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B11

GENERAL CATALOG

SWITCH • PILOT LAMP • SIGNAL LIGHT

Control switch / Combination display light / Power switch
Main switch / Cam switch / Limit switch / Micro switch
Hoist switch / Foot switch / Mono lever switch / Sign tower
Turn light / Buzzer / Terminal block / Fuse holder
Controlling box / Cable connector

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HANYOUNG NUX

A Control switch Combination Display Light

Control switch (QR series) ---------- 2
- Aluminum guard (Ø22/Ø25/Ø30) ---------- 8
- Plastic guard (Ø25) ----------29
- Plastic guard (Ø22/Ø25) ---------- 39

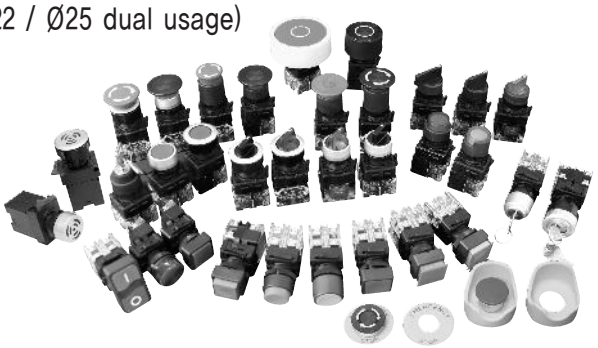
Control switch (Ø22/Ø25 AR series) ---------- 55
Control switch (Ø25/Ø30 CR series) ---------- 87
Control switch (Ø16 SR series) ---------- 99
Rectangular lamp (4×32 CR-400 series) -----115
Combination display light (30×30, 30×40 CD series) ----118

QR series

Control switch & Pilot Lamp

Flush type (Ø30, Ø25), extended type (Ø22 / Ø25 dual usage)

The QR series is module type. It is composed of module type actuator and contact parts. Actuator is divided into the aluminum guard (flush type, extended type) and plastic guard. The contact part is divided into the 3 kinds of contact units (Snap-action : 2 kinds, Slow-make : 1 kind), 2 kinds of light source units and 2 kinds of fixing units.

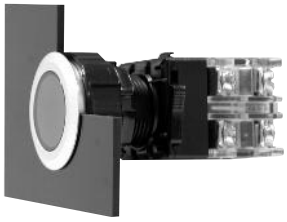
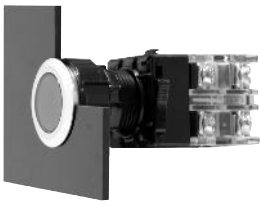
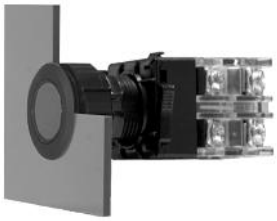


Specification

Classification		Aluminum guard type			Plastic guard type	
		Flush type (Ø30)	Flush type (Ø25)	Extended type (Ø22/Ø25 dual usage)	Flush type (Ø25)	Extended type (Ø22/Ø25 dual usage)
Contact action		Snap-action / Slow-make				
Installing panel thickness		9 ㎜ (when excluded the additional accessories)				7 ㎜ (when excluded the additional accessories)
Material	Contact material	Running contact : AgNi (gold plating), Fixed contact : AgNi + Cu (gold plating)				
	Contact cover material	Polycarbonate (PC)				
	Contact body material	Nylon 66 + Glass 15 %				
Mechanical characteristic	Fixed torque	Installing screw : 25 Ncm Max., Terminal screw : 50 Ncm Max.				
	Operating power	A/B type : 6.47 N (operation part + 1a1b contact), C type : 7.8 N (operation part + 1a, 1b contact)				
	Operating distance	5 ㎜ ±0.5				
	Reflection time	max 3 ㎳				
	Durability of actuator	Button : min 1 million times, Selector switch : min 50 thousand times (A, B type) / min 10 thousand times (C type)				
Electrical characteristic	Dielectric strength	A, B type : 2,000 V a.c for 1 min / C type : 1,500 V a.c for 1 min				
	Contact resistance	Max 50 mΩ (default)				
	Insulation resistance	Min 10 MΩ 500 V d.c				
	Switch rating	A, B type (a.c : 6 A 250 V a.c, d.c : 10 A 24 V d.c) / C type (6 A 250 V a.c)				
	Min load current	5 ㎃ 24 V d.c, 10 ㎃ 110 V d.c				
	Electrical durability	500 thousand times (resistive load)				
Light source	Power supply voltage	100 – 240 V a.c : LED (condenser voltage dropping type)				
		380 V a.c : LED (condenser voltage dropping type)				
		12 – 24 V d.c/a.c : LED (Resistance voltage dropping type)				
Environment condition	Ambient temperature	A, B type : -25 ~ 55 ℃ / C type : -25 ~40 ℃				
	Ambient humidity	A, B type : 35 ~ 85 % R.H. / C type : 45 ~ 85 % R.H.				
	Storage temperature	A, B type : -40 ~ 85 ℃ / C type : -40 ~ 70 ℃				
	Shock resistance	A, B type (300 ㎧ pulse cycle 11 ㎳) / C type (shock resistance : 500 ㎧, malfunction : 100 ㎧)				
	Vibration resistance	A, B type (100 ㎧, 10 ㎐ – 55 ㎐, amplitude 0.75 ㎜ (within 1 ㎳)) / C type (malfunction : 10 ㎐ – 55 ㎐ amplitude 3 ㎜)				

Actuator composition & Panel installation sample

■ Flush type

Model	Flush type (Ø30)	Flush type (Ø25)	
	Aluminum guard	Aluminum guard	Plastic guard
Actuator composition			
Panel installation sample			

■ Extended type

Model	Extended type(Ø22 / Ø25 Dual usage)	Extended type(Ø22 / Ø25 Dual usage)	
	Plastic guard	Aluminum guard	Plastic guard
Actuator composition			
Panel installation sample			

Contact part composition

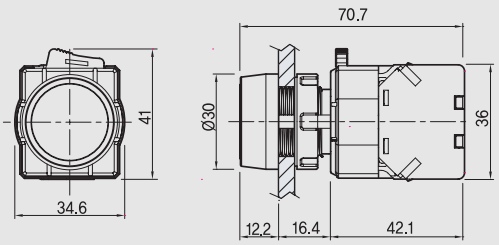
■ A type contact block (Snap-action)

• Fixing plate (QR-FPA)

• Contact unit (QR-CBA)

• Illuminated LED unit (QR-LA)

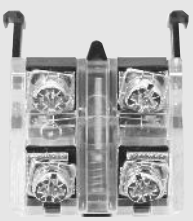
• Dimension



■ B type contact block (Snap-action)

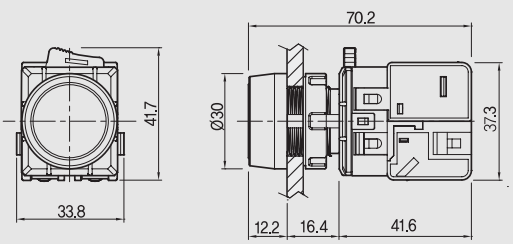
• Fixing plate (QR-FPB)

• Contact unit (QR-CBB)



• Illuminated LED unit (QR-LB)

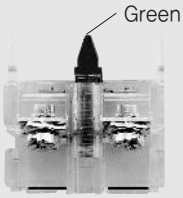
• Dimension



■ C type contact block (Slow-make)

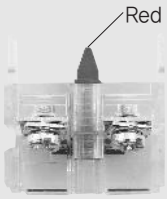
• Fixing plate (QR-FPC)

• Contact unit (QR-CBC)



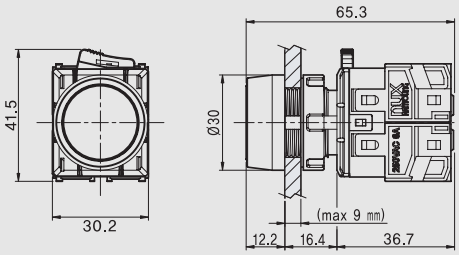
a contact (N.O)

• Contact unit (QR-CBD)



b contact (N.C)

• Dimension

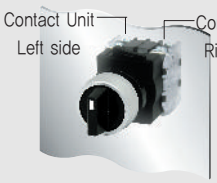


Precautions when composing the selector contact

■ A type

When combining A type fixing plate with actuator, it can be assembled with 4 directions but it only operates properly when fixing plate lever is located in up and down direction.
So users must be careful when assembling.

Lever direction up and down



(○)

Lever direction left and right

(×)

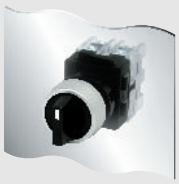
■ B/C type

When combining B type fixing plate with actuator, it can be assembled with 4 directions but in only operates properly when fixing plate lever is located in left and right direction.
So users must be careful when assembling.

Lever direction left and right

(○)

Lever direction up and down



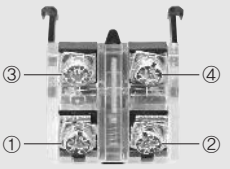
(×)

■ Selector contact operation

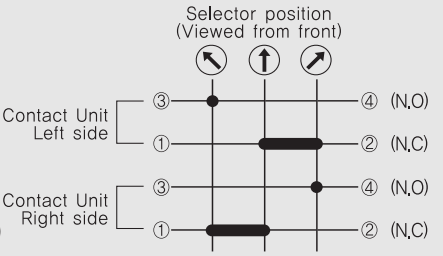
In case of 3 positions selector, please refer to the contact operation diagram.
(Please refer the contact unit position in the A type drawing on page 5.)

※ A/B type contact unit

A type contact unit (QR-CBA)



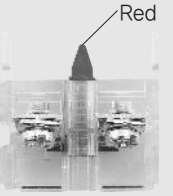
B type contact unit (QR-CBB)



※ C type contact unit

C type contact unit (QR-CBC)
a contact (N.O)

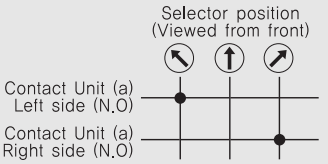
C type contact unit (QR-CBD)
b contact (N.C)

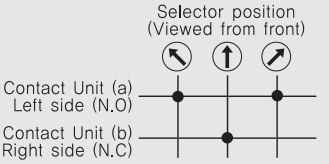


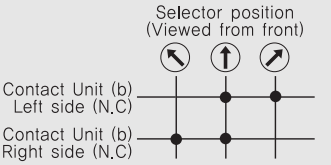
(2a)

(1a, 1b)

(2b)

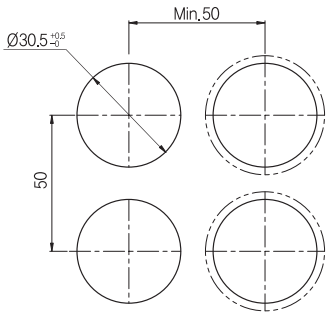




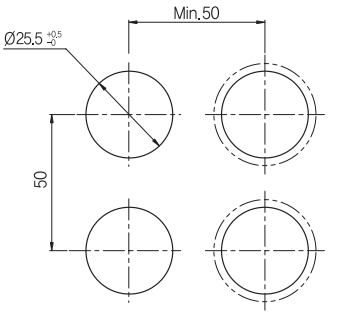


Panel cutout (unit : ㎜)

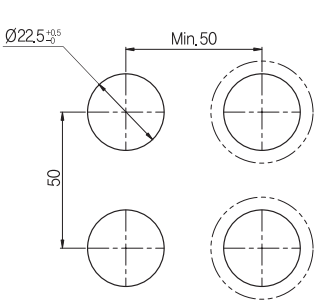
• Ø30



• Ø25

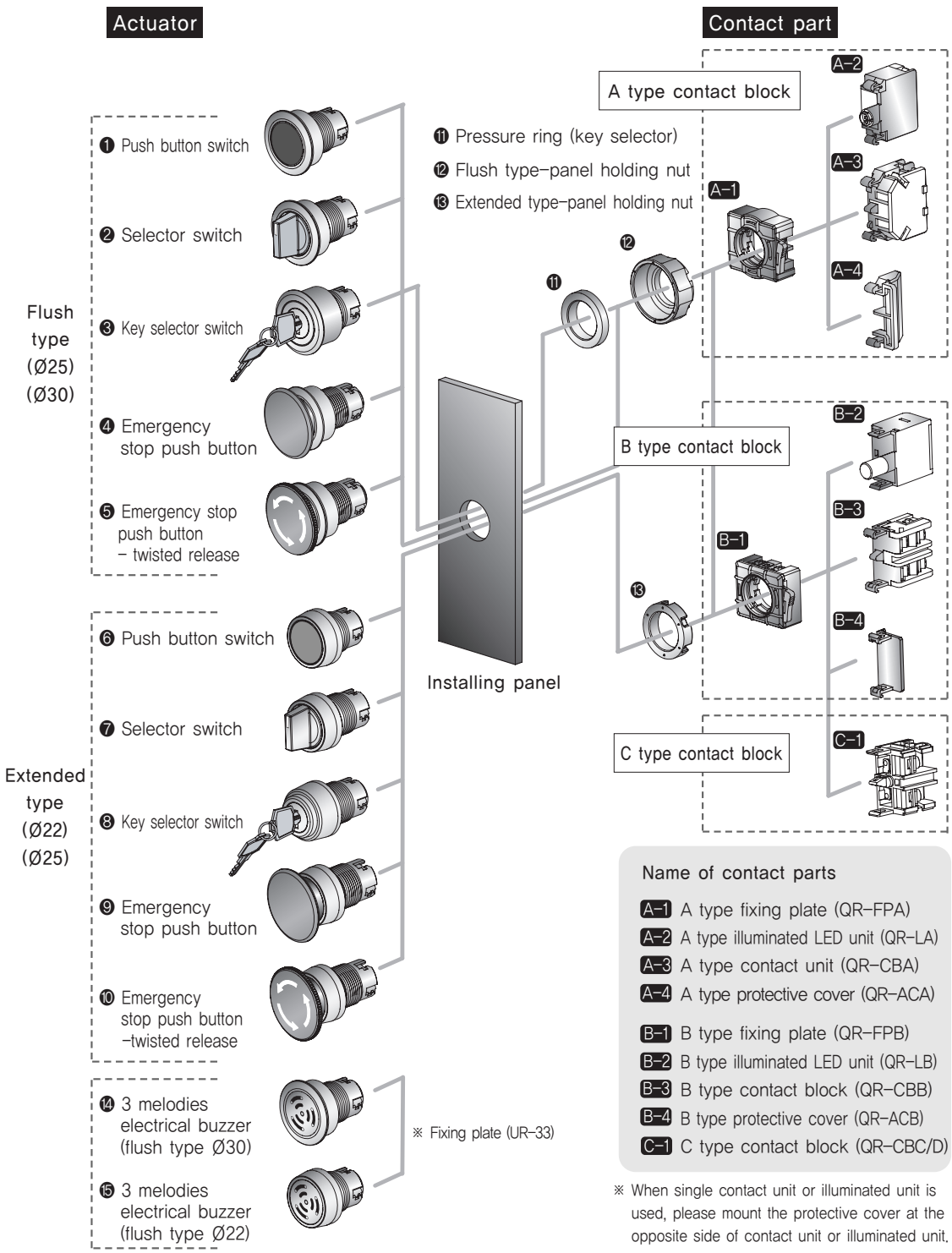


• Ø22



Aluminum Guard Product Composition

■ Flush type Ø30, Ø25, extended type Ø22 / Ø25



Name of contact parts

- A-1 A type fixing plate (QR-FPA)
- A-2 A type illuminated LED unit (QR-LA)
- A-3 A type contact unit (QR-CBA)
- A-4 A type protective cover (QR-ACA)
- B-1 B type fixing plate (QR-FPB)
- B-2 B type illuminated LED unit (QR-LB)
- B-3 B type contact block (QR-CBB)
- B-4 B type protective cover (QR-ACB)
- C-1 C type contact block (QR-CBC/D)

※ When single contact unit or illuminated unit is used, please mount the protective cover at the opposite side of contact unit or illuminated unit.

QR series (Aluminum guard)

Push button switch

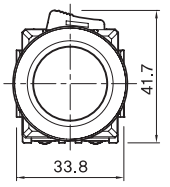
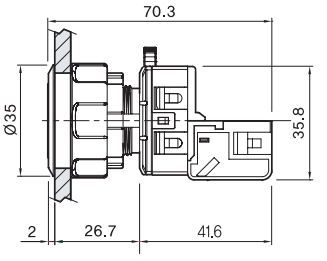
Flush type (Ø25, Ø30), Extended type (Ø22 / Ø25 dual usage)

- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6A 250V a.c / 10A 24V a.c
- Excellent durability and energize function
- IP 65 protective structure

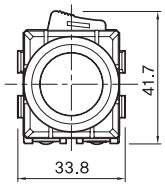
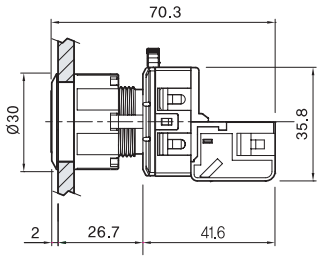
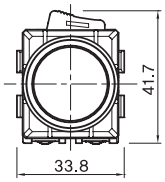
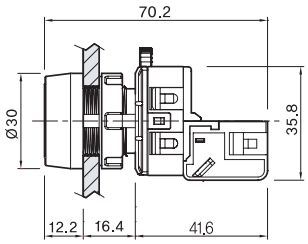
Suffix code

Model	Code				Description		
QRF-	□	□	□	□	Aluminum guard push button switch		
Actuator	A				Flush aluminum guard (Installing hole : Ø30)		
	N				Flush aluminum guard (Installing hole : Ø25)		
	R				Extended aluminum guard (Installing hole : Ø22 / Ø25 dual usage)		
Operation function		M			Momentary		
		A			Alternate		
Contact composition			A1		1a1b Contact	A type contact block	Contact operation : Snap-action
			A2		2a2b Contact		
			B1		1a1b Contact	B type contact block	
			B2		2a2b Contact		
			C1		1a1b Contact	C type contact block	Contact operation : Slow-make
			C2		2a2b Contact		
Color of actuator (cap color)				R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRF-AM□□ QRF-AA□□ Flush type (Installing hole : Ø30)		 

QR series

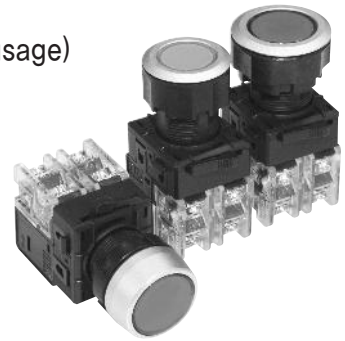
Model	Appearance	Dimension
QRF-NM□□ QRF-NA□□ Flush type (Installing hole : Ø25)		 
QRF-RM□□ QRF-RA□□ Extended type (Installing hole : Ø22/Ø25)		 

QR series (Aluminum guard)

Illuminated push button switch

Flush type (Ø25, Ø30), Extended type (Ø22/Ø25 dual usage)

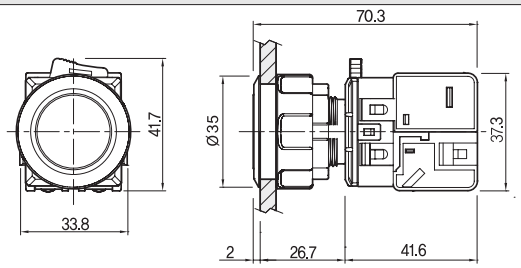
- Assembling type (actuator and contact part)
- Bright and long life expectancy due to the LED light source application
- Snap-action / Slow-make contact unit
- IP 65 protective structure



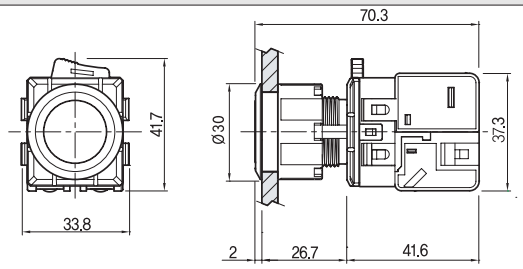
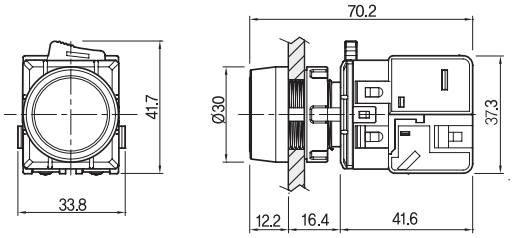
Suffix code

Model	Code					Description		
QRX-	□	□	□	□	□	Aluminum guard illuminated push button switch		
Actuator	A					Flush aluminum guard (Installing hole : Ø30)		
	N					Flush aluminum guard (Installing hole : Ø25)		
	R					Extended aluminum guard (Installing hole : Ø22)		
Operation function		M				Momentary		
		A				Alternate		
Contact composition			A1			1a1b Contact	A type contact block	Contact operation : Snap-action
			A2			2a2b Contact		
			B1			1a1b Contact	B type contact block	
			B2			2a2b Contact		
			C1			1a1b Contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A		100 – 240 V a.c	LED (condenser voltage dropping type)	
				C		380 V a.c		
				D		12 – 24 V a.c / d.c	LED (Resistance voltage dropping type)	
Color of actuator (cap color)					R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRX-AM□□□ QRX-AA□□□ Flush type (Installing hole : Ø30)		

QR series

Model	Appearance	Dimension
QRX-NM□□□ QRX-NA□□□ Flush type (Installing hole : Ø25)		
QRX-RM□□□ QRX-RA□□□ Extended type (Installing hole : Ø22/Ø25)		

QR series (Aluminum guard)

Pilot lamp

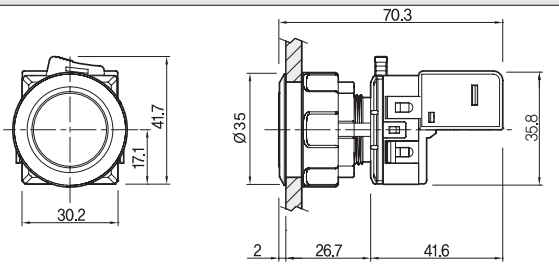
Flush type (Ø25, Ø30), Extended type (Ø22 / Ø25 dual usage)

- Assembling type (actuator and contact part)
- Bright and long life due to the LED light source application
- IP 65 protective structure

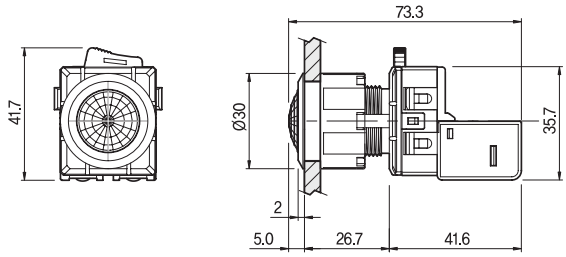
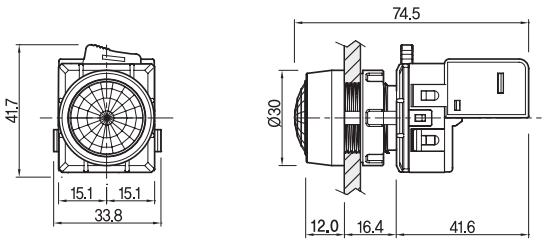
Suffix code

Model	Code		Description	
QRP-	□	□	□	Aluminum guard pilot Lamp	
Actuator	A			Flush aluminum guard (Installing hole : Ø30)	
	N			Flush aluminum guard (Installing hole : Ø25)	
	R			Extended aluminum guard (Installing hole:Ø22/Ø25 dual usage)	
Rated input voltage (A type exclusive unit)		A		100 – 240 V a.c	LED (Condenser voltage dropping type)
		C		380 V a.c	
		D		12 – 24 V d.c / a.c	LED (Resistance voltage dropping type)
Rated input voltage (B type exclusive unit)		BA		100 – 240 V a.c	LED (Condenser voltage dropping type)
		BC		380 V a.c	
		BD		12 – 24 V d.c / a.c	LED (Resistance voltage dropping type)
Color of actuator (cap color)			R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRP-A Flush type (Installing hole : Ø30)		

QR series

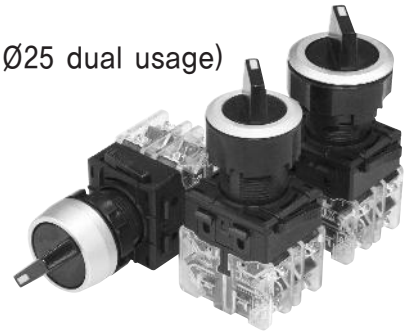
Model	Appearance	Dimension
QRP-N Flush type (Installing hole : Ø25)		
QRP-R Extended type (Installing hole : Ø22/Ø25)		

QR series (Aluminum guard)

Selector switch

Flush type (Ø25, Ø30), Extended type (Ø22 / Ø25 dual usage)

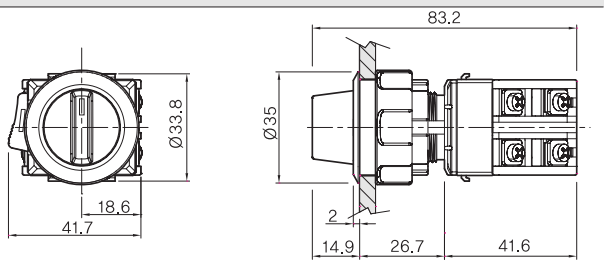
- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6A 250V a.c / 10A 24V d.c
- IP 65 protective structure

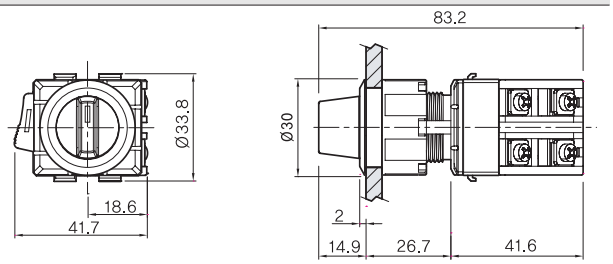
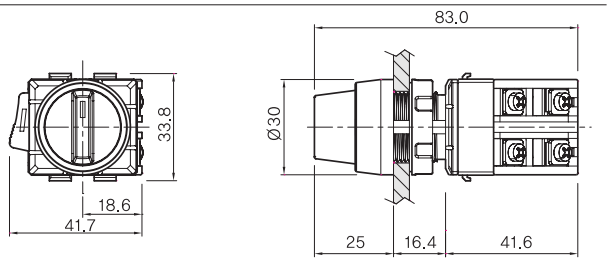


Suffix code

Model	Code			Description			
QRS-	□	□	□	Aluminum guard selector switch			
Actuator	A			Flush aluminum guard (Installing hole : Ø30)			
	N			Flush aluminum guard (Installing hole : Ø25)			
	R			Extended aluminum guard (Installing hole:Ø22/Ø25 dual usage)			
Operation function		2		2 positions alternate	–	※ Please refer to precautions when composing the selector contact (3 positions : only 2a 2b contact available)	
		2R		2 positions momentary			
		3		3 positions alternate	–		
		3L		3 positions left side momentary			
		3R		3 positions right side alternate			
		3LR		3 positions left and right side alternate			
Contact composition			A1	1a1b Contact (only with 2 positions)		A type contact block	Contact operation : Snap-action
			A2	2a2b Contact			
			B1	1a1b Contact (only with 2 positions)		B type contact block	
			B2	2a2b Contact			
			C1	1a1b Contact		C type contact block	Contact operation : Slow-make
			C2	2a2b Contact			
Color of actuator (cap color)				Black (solid)			

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRS-A□□ Flush type (Installing hole : Ø30)		

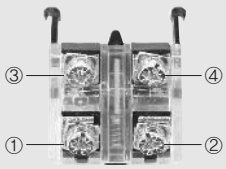
Model	Appearance	Dimension
QRS-N□□ Flush type (Installing hole : Ø25)		
QRS-R□□ Extended type (Installing hole : Ø22/Ø25)		

selector contact operation

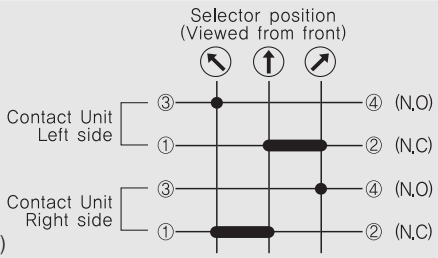
■ In case of 3 positions selector, please refer to the contact operation diagram.
(Please refer the contact unit position in the A type drawing on page 5.)

※ A/B type contact unit

A type contact unit (QR-CBA)



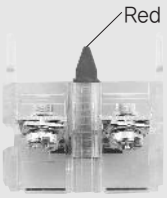
B type contact unit (QR-CBB)



※ C type contact unit

C type contact unit (QR-CBC)
a contact (N.O)

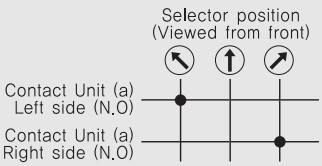
C type contact unit (QR-CBD)
b contact (N.C)

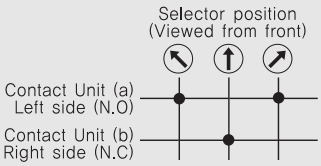


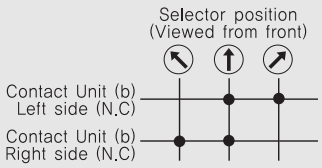
(2a)

(1a, 1b)

(2b)

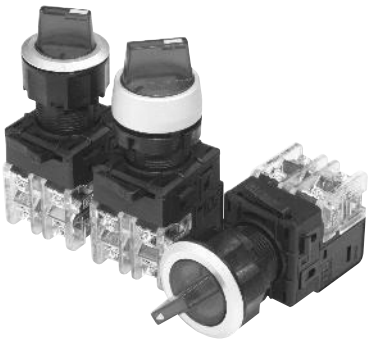






QR series (Aluminum guard)

Illuminated selector switch



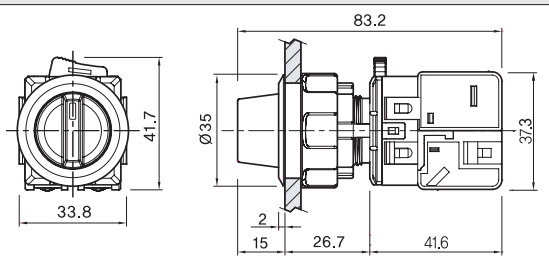
Flush type (Ø25, Ø30), Extended type (Ø22 / Ø25 Dual usage)

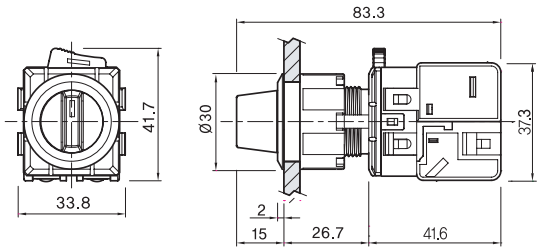
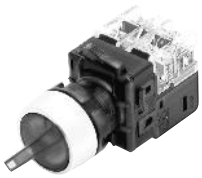
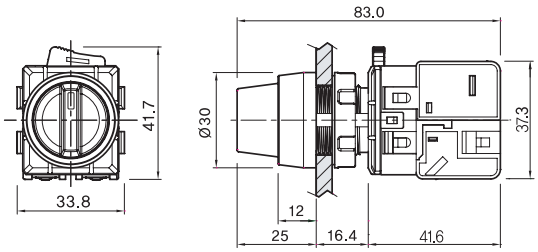
- Assembling type (Actuator and contact part)
- Bright and long life span (LED as a light source)
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V a.c / 10 A 24 V d.c
- IP 65 protective structure

Suffix code

Model	Code						Description		
QRT-	□	□	□	□	□		Aluminum guard illuminated selector switch		
Actuator	A						Flush aluminum guard (Installing hole : Ø30)		
	N						Flush aluminum guard (Installing hole : Ø25)		
	R						Extended aluminum guard (Installing hole:Ø22/Ø25 dual usage)		
Operation function		2					2 positions alternate	–	※ Only available 2 positions
		2R					2 positions momentary	↖	
Contact composition			A1				1a1b Contact	A type contact block	Contact operation : Snap-action
			A2				2a2b Contact		
			B1				1a1b Contact	B type contact block	
			B2				2a2b Contact		
			C1				1a1b Contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A			100 – 240 V a.c	LED (Condenser voltage dropping type)	
				C			380 V a.c		
				D			12 – 24 V d.c / a.c	LED (Resistance voltage dropping type)	
Color of actuator (cap color)					R		R (Red), G (Green), Y (Yellow), A (Blue)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRT-A□□□□ Flush type (Installing hole : Ø30)		

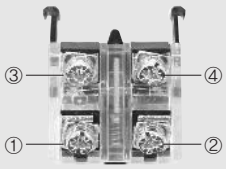
Model	Appearance	Dimension
QRT-N□□□□ Flush type (Installing hole : Ø25)		
QRT-R□□□□ Extended type (Installing hole : Ø22/Ø25)		

selector contact operation

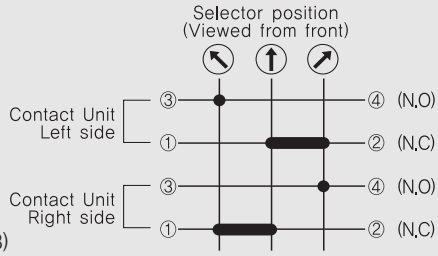
■ In case of 3 positions selector, please refer to the contact operation diagram.
(Please refer the contact unit position in the A type drawing on page 5.)

※ A/B type contact unit

A type contact unit (QR-CBA)

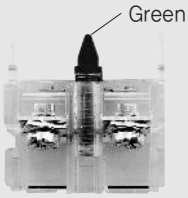


B type contact unit (QR-CBB)

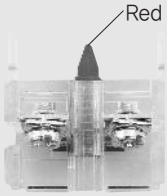


※ C type contact unit

C type contact unit (QR-CBC)
a contact (N.O)



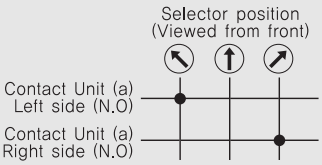
C type contact unit (QR-CBD)
b contact (N.C)

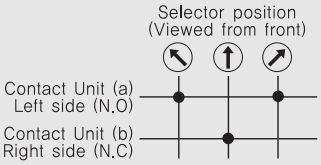


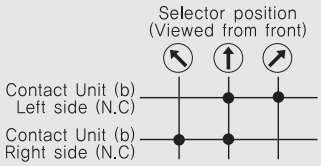
(2a)

(1a, 1b)

(2b)





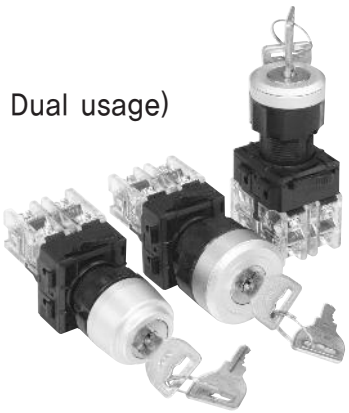


QR series (Aluminum guard)

Key selector switch

Flush type (Ø25, Ø30), Extended type (Ø22 / Ø25 Dual usage)

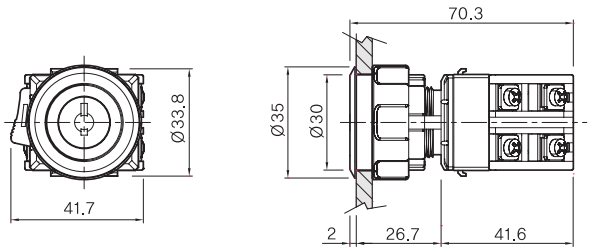
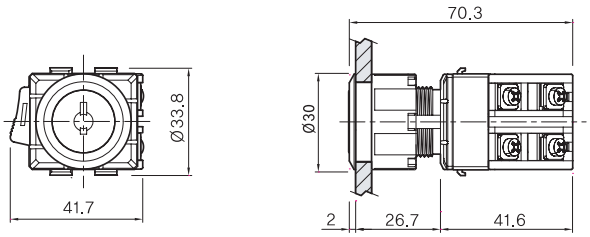
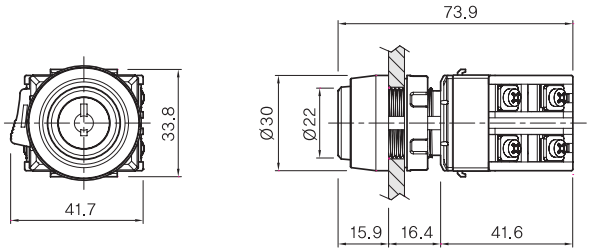
- Assembling type (actuator and contact part)
- Various key removing positions
- Contact capacity 6 A 250 V a.c / 10 A 24 V d.c
- Snap-action / Slow-make contact unit
- Excellent durability and conductivity
- IP65 protective structure



Suffix code

Model	Code	Description			
QRK-	□ □ □ □	Aluminum guard key selector switch			
Actuator	A	Flush type (Installing hole : Ø30)			
	N	Flush type (Installing hole : Ø25)			
	R	Extended type (Installing hole : Ø22/Ø25 dual usage)			
Operation function	2	2 positions momentary operation	–	※ Refer to the precaution when structuring the selector ※ 3 positions : only 2a2b contact available	
	2R	2 positions alternate operation	↖		
	3	3 positions momentary operation	–		
	3L	3 positions left side alternate operation	↑		
	3R	3 positions right side alternate operation	↑		
	3LR	3 positions left and right side alternate operation	↑		
Contact composition	A1	1a1b contact (only with 2 notches)		A type contact block	Contact operation : Snap-action
	A2	2a2b contact			
	B1	1a1b contact (only with 2 notches)		B type contact block	
	B2	2a2b contact			
	C1	1a1b contact		C type contact block	Contact operation : Slow-make
	C2	2a2b contact			
Key removing position (key selecting switch)	A	Left	↖	In case of 2 positions, exclude the middle key removing position	
	B	Right	↗		
	C	Middle	↑		
	D	Left and right	↖ ↗		
	E	Front	↖ ↑ ↗		
Actuator color		White aluminum			

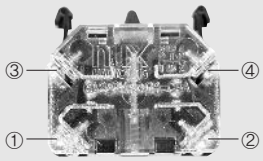
Dimension (unit : ㎜)

Model	Appearance	Dimension
QRK-A Flush type (Installing hole : Ø30)		
QRK-N Flush type (Installing hole : Ø25)		
QRK-R Extended type (Installing hole : Ø22/Ø25)		

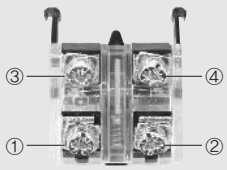
Selector contact operation

■ In case of 3 positions selector, please refer to the contact operation diagram.
(Please refer the contact unit position in the A type drawing on page 5.)

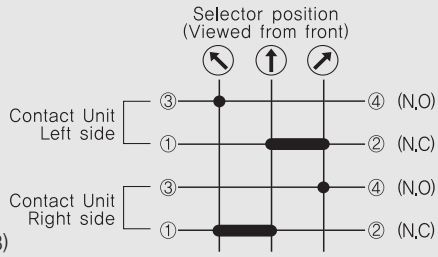
※ A/B type contact unit



A type contact unit (QR-CBA)



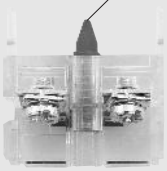
B type contact unit (QR-CBB)



※ C type contact unit

C type contact unit (QR-CBC)
a contact (N.O)

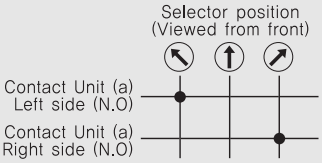
C type contact unit (QR-CBD)
b contact (N.C)

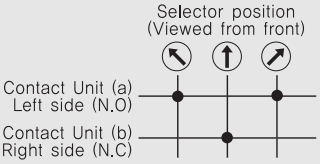


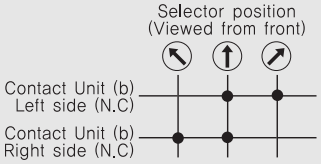
(2a)

(1a, 1b)

(2b)





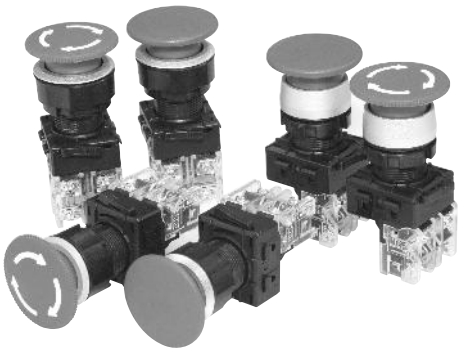


QR series (Aluminum guard)

Emergency stop push button switch

Flush type (Ø25, Ø30), Extended type (Ø22 / Ø25 dual usage)

- Assembling type (actuator and contact part)
- 2 types of operation function
- Snap-action / Slow-make contact unit
- Contact capacity 6A 250V a.c / 10A 24V d.c
- IP65 protective structure

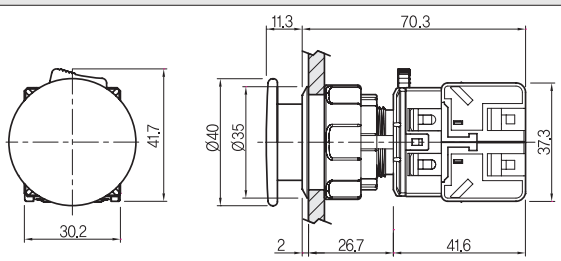


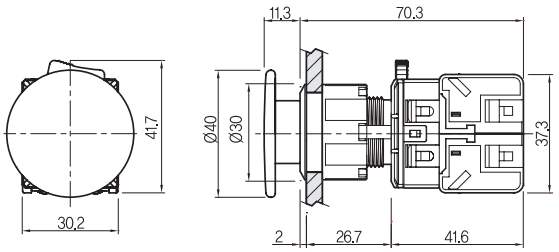
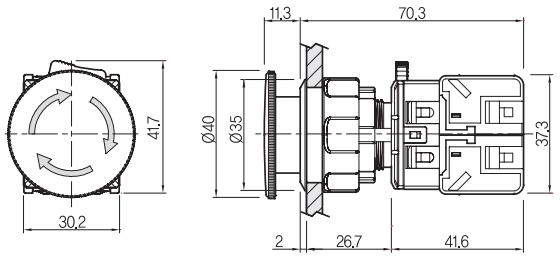
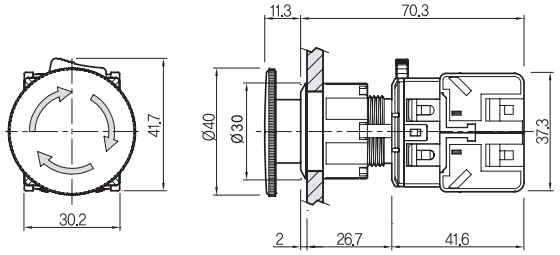
Suffix code

Model	Code			Description		
QRE-	□	□	□	Aluminum guard emergency stop push button switch		
Actuator	A			Flush aluminum guard (Installing hole : Ø30)		
	N			Flush aluminum guard (Installing hole : Ø25)		
	R			Extended aluminum guard (Installing hole:Ø22/Ø25 dual usage)		
Operation function		M		Alternate operation		
		R		Push lock-pull reset		
Contact composition			A1	1a1b contact	A type contact block	Contact operation : Snap-action
			A2	2a2b contact		
			B1	1a1b contact	B type contact block	
			B2	2a2b contact		
			C1	1a1b contact	C type contact block	Contact operation : Slow-make
			C2	2a2b contact		
Actuator color				Red (solid color)		

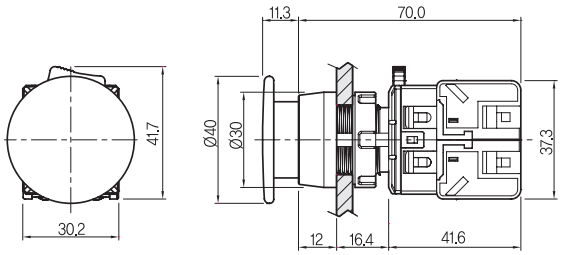
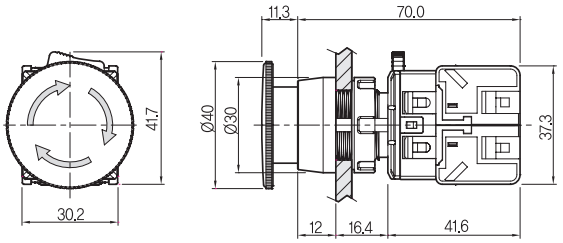
Dimension (Unit : ㎜)

■ Flush type

Model	Appearance	Dimension
QRE-AM□ Flush type (Installing hole : Ø30)		

Model	Appearance	Dimension
QRE-NM□ Flush type (Installing hole : Ø25)		
QRE-AR□ Flush type (Installing hole : Ø30)		
QRE-NR□ Flush type (Installing hole : Ø25)		

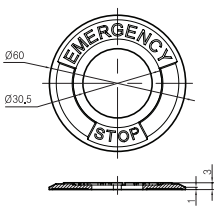
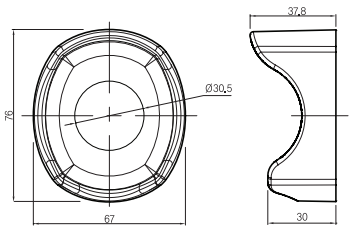
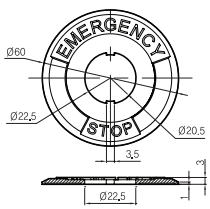
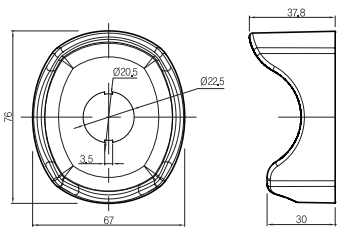
■ Extended type

Model	Appearance	Dimension
QRE-RM□ Extended type (Installing hole : Ø22/Ø25)		
QRE-RR□ Extended type (Installing hole : Ø22/Ø25)		

Emergency name plate and example of emergency protective guard application

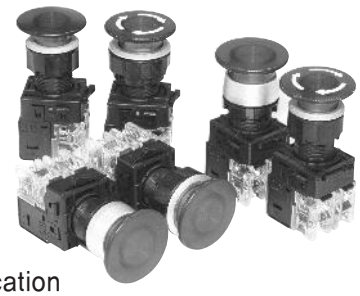
Model	Emergency name plate	Model	Emergency protective guard
EN-36		EP-30	
EN-26		EP-22	

Emergency name plate and Emergency protective guard

Model	Emergency name plate	Model	Emergency protective guard
EN-36 (Ø30)		EP-30 (Ø30)	
EN-26 (Ø22)		EP-22 (Ø22)	

QR series (Aluminum guard)

Illuminated emergency stop push button switch



Flush type (Ø25, Ø30),
Extended type (Ø22 / Ø25 Dual usage)

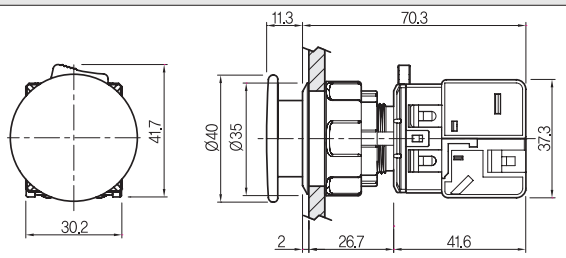
- Assembling type (actuator and contact part)
- Bright and long life due to the LED light source application
- 2 types of operation function
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V a.c / 10 A 24 V d.c
- IP65 protective structure

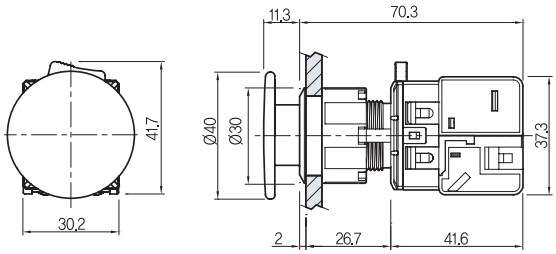
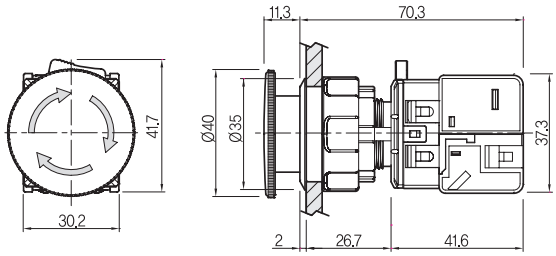
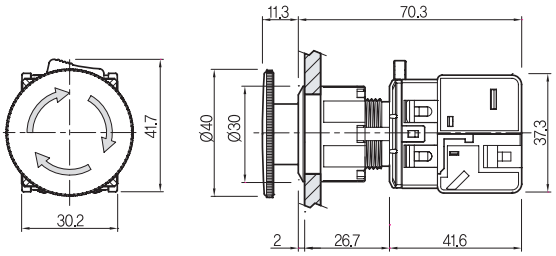
Suffix code

Model	Code				Description		
QRA-	□	□	□	□	Aluminum guard illuminated emergency stop push button Switch		
Actuator	A				Flush type (Installing hole : Ø30)		
	N				Flush type (Installing hole : Ø25)		
	R				Extended aluminum guard (Installing hole:Ø22/Ø25 dual usage)		
Operation function		M			Alternate operation		
		R			Push lock-turn reset		
Contact composition			A1		1a1b Contact	A type contact block	Contact operation : Snap-action
			A2		2a2b Contact		
			B1		1a1b Contact	B type contact block	
			B2		2a2b Contact		
			C1		1a1b Contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A	100 - 240 V a.c	LED (Condenser voltage dropping type)	
				C	380 V a.c	LED (Condenser voltage dropping type)	
				D	12 - 24 V a.c/d.c	LED (Resistance voltage dropping type)	
Actuator color					Red (solid color)		

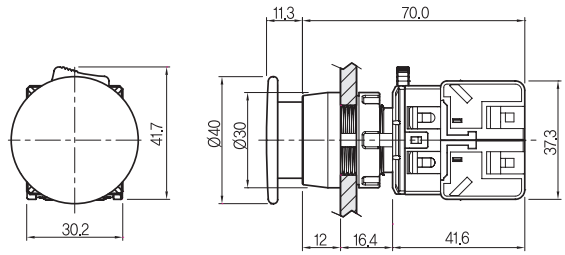
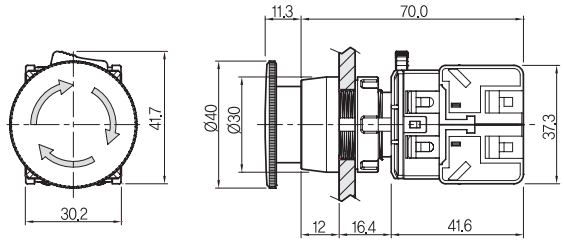
Dimension (unit : ㎜)

■ Flush type

Model	Appearance	Dimension
QRA-AM□□ Flush type (Installing hole : Ø30)		

Model	Appearance	Dimension
QRA-NM□□ Flush type (Installing hole: Ø25)		
QRA-AR□□ Flush type (Installing hole : Ø30)		
QRA-NR□□ Flush type (Installing hole : Ø25)		

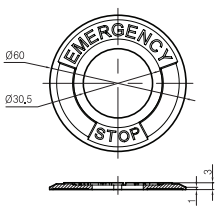
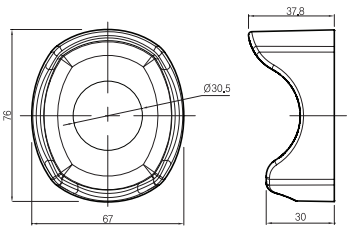
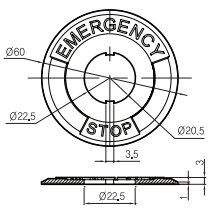
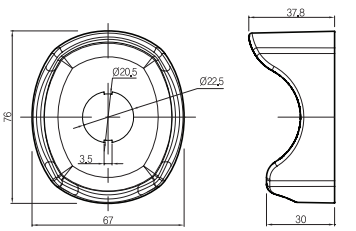
■ Extended type

Model	Appearance	Dimension
QRA-RM□□ Extended type (Installing hole : Ø22/Ø25)		
QRA-RR□□ Extended type (Installing hole : Ø22/Ø25)		

Emergency name plate and example of emergency protective guard application

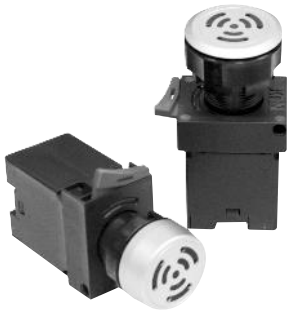
Model	Emergency name plate	Model	Emergency protective guard
EN-36		EP-30	
EN-26		EP-22	

Emergency name plate and Emergency protective guard

Model	Emergency name plate	Model	Emergency protective guard
EN-36 (Ø30)		EP-30 (Ø30)	
EN-26 (Ø22)		EP-22 (Ø22)	

QR series (Aluminum guard)

3 melodies electrical buzzer



- 3 melodies selection (by the backside jumper pin)
- Assembling type (Actuator and contact part)
- LED flashed when buzzer operated
- Extended type (Ø22 / Ø25 Dual usage), Flush type (Ø30)

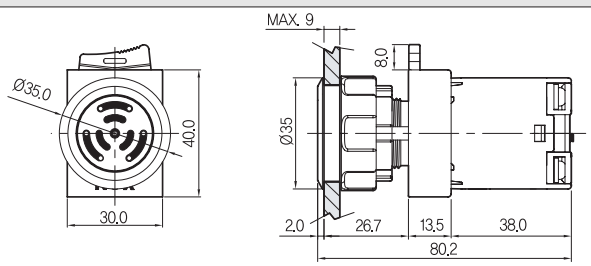
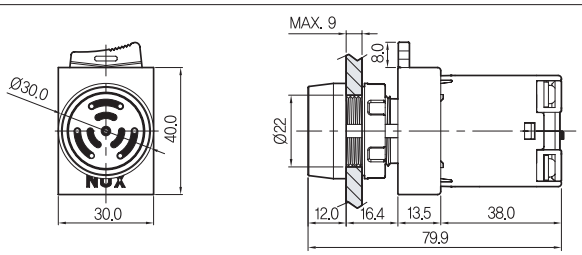
Suffix code

Model	Code			Description	
QRB-	□	□	□	Aluminum guard 3 melodies electrical buzzer	
Actuator	A			Flush type (Installing hole : Ø30)	
	R			Extended type (Installing hole : Ø22)	
Power supply voltage		A		110 – 220 V a.c	LED (Condenser voltage dropping type)
		D		12 – 24 V a.c / d.c	LED (Resistance voltage dropping type)
Actuator color			W	White aluminum	

Specification

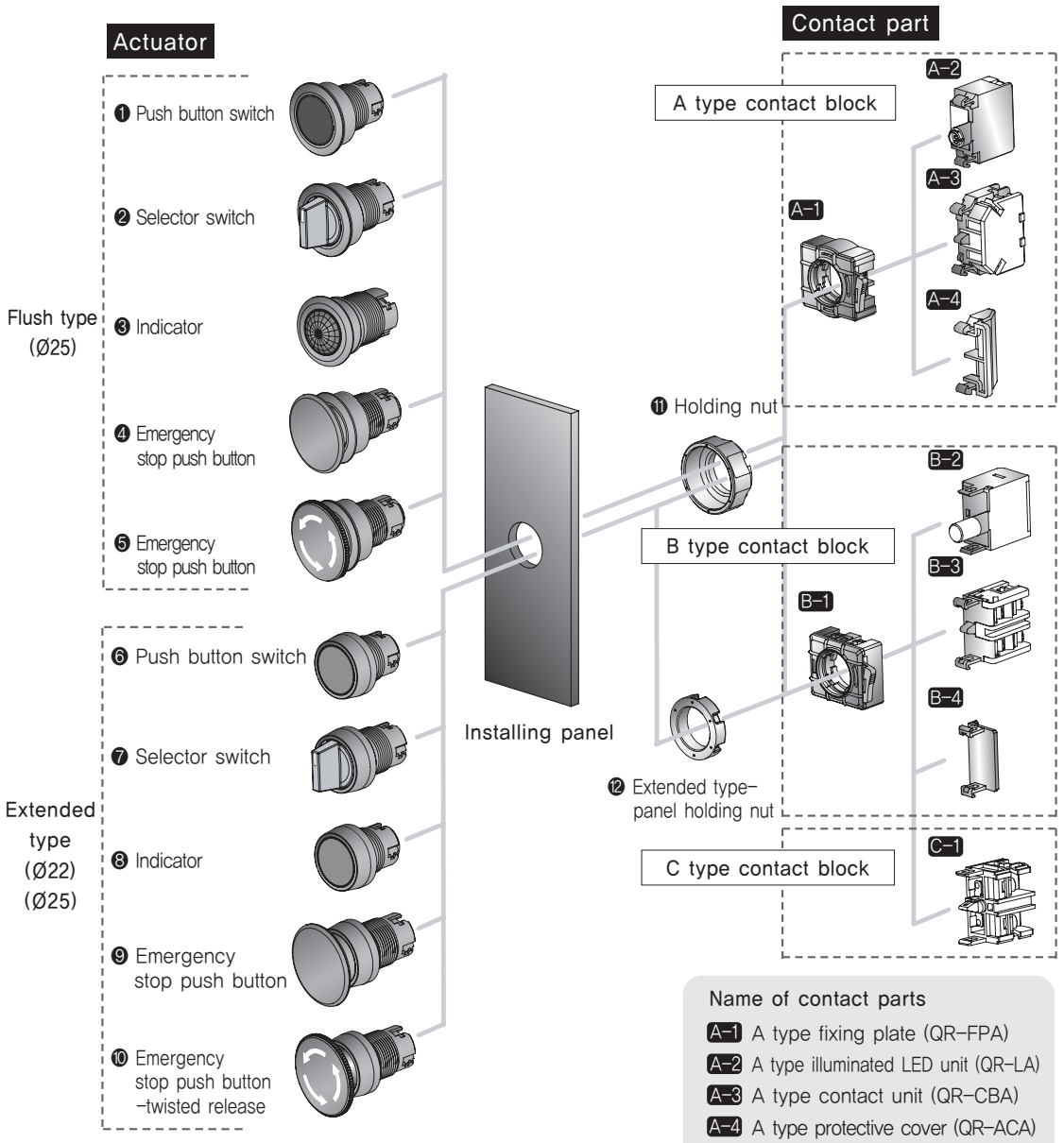
Model	QRB-AAW	QRB-RAW	QRB-ADW	QRB-RDW
Installing hole	Ø30	Ø22	Ø30	Ø22
Power supply voltage	110 – 220 V a.c 50 – 60 Hz		12 – 24 V d.c / a.c	
Power consumption	13.5 W		0.6 W	
Decibel	80 dB			
Melody selection (backside jumper)	SELECT-1	FAST BEEP		
	SELECT-2	SLOW BEEP		
	REMOVE (open)	CONTINUANT		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRB-A□□ Flush type (Installing hole : Ø30)		
QRB-R□□ Extended type (Installing hole : Ø22/Ø25)		

Plastic Guard Product Composition

■ Flush type Ø25, Extended type Ø22/Ø25



Name of contact parts

- A-1 A type fixing plate (QR-FPA)
- A-2 A type illuminated LED unit (QR-LA)
- A-3 A type contact unit (QR-CBA)
- A-4 A type protective cover (QR-ACA)
- B-1 B type fixing plate (QR-FPB)
- B-2 B type illuminated LED unit (QR-LB)
- B-3 B type contact block (QR-CBB)
- B-4 B type protective cover (QR-ACB)
- C-1 C type contact block (QR-CBC/D)

※ When single contact unit or illuminated unit is used, mount the protective cover at the opposite side of contact unit or illuminated unit.

QR series (Plastic guard)

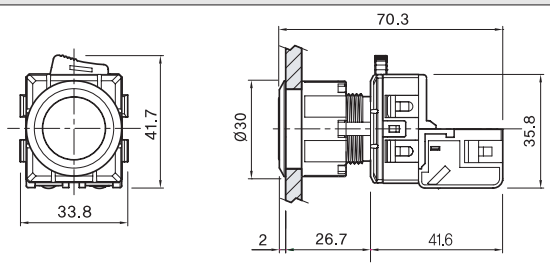
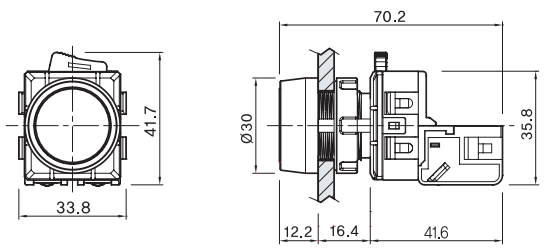
Push button switch

- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V a.c / 10 A 24 V d.c
- Excellent durability and conductivity
- IP 65 protective structure

Suffix code

Model	Code				Description		
QRF-	□	□	□	□	Plastic guard push button switch		
Actuator	K				Flush type (installing hole : Ø25)		
	T				Extended type (Installing hole : Ø22/Ø25 dual usage) ※order-made		
Operation function		M			Momentary		
		A			Alternate		
Contact composition			A1		1a1b Contact	A type contact block	Contact operation : Snap-action
			A2		2a2b Contact		
			B1		1a1b Contact	B type contact block	
			B2		2a2b Contact		
			C1		1a1b contact	C type contact block	Contact operation : Slow-make
			C2		2a2b contact		
Color of actuator (cap color)				R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRF-KM□□ QRF-KA□□ Flush type (Installing hole : Ø25)		
QRF-TM□□ QRF-TA□□ Extended type (Installing hole : Ø22/Ø25)		

QR series (Plastic guard)

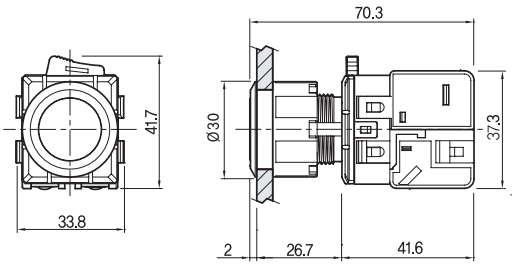
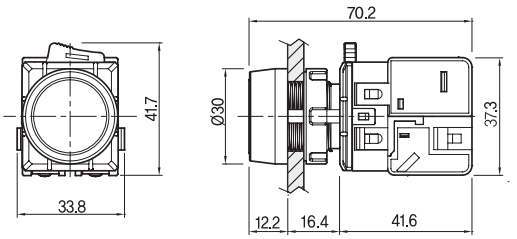
Illuminated push button switch

- Assembling type (actuator and contact part)
- Bright and long usage due to the LED light application
- Snap-action / Slow-make contact unit
- IP65 protective structure

Suffix code

Model	Code					Description		
QRX-	□	□	□	□	□	Plastic guard illuminated push button switch		
Actuator	K					Extended type (installing hole : Ø25)		
	T					Extended type (Installing hole : Ø22/Ø25 dual usage) ※order-made		
Operation function		M				Momentary		
		A				Alternate		
contact composition			A1			1a1b contact	A type contact block	Contact operation : Snap-action
			A2			2a2b contact		
			B1			1a1b contact	B type contact block	
			B2			2a2b contact		
			C1			1a1b contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A		100 - 240 V a.c	LED (Condenser voltage dropping type)	
				C		380 V a.c	LED (Condenser voltage dropping type)	
				D		12 - 24 V a.c/d.c	LED (Resistance voltage dropping type)	
Color of actuator					R	R (red), G (green), Y (yellow), A (blue), W (white)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRX-KM□□□ QRX-KA□□□ Flush type (Installing hole : Ø25)		
QRX-TM□□□ QRX-TA□□□ Extended type (Installing hole : Ø22/Ø25)		

QR series (Plastic guard)

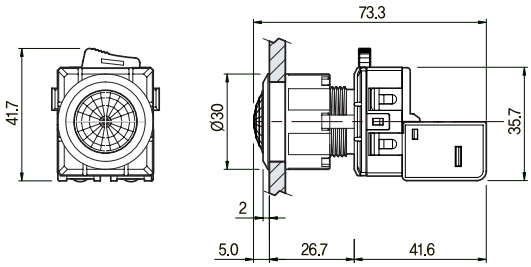
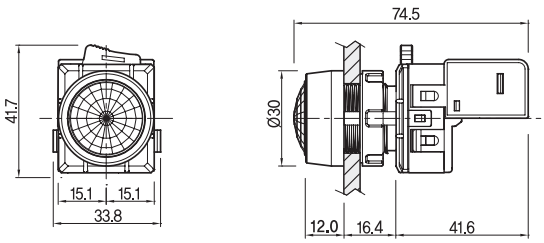
Pilot lamp

- Assembling type (actuator and contact part)
- Bright and long life expectancy due to the LED light application
- IP 65 protective structure

Suffix code

Model	Code			Description	
QRP-	□	□	□	Plastic guard indicator	
Actuator	K			Flush type (Installing hole : Ø25)	
	T			Extended type (Installing hole : Ø22/Ø25 dual usage) ※order-made	
Rated input voltage (A type exclusive unit)		A		100 – 240 V a.c	LED (Condenser voltage dropping type)
		C		380 V a.c	
		D		12 – 24 V d.c/a.c	LED (Resistance voltage dropping type)
Rated input voltage (B type exclusive unit)		BA		100 – 240 V a.c	LED (Condenser voltage dropping type)
		BC		380 V a.c	
		BD		12 – 24 V d.c/a.c	LED (Resistance voltage dropping type)
Color of actuator			R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRP-K Flush type (Installing hole : Ø25)		
QRP-T Extended type (Installing hole : Ø22/Ø25)		

QR series (Plastic guard)

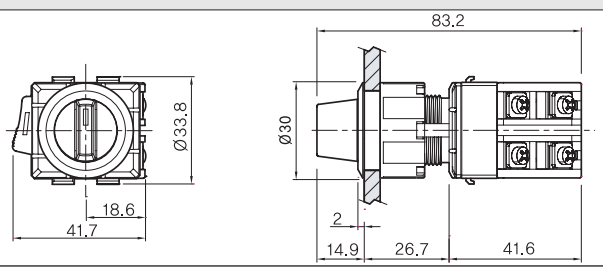
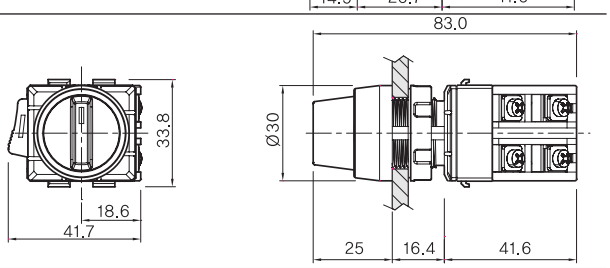
Selector switch

- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V d.c / 10 A 24 V d.c
- IP65 protective structure

Suffix code

Model	Code		Description			
QRS-	□ □ □		Plastic guard selector switch			
Actuator	K		Flush type (installing hole : Ø25)			
	T		Extended type (Installing hole : Ø22/Ø25 dual usage) ※order-made			
Operation function	2		2 positions momentary operation	–	※ Refer to the precaution when structuring the selector (3 positions : Only 2a2b contact available)	
	2R		2 positions alternate operation			
	3		3 positions momentary operation	–		
	3L		3 positions left side alternate operation			
	3R		3 positions right side alternate operation			
	3LR		3 positions left and right side alternate operation			
Contact composition		A1	1a1b contact (only with 2 positions)		A type contact block	Contact operation : Snap-action
		A2	2a2b contact			
		B1	1a1b contact (only with 2 positions)		B type contact block	
		B2	2a2b contact			
		C1	1a1b contact		C type contact block	Contact operation : Slow-make
		C2	2a2b contact			
Actuator color			Black (solid)			

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRS-K□□ Flush type (Installing hole : Ø25)		
QRS-T□□ Extended type (Installing hole : Ø22/Ø25)		

QR series (Plastic guard)

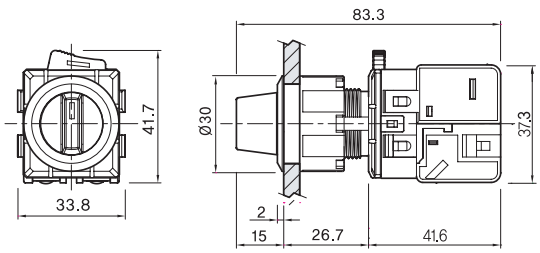
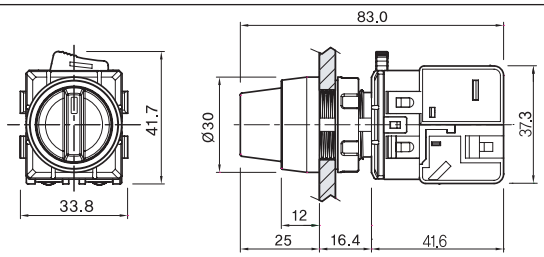
Illuminated Selector switch

- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V a.c / 10 A 24 V d.c
- IP 65 protective structure

Suffix code

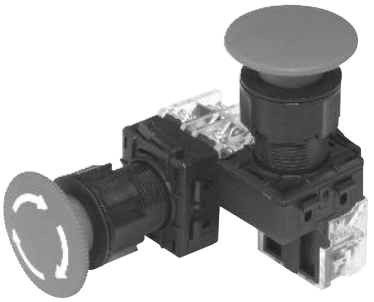
Model	Code						Description		
QRT-	□	□	□	□	□		Plastic guard illuminated selector switch		
Actuator	K						Flush type (installing hole : Ø25)		
	T						Extended type (Installing hole : Ø22/Ø25 dual usage) ※order-made		
Operation function		2					2 positions maintain operation	–	※ Only 2 positions operation possible
		2R					2 positions momentary operation	↖	
Contact composition			A1				1a1b contact	A type contact block	Contact operation : Snap-action
			A2				2a2b contact		
			B1				1a1b contact	B type contact block	
			B2				2a2b contact		
			C1				1a1b contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A			100 – 240 V a.c	LED (Condenser voltage dropping type)	
				C			380 V a.c	LED (Condenser voltage dropping type)	
				D			12 – 24 V d.c/a.c	LED (Resistance voltage dropping type)	
Actuator color						R	R (Red), G (Green), Y (Yellow), A (Blue)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRT-K□□□□ Flush type (Installing hole : Ø25)		
QRT-T□□□□ Extended type (Installing hole : Ø22/Ø25)		

QR series (Plastic guard)

Emergency stop push button switch



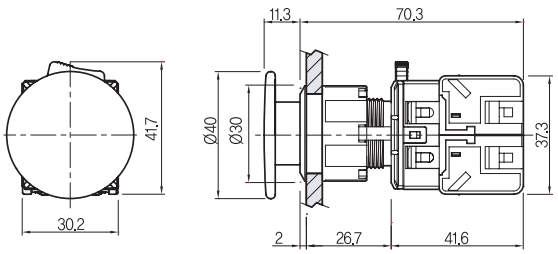
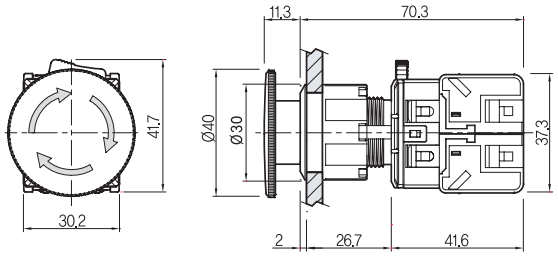
- Assembling type (actuator and contact part)
- 2 types of operation function
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V a.c / 10 A 24 V a.c
- IP65 protective structure

Suffix code

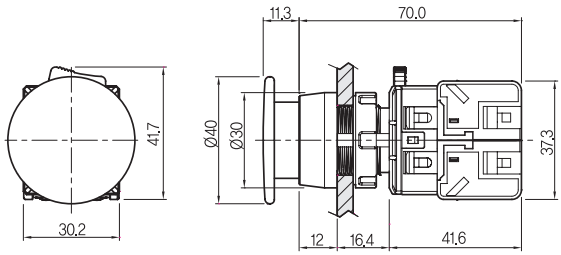
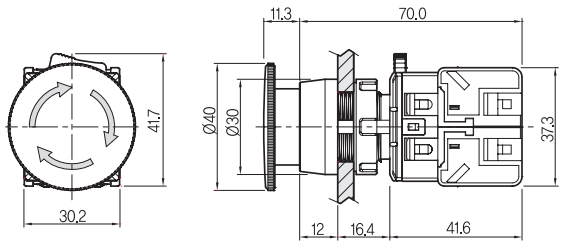
Model	Code			Description		
QRE-	□	□	□	Plastic guard emergency stop push button switch		
Actuator	K			Flush type (installing hole : Ø25)		
	T			Extended aluminum guard (Installing hole : Ø22/Ø25 dual usage) ※order-made		
Operation function		M		Alternate operation		
		R		Push lock-pull reset		
Contact composition			A1	1a1b contact	A type contact block	Contact operation : Snap-action
			A2	2a2b contact		
			B1	1a1b contact	B type contact block	
			B2	2a2b contact		
			C1	1a1b contact	C type contact block	Contact operation : Slow-make
			C2	2a2b contact		
Actuator color				Red (solid color)		

Dimension (unit : ㎜)

■ Flush type

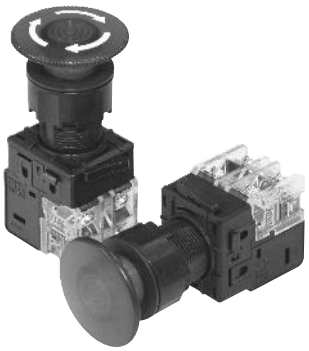
Model	Appearance	Dimension
QRE-KM□ Flush type (Installing hole : Ø25)		
QRE-KR□ Flush type (Installing hole : Ø25)		

■ Extended type

Model	Appearance	Dimension
QRE-TM□ Extended type (Installing hole : Ø22/Ø25)		
QRE-TR□ Extended type (Installing hole : Ø22/Ø25)		

QR series (Plastic guard)

Illuminated emergency stop push button switch



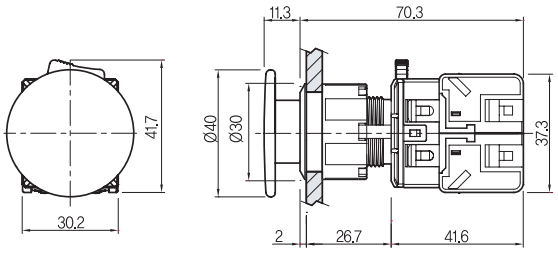
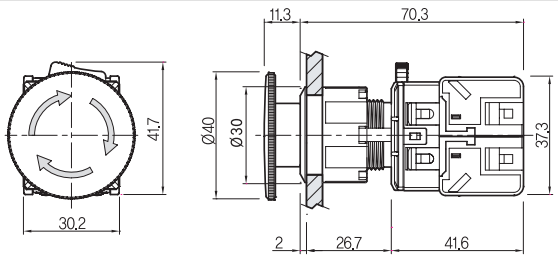
- Assembling type (actuator and contact part)
- 2 types of operation function
- Snap-action / Slow-make contact unit

Suffix code

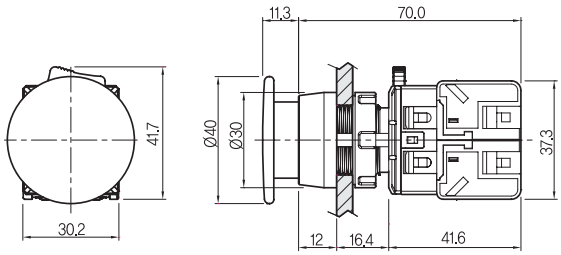
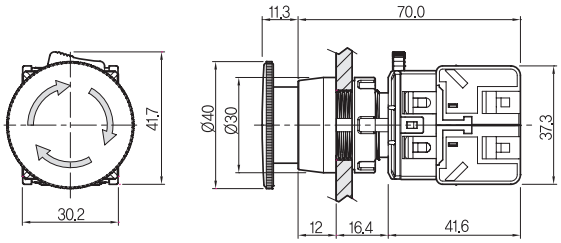
Model	Code				Description		
QRA-	□	□	□	□	Plastic guard illuminated selector switch		
Actuator	K				Flush type (installing hole : Ø25)		
	T				Extended type (Installing hole : Ø22/Ø25 dual usage) ※order-made		
Operation function		M			Alternate operation		
		R			Push lock-turn reset		
Contact composition			A1		1a1b contact	A type contact block	Contact operation : Snap-action
			A2		2a2b contact		
			B1		1a1b contact	B type contact block	
			B2		2a2b contact		
			C1		1a1b contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A	100 – 240 V a.c	LED (Condenser voltage dropping type)	
				C	380 V a.c	LED (Condenser voltage dropping type)	
				D	12 – 24 V d.c/a.c	LED (Resistance voltage dropping type)	
Actuator color					Red (solid color)		

Dimension (unit : ㎜)

■ Flush type

Model	Appearance	Dimension
QRA-KM□ Flush type (Installing hole : Ø25)		
QRA-KR□ Flush type (Installing hole : Ø25)		

■ Extended type

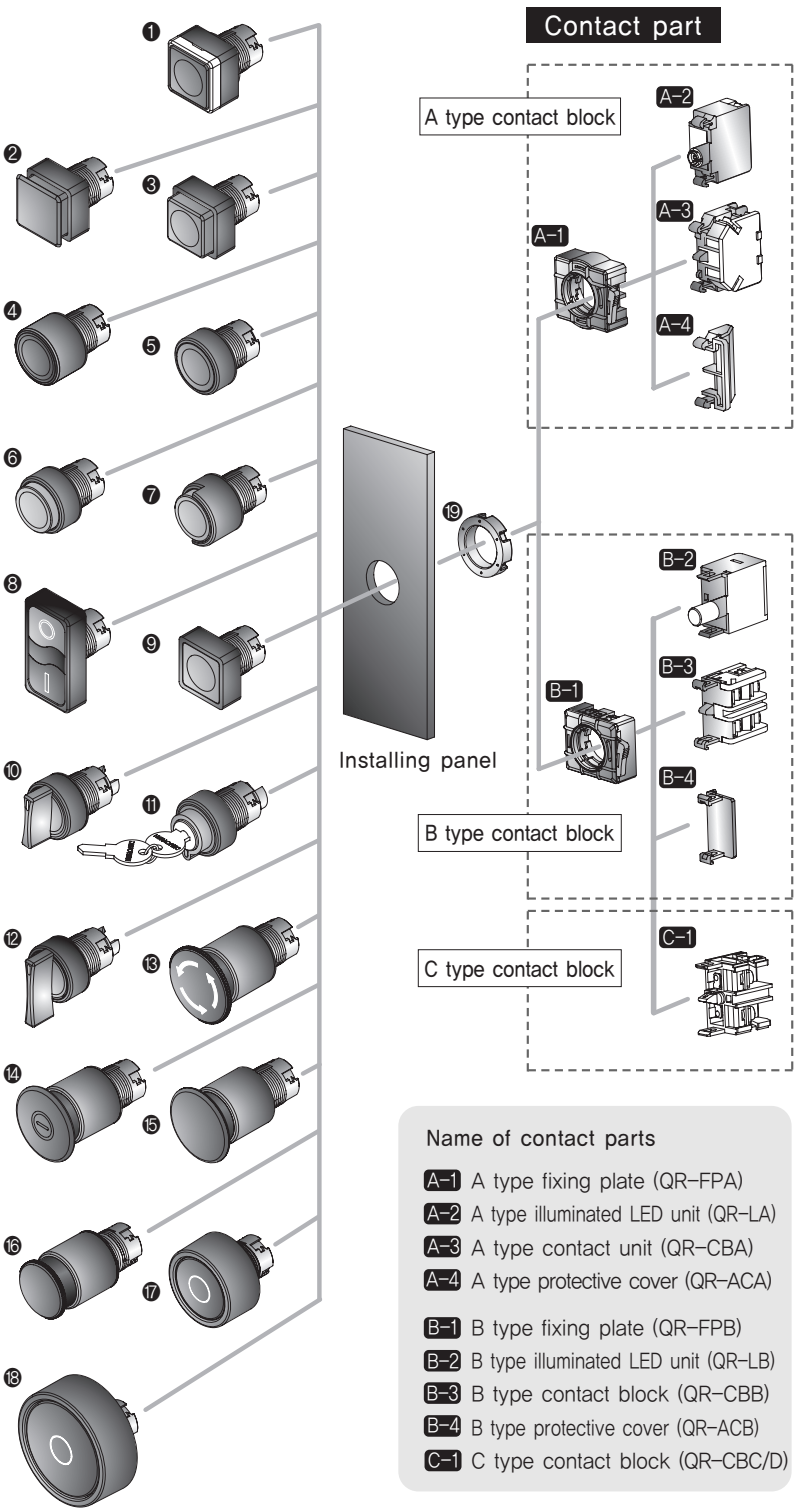
Model	Appearance	Dimension
QRA-TM□□ Extended type (Installing hole : Ø22/Ø25)		
QRA-TR□□ Extended type (Installing hole : Ø22/Ø25)		

Plastic Guard Product Composition

■ Extended Ø22/Ø25

Actuator (Ø22 / Ø25)

❶ Push button (square flush type)
❷ Push button (square mushroom type)
❸ Push button (square extended type)
❹ Push button (full guard type)
❺ Push button (flush type)
❻ Push button (extended type)
❼ Push button (half guard type)
❽ Push button (square double button type)
❾ Pilot light (square flush type)
❿ Selector switch (short lever)
⓫ Key selector switch
⓬ Selector switch (long lever)
⓭ Emergency stop push button (Ø40 mushroom type)
⓮ Emergency stop push button (Ø40 mushroom type)
⓯ Emergency stop push button (Ø40 mushroom type)
⓰ Emergency stop push button (Ø30 mushroom type)
⓱ Emergency stop push button (Ø47 Normal type)
⓲ Emergency stop push button (Ø75 Normal type)
⓳ Panel fixing nut



Name of contact parts

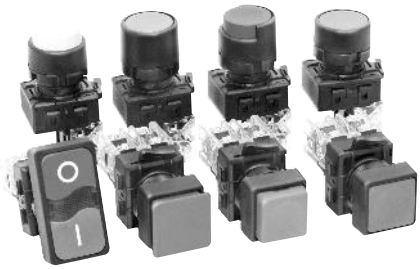
A-1 A type fixing plate (QR-FPA)
A-2 A type illuminated LED unit (QR-LA)
A-3 A type contact unit (QR-CBA)
A-4 A type protective cover (QR-ACA)

B-1 B type fixing plate (QR-FPB)
B-2 B type illuminated LED unit (QR-LB)
B-3 B type contact block (QR-CBB)
B-4 B type protective cover (QR-ACB)
C-1 C type contact block (QR-CBC/D)

QR series (Plastic guard Ø22/Ø25)

Push button switch

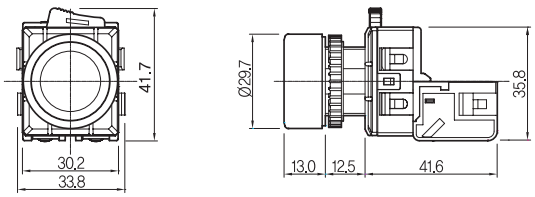
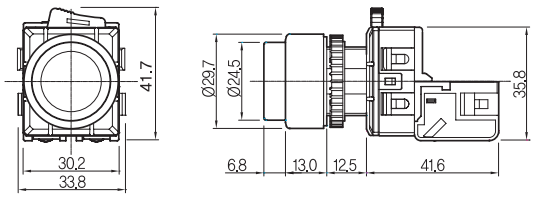
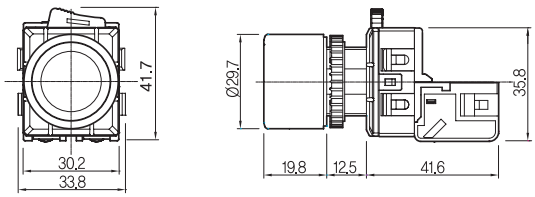
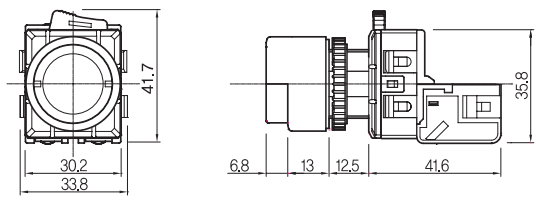
- Various structures of actuator (8 kinds)
- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6A 240V a.c / 10A 24V d.c
- IP 65 protective structure



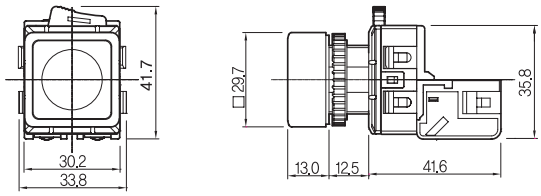
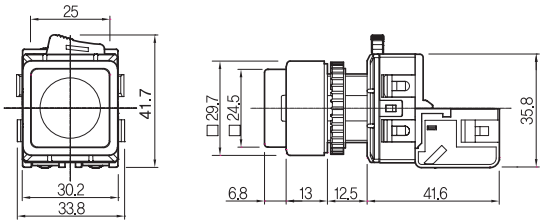
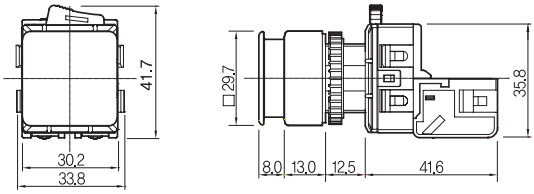
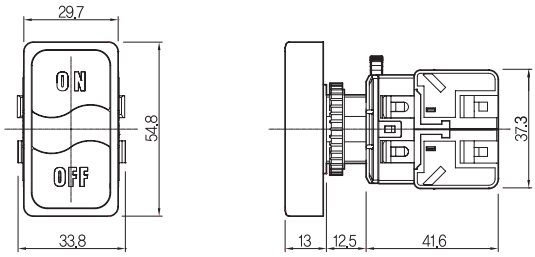
Suffix code

Model	Code				Description		
QRF-	□	□	□	□	Plastic guard push button switch		
Actuator	F				Flush type		
	P				Extended type		
	G				Full guard type		
	H				Half guard type		
	C				Square flush type		
	D				Square extended type		
	M				Square mushroom type		
	W				Square double button		
Operation function		M			Momentary		
Contact composition			A1		1a1b contact	A type contact block	Contact operation : Snap-action
			A2		2a2b contact		
			B1		1a1b contact	B type contact block	
			B2		2a2b contact		
			C1		1a1b contact	C type contact block	Contact operation : Slow-make
			C2		2a2b contact		
Color actuator				R	R (Red), G (Green), Y (Yellow), A (Blue), W (White) ※ plastic guard B : type black possible		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRF-FM□□ (Flush type)		
QRF-PM□□ (Extended type)		
QRF-GM□□ (Full guard type)		
QRF-HM□□ (Half guard type)		

QR series

Model	Appearance	Dimension
QRF-CM□□ (Square flush type)		
QRF-DM□□ (Square extended type)		
QRF-MM□□ (Square mushroom type)		
QRF-WMA2 (Square double button type)		

QR series (Plastic guard Ø22/Ø25)

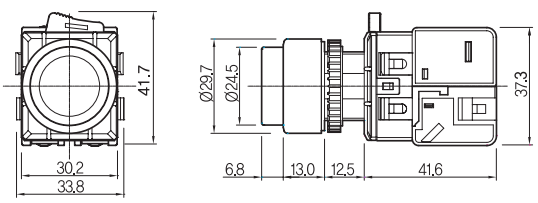
Illuminated push button switch

- Various structures of actuator (6 types)
- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6 A 250 V a.c / 10 A 24 V d.c
- Bright and long usage due to the LED light application
- IP65 protective structure

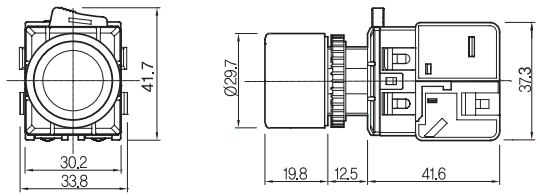
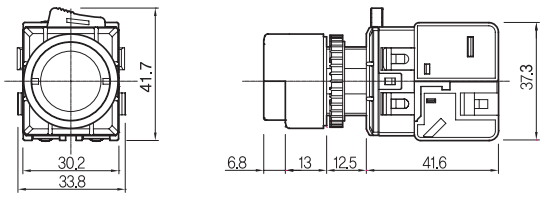
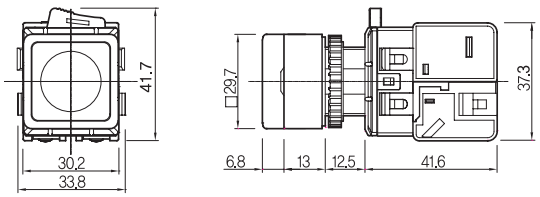
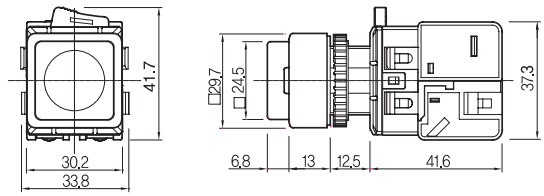
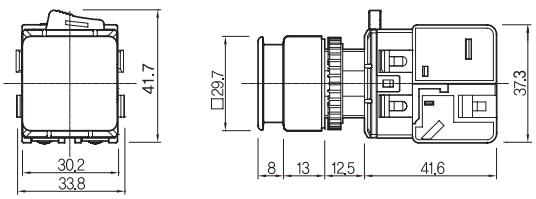
Suffix code

Model	code					Description		
QRX-	□	□	□	□	□	Plastic guard illuminated push button switch		
Actuator	P					Extended type		
	G					Full guard type		
	H					Half guard type		
	C					Square flush type		
	D					Square extended type		
	M					Square mushroom type		
Operation function		M				Momentary		
Contact composition			A1			1a1b contact	A type contact block	Contact operation : Snap-action
			A2			2a2b contact		
			B1			1a1b contact	B type contact block	
			B2			2a2b contact		
			C1			1a1b contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A		100 – 240 V a.c	L.E.D (Condenser voltage dropping type)	
				C		380 V a.c	L.E.D (Condenser voltage dropping type)	
				D		12 – 24 V a.c/d.c	L.E.D (Resistance voltage dropping type)	
Color of actuator					R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRX-PM□□□ (Extended type)		

QR series

Model	Appearance	Dimension
QRX-GM□□□ (Full guard type)		
QRX-HM□□□ (Half guard type)		
QRX-CM□□□ (Square flush type)		
QRX-DM□□□ (Square extended type)		
QRX-MM□□□ (Square mushroom type)		

QR series (Plastic guard Ø22/Ø25)

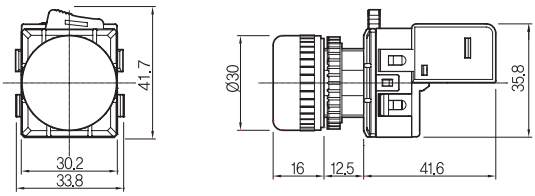
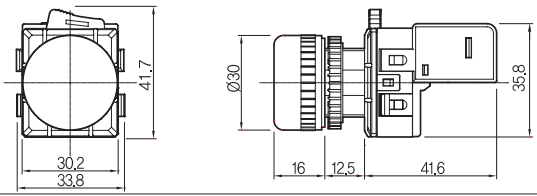
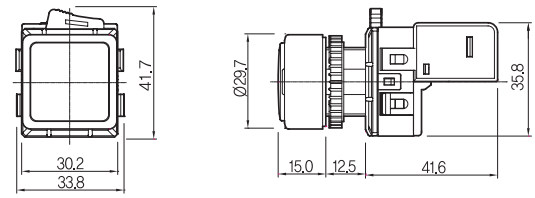
Pilot lamp

- Various structures of actuator (3 types)
- Assembling type (actuator and contact part)
- Bright and long life expectancy due to the LED light application
- IP 65 protective structure

Suffix code

Model	code		Description	
QRP-	□	□	□	Plastic guard indicator	
Actuator	F			Flush type (no roulette)	
	B			Roulette type	
	S			Square flush type	
Rated input voltage (A type exclusive unit)	A			100 – 240 V a.c	LED (Condenser voltage dropping type)
	C			380 V a.c	
	D			12 – 24 V d.c/a.c	LED (Resistance voltage dropping type)
Rated input voltage (B type exclusive unit)	BA			100 – 240 V a.c	LED (Condenser voltage dropping type)
	BC			380 V a.c	
	BD			12 – 24 V d.c/a.c	LED (Resistance voltage dropping type)
Color of actuator			R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRP-F□□ (Flush type, no roulette)		
QRP-B□□ (Roulette type)		
QRP-SA□□ (Square flush type)		

QR series (Plastic guard Ø22/Ø25)

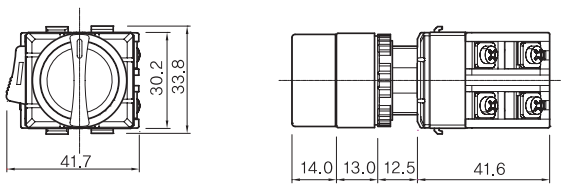
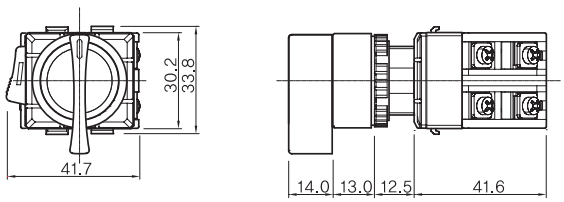
Selector switch

- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Contact capacity 6A 250 V a.c / 10A 24 V d.c

Suffix code

Model	code			Description			
QRS-	□	□	□	Plastic guard selector switch			
Actuator	S			Short lever type			
	L			Long lever type			
Operation function		2		2 positions maintain operation	–	※ Refer to the selector contact composition (3 positions : Only 2a2b contact available)	
		2R		2 positions momentary operation			
		3		3 positions maintain operation	–		
		3L		3 positions left side momentary operation			
		3R		3 positions right side momentary operation			
		3LR		3 positions left and right side momentary operation			
Contact composition			A1	1a1b Contact (Only with 2 notches)		A type contact block	Contact operation : Snap-action
			A2	2a2b Contact			
			B1	1a1b Contact (Only with 2 notches)		B type contact block	
			B2	2a2b Contact			
			C1	1a1b Contact		C type contact block	Contact operation : Slow-make
			C2	2a2b Contact			
Color actuator				Black (solid)			

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRS-S□□ (Short lever type)		
QRS-L□□ (Long lever type)		

QR series (plastic guard Ø22/Ø25)

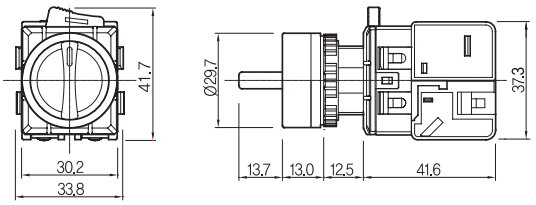
Illuminated Selector switch

- Assembling type (actuator and contact part)
- Snap-action / Slow-make contact unit
- Bright and long life expectancy due to the LED light application
- IP 54 protective structure

Suffix code

Model	code					Description			
QRT-	□	□	□	□	□	Plastic guard illuminated selector switch			
Actuator	S					Short lever type			
Operation function		2				2 positions maintain operation	–	※ Only 2 positions operation possible	
		2R				2 positions momentary operation	↖		
Contact composition			A1			1a1b Contact		A type contact block	Contact operation : Snap-action
			A2			2a2b Contact			
			B1			1a1b Contact		B type contact block	
			B2			2a2b Contact			
			C1			1a1b Contact		C type contact block	Contact operation : Slow-make
Rated input voltage				A		100 – 240 V a.c		LED (condenser voltage dropping type)	
				C		380 V a.c			
				D		12 – 24 V d.c/a.c		LED (Resistance voltage dropping type)	
Color actuator					R	R (Red), G (Green), Y (Yellow), A (Blue)			

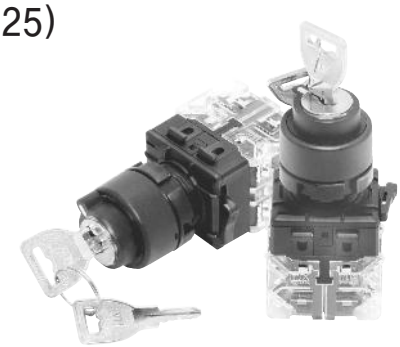
Dimension (unit : ㎜)

Model	Appearance	Dimension
QRT-S□□□□ (Short lever type)		

QR series (Plastic guard Ø22/Ø25)

Key Selector switch

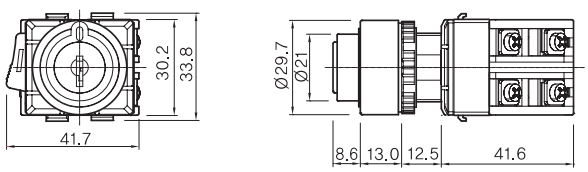
- Assembling type (actuator and contact part)
- Various key removing structure
- Snap-action / Slow-make contact unit
- IP 54 protective structure



Suffix code

Model	code				Description			
QRK-	□	□	□	□	Plastic guard key selector switch			
Actuator	P				Key extended type			
Operation function		2			2 positions maintain operation	–	※ Refer to the selector contact composition ※ 3 positions : Only 2a2b contact available	
		2R			2 positions momentary operation			
		3			3 positions maintain operation	–		
		3L			3 positions left side momentary operation			
		3R			3 positions right side momentary operation			
		3LR			3 positions left and right side momentary operation			
Contact composition			A1		1a1b Contact (Only with 2 notches)		A type contact block	Contact operation : Snap-action
			A2		2a2b Contact			
			B1		1a1b Contact (Only with 2 notches)		B type contact block	
			B2		2a2b Contact			
			C1		1a1b Contact		C type contact block	Contact operation : Slow-make
			C2		2a2b Contact			
Key removing position (key selecting switch)				A	Left		In case of 2 positions, exclude the middle key removing position.	
				B	Right			
				C	Middle			
				D	Left and right			
				E	All direction			
Color actuator					Black plastic			

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRK-P		

QR series (Plastic guard Ø22 / Ø25)

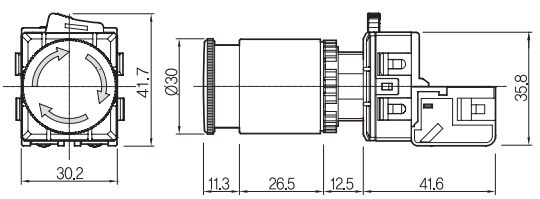
Emergency push button switch

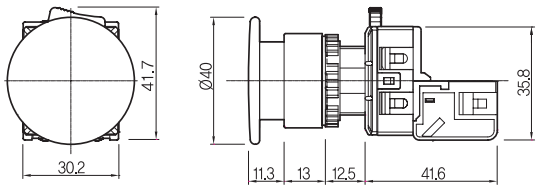
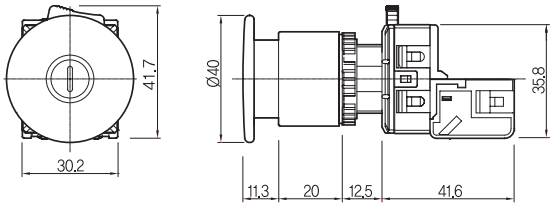
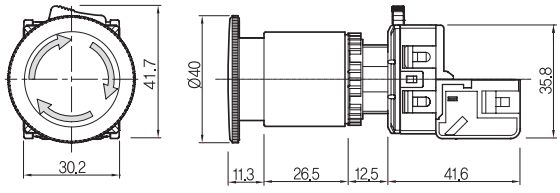
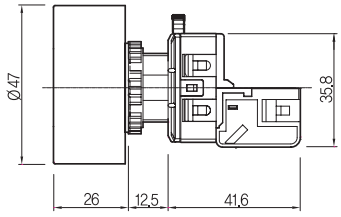
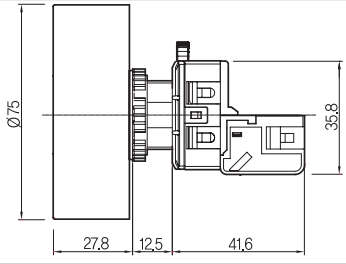
- Assembling type
  (6 kinds of actuator and contact part)
- 3 types of action
- Snap-action / Slow-make contact unit
- Contact capacity 6A 250V a.c / 10A 24V d.c
- IP 65 protective structure

Suffix code

Model	code			Description		
QRE-	□	□	□	Plastic guard emergency stop push button switch		
Actuator	3			Ø30 Mushroom type (only with the push lock-turn reset)		
	4			Ø40 Mushroom type		
	5			Ø47 Normal type (only for momentary action)		
	7			Ø75 Normal type (only for momentary action)		
Operation function		M		Momentary action	Ø30 excluded	
		P		Push lock-pull reset	Ø30, Ø47, Ø75 excluded	
		R		Push lock-turn reset	Ø47, Ø75 excluded	
Contact composition			A1	1a1b Contact	A type contact block	Contact operation : Snap-action
			A2	2a2b Contact		
			B1	1a1b Contact	B type contact block	
			B2	2a2b Contact		
			C1	1a1b Contact	C type contact block	Contact operation : Slow-make
			C2	2a2b Contact		
Color actuator				Red (solid)		

Dimension (unit : ㎜)

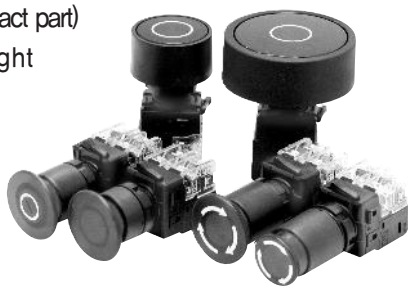
Model	Appearance	Dimension
QRE-3R□ (Push lock-turn reset)		

Model	Appearance	Dimension
QRE-4M□ (Momentary action)		
QRE-4P□ (Push lock-pull reset)		
QRE-4R□ (Push lock-turn reset)		
QRE-5M□		
QRE-7M□		

QR series (Plastic guard Ø22/Ø25)

Illuminated emergency push button switch

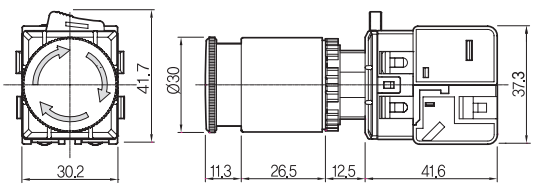
- Assembling type actuator (6 kinds of actuator and contact part)
- Bright and long life expectancy due to the LED light application
- 3 types of operation function
- Snap-action / Slow-make contact unit
- Contact capacity 6A 250V a.c / 10A 24V d.c
- IP65 protective structure

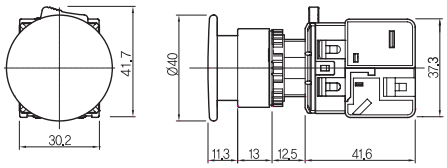
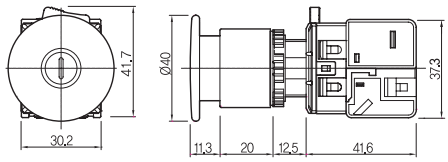
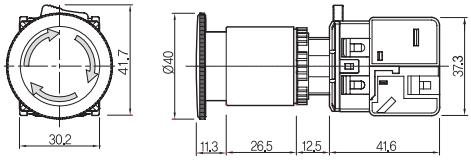
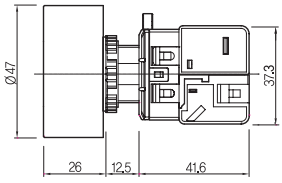
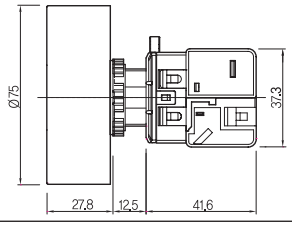


Suffix code

Model	code				Description		
QRA-	□	□	□	□	Plastic guard illuminated emergency stop push button switch		
Actuator	3				Ø30 Mushroom type (only for the push lock-turn reset)		
	4				Ø40 Mushroom type		
	5				Ø47 Normal type (only for momentary action)		
	7				Ø75 Normal type (only for momentary action)		
Operation function		M			Momentary action	Ø30 excluded	
		P			Push lock-pull reset	Ø30, Ø47, Ø75 excluded	
		R			Push lock-turn reset	Ø47, Ø75 excluded	
Contact composition			A1		1a1b Contact	A type contact block	Contact operation : Snap-action
			A2		2a2b Contact		
			B1		1a1b Contact	B type contact block	
			B2		2a2b Contact		
			C1		1a1b Contact	C type contact block	Contact operation : Slow-make
Rated input voltage				A	100 - 240 V a.c	LED (Condenser voltage dropping type)	
				C	380 V a.c	LED (Condenser voltage dropping type)	
				D	12 - 24 V a.c/d.c	LED (Resistance voltage dropping type)	
Color of actuator					Red (solid)		

Dimension (unit : ㎜)

Model	Appearance	Dimension
QRA-3R□□ (Push lock-turn reset)		

Model	Appearance	Dimension
QRA-4M□□ (Momentary action)		
QRA-4P□□ (Push lock-pull reset)		
QRA-4R□□ (Push lock-turn reset)		
QRA-5M□□		
QRA-7M□□		

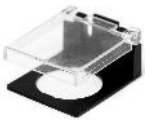
Emergency name plate and example of emergency protective guard application

Model	Emergency name plate	Model	Emergency protective guard
EN-26		EP-22	
EN-26		EP-22	

Accessories

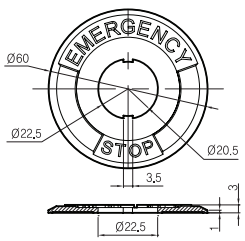
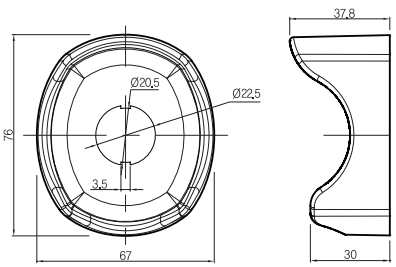
Types	Shape	Model	Contents
A type contact unit		QR-CBA	Hook fixing contact unit which is composed of 1a1b, is assembled to A type fixing plate and applied.
B type contact unit		QR-CBB	Hook fixing contact unit which is composed of 1a1b, is assembled to B type fixing plate and applied.
C type contact unit		QR-CBC (N.O : Green)	Hook fixing contact unit which is composed of 1a1b is assembled to C type fixing plate and applied.
		QR-CBD (N.C : Red)	
Flush type aluminum guard		QR-AGA	Applied the panel cutting dimension Ø30
		QR-AGC	Applied the panel cutting dimension Ø25
Extended type aluminum guard		QR-AGB	Applied the panel cutting dimension Ø22
Flush type plastic guard		QR-PGA	Applied the panel cutting dimension Ø25
Plastic type Aluminum guard		QR-PGD	Applied the panel cutting dimension Ø25
Extended type plastic guard		QR-PGB	Applied the panel cutting dimension Ø22
A type fixing plate		QR-FPA	Connect actuator to the A type contact unit and lamp unit

QR series

Types	Shape	Model	Contents	
B/C type fixing plate		QR-FPB	Connect actuator to the B type contact unit and lamp unit Connect actuator to the C type contact unit	
A type LED unit		QR-LAA□	100 – 240 V a.c	Illuminated LED unit is used to assemble with A type fixing plate
		QR-LAC□	380 V a.c	
		QR-LAD□	12 – 24 V d.c/a.c	
B type LED unit		QR-LBA□	100 – 240 V a.c	Illuminated LED unit is used to assemble with B type fixing plate
		QR-LBC□	380 V a.c	
		QR-LBD□	12 – 24 V d.c/a.c	
Square spinning prevention plate		QR-65	Spin prevent plate which is attached to Ø22 panel	
A type protection cover		QR-ACA	Protective cover for contact or LED unit assembled with A type fixing plate	
B type protection cover		QR-ACB	Protective cover for contact or LED unit assembled with B type fixing plate	
Emergency stop switch label (Ø60)		EN-26	Yellow label of emergency stop switch Applied the Panel cutting dimension Ø22	
		EN-36	Yellow label of emergency stop switch Applied the Panel cutting dimension Ø30	
Emergency protective guard		EP-22	Applied the Panel cutting dimension Ø22 Max size of emergency cap Ø40	
		EP-30	Applied the Panel cutting dimension Ø30 Max size of emergency cap Ø40	
Protective cover		AR-77	Used in order to prevent the malfunction of switch. But it only can be used with QRF-R, QRF-F, QRX-R, and QRF-CM	
Ø22 Name labeling plate		AR-62	Label the operation name of switch and lamp	
Ø30 Name labeling plate		QR-31		
Ø22 Squared ring labeling plate		AR-63	Label the operation name of switch and lamp	

Types	Shape	Model	Contents
Nut tightening tool		QR-82	Used to tightening the fixed nut at the back side of panel
Ø22 Water proof cap (flush type)		AR-73	Water proof silicon transparency rubber cap (Applied to QRF-R / QRF-F)
Ø22 Water proof cap		AR-74	Water proof silicon transparency rubber cap (QRF-G, QRF-PM, QRF-HM, QRF-GM, QRX-PM, QRX-HM)
Ø47 Water proof cap		AR-75	Water proof silicon transparency rubber cap (For emergency cap Ø47)
Ø75 Water proof cap		AR-76	Water proof silicon transparency rubber cap (For emergency cap Ø75)
Guide bracket		AR-67	Used when applying Ø22 product to Ø30 hole panel

Emergency name plate and Emergency button protective guard

Appearance	Dimension
Emergency name plate	EN-26 (Ø22)
	
Emergency button protective guard	EP-22 (Ø22)
	

AR series

Control switch

Features

For the AR series controlling switch, it is possible to apply 2 types (Ø22 / Ø25) panel cutout dimension and in case of using the guide bracket, it is even possible to use it with the Ø30 hole. Various functions and designs have made the selection choice wider and attachment and detachment of the actuator/switch part became very simple.

Specification

Allowable operating frequency		30 times / min (mechanically / electrically)
Rated voltage (Ue)		500 V a.c 50/60 ㎐
Rated current (Ie)		5 A 250 V 50/60 ㎐
Applying categories		AC-12, AC-13, AC-14, AC-15
Insulation resistance		100 ㏁ min
Dielectric strength		2,000 V a.c for 1 min (between the same polarities)
Vibration	Malfunction	10 ~ 55 Hz double amplitude 3 ㎜ (within 1 ㎳)
Shock	Durability	Min 500 ㎧
	Malfunction	Min 100 ㎧
Life expectancy	Mechanically	500,000
	Electrically	100,000
Ambient temperature		-25 ℃ ~ 40 ℃
Ambient humidity		45 ~ 85 % R.H
Storage temperature		-40 ℃ ~ 70 ℃

Incandescent lamp and LED specification

Classification	Power supply voltage (1st)	Incandescent lamp and LED capacity		Base
Incandescent lamp	220 V a.c (Trans dropping)	6.3 V	150 ㎃	BA9S (pin type)
	Without voltage dropping	12 V	80 ㎃	
		24 V	40 ㎃	
LED	220 V a.c (Trans dropping)	6 V	72 ㎃	BA9S (pin type)
	Without voltage dropping	12 V	36 ㎃	
		24 V	18 ㎃	

Accessories

Types	Appearance	Model	Reference
Switch unit		AR-10a (1a Contact)	Replaced or added by using a bolt
		AR-20b (1b Contact)	
Alternate operation unit		AR-50	Used when changing from a momentary operation to an alternate operation.
Name plate		AR-62	Attaching a name plate prevents the spinning and looks more organized.
		AR-63	
Spin prevention ring		AR-65	Prevents the spinning and looks more organized
		AR-66	Prevents the spinning
Guide bracket		AR-67	Used when attaching onto Ø30 hole panel
Square spinning prevention plate		AR-68	Prevents the spinning

AR series

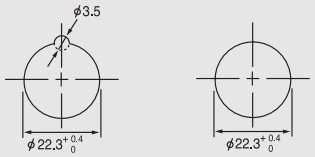
Types		Appearance	Model	Reference
Name plates	Standard		AR-71	Attached to the standard type name plate and used
	Large		AR-72	Attached to the large type name plate and used
Water proof cap			AR-73, 74	Water proof silicon transparency rubber cap AR-73 : For ARF-F AR-74 : For ARX-G
			AR-75, 76	Water proof silicon transparency rubber cap AR-75 : For ARE-5B AR-76 : For ARE-7B
Protective cover			AR-77	Used in order to prevent the switch to cause malfunction. But it only can be used with the flush type
Nut tightening tool			QR-82	Used to tightening the fixed nut at the back side of panel
Puller			AR-83	Used when replacing the light operation button.
Lamp extractor			UR-81	It is made of rubber and used when replacing the light bulb.

How to use

■ When installing to the panel

① Panel cutout dimension (in case of $22.3^{+0.4}_{0}$)

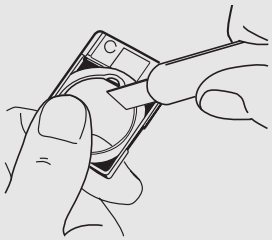
• Select the panel cutout just like an image below when necessary. The thickness of mounting panel is 1mm to 8mm.



When needs to stop spinning

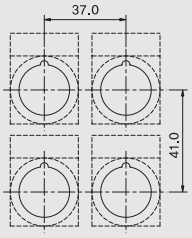
When does not need to stop spinning

• To prevent its spinning, please use a name plate or a spin prevention ring
• When using a name plate that does not require spinning to stop, please cut the stopping area on the back side

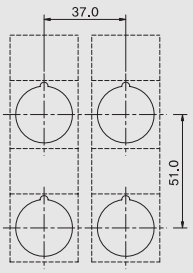


② Pattern mounting

(1) Processing method for mounting the independent switch and standard type name plate.



(2) Processing method for mounting the large name plate.



• Process the spinning prevention work in the direction of where Engravings plate is in present.

Note1) above cutout dimension is the minimum mounting size but excluded the large push button switch and long lever selector switch.
Note2) for the long lever switch, use 40x41 (standard name plate) or 40x51 (large name plate)

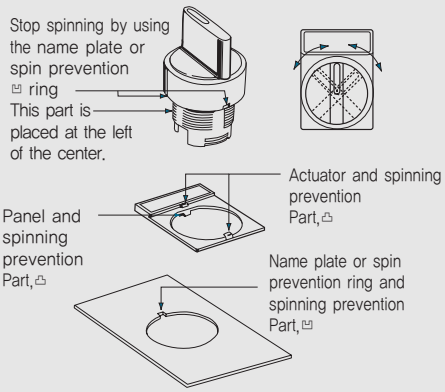
③ Panel cutout dimension (in case of $25^{+0.5}_{0}$)

• Must use the name plate or spin prevention ring
• Cut the stopping area in the name plate or spin prevention ring

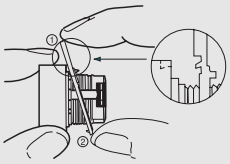
■ About the replacement

① Mounting method

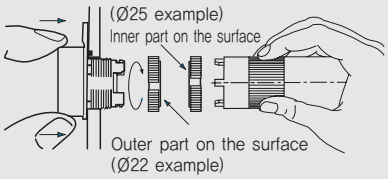
• When using the selector switch and key selector switch, please install the stopper by using the name plate or spin prevention ring



• When using the name plate or spin prevention ring, firstly insert in the 2 wings (on the surface) to the actuator in consecutive order (example: ① and ②) and then push in the panel actuator.

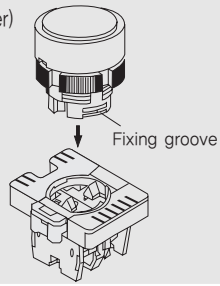


• Actuator is fixed to the panel by pushing in and able to mount by tightening from the backside.



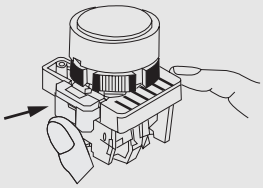
② Mounting method of switch part and actuator

• Assemble it by pushing the switch part until it clicks
(push to the direction where stopper of actuator and switch part become parallel to each other)



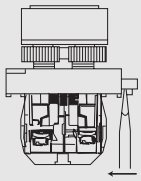
③ Separating method of switch and actuator

• Dismount the switch part by pushing the lever to the arrow direction.



※ Dismounting by hand

• Dismount the switch part by inserting the flat (−) screwdriver near the lever and push it to the arrow direction. Use the flat (−) screwdriver below 5mm.



※ Dismounting by using the flat screwdriver

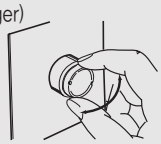
■ Replacing the color cap

① half guard type

• Push the cap puller at near the part of color cap ⊔ and rotate it.

② extended type, full guard type, indicator and etc

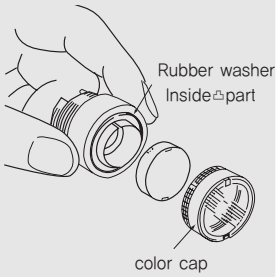
• Rotate the color cap by using hand (finger)



■ Cap assembling method

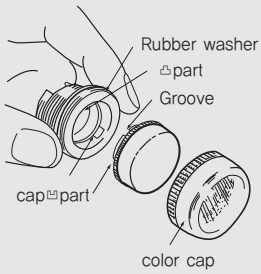
① Illuminated push button switch

• Mount the color cap so that the protrusions ⊔ inside the cap fit into the grooves in the pushbutton unit



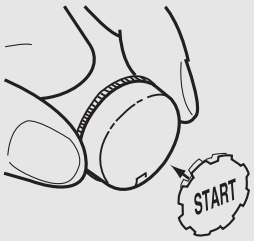
② Indicator

• Mount the color cap so that the protrusions inside the pushbutton unit fit into the grooves in the cap. Please make sure that grooves stay still



■ Affixing Character Film

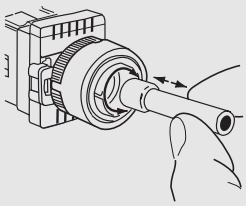
• Make sure that the protruding portions ⊔ of the cap engage the cutout portions ⊔ of the film.



■ Replacing the lamp

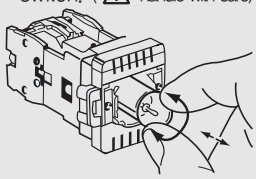
① From the panel surface

• Insert the lamp extractor into the lamp, and then rotate the extractor while pressing it



② On the switch

• Grip the lamp with fingertips and then rotate the lamp while pressing it against the switch. (⚠ handle with care)

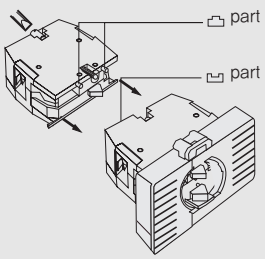


(Note) Use 6.3 V incandescent lamp when using voltage dropping transformer (trans dropping)

■ About the mounting method

① Switch unit mounting method and position

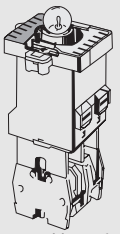
- For the connection of switch unit, insert the part of mounting unit ⊔ to the ⊔ part and tighten it by the flat screwdriver. Connection of the mounting switch unit is possible up to 2 stages.



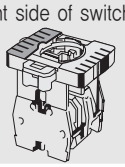
2 stages (Total 4 units)

② Unit mounting method and position

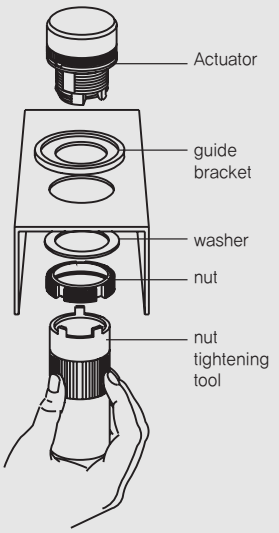
- When changing the momentary operation switch part to the alternative operation, please remove the switch unit, insert the alternative operation unit and lastly insert the switch unit.



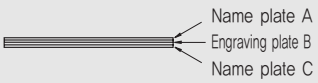
- Mounting position of alternative operation unit is the front side of switch unit.



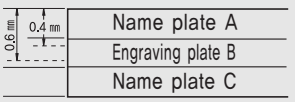
③ Ø30 bracket mounting method



■ About the Engraving plate

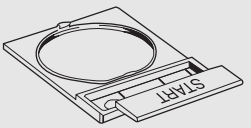


A	B	C
black	white	red

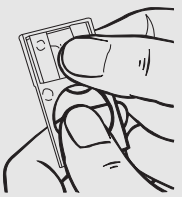


■ Mounting and dismounting Engraving plate

- Press name plate unit from the upper side.
- In case of selector switch or key selector switch, the direction of the characters will be changed by the mounting direction of the control panel.



- The name plate is easily removed by pressing engraving plate from the back.



Correct usage

■ Mounting

- The tightening torque of mounting nuts is less than 1.96 N.m
- The tightening torque of mounting bolts of each unit is less than 0.49 N.m
- The thickness of panel is 1 ~ 8 ㎜

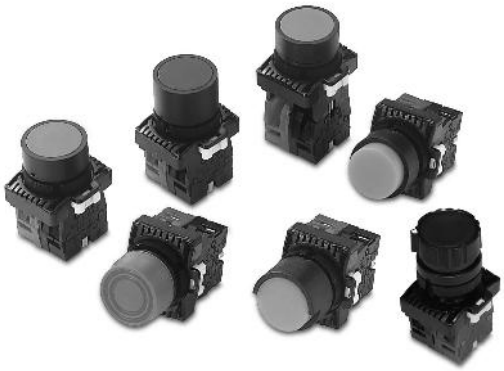
■ Wiring

- Do not get confused with the wires of lamp terminal and switch terminal
- Terminal bolt uses M3.5 and square washer
- The tightening torque of terminal bolt is less than 0.78 N.m
- Single wires, stranded wires and crimp terminal can be connected to the switch
- The width of crimp terminal is less than 7 ㎜

AR series

Push button switch

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between the actuator and contact
- Consecutive installation possible due to the 37 mm x 41 mm installation space

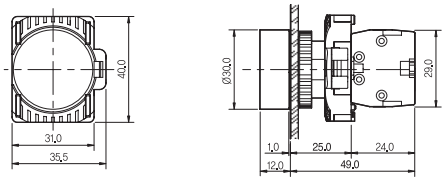
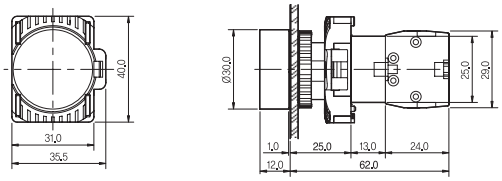
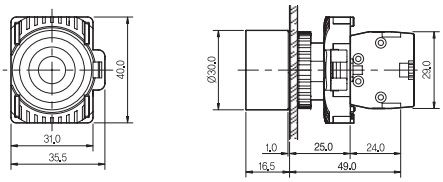
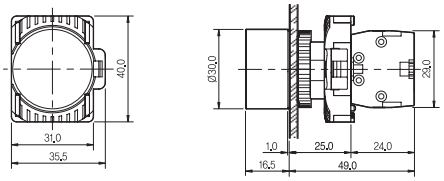
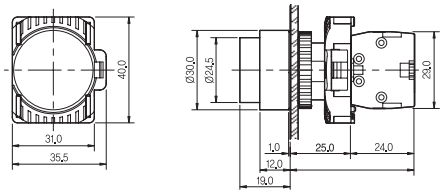
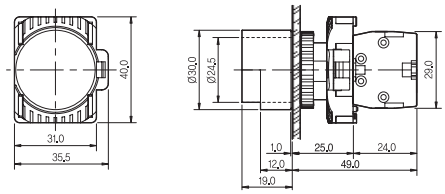
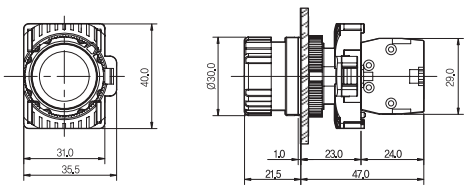


Suffix code

Model	Code				Description
ARF-	□	□	□	□	Push button switch
Actuator type	F				Flush
	B				Rubber cover
	P				Extended
	G				Full guard
	H				Half guard
	S				Push button selectors
Operation function		1			Momentary
		2			Alternate
Contact composition			10		1a Contact
			20		1b Contact
			12		1a1b Contact
			11		2a Contact
			22		2b Contact
Color of actuator				R	RED
				G	GREEN
				Y	YELLOW
				A	BLUE
				B	BLACK

※ ARF-S (Push button selectors) is only available Black color.

Dimension (unit : ㎜)

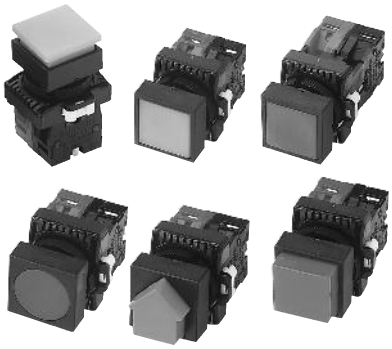
Model	Appearance	Dimension
ARF-F1 (Momentary operation)		
ARF-F2 (Alternative operation)		
ARF-B1 (Momentary operation)		
ARF-G1 (Momentary operation)		
ARF-P1 (Momentary operation)		
ARF-H1 (Momentary operation)		
ARF-S (Momentary operation)		

※ Please refer the dimension of an alternative-operation switch to "ARF-F2"

AR series

Square push button switch

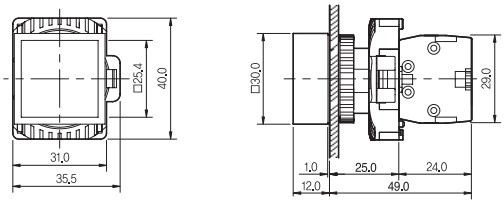
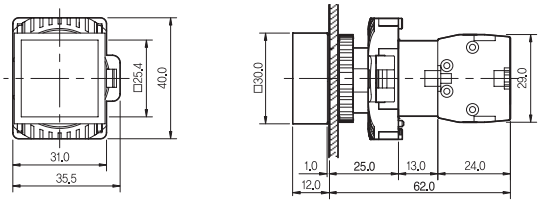
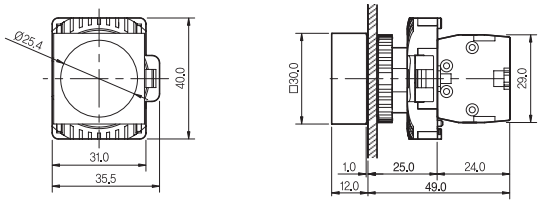
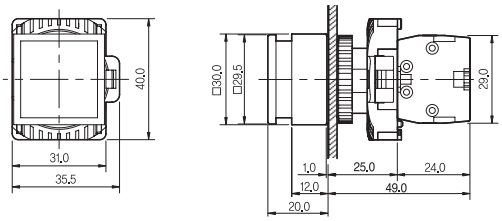
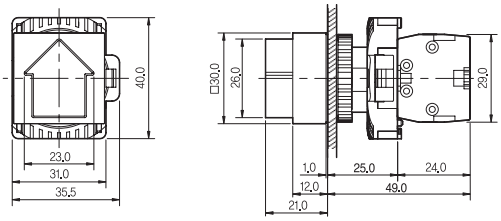
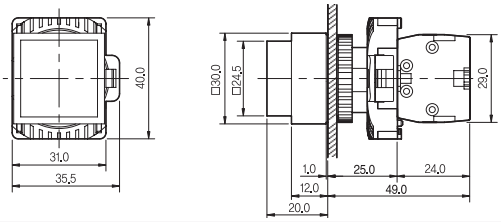
- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact
- Various square actuators
- Consecutive installation possible due to the 37 mm x 41 mm installation space



Suffix code

Model	Code				Description
ARC-	□	□	□	□	Square push button switch
Actuator type	I				Arrow extended type
	S				Square flush type
	C				Round flush type
	P				Mushroom type
	PS				Square extended type
Operation function		1			Momentary
		2			Alternate
Contact composition			10		1a Contact
			20		1b Contact
			12		1a1b Contact
			11		2a Contact
			22		2b Contact
Color of actuator				R	RED
				G	GREEN
				Y	YELLOW
				A	BLUE

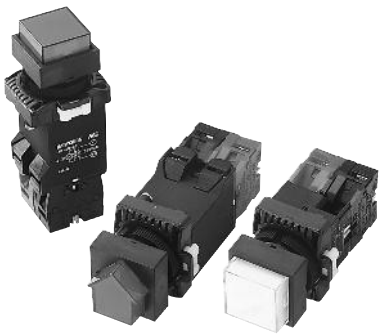
Dimension (unit : ㎜)

Model	Appearance	Dimension
ARC-S1 (Momentary operation)		
ARC-S2 (Alternative operation)		
ARC-C1 (Momentary operation)		
ARC-P1 (Momentary operation)		
ARC-I1 (Momentary operation)		
ARC-PS1 (Momentary operation)		

※ Please refer the dimension of an alternative-operation switch to "ARC-S2"

AR series

Square illuminated push button switch



- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact / transformer
- Various square actuators
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

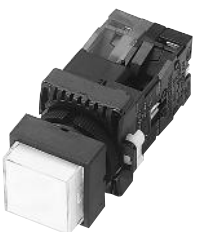
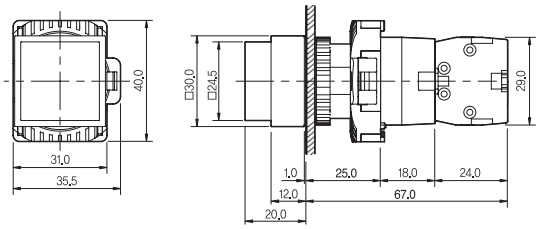
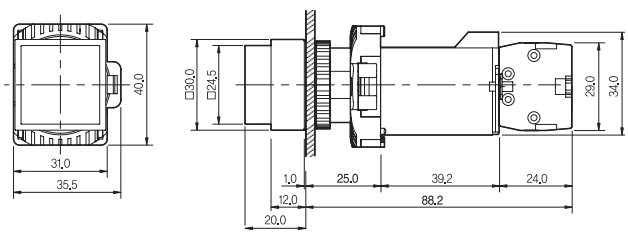
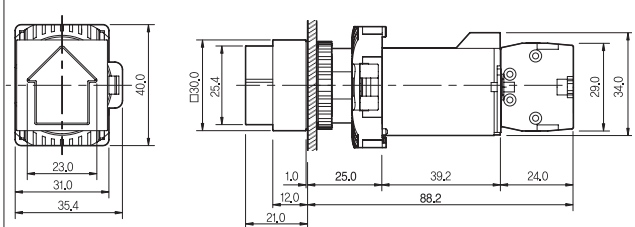
Model	Code	Description	
ARC-	□□□□□	Square illuminated push button switch	
Actuator type	XI	Arrow illuminated extended type	
	XS	Square illuminated flush type	
Operation function	1	Momentary	
	2	Alternate	
Contact composition	10	1a Contact	
	20	1b Contact	
	12	1a1b Contact	
	11	2a Contact	
	22	2b Contact	
Power supply voltage	A1	110 V a.c	Transformer attached (Incandescent lamp 6.3 V)
	A2	220 V a.c	
	LA1	110 V a.c	Transformer attached (LED 6 V)
	LA2	220 V a.c	
	L6	6 V	Without voltage dropping unit (a.c/d.c) (LED)
	L12	12 V	
	L24	24 V	
	LB1	110 V	
	LB2	220 V	
	B6	6.3 V	Without voltage dropping unit (a.c/d.c) (Incandescent lamp)
	B12	12 V	
	B24	24 V	
Color of actuator	R	RED	
	G	GREEN	
	Y	YELLOW	
	A	BLUE	
	W	WHITE	

※ LED bulb : 6 V, 12 V, 24 V, 110 V, 220 V

Incandescent lamp and LED specification

Classification	Power supply voltage (1st)	Incandescent lamp and LED capacity		Base
Incandescent lamp	110 V, 220 V a.c (transformer voltage dropping)	6.3 V	150 ㎃	BA9S (Pin type)
	Without voltage dropping unit	12 V	80 ㎃	
		24 V	40 ㎃	
LED	110 V, 220 V a.c (transformer voltage dropping)	6 V	72 ㎃	
	Without voltage dropping unit	12 V	36 ㎃	
		24 V	20 ㎃	
		110 V	5 ㎃	
		220 V	3 ㎃	

Dimension (unit : ㎜)

Model	Appearance	Dimension
ARC-XS (Without voltage dropping)		
ARC-XS (Transformer attached)		
ARC-XI (Transformer attached)		

AR series

Selector switch

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

Model	Code			Description		
ARS-	□	□	□	Selector switch		
Actuator type	S			Standard type		
	L			Long lever type		
Operation function		2		2 positions	Alternative operation	–
		2R			Momentary operation	
		3		3 positions (2a is standard)	Alternative operation	–
		3L			Left Momentary operation	
		3R			Right Momentary operation	
		3LR			Left/right Momentary operation	
Contact composition			10	1a Contact		
			20	1b Contact		
			12	1a1b Contact		
			11	2a Contact		
			22	2b Contact		

Contact composition

■ 2 positions action

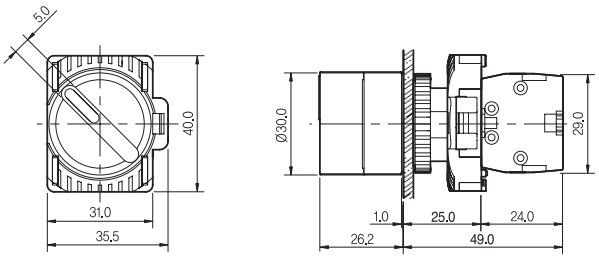
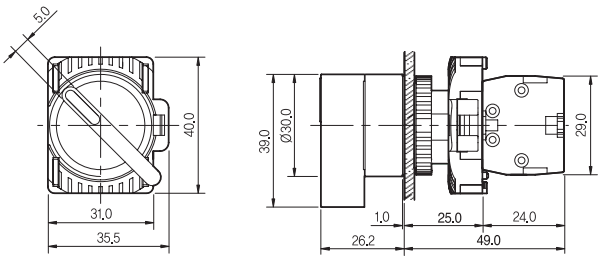
Positions selection	1a Contact	1b Contact	1a1b Contact		2a Contact		2b Contact	
			1a	1b	1a	1a	1b	1b
1 positions	OFF	ON	OFF	ON	OFF	OFF	ON	ON
2 positions	ON	OFF	ON	OFF	ON	ON	OFF	OFF

■ 3 positions action

Positions selection	1a Contact	1b Contact	1a1b Contact		2a Contact		2b Contact	
			1a	1b	1a	1a	1b	1b
1 positions	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
2 positions	OFF	ON	OFF	ON	OFF	OFF	ON	ON
3 positions	ON	ON	ON	ON	OFF	ON	ON	OFF

※ Standard type: assembled left and right as 2a contact

Dimension (unit : ㎜)

Model	Appearance	Dimension
ARS-S		
ARS-L		

AR series

Pilot lamp

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact / transformer.
- Light source selection: incandescent lamp / LED
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

Model	Code			Description	
ARP-	□	□	□	Pilot lamp	
Actuator type	F			Flush type	
	R			Roulette type	
Power supply voltage		A1		110 V a.c	Transformer attached (Incandescent lamp 6.3 V)
		A2		220 V a.c	
		LA1		110 V a.c	Transformer attached (LED 6 V)
		LA2		220 V a.c	
		L6		6 V	Without voltage dropping unit (a.c/d.c) (LED)
		L12		12 V	
		L24		24 V	
		LB1		110 V	
		LB2		220 V	
		B6		6.3 V	Without voltage dropping unit (a.c/d.c) (Incandescent lamp)
		B12		12 V	
		B24		24 V	
Color of actuator			R	RED	
			G	GREEN	
			Y	YELLOW	
			W	WHITE	
			A	BLUE	

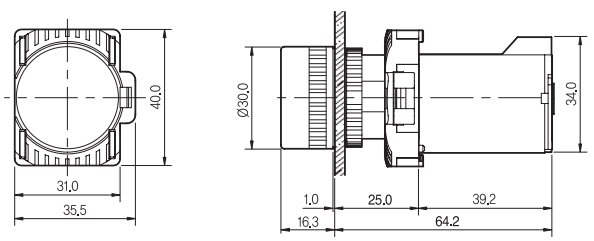
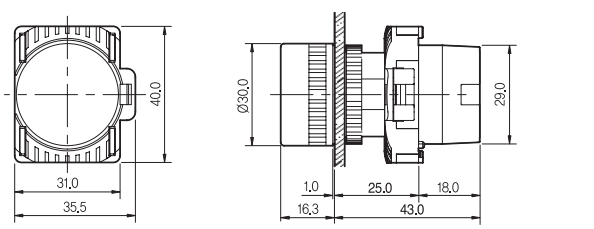
Incandescent lamp and LED specification

Classification	Power supply voltage (1st)	Incandescent lamp and LED capacity		Base
Incandescent lamp	110 V, 220 V a.c (transformer voltages dropping)	6.3 V	150 ㎃	BA9S (Pin type)
	Without voltage dropping unit	12 V	80 ㎃	
		24 V	40 ㎃	
LED	110 V, 220 V a.c (transformer voltages dropping)	6 V	72 ㎃	
	Without voltage dropping unit	12 V	36 ㎃	
		24 V	20 ㎃	
		110 V	5 ㎃	
		220 V	3 ㎃	

Shape of indicator

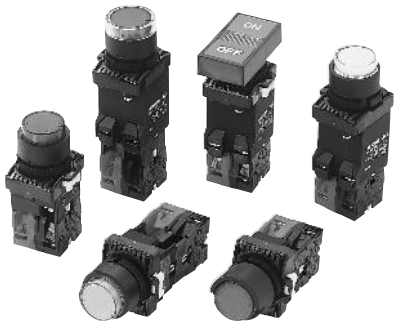
ARP-F (Flush type)	ARP-R (Roulette type)

Dimension (unit : ㎜)

Model	Appearance	Dimension
ARP-F (Transformer attached)		
ARP-R (Without voltage dropping)		

AR series

Illuminated push button switch



- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact / transformer
- Various square actuators
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

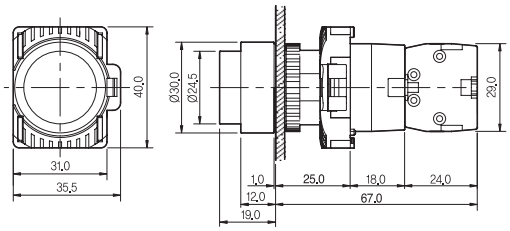
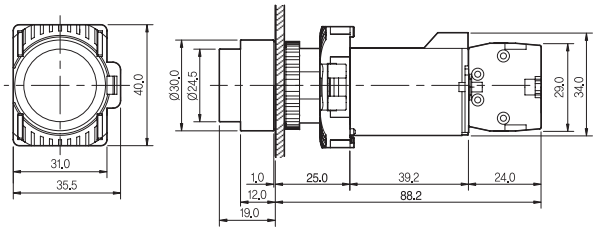
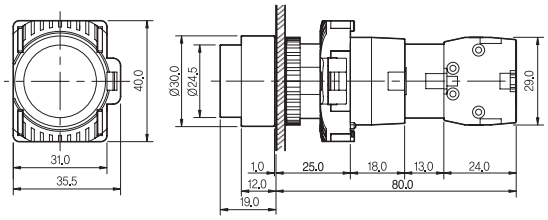
Model	Code					Description	
ARX-	□	□	□	□	□	Illuminated push button switch	
Actuator type	P					Extended type	
	G					Full guard type	
	H					Half guard type	
	S					ON · OFF push type	
Operation function		1				Momentary	
		2				Alternate ※ Except ARX-S	
Contact composition			10			1a Contact	
			20			1b Contact	
			12			1a1b Contact	
			11			2a Contact	
			22			2b Contact	
Power supply voltage				A1		110 V a.c	Transformer attached (Incandescent lamp 6.3 V)
				A2		220 V a.c	
				LA1		110 V a.c	Transformer attached (LED 6 V)
				LA2		220 V a.c	
				L6		6 V	Without voltage dropping unit (a.c/d.c) (LED)
				L12		12 V	
				L24		24 V	
				LB1		110 V	
				LB2		220 V	
				B6		6.3 V	Without voltage dropping unit (a.c/d.c) (Incandescent lamp)
				B12		12 V	
				B24		24 V	
Color of actuator					R	RED	
					G	GREEN	
					Y	YELLOW	
					W	WHITE	
					A	BLUE	

※ Actuator color of type ARX-S: red, green and assigned color

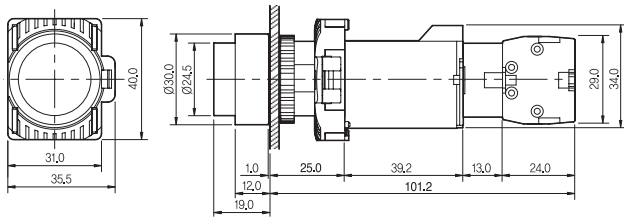
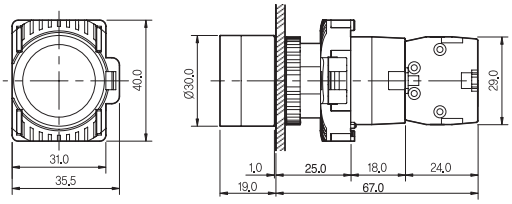
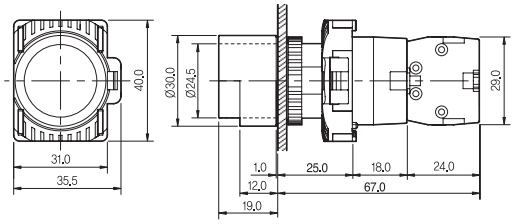
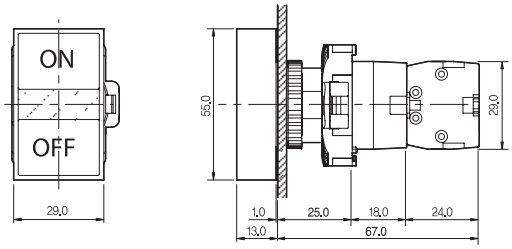
Incandescent lamp and LED specification

Classification	Power supply voltage (1st)	Incandescent lamp and LED capacity		Base
incandescent lamp	110 V, 220 V a.c (transformer voltages dropping)	6.3 V	150 ㎃	BA9S (Pin type)
	Without voltage dropping unit	12 V	80 ㎃	
		24 V	40 ㎃	
LED	110 V, 220 V a.c (transformer voltages dropping)	6 V	72 ㎃	
	Without voltage dropping unit	12 V	36 ㎃	
		24 V	20 ㎃	
		110 V	5 ㎃	
		220 V	3 ㎃	

Dimension (unit : ㎜)

Model	Appearance	Dimension
ARX-P Without voltage dropping (alternative operation)		
ARX-P Transformer attached (momentary operation)		
ARX-P Without voltage dropping (alternative operation)		

AR series

Model	Appearance	Dimension
ARX-P Transformer attached (alternative operation)		
ARX-G Without voltage dropping (momentary operation)		
ARX-H Without voltage dropping (momentary operation)		
ARX-S Without voltage dropping (momentary operation)		

※ ARX-S indication I and O are optional

AR series

Illuminated selector switch

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact / transformer
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

Model	Code				Description	
ART-	□	□	□	□	Illuminated selector switch	
Operation function	2				2 positions manual	
	2R				2 positions automatic	
	3				3 positions manual	
Contact composition		10			1a Contact	
		20			1b Contact	
		12			1a1b Contact	
		11			2a Contact	
		22			2b Contact	
Power supply voltage			A1		110 V a.c	Transformer attached (incandescent lamp 6.3 V)
			A2		220 V a.c	
			LA1		110 V a.c	Transformer attached (LED 6 V)
			LA2		220 V a.c	
			L6		6 V	Without voltage dropping unit (a.c/d.c) (LED)
			L12		12 V	
			L24		24 V	
			LB1		110 V	
			LB2		220 V	
			B6		6 V (6.3 V)	Without voltage dropping unit (a.c/d.c) (Incandescent lamp)
			B12		12 V	
			B24		24 V	
Color of actuator				R	RED	
				G	GREEN	
				Y	YELLOW	
				A	BLUE	

※ please refers to the incandescent lamp and LED specification

Contact composition

■ 2 positions action

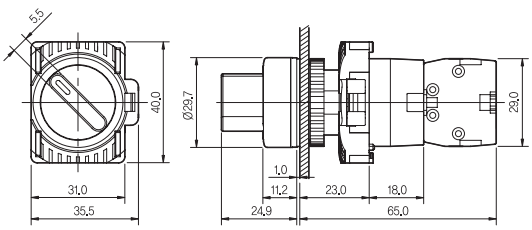
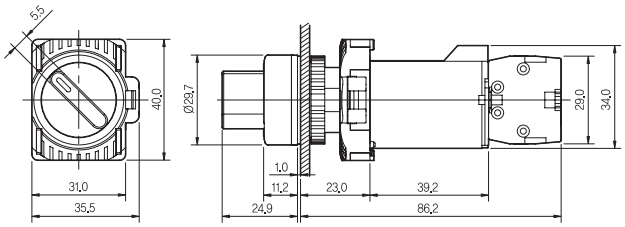
Positions selection	1a Contact	1b Contact	1a1b Contact		2a Contact		2b Contact	
			1a	1b	1a	1a	1b	1b
1 position	OFF	ON	OFF	ON	OFF	OFF	ON	ON
2 positions	ON	OFF	ON	OFF	ON	ON	OFF	OFF

■ 3 positions action

Positions selection	1a Contact	1b Contact	1a1b Contact		2a Contact		2b Contact	
			1a	1b	1a	1a	1b	1b
1 position	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
2 positions	OFF	ON	OFF	ON	OFF	OFF	ON	ON
3 positions	ON	ON	ON	ON	OFF	ON	ON	OFF

※ Standard type: assembled left and right as 2a contact

Dimension (unit : ㎜)

Model	Appearance	Dimension
ART Without voltage dropping unit		
ART Transformer attached		

AR series

Key selector switch

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

Model	Code			Description	
ARK-	□	□	□	Key selector switch	
Operation function	2			2 positions	Manual
	2R				Auto
	3			3 positions	Manual
	3L				Both
	3R				Both
	3LR				Auto
Contact composition		10		1a Contact	
		20		1b Contact	
		12		1a1b Contact	
		11		2a Contact	
		22		2b Contact	
Key release position			A	Left	
			B	Right	
			C	Middle	
			D	Left and right	
			E	All directions	

Contact composition

■ 2 positions action

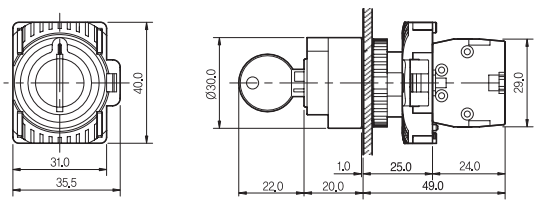
Positions selection	1a Contact	1b Contact	1a1b Contact		2a Contact		2b Contact	
			1a	1b	1a	1a	1b	1b
1 position	OFF	ON	OFF	ON	OFF	OFF	ON	ON
2 positions	ON	OFF	ON	OFF	ON	ON	OFF	OFF

■ 3 positions action

Positions selection	1a Contact	1b Contact	1a1b Contact		2a Contact		2b Contact	
			1a	1b	1a	1a	1b	1b
1 position	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
2 positions	OFF	ON	OFF	ON	OFF	OFF	ON	ON
3 positions	ON	ON	ON	ON	OFF	ON	ON	OFF

※ Standard type : assembled left and right as 2a contact

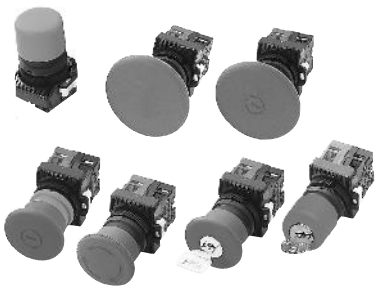
Dimension (unit : ㎜)

Model	Appearance	Dimension
ARK		

AR series

Emergency stop switch

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact
- Consecutive installation possible due to the 37 mm x 41 mm installation space



Suffix code

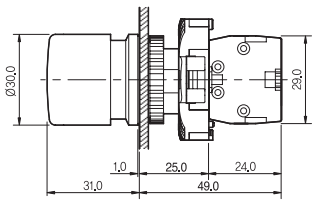
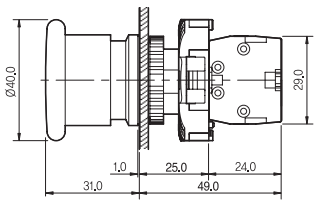
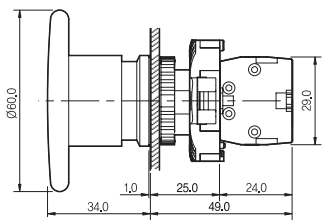
Model	Code				Description
ARE-	□	□	□	□	Emergency stop switch
Actuator type	3				Ø30 Standard type
	4				Ø40 Mushroom type
	6				Ø60 Mushroom type
Operation function		B			Momentary operation
		P			Push-lock Pull-reset
		R			Push-lock Turn-reset
		K			Push lock-Key reset
Contact composition			10		1a Contact
			20		1b Contact
			12		1a1b Contact
			11		2a Contact
			22		2b Contact
Color of actuator				R	Red (Possible applying function code B, P, R, K)
				G	Green (Applying operation function code B)
				Y	Yellow (Applying operation function code 4B)

Standard suffix code

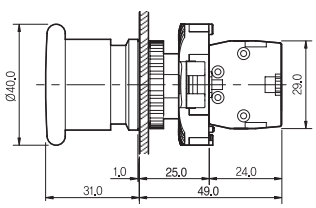
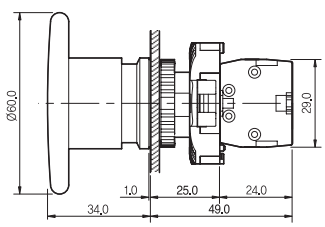
Dimension	Momentary operation	Push lock-pull reset	Push lock-turn reset	Push lock-key reset
Ø30	ARE-3B□□	-	ARE-3R□R ARE-3R□G	ARE-3K□□
Ø40	ARE-4B□□	ARE-4P□R	ARE-4R□R ARE-4R□G	ARE-4K□R
Ø60	ARE-6B□□	ARE-6P□R	ARE-6R□R	ARE-6K□R

Dimension (unit : ㎜)

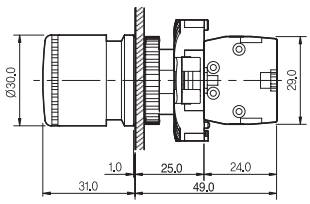
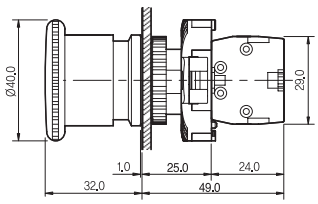
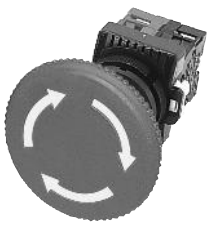
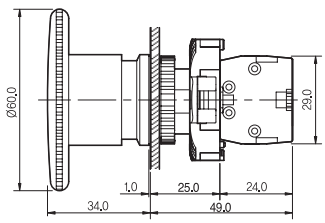
■ Momentary operation

Model	Appearance	Dimension
ARE-3B□□ Ⓡ Ⓖ		
ARE-4B□□ Ⓡ Ⓖ Ⓨ		
ARE-6B□□ Ⓡ Ⓖ		

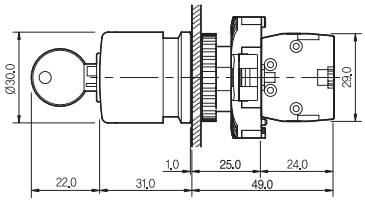
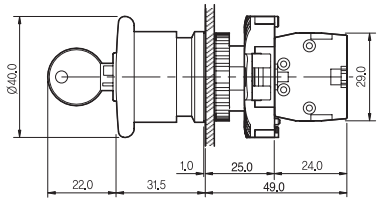
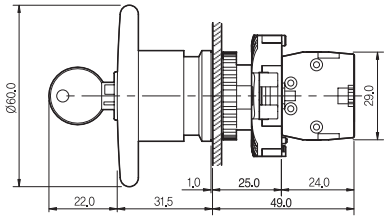
■ Push lock-pull reset

Model	Appearance	Dimension
ARE-4P□R Ⓡ		
ARE-6P□R Ⓡ		

■ Push lock-turn reset

Model	Appearance	Dimension
ARE-3R□□ ®		
ARE-4R□□ ®		
ARE-6R□R ®		

■ Push lock-key reset

Model	Appearance	Dimension
ARE-3K□□ Ⓡ		
ARE-4K□□ Ⓡ		
ARE-6K□R Ⓡ		

AR series

Illuminated emergency stop switch

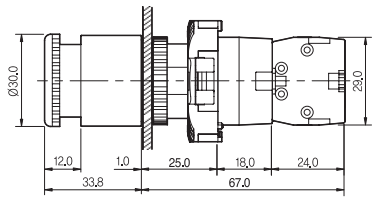
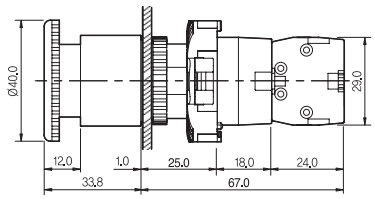
- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple mounting and dismounting between actuator and contact / transformer
- Consecutive installation possible due to the 37 mm x 41 mm installation space

Suffix code

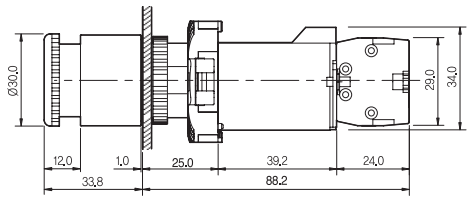
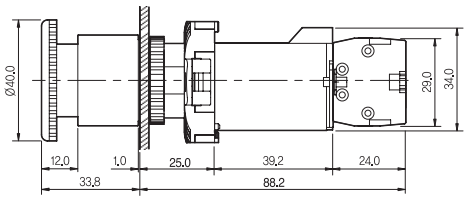
Model	Code					Description	
ARE-	□	□	□	□	□	Illuminated emergency stop switch	
Actuator type	3					Ø30 Mushroom type	
	4					Ø40 Mushroom type	
Operation function		XR				Push lock-Turn reset	
Contact composition			10			1a Contact	
			20			1b Contact	
			12			1a1b Contact	
			11			2a Contact	
			22			2b Contact	
Power supply voltage				A1		110 V a.c	Transformer attached (Incandescent lamp 6.3 V)
				A2		220 V a.c	
				LA1		110 V a.c	Transformer attached (LED 6 V)
				LA2		220 V a.c	
				L6		6 V	Without voltage dropping unit (a.c/d.c) (LED)
				L12		12 V	
				L24		24 V	
				LB1		110 V	
				LB2		220 V	
				B6		6.3 V	Without voltage dropping unit (a.c/d.c) (Incandescent lamp)
				B12		12 V	
				B24		24 V	
Color of actuator					R	Red	
					G	Green ※ Only for ARE-3XR	

Dimension (unit : ㎜)

■ Push lock-turn reset (Without voltage dropping unit)

Model	Appearance	Dimension
ARE-3XR Ⓡ		
ARE-4XR Ⓡ		

■ Push lock-turn reset (Transformer attached)

Model	Appearance	Dimension
ARE-3XR Ⓡ Ⓖ		
ARE-4XR Ⓡ		

AR series

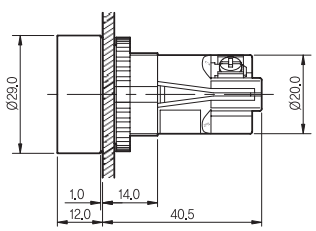
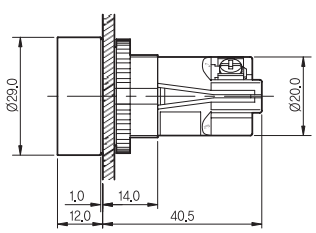
One body type push button switch

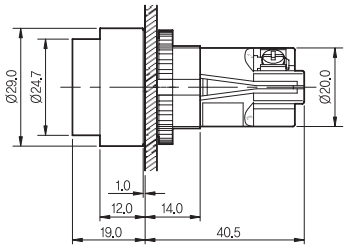
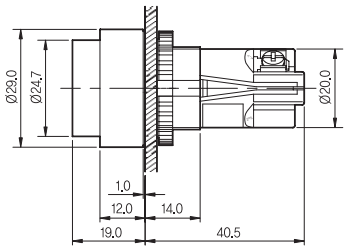
- Simple handling because the actuator and contact part are one body type
- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Consecutive installation possible due to the 31 mm x 31 mm installation space

Suffix code

Model	Code				Description
ARF-D	□	□	□	□	One body type push button switch
Actuator type	F				Flush type
	P				Extended type
Operation function		1			Momentary
		2			Alternate
Contact composition			10		1a Contact
			20		1b Contact
			12		1c Contact
Color of actuator				R	RED
				G	GREEN
				Y	YELLOW
				A	BLUE

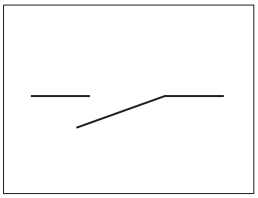
Dimension (unit : ㎜)

Model	Appearance	Dimension
ARF-DF1 (Momentary operation)		
ARF-DF2 (Alternate operation)		

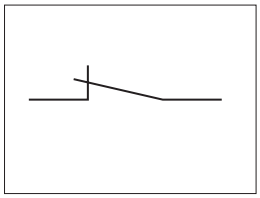
Model	Appearance	Dimension
ARF-DP1 (Momentary operation)		
ARF-DP2 (Alternate operation)		

Contact composition

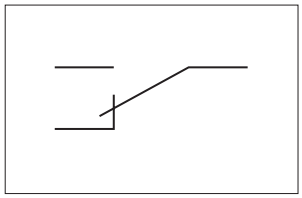
■ a Contact



■ b Contact



■ c Contact



AR series

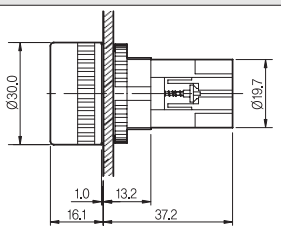
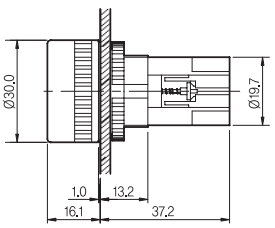
One body type pilot lamp

- Ø22 and Ø25 hole installation applicable due to the direction of inserting panel fixing nut
- Simple handling because the actuator and contact part are one body type
- Consecutive installation possible due to the 31 mm x 31 mm installation space

Suffix code

Model	Code			Description	
ARP-D	□	□	□	Indicator light	
Actuator type	F			Flush type	
	R			Roulette type	
Power supply voltage		B6		6.3 V	Without voltage dropping unit (a.c/d.c) (Incandescent lamp)
		B12		12 V	
		B24		24 V	
		L6		6 V	Without voltage dropping unit (a.c/d.c) (LED)
		L12		12 V	
		L24		24 V	
		LB1		110 V	
		LB2		220 V	
Color of indicator			R	RED	
			G	GREEN	
			Y	YELLOW	
			W	WHITE	
			A	BLUE	

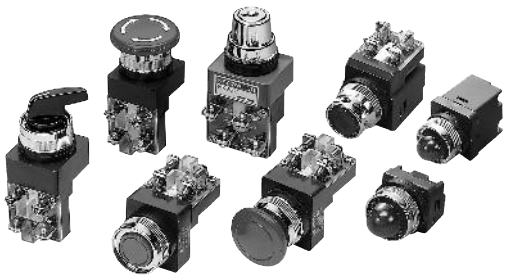
Dimension (unit : ㎜)

Model	Appearance	Dimension
ARP-DF (Flush type)		
ARP-DR (Roulette type)		

CR series

Control switch

- Ø25 and Ø30 dual usage
- Formation of contact part : 1a1b one body type
- Light source : Incandescent Lamp / LED
- Consecutive Installation possible due to the 37 mm x 41 mm installation space



Standard types of each model

Description	Model	
	Ø25	Ø30
Push button switch	CR-251	CR-301
Indicator (Trans attached)	CR-252	CR-302
Selector switch	CR-253	CR-303
Illuminated push button switch	CR-254	CR-304
Emergency button switch (self momentary type)	CR-257	CR-307
Emergency button switch (push lock-turn reset)	CR-257R	CR-307R
Key selector switch	CR-2511	CR-3011
Selection push button switch	-	CR-308

Common specification

Model		CR-251, CR-301 CR-254, CR-304	CR-253, CR-303 CR-2511, CR-3011, CR-308
Allowable operating frequency	Mechanical	Max 30 times/min	
	Electrical		
Insulation resistance		Min 100 MΩ	
Dielectric strength		2,000 V a.c for 1 min (between the same polarity terminals)	
Vibration	Durability	10 ~ 55 Hz (double amplitude 3 ㎜)	
Shock	Durability	Min 500 ㎧	
	Malfunction	Min 100 ㎧	
Life expectancy	Mechanical	1 milion times min	100 thousand times min
	Electrical	100 thousand times min	
Ambient temperature		-25 ~ 40 ℃	
Ambient humidity		45 ~ 85 % R.H	
Storage temperature		-40 ~ 70 ℃	

CR series

Push button switch

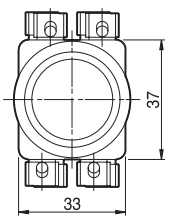
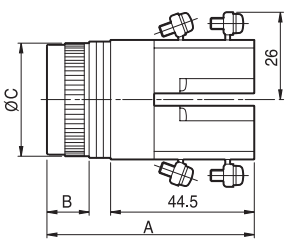
Suffix code

Model	Code	Description
CR-	□ □- □ □	CR series push button switch
Installing dimension	25	Ø25
	30	Ø30
Type classification	1	Push button switch (Momentary operation)
Contact composition	1	1a1b Contact
	2	2a2b Contact
Cap color	R	Red
	G	Green
	Y	Yellow
	B	Blue
	K	Black

Specification

Model	Dimension	Operation function	Contact composition	Rated current	Color of button cap
CR-251-1	Ø25	Momentary operation	1a1b Contact	5 A 250 V a.c	Red, Green, Yellow, Blue and Black
CR-251-2			2a2b Contact		
CR-301-1	Ø30		1a1b Contact		
CR-301-2			2a2b Contact		

Dimension (unit : ㎜)

Model	Design	Dimension
CR-251 (Ø25) CR-301 (Ø30)		 

Model	A	B	C
CR-251	63	12	29.5
CR-301	64	13	34

CR series

Emergency stop push button switch

Suffix code

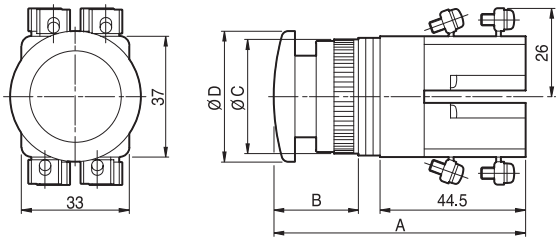
Model	Code				Description
CR-	□	□-	□	□	CR series emergency stop push button switch
Installing dimension	25				Ø25
	30				Ø30
Type classification		7			Emergency stop push button switch (momentary operation)
		7R			Emergency stop push button switch (push lock-turn reset)
Contact composition			1		1a1b Contact
			2		2a2b Contact
Cap color				R	Red
				G	Green

Specification

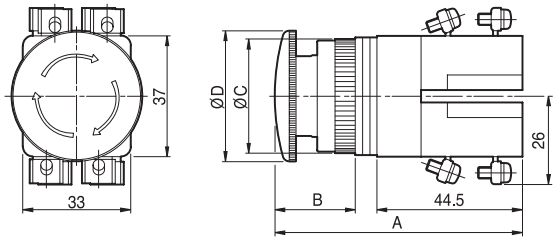
Model	Dimension	Operation function	Contact composition	Rated current	Color of button cap
CR-257-1	Ø25	Momentary operation	1a1b Contact	5 A 250 V a.c	red and green
CR-257-2			2a2b Contact		
CR-307-1	Ø30		1a1b Contact		
CR-307-2			2a2b Contact		
CR-257R-1	Ø25	Push lock-turn reset	1a1b Contact	5 A 250 V a.c	red and green
CR-257R-2			2a2b Contact		
CR-307R-1	Ø30		1a1b Contact		
CR-307R-2			2a2b Contact		

※ Default color of the emergency stop push button switch cap is red. Pease order separately for the green color.

Dimension (unit : ㎜)

Model	Design	Dimension
CR-257 (Ø25, Momentary operation) CR-307 (Ø30, Momentary operation)		

Model	A	B	C	D
CR-257	75.5	24.5	29.5	35
CR-307	76.5	24.5	34	40

Model	Design	Dimension
CR-257R (Ø25, push lock-turn reset) CR-307R (Ø30, push lock-turn reset)		

Model	A	B	C	D
CR-257R	75.5	24.5	29.5	40
CR-307R	75.5	24.5	34	46

CR series

Pilot lamp

Suffix code

Model	Code					Description	
CR-	□	□-	□	□	□	CR series indicator	
Installing dimension	25					Ø25	
	30					Ø30	
Type classification		2				Pilot lamp (Transformer attached type)	
		1				Pilot lamp (Without voltage dropping unit : 24 V d.c/a.c)	
Power supply voltage			0			24 V d.c/a.c	Only when Transformer is attached
			1			110 V a.c	
			2			220 V a.c	
			3			380 V a.c	
			4			440 V a.c	
Light source selection				L		LED (luminescent diode)	Base rating : E10 (screw type)
						Incandescent lamp	
Cap color					R	Red	
					G	Green	
					Y	Yellow	
					B	Blue	
					W	White	

Specification

■ Transformer attached type

Model	Installing dimension	Lamp voltage (Trans attached)		Color of lamp cap
		1st voltage	2nd voltage	
CR-252-1	Ø25	110 V a.c	6.3 V a.c	Red, green, yellow, blue and white
CR-252-2		220 V a.c		
CR-252-3		380 V a.c		
CR-252-4		440 V a.c		
CR-302-1	Ø30	110 V a.c	6.3 V a.c	Red, green, yellow, blue and white
CR-302-2		220 V a.c		
CR-302-3		380 V a.c		
CR-302-4		440 V a.c		

■ Without voltage dropping unit

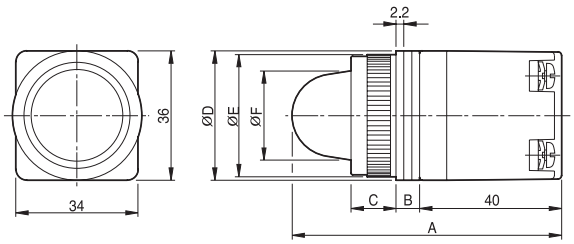
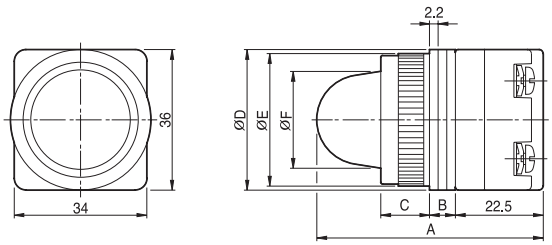
Model	Installing dimension	Power supply voltage	Color of lamp cap
CR-2510	Ø25	24 V d.c/a.c	red, green, yellow, blue , white
CR-3010	Ø30	24 V d.c/a.c	red, green, yellow, blue , white

※ In case of the pilot lamp without voltage dropping unit, please refer to the "incandescent lamp and LED specification"

Incandescent lamp and LED specification

Classification	Incandescent lamp	LED (luminescent diode)		
Colors	transparent	Red	Green	Yellow
Rated current	6.3 V 150 ㎃ 24 V 40 ㎃ 110 V 18 ㎃ 220 V 14 ㎃	6 V 2.94 ㎃ 24 V 10.2 ㎃ 110 V 6.0 ㎃ 220 V 4.7 ㎃	6 V 9.6 ㎃ 24 V 10.8 ㎃ 110 V 4.6 ㎃ 220 V 5.1 ㎃	6 V 29.4 ㎃ 24 V 10.2 ㎃ 110 V 6.0 ㎃ 220 V 4.7 ㎃
Base rating	E10 (screw type)			

Dimension (unit : ㎜)

Model	Design	Dimension
CR-252 (Ø25) CR-302 (Ø30) Transformer attached type		
CR-2510 (Ø25) CR-3010 (Ø30) Without voltage dropping unit		

Model	A	B	C	D	E	F
CR-252	70	6	13	31.5	29.5	20
CR-302	73	7.5	12.5	36.5	34	25

Model	A	B	C	D	E	F
CR-2510	54	6	13	31.5	29.5	20
CR-3010	57	7.5	12.5	31.5	34	25

CR series

Illuminated push button switch

Suffix code

Model	Code					Description	
CR-	□	□-	□	□	□	CR series illuminated push button switch	
Installing dimension	25					Ø25	
	30					Ø30	
Type classification		4				Illuminated push button switch (only with 1a1b contact)	
Power supply voltage			24			24 V	Without voltage dropping unit
			1			110 V a.c	Transformer attached type
			2			220 V a.c	
			3			380 V a.c	
			4			440 V a.c	
Light source selection				L		LED (luminescent diode)	
						Incandescent lamp	
Cap color					R	Red	
					G	Green	
					Y	Yellow	
					B	Blue	
					W	White	

※ Illuminated push button switch cannot use 2a2b contact

Specification

■ Transformer attached type

Model	Installing dimension	Power supply voltage (Trans attached)		Contact composition	Contact capacity	Color of lamp cap
		1st voltage	2nd voltage			
CR-254-1	Ø25	110 V a.c	6.3 V a.c (5.5 V)	1a1b	5 A 250 V a.c	red, green, yellow, blue, white
CR-254-2		220 V a.c				
CR-254-3		380 V a.c				
CR-254-4		440 V a.c				
CR-304-1	Ø30	110 V a.c	6.3 V a.c (5.5 V)	1a1b	5 A 250 V a.c	red, green, yellow, blue, white
CR-304-2		220 V a.c				
CR-304-3		380 V a.c				
CR-304-4		440 V a.c				

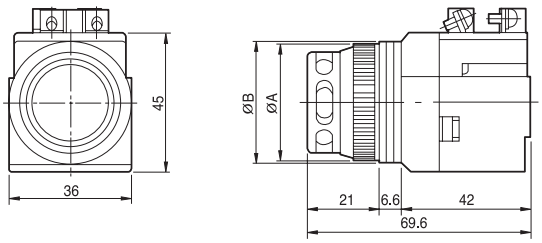
■ Without voltage dropping unit

Model	Installing dimension	Power supply voltage	Contact composition	Contact capacity	Color of lamp cap
CR-254-24	Ø25	Without voltage dropping unit 24 V	1a1b	5 A 250 V a.c	red, green, yellow, blue, white
CR-304-24	Ø30				

Incandescent lamp and LED specification

Classification	Incandescent lamp	LED (luminescent diode)		
Colors	transparent	red	green	yellow
Rated current	6.3 V 150 ㎃ 24 V 40 ㎃ 110 V 18 ㎃ 220 V 14 ㎃	6 V 2.94 ㎃ 24 V 10.2 ㎃ 110 V 6.0 ㎃ 220 V 4.7 ㎃	6 V 9.6 ㎃ 24 V 10.8 ㎃ 110 V 4.6 ㎃ 220 V 5.1 ㎃	6 V 29.4 ㎃ 24 V 10.2 ㎃ 110 V 6.0 ㎃ 220 V 4.7 ㎃
Base rating	E10 (screw type)			

Dimension (unit : ㎜)

Model	Design	Dimension
CR-254 (Ø25) CR-304 (Ø30)		

Model	A	B
CR-254	29.5	31.5
CR-304	34.5	36.5

CR series
Selector switch

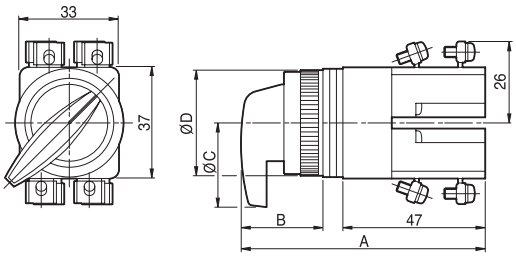
Suffix code

Model	Code			Description
CR-	□	□-	□	CR series selector switch
Installing dimension	25			Ø25
	30			Ø30
Type classification		3		Selector switch
2 positions contact composition			1	1a1b Contact
			2	2a2b Contact
3 positions contact composition			3	1a1b Contact
			4	2a2b Contact

Specification

Model	Installing dimension	Positions selection	Contact composition	Rated current	Color of actuator
CR-253-1	Ø25	2 positions	1a1b Contact	5 A 250 V a.c	Black
CR-253-2			2a2b Contact		
CR-253-3		3 positions	1a1b Contact		
CR-253-4			2a2b Contact		
CR-303-1	Ø30	2 positions	1a1b Contact	5 A 250 V a.c	Black
CR-303-2			2a2b Contact		
CR-303-3		3 positions	1a1b Contact		
CR-303-4			2a2b Contact		

Dimension (unit : ㎜)

Model	Design	Dimension
CR-253 (Ø25) CR-303 (Ø30)		

Model	A	B	C	D
CR-253	81.5	16.5	23.5	31.5
CR-303	82	16.5	28.5	36.5

CR series
Key selector switch

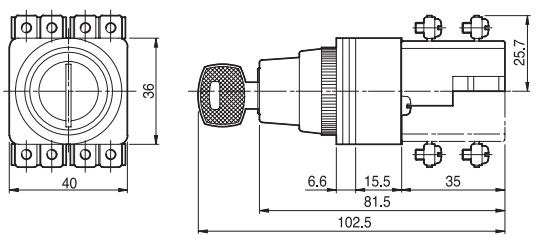
Suffix code

Model	Code				Description
CR-	□	□-	□	□	CR series key selector switch
Installing dimension	25				Ø25
	30				Ø30
Type classification		11			Key Selector switch
2 positions contact composition			1		1a1b Contact
			2		2a2b Contact
3 positions contact composition			3		1a1b Contact
			4		2a2b Contact
Key removing position				A	Left
				B	Right
				C	Middle
				D	Left / Right

Specification

Model	Installing dimension	Positions selection	Contact composition	Rated current	Key removing position
CR-2511-1	Ø25	2 positions	1a1b Contact	5 A 250 V a.c	A : left B : right C : middle D : left / right
CR-2511-2			2a2b Contact		
CR-2511-3		3 positions	1a1b Contact		
CR-2511-4			2a2b Contact		
CR-3011-1	Ø30	2 positions	1a1b Contact	5 A 250 V a.c	
CR-3011-2			2a2b Contact		
CR-3011-3		3 positions	1a1b Contact		
CR-3011-4			2a2b Contact		

Dimension (unit : ㎜)

Model	Design	Dimension
CR-2511 (Ø25) CR-3011 (Ø30)		

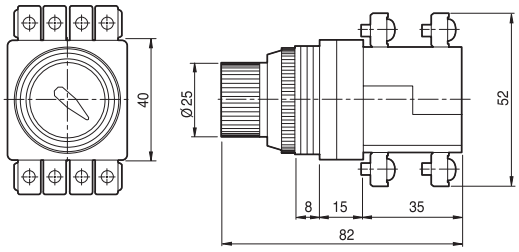
CR series
Selector push button switch

Selector (select) push button switch?

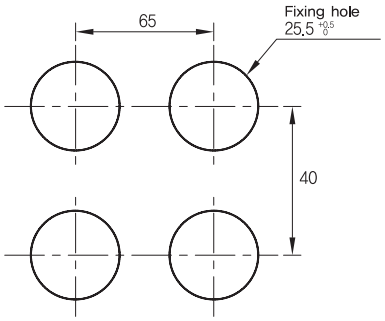
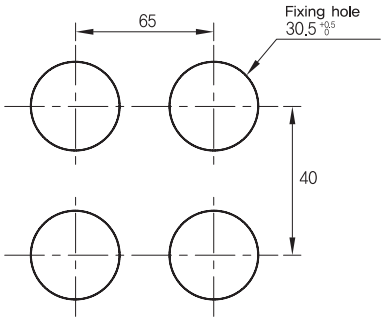
Besides the general push operation, this refers to a push button switch that can open/close a contact by using a selection ring, a lever, or rotating a button.
In automatic control, this control switch is used when one of two functions is selected and then an operation signal is needed to operate in the function. If the selector push-button switch is selected the desired direction of two directions, it only works (open/close) within the selected direction. It can be viewed as "selector switch" and "push button switch" together which is a convenient switch for machine tools and automatic controls.

Model	Installing dimension	Positions selection	Contact composition	Contact capacity
CR-308	Ø30	2 Positions	Left : 1a1b Contact Right : 1a1b Contact	5 A 250 V a.c
Operation function	Press the actuator after selecting left/right side then only selected position contact will be operated			

Dimension (unit : ㎜)

Model	Design	Dimension
CR-308 (Ø30)		

Mounting cutout dimension (unit : ㎜)

Mounting design	Ø25	Ø30
Cutout dimension	25.5 (0, +0.5 ㎜)	30.5 (0, +0.5 ㎜)
		

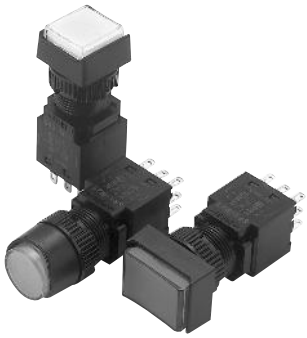
Protective cover and contact

Push button protective cover		Contact of each applying switch		
CR-50	CR-60	CR-10	CR-20	CR-30
Ø25 (Mounting design)	Ø30 (Mounting design)	Push button, selector emergency stop (alternative operation)	Illuminated push button for emergency (push lock-turn reset)	Key selector

SR series

Push button switch (non-illuminating, illuminating)

- Ø16 panel mounting type
  (actuator and contact part detachable)
- Contact part composed of 1a1b and 2a2b
- Light source: incandescent lamp and LED selection
- 3 kinds of actuator and 5 kinds of color
- Various accessories such as guard cover, waterproof cover and etc

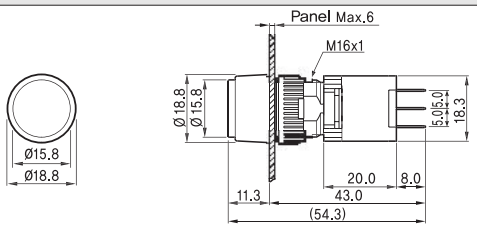
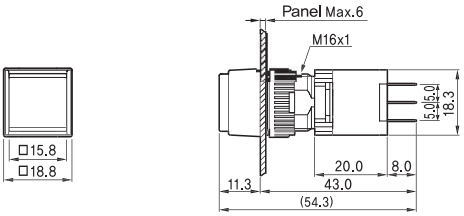
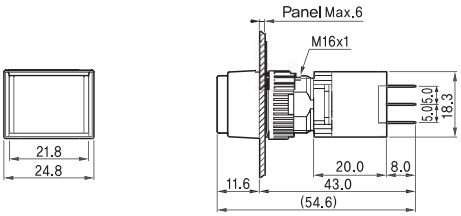


Suffix code

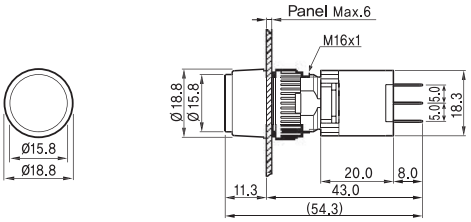
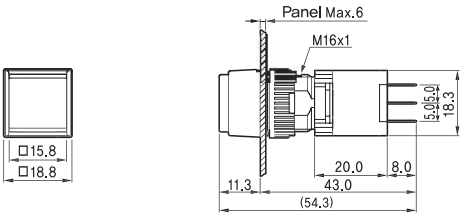
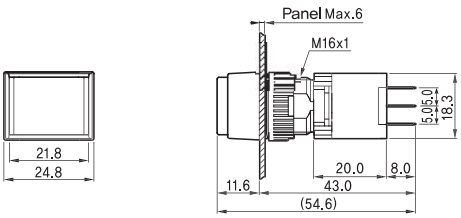
Model	Code							Description
SRF-	□	□	□	□	□	□	□	Ø16 push button switch
Protective cover	A							Standard type
	B							Waterproof type (Option)
Illumination		F						Non-illuminating type
		X						Illuminating type
Operation function			M					Momentary
			A					Alternate
Shape of actuator				1				Round type
				2				Square type
				3				Rectangle type
Contact composition					1			1a1b Contact
					2			2a2b Contact
Light source and voltage (only illuminating type assigned)						1		6.3 V Incandescent lamp
						2		12 V Incandescent lamp
						3		24 V Incandescent lamp
						4		12 V Luminescent diode (LED)
						5		24 V Luminescent diode (LED)
Color of actuator							R	R (Red), G (Green), Y (Yellow), W (White), B (Blue)

Dimension (unit : ㎜)

■ Non-illuminating type

Model	Design	Dimension
SRF-AFM11R		
SRF-AFM21G		
SRF-AFM31Y		

■ Illuminating type

Model	Design	Dimension
SRF-AXM113R		
SRF-AXM213G		
SRF-AXM313Y		

SR series

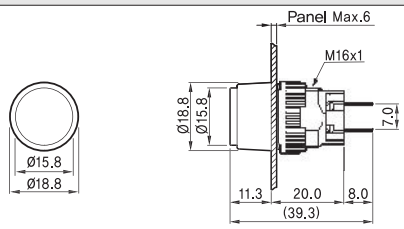
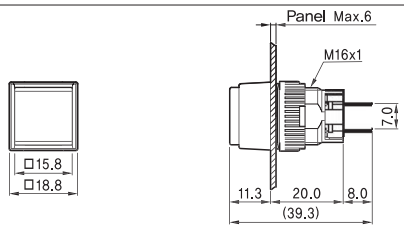
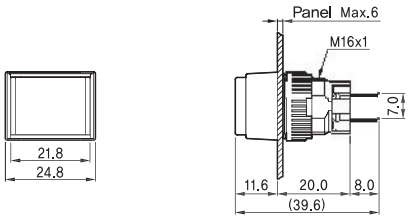
Pilot lamp

- One body type (Ø16 panel mounting type)
- Light source: incandescent lamp and LED selection
- Various actuator such as round, square, rectangular type and etc

Suffix code

Model	Code				Description
SRP-	□	□	□	□	Ø16 Pilot lamp
Protective type	A				Standard type
	B				Water proof type (Option)
Actuator type		1			Round type
		2			Square type
		3			Rectangle type
Light source and voltage (Only illuminating type assigned)			1		6.3 V Incandescent lamp
			2		12 V Incandescent lamp
			3		24 V Incandescent lamp
			4		12 V Luminescent diode (LED)
			5		24 V Luminescent diode (LED)
Color of actuator				R	R (Red), G (Green), Y (Yellow), W (White), B (Blue)

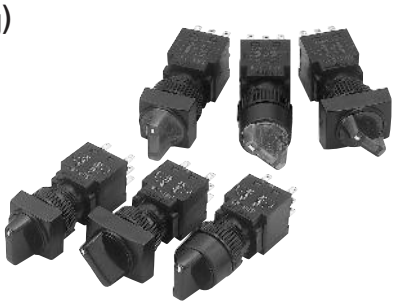
Dimension (unit : ㎜)

Model	Design	Dimension
SRP-A1□R		
SRP-A2□G		
SRP-A3□Y		

SR series

Selector switch (non-illuminating, illuminating)

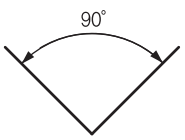
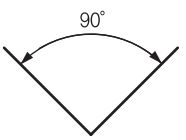
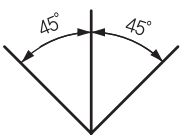
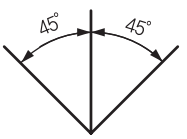
- Detachable type of actuator and contact part (Ø16 panel mounting type)
- Contact part composed of 1a1b and 2a2b
- Light source : incandescent lamp and LED selection
- Various actuator such as round, square, rectangular type and etc



Suffix code

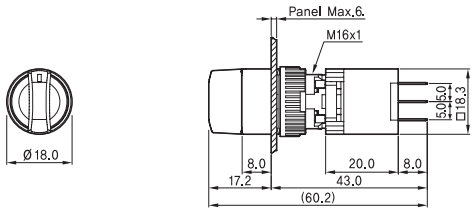
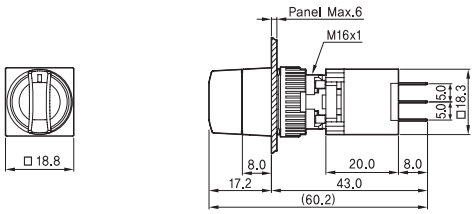
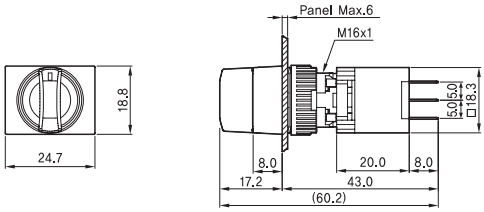
Model	Code						Description
SRS-	□	□	□	□	□	□	Ø16 selector switch
Illumination	F						Non-illuminating type
	X						Illuminating type
Actuator type		1					Round type
		2					Square type
		3					Rectangle type
Number of positions			1				2 positions momentary operation
			2				2 positions alternative operation
			3				3 positions alternative operation
			6				3 positions momentary operation
Contact composition				1			1a1b Contact
				2			2a2b Contact
Light source and voltage (Only illuminating type assigned)					1		6.3 V Incandescent lamp
					2		12 V Incandescent lamp
					3		24 V Incandescent lamp
					4		12 V Luminescent diode (LED)
					5		24 V Luminescent diode (LED)
Color of actuator (Only illuminating type assigned)						R	R (Red), G (Green), Y (Yellow), W (White), B (Blue)

Actuator of positions and angle

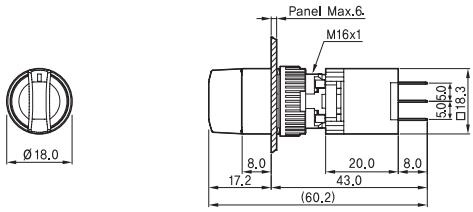
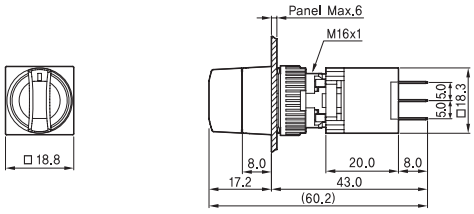
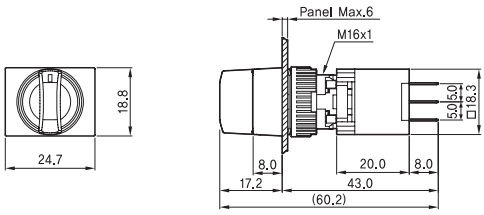
Position selection	2 positions automatic	2 positions manual	3 positions automatic	3 positions manual
Operation angle				

Dimension (unit : ㎜)

■ Non-illuminating type

Model	Design	Dimension
SRS-F1□□		
SRS-F2□□		
SRS-F3□□		

■ Illuminating type

Model	Design	Dimension
SRS-X1□□□G		
SRS-X2□□□Y		
SRS-X3□□□B		

SR series

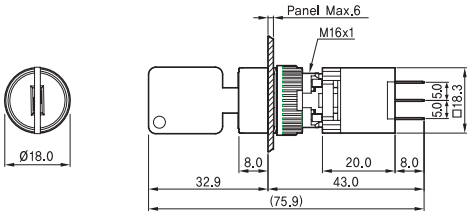
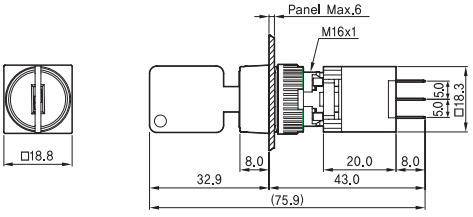
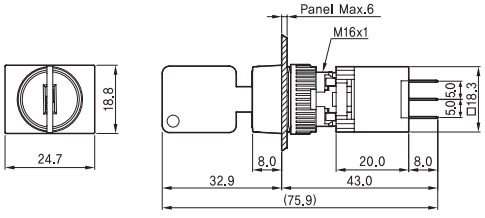
Key selector switch

- Actuator and contact part detachable (Ø16 panel mounting type)
- Contact part composed of 1a1b and 2a2b
- Various actuator such as round, square, rectangular type and etc
- 2 positions, 3 positions, momentary type, alternative type and etc

Suffix code

Model	Code			Description
SRK-	□	□	□	Ø16 key selector switch
Actuator type	1			Round type
	2			Square type
	3			Rectangle type
Position selection		1		2 positions momentary operation
		2		2 positions alternative operation
		3		3 positions alternative operation
		6		3 positions momentary operation
Contact composition			1	1a1b Contact
			2	2a2b Contact
Color of actuator				Only black color

Dimension (unit : ㎜)

Model	Design	Dimension
SRK-1□□		
SRK-2□□		
SRK-3□□		

SR series

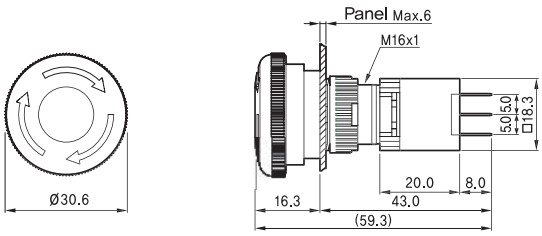
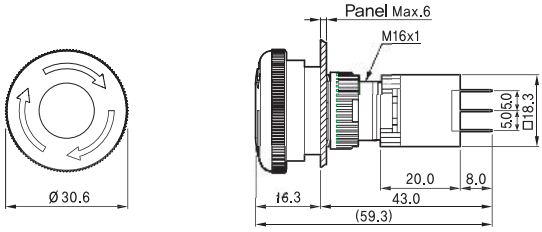
Emergency switch (non-illuminating and illuminating)

- Detachable type of actuator and contact part (Ø16 panel mounting type)
- Contact part composed of 1a1b and 2a2b
- Light source : incandescent Lamp and LED selection
- Push lock-turn reset function

Suffix code

Model	Code			Description
SRE-	□	□	□	Ø16 emergency stop switch (push lock-turn reset)
Illumination	F			Non-illuminating type
	X			Illuminating type
Contact composition		1		1a1b Contact
		2		2a2b Contact
Light source and voltage			1	6.3 V Incandescent lamp
			2	12 V Incandescent lamp
			3	24 V Incandescent lamp
			4	12 V Luminescent diode (LED)
			5	24 V Luminescent diode (LED)
Color of actuator				Red (solid)

Dimension (unit : ㎜)

Model	Appearance	Dimension
SRE-F□		
SRE-X□□		

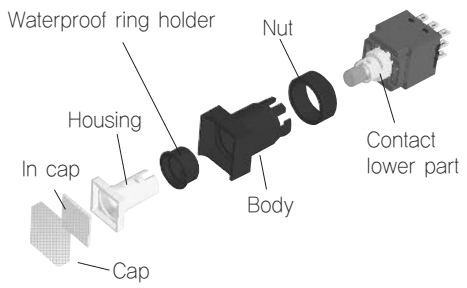
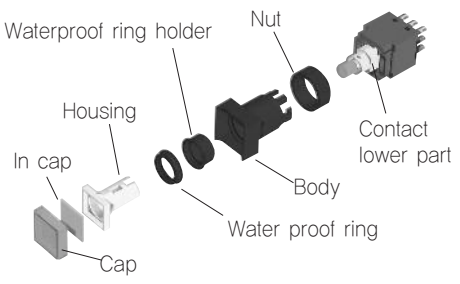
Common specification

Lists	Description
Contact material	Silver contact
Rating	6 A 250 V a.c
Insulation resistance	Min 100 MΩ
Dielectric strength	2,000 V a.c (each 50/60 Hz for 1min)
Vibration resistance	10 – 55 Hz (double amplitude 0.75 mm)
Contact resistance	Max 0.05 Ω (default value) d.c 6 V 0.1 A voltage descending type
Mechanical life expectancy	Above 100thousand times / 1800 h (button switch, illuminating button switch : above 500thousand times / 1800 h)
Electrical life expectancy	70 thousand times (with rated load)
Ambient temperature	-20 ℃ ~ 50 ℃
Ambient humidity	45 ~ 85 % R.H.
Storage temperature	-40 ℃ ~ 70 ℃
Force required for operation	4.50 N

Incandescent lamp and LED specification

Classification	Rated voltage	Rated current
Incandescent lamp	6.3 V a.c/d.c	60 mA
	6.3 V a.c/d.c	40 mA
	6.3 V a.c/d.c	20 mA
LED	12 V d.c	20 mA
	24 V d.c	15 mA
Base rating	BA6S-B (Incandescent lamp, LED)	

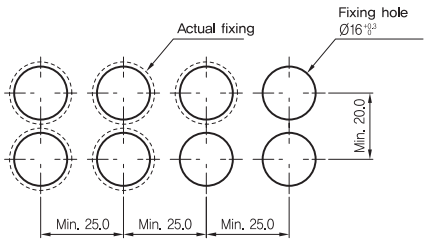
Formation

Standard type	Waterproof type
	

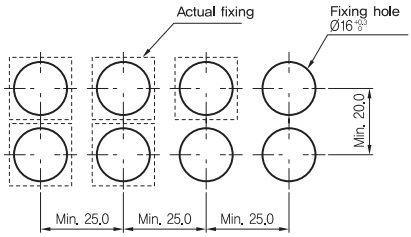
Panel cutout and min panel mounting dimension (unit : ㎜)

■ Standard

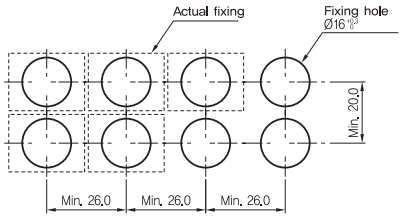
Round type



Square type



Rectangular type



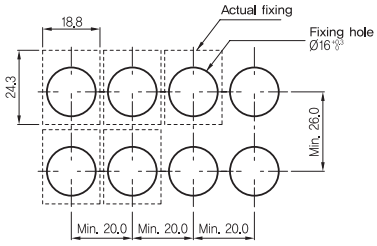
※ Panel mounting thickness 0.5 ~ 6 ㎜

■ Things to consider when using it

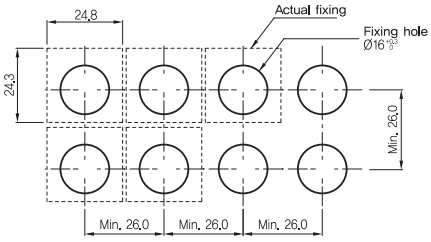
- Soldering the terminal : use soldering iron less than 40W in 40 sec
- Mounting to the panel : tightening torque of nut should be less than 0.49N.m
- Use a spin prevention ring when there are much of vibration
- For the safety after soldering the terminal, please insulate the terminal by tube or etc
- Alphabet film : Please use 0.1 mm thickness of heat-resistant film

■ Attaching the protective cover

Round and square type

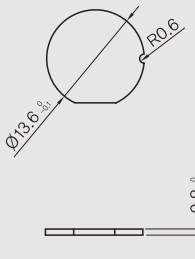


Rectangular type

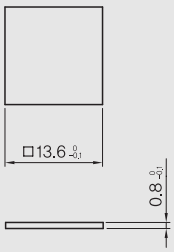


■ In-cap dimension

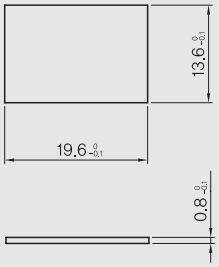
• Round type button



• Square type button

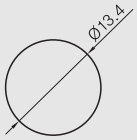


• Rectangular type button



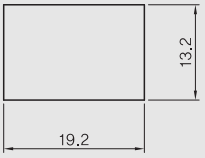
■ Film rating when using the alphabet film

• Round type button

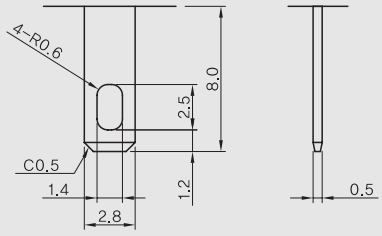


• Square type button

• Rectangular type button

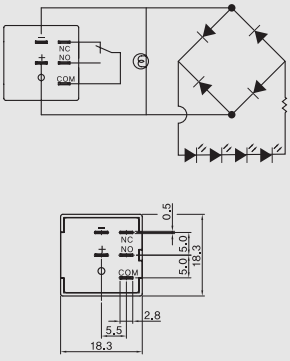


■ Terminal diagram

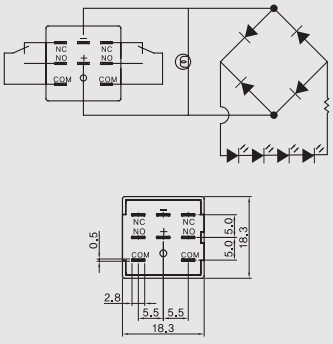


■ Terminal arrangement

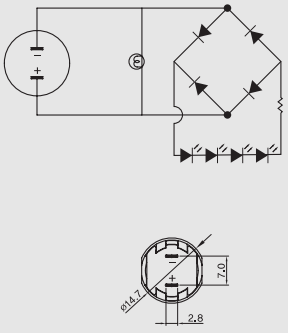
• Contact type 1a1b



• Contact type 2a2b

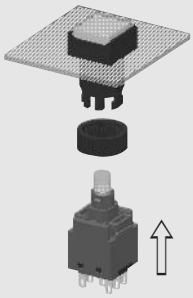


• Indicator



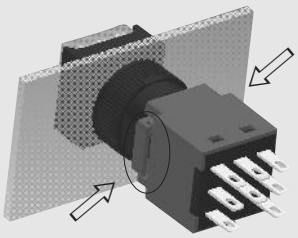
■ Assembling and disassembling method

• Assembling method



Put upper switch part to the panel and tighten it by the nut. Adjust contact part to the groove and press it until it clicks.

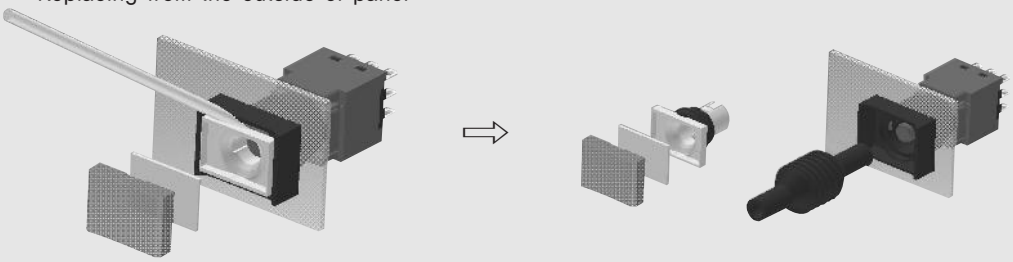
• Disassembling method



Disassemble the contact part by pressing the lever to the indicated arrow direction. By using the contact replacing tool, disassemble the contact part by pressing the (⬭) part.

■ Lamp replacing method

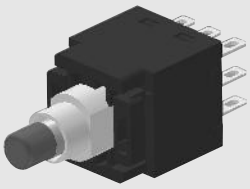
• Replacing from the outside of panel



After turning off the power, disassemble the actuator cap and housing by using a screwdriver or other appropriate tool and replace the lamp by using the lamp extractor. At this moment, please check for the rating and replace the lamp.

※ May damage your hand if lamp is destroyed so please be cautious (⚠ Caution)

• Replacing the contact part



Grip the lamp with your fingertip and pull it.
At this moment, please check for the rating and then replace the lamp.

Suffix code of each part

SR series can clearly divide the suffix code of actuator (illuminating part) and contact part. Please use the suffix code formation which given in the below.

■ Button switch suffix code

Button switch is largely divided into the push button switch, illuminating push button switch, emergency button switch and illuminating emergency button switch and it is compose of actuator and contact part.

Actuator

• Push button, illuminating push button "actuator suffix code"

Model	Code			Description
SRF-	□	□	□	Push button, illuminating push button actuator
Protective structure	A			Standard type
	B			Waterproof type
Actuator type		1		Round type
		2		Square type
		3		Rectangular type
Color of actuator			R	R (Red), G (Green), Y (Yellow), W (White), B (Blue) ※ exclude white and blue incandescent lamp

• Emergency button, illuminating emergency button

Model	Code	Description
SRE-	□	Emergency button actuator (push lock-turn reset)
Actuator type	X	Illuminating emergency button actuator
	F	Emergency button actuator (non-illuminating)

Contact part

• Push button, illuminating push button "contact part suffix code"

Model		Code				Description
SR	□-	□	□	□	□	Push button, illuminating push button, emergency button contact part
Illumination	X					Illuminating
	F					Non-illuminating
Operation function		M				Momentary
		A				Alternate
Contact composition			1			1a1b Contact
			2			2a2b Contact
Light source and voltage (assigned only to the illuminating type)				1		6.3 V incandescent lamp
				2		12 V incandescent lamp
				3		24 V incandescent lamp
				4		12 V luminescent diode (LED)
				5		24 V luminescent diode (LED)
Color of light source (assigned only to the illuminating type)					R	R (Red), G (Green), Y (Yellow), W (White), B (Blue) ※ Emergency switch : only Red color

■ Indicator suffix code

Model	Code				Description
SRP-	□	□	□	□	Indicator
Protective structure	A				Standard type
	B				Waterproof type
Actuator type		1			Round type
		2			Square type
		3			Rectangular type
Light source and voltage			1		6.3 V incandescent lamp
			2		12 V incandescent lamp
			3		24 V incandescent lamp
			4		12 V luminescent diode (LED)
			5		24 V luminescent diode (LED)
Color of actuator				R	R (Red), G (Green), Y (Yellow), W (White), B (Blue) ※ white and blue incandescent lamp

■ Selector switch suffix code

Selector switch is largely divided into the non-illuminating selector, illuminating selector and key selector and composed of actuator and contact part. (But illuminating type is illuminating contact part)
Therefore, it is necessary to indicate the actuator and contact part separately.
(Caution) Selector contact part is not compatible with other products so please be cautious

Actuator

• Selector switch, illuminating selector switch "actuator suffix code"

Model	Code				Description
SRS-	□	□	□	□	Selector switch, illuminating selector switch actuator
Actuator type	1				Round type
	2				Square type
	3				Rectangular type
Number of position		1			2 positions momentary operation
		2			2 positions alternative operation
		3			3 positions alternative operation
		6			3 positions momentary operation
Illumination			X		Illuminating
			F		Non-illuminating (only black possible)
Color of actuator (Only for illuminating type)				R	R (Red), G (Green), Y (Yellow), W (White), B (Blue) ※ white and blue incandescent lamp

■ Key selector switch "actuator suffix code"

Model	Code		Description
SRK-	□	□	Key selector switch actuator
Actuator type	1		Round type
	2		Square type
	3		Rectangular type
Number of position		1	2 positions momentary operation
		2	2 positions alternative operation
		3	3 positions alternative operation
		6	3 positions momentary operation

Contact part

• Selector, illuminating selector, key selector "contact part suffix code"

Model		Code				Description
SR	□-	□	□	□	□	Selector, Illuminating selector, Key selector contact part
Illumination	X					Illuminating
	F					Non-illuminating (Including key selector)
Position selection		2				2 positions
		3				3 positions
Contact composition			1			1a1b Contact
			2			2a2b Contact
Light source and voltage (assigned only to the illuminating type)				1		6.3 V Incandescent lamp
				2		12 V Incandescent lamp
				3		24 V Incandescent lamp
				4		12 V Luminescent diode (LED)
				5		24 V Luminescent diode (LED)
Color of light source (assigned only to the illuminating type)					R	R (Red), G (Green), Y (Yellow), W (White), B (Blue)

■ Accessories

Name	Model	Appearance	Reference
Contact	SRX / SRF		6 A 250 V a.c 1a1b / 2a2b
Spin prevention ring	SR-68		Prevent the spinning
Nut tightening tool	SR-448		Used to tightening the fixed nut at the back side of panel
Lamp extractor	SR-81		It is made of rubber and used when replacing the light bulb
Puller	SR-82		Used when replacing the contact after mounting the panel
Protective cover	SR-178		Prevents the switch malfunction (round type and square type)
	SR-239		Prevents the switch malfunction (rectangular type) use it after removing the spin prevention ring

SR series

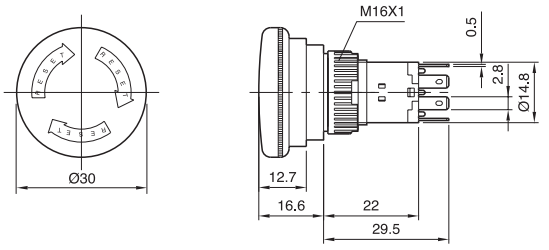
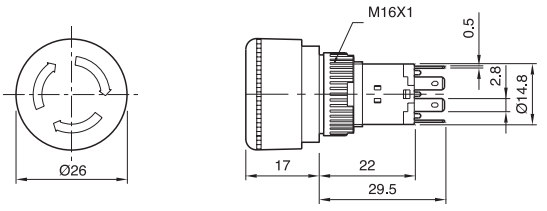
Emergency stop switch

- Ø16 panel mounting type
  (actuator and contact part are one body type)
- Contact parts composed of 1a1b and 2a2b
- Push lock-turn reset function

Specification

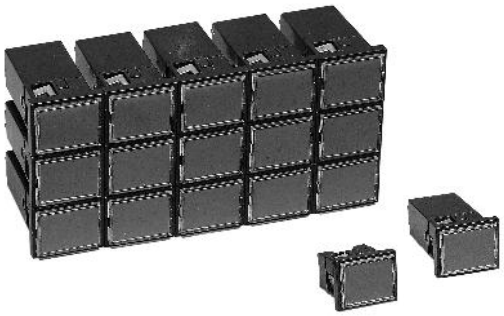
Model	SRE-121	SRE-122	SRE-121H	SRE-122H
Contact composition	1a1b	2a2b	1a1b	2a2b
Operation function	Push lock-turn reset			
Contact material	Silver contact (gold plating)			
Rated current	3 A 250 V a.c			
Insulation resistance	Min 100 ㎆			
Dielectric strength	1,000 V a.c for 1min (between the terminal and earth)			
Vibration resistance	10 – 55 ㎐ (double amplitude 0.75 ㎜)			
Contact resistance	Max 30 mΩ (initial)			
Mechanical life expectancy	Above 200 thousand times (30 times per min)			
Electrical life expectancy	Above 70 thousand times (30 times per min)			
Ambient temperature	-20 ~ 50 ℃			
Ambient humidity	45 ~ 85 % R.H			

Dimension (unit : ㎜)

Model	Appearance	Dimension
SRE-1 2□		
SRE-1 2□H		

CR-400 series

Rectangular lamp



- Size of surface 40x32mm
- Light source : incandescent lamp / LED selection
- Change the color of indicator by replacing the alphabet plate
- Easy individual mounting, gathered / assembled mounting
- Gathered / assembled mounting by the + shape connector (die casting)

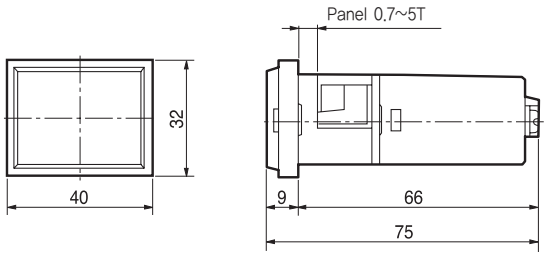
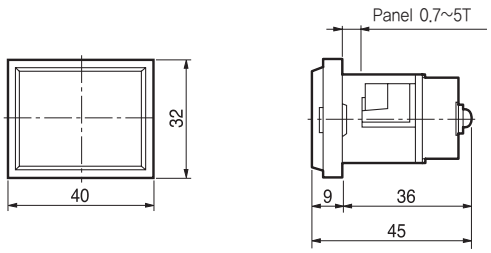
Suffix code

Model	Code				Description	
CR-40	□-	□	□	□	CR series, rectangular indicator	
Power supply voltage	1	1			110 V a.c	Transformer attached
	1	2			220 V a.c	
	1	3			380 V a.c	
	1	4			440 V a.c	
	2	12			12 V a.c/d.c	Without voltage dropping unit
	2	24			24 V a.c/d.c	
Light source type			–		Incandescent lamp	
			L		LED (Incandescent lamp)	
Color of indicator				W	W (white) ※ Default color is white and color R, G, Y and B can be purchased by placing a separate order	

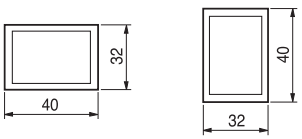
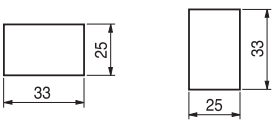
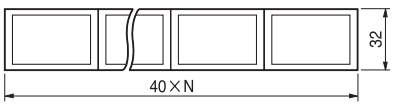
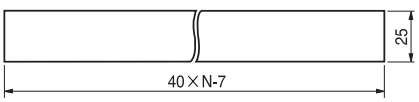
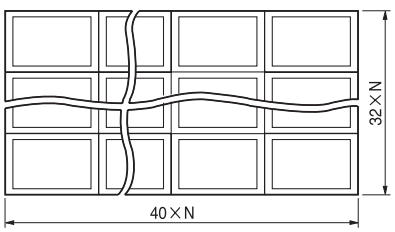
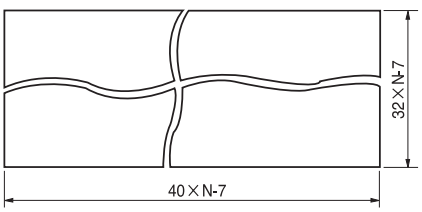
Specification

Types	Input voltage	2nd voltage	Power consumption	Color of alphabet plate	Reference
CR-401-1□	110 V a.c	6.3 V Trans attached	1.0 W	white, red, green, yellow, blue	• Size of alphabet plate (31.5 X 24 ㎜) • Applying light source (incandescent lamp/LED)
CR-401-2□	220 V a.c				
CR-401-3□	380 V a.c				
CR-401-4□	440 V a.c				
CR-402-12□	12 V d.c/a.c	Without voltage dropping unit	1.0 W		
CR-402-24□	24 V d.c/a.c				

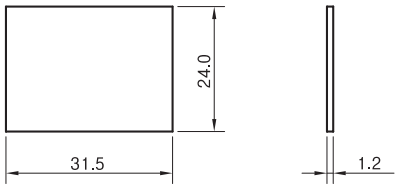
Dimension (unit : ㎜)

Model	Appearance	Dimension
CR-401 (Trans attached)		
CR-402 (Without voltage dropping unit)		

Panel cutout dimension (unit : ㎜)

Type	Front view (㎜)	Panel cutout dimension (㎜)
Independent mounting		
1 row continuous mounting		
Multi rows continuous mounting		

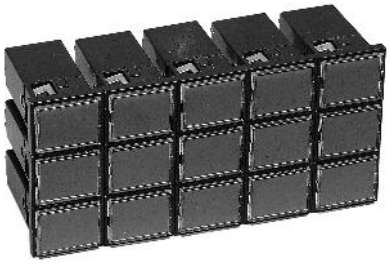
■ Dimension of plate



■ + shape connector when performing the gathered / assembled mounting

(CR-40)

■ Gathered/assembled mounting



CD Series

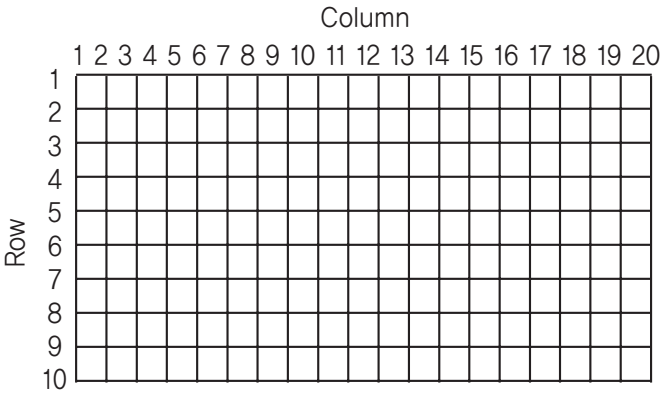
Combination display lights

- 2 types of surface dimension : 30x30mm, 30x40mm
- Applied high brightness square surface LED unit
- 6 types of various indicating colors
- Simple assembling and able to change to color in the field
- Max 200 compositions (10 rows 20 columns)

Suffix code

Model	Code				Description	
CD-	□	□	□	□	CD series Combination display lights	
Standard type	S				Square type (30 X 30 ㎜)	
	R				Rectangular type (30 X 40 ㎜)	
Power supply voltage		A			24 V a.c/d.c	Without voltage dropping
		B			110 V, 125 V d.c	Resistance voltage dropping type
		C			110 V a.c	Condenser voltage dropping type
		D			220 V a.c	
LED indicating color			R		Red	
			G		Green	
			Y		Yellow	
			W		white	
			O		Orange	
			A		Blue	
Surface composition				2	1 row ~ 10 rows	
				6	1 column ~ 20 columns	

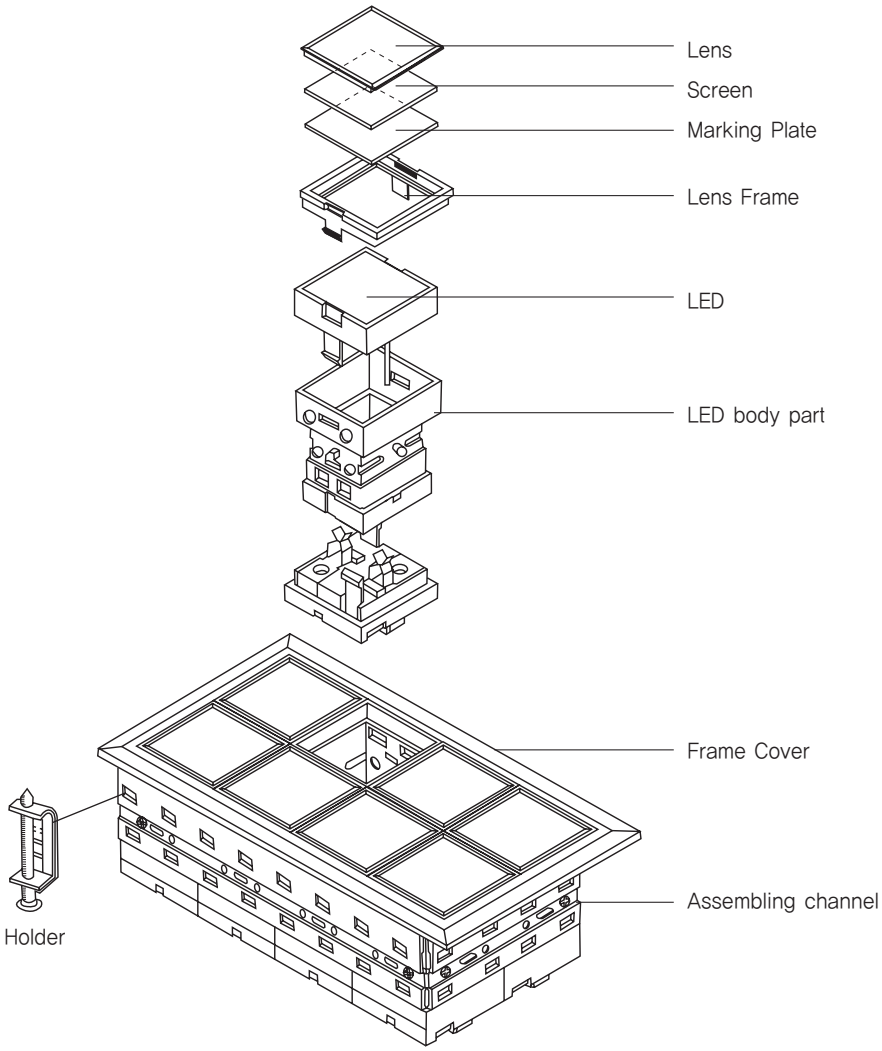
Surface indication



Specification

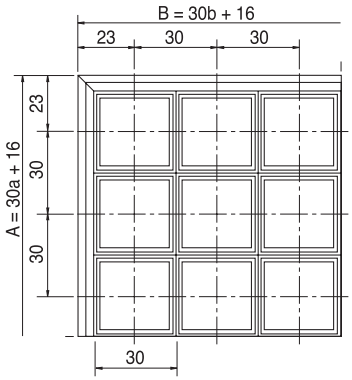
Power supply voltage	24 V d.c		110 V, 125 V d.c		110 V a.c, 220 V a.c	
Input type	Without voltage dropping type		Resistance voltage dropping type		Condenser voltage dropping type	
Type	CD-SA	CD-RA	CD-SB	CD-RB	CD-SC, SD	CD-RC, RD
Appearance						
LED rated voltage	24 V d.c					
LED base	Exclusive unit					
LED color	red, green, yellow, white, orange and blue					
Insulation resistance	Min 100 MΩ					
Dielectric voltage	2,000 V a.c (for one minute)					
Power consumption	0.68 W (24 V d.c, 20 mA)					
Life expectancy	50,000 hours (24 V d.c, 25 ℃)					
Ambient temperature	-20 ℃ ~ 40 ℃					
Ambient humidity	-25 ℃ ~ 55 ℃					
Storage temperature	45 ~ 85 % R.H					
Weight	About 65 g	About 80 g	About 75 g	About 90 g	About 80 g	About 93 g

Nomenclature

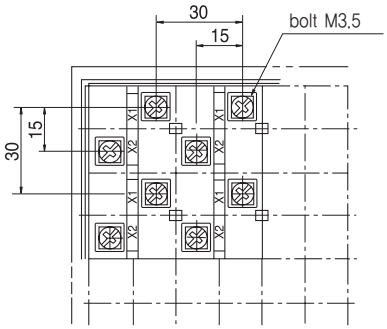


Dimension (CD-S : 30×30) (unit : ㎜)

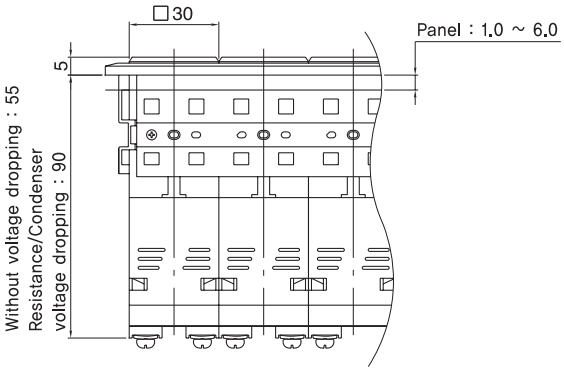
Front side view



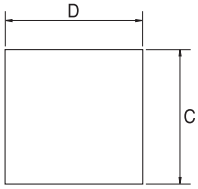
Back side view



Side view

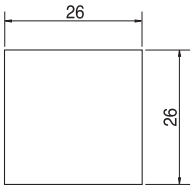


Panel cutout



※ C : 30n+5(n : number)
※ D : 40n+5(n : number)
※ Please refer to panel cut out chart

Marking plate



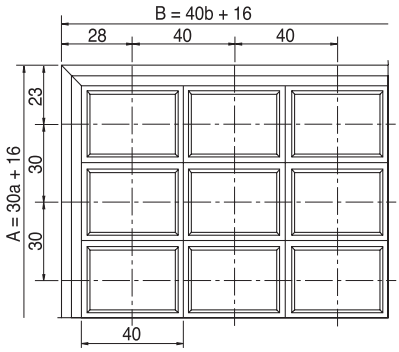
Panel cutout chart (CD-S : 30×30) (unit : ㎜)

Row	Column	b	01	02	03	04	05	06	07	08	09	10
	Dimension (Panel cutout)	B	46	76	106	136	166	196	226	256	286	316
a	A	(D) / (C)	(35)	(65)	(95)	(125)	(155)	(185)	(215)	(245)	(275)	(305)
01	46	(35)	1	2	3	4	5	6	7	8	9	10
02	76	(65)	2	4	6	8	10	12	14	16	18	20
03	106	(95)	3	6	9	12	15	18	21	24	27	30
04	136	(125)	4	8	12	16	20	24	28	32	36	40
05	166	(155)	5	10	15	20	25	30	35	40	45	50
06	196	(185)	6	12	18	24	30	36	42	48	54	60
07	226	(215)	7	14	21	28	35	42	49	56	63	70
08	256	(245)	8	16	24	32	40	48	56	64	72	80
09	286	(275)	9	18	27	36	45	54	63	72	81	90
10	316	(305)	10	20	30	40	50	60	70	80	90	100

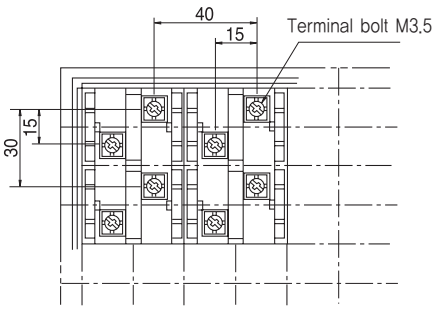
Row	Column	b	11	12	13	14	15	16	17	18	19	20
	Dimension (Panel cutout)	B	346	376	406	436	466	496	526	556	586	616
a	A	(D) / (C)	(335)	(365)	(395)	(425)	(455)	(485)	(515)	(545)	(575)	(605)
01	46	(35)	11	12	13	14	15	16	17	18	19	20
02	76	(65)	22	24	26	28	30	32	34	36	38	40
03	106	(95)	33	36	39	42	45	48	51	54	57	60
04	136	(125)	44	48	52	56	60	64	68	72	76	80
05	166	(155)	55	60	65	70	75	80	85	90	95	100
06	196	(185)	66	72	78	84	90	96	102	108	114	120
07	226	(215)	77	84	91	98	105	112	119	126	133	140
08	256	(245)	88	96	104	112	120	128	136	144	152	160
09	286	(275)	99	108	117	126	135	144	153	162	171	180
10	316	(305)	110	120	130	140	150	160	170	180	190	200

Dimension (CD-R : 30×40) (unit : ㎜)

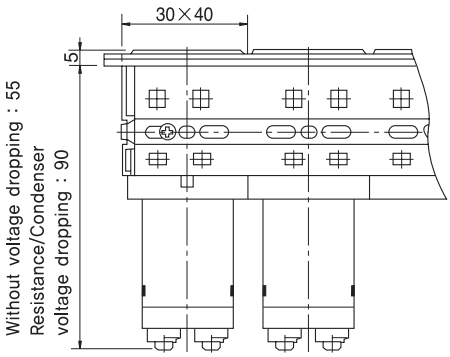
Front side view



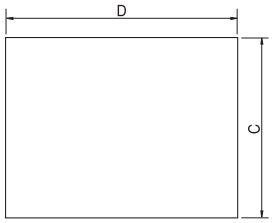
Back side view



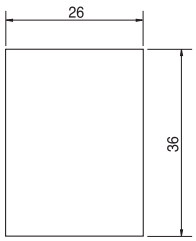
Side view



Panel cutout



Marking plate



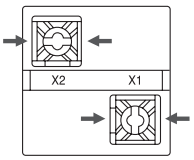
※ C : 30n+5 (n : number)
※ D : 40n+5 (n : number)
※ Please refer to panel cut out chart

Panel cutout chart (CD-R : 30×40) (unit : ㎜)

Row	Column	b	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	Dimension (Panel cutout)	B	56	96	136	176	216	256	296	336	376	416	456	496	536	576	616	656
a	A	(D) / (C)	(45)	(85)	(125)	(165)	(205)	(245)	(285)	(325)	(365)	(405)	(445)	(485)	(525)	(565)	(605)	(645)
01	46	(35)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
02	76	(65)	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
03	106	(95)	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
04	136	(125)	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64
05	166	(155)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
06	196	(185)	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
07	226	(215)	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112
08	256	(245)	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128
09	286	(275)	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144
10	316	(305)	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160

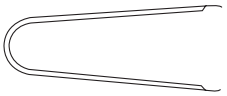
Terminal wiring and parts

Wiring direction diagram



X1 : +
X2 : −

L.E.D and cover puller

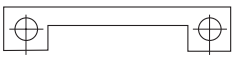


CD-10

Vertical terminal

CD-203
CD-204

Horizontal terminal

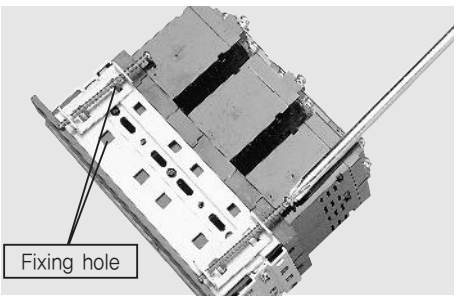


CD-303
CD-304

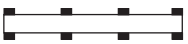
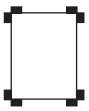
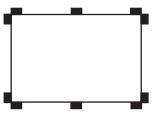
Holder quantity and holder position by the composition of assembled indicator

• Holder quantity

height \ width	1-2	3-8	9-15	16-20
1-2	2	4	6	8
3-6	4(6)	6(8)	8	10
7-10	6(8)	8	10	12



• Holder position

height \ width	1-2	3-8	9-15	16-20
1-2				
3-6				
7-10				

Precautions

- When mounting the panel, select the thickness after considering the weight of device body part (such as assembled indicator and etc), weight of cables (by wiring) and etc.
- For the assembled type above 3x6, please have the gap (more than 50mm) in the left/right direction and wiring direction
- When replacing the LED luminous element, must turn OFF the indicator and replace it
- D.C rated voltage of LED luminous element indicates complete direct current voltage. Also, full-wave rectified or pulsating voltage might lead an error in measurement depending on the measuring instrument so please be cautious
- In case of PCB, overall weight will exceed 1kg once combining more than 12 devices so please consider the thickness of panel and combine them.
- Common of assembled indicator is composed of ⊕

B Power switch Main switch Cam switch

Power push button switch (BE series) ----------126
Power push button switch (HY-500 series) -------129
Main switch (MAS series)----------133
Cam switch (SQ5 / 305 / 255 series)----------136
Key cam switch (HY-MRK)----------147
Cam switch standard circuit diagram----------149

BE Series

Power push button switch

- Directly ON/OFF the power of compact size electric motor
- Exposed type / flush mounted type, plastic / cold rolled steel case
- 3 buttons electric motor switch (Forward, reverse and stop buttons)
- Waterproof type and frame retardancy ABS plastic case

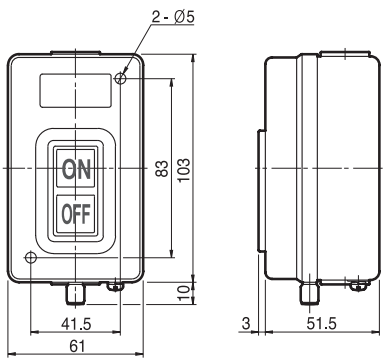
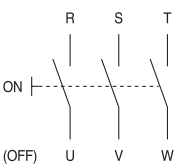
Specification

Type		Number of polarities	Rated capacity	Connecting terminal	Indicating alphabet (button color)	Case material
Standard type	BE 230	3P	440 V a.c 30 A	M5	ON (Black) OFF (Red)	Cold rolled steel
Water proof type	BEW 215	3P	440 V a.c 15 A	M4	ON (Black) OFF (Red)	Frame retardancy ABS
	BEW 230	3P	440 V a.c 30 A	M5		
	BEWT 215	3P	440 V a.c 15 A	M4	ON (Black) OFF (Red)	
	BEWT 315	3P	440 V a.c 15 A	M4	FOR (Black) STOP (Red) REV (Black)	

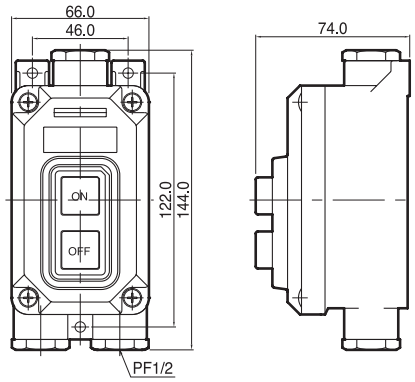
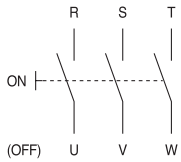
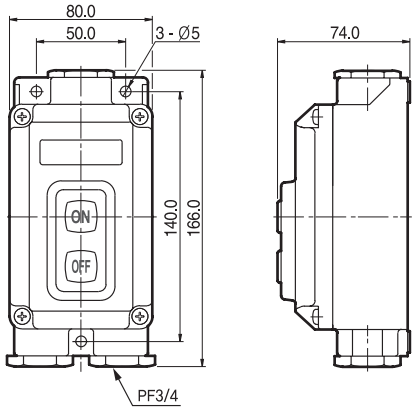
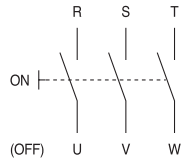
※ When using as the waterproof type, please use a proper cable bushing

Dimension (unit : ㎜)

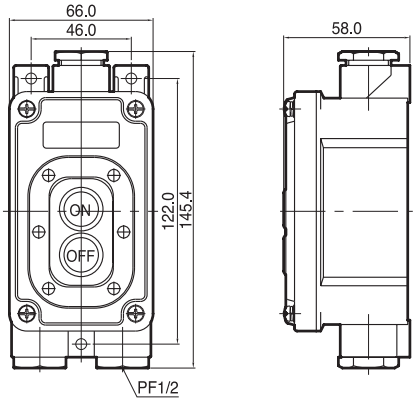
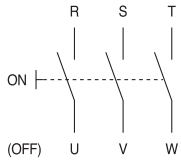
■ Push button switch

Appearance	Dimension	Rating and contact composition
 BE 230		3P, 440 V 30 A 

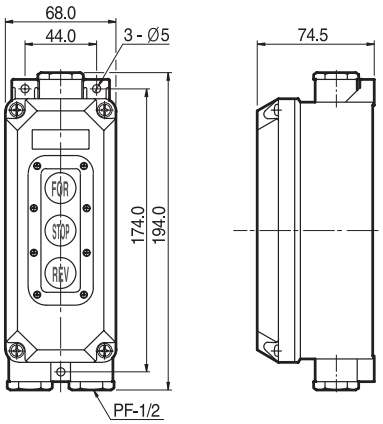
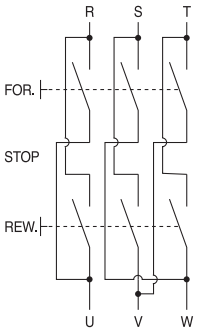
■ Waterproof type push button switch

Appearance	Dimension	Rating and contact composition
BEW 215		3P, 440 V 15 A 
BEW 230		3P, 440 V 30 A 

■ Waterproof type push button switch

Appearance	Dimension	Rating and contact composition
BEWT 215		3P, 440 V 15 A 

■ Waterproof type forward / reverse switch

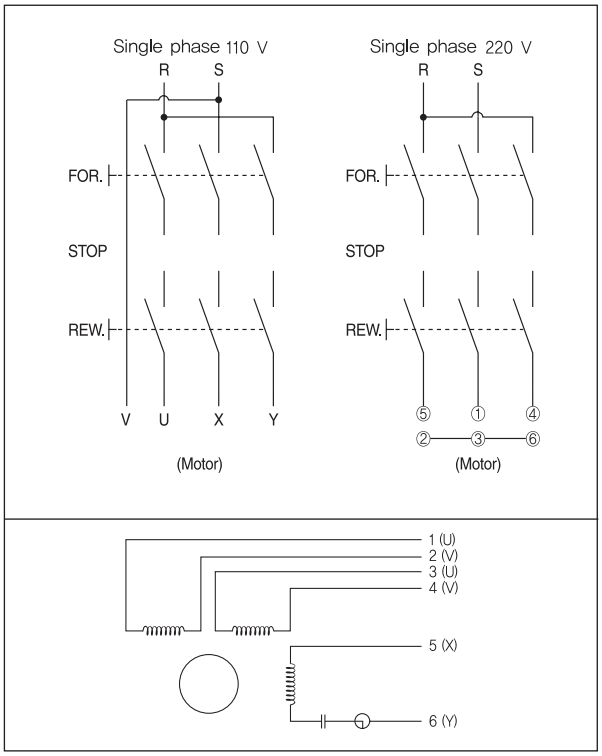
Appearance	Dimension	Rating and contact composition
BEWT 315		3P, 440 V 15 A 

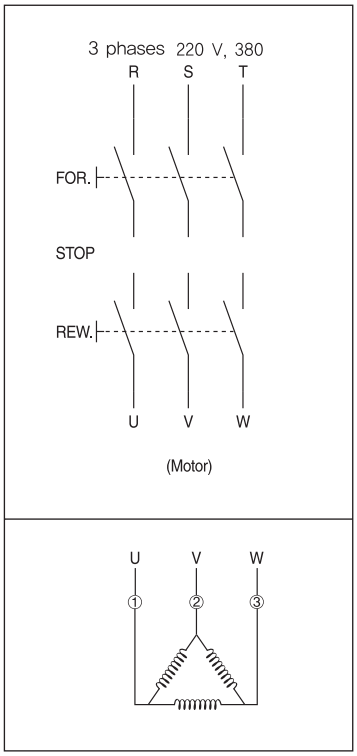
Example of connection

■ Forward / reverse switch (model: BEWT-315) connection example

• Single phase condenser running type motor

• Three phases single voltage (3 wires) motor





HY-500 Series

Power push button switch

- Directly ON / OFF the power of compact size electric motor
- Exposed type / flush mounted type, plastic / cold rolled steel case
- Push button for ON / OFF the electric motor (forward, reverse operation)
- Lamp power ON / OFF type switch mounting type
- Electrical appliances Safety Certification

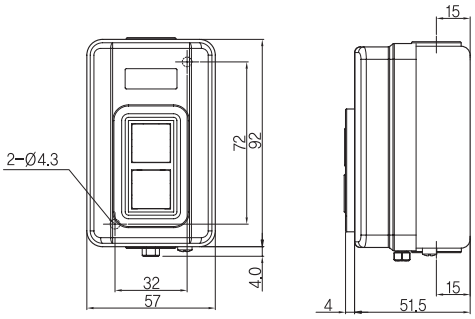
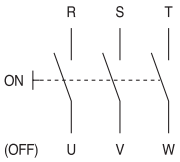
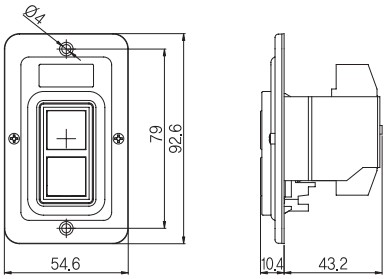
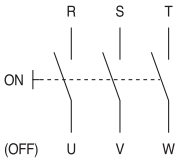
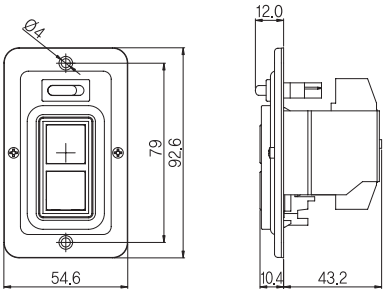
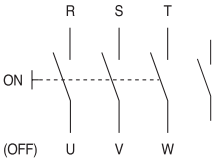
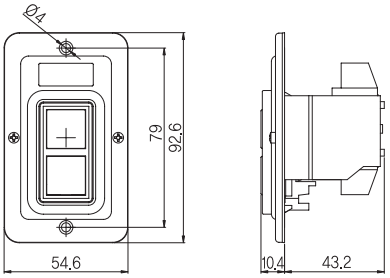
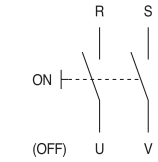
Specification

Type		Number of polarities	Rated capacity	Connecting terminal	Indicating character (button color)	Case material
Exposed type	HY-510	3P	250 V a.c 15 A	M4	ON (Black) OFF (Red)	Cold rolled steel (ON/OFF)
Flush mounted type	HY-513					
	HY-513S (Lamp switch part)		250 V a.c 15 A	M4	ON (Black) OFF (Red)	
Flush mounted type	HY-512	2P	250 V a.c 15 A	M4	ON (Black) OFF (Red)	Cold rolled steel (ON/OFF)
	HY-512S (Lamp switch part)					
Flush mounted type	HY-514	3P	250 V a.c 15 A	M4	ON (Black) OFF (Red)	Cold rolled steel (ON/OFF)
	HY-514S (Lamp switch part)					
Exposed type	HY-516	3P	250 V a.c 15 A	M4	FOR (Black) STOP (Red) REV (Black)	Cold drawn steel (Forward, reverse and stop button)
Exposed type	HY-517	3P	250 V a.c 15 A	M4	ON (Black) OFF (Red)	Plastic (ON/OFF)

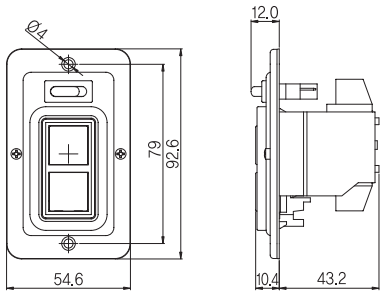
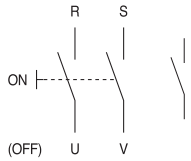
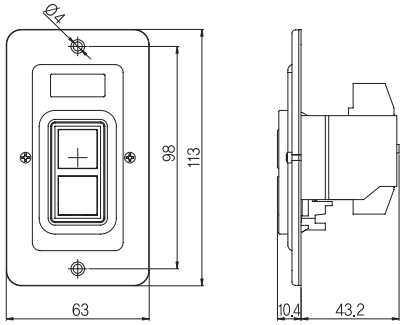
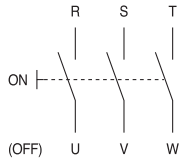
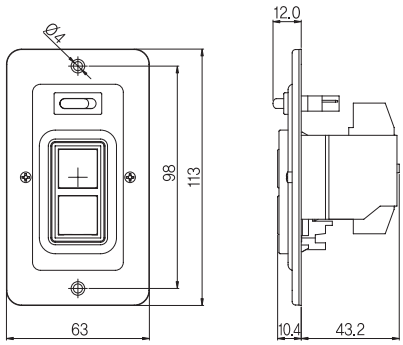
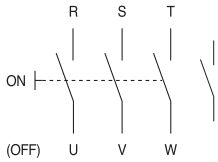
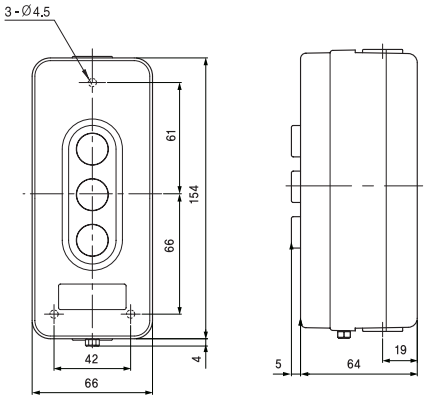
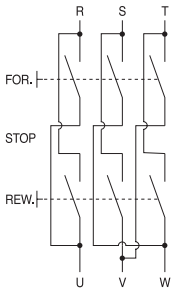
※ Switch capacity for Lamp : 6(2) A 250 V a.c

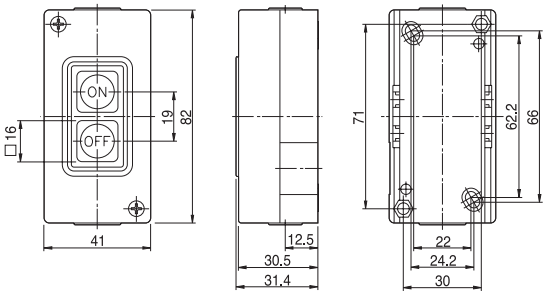
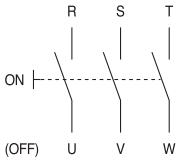
※ When button is ON, case will not be dismounted so it is safe (HY-517)

Dimension (unit : ㎜)

Appearance	Dimension	Rating and contact composition
HY-510		3P, 250 V a.c 15 A 
HY-513		3P, 250 V a.c 15 A 
HY-513S		3P, 250 V a.c 15 A 
HY-512		2P, 250 V a.c 15 A 

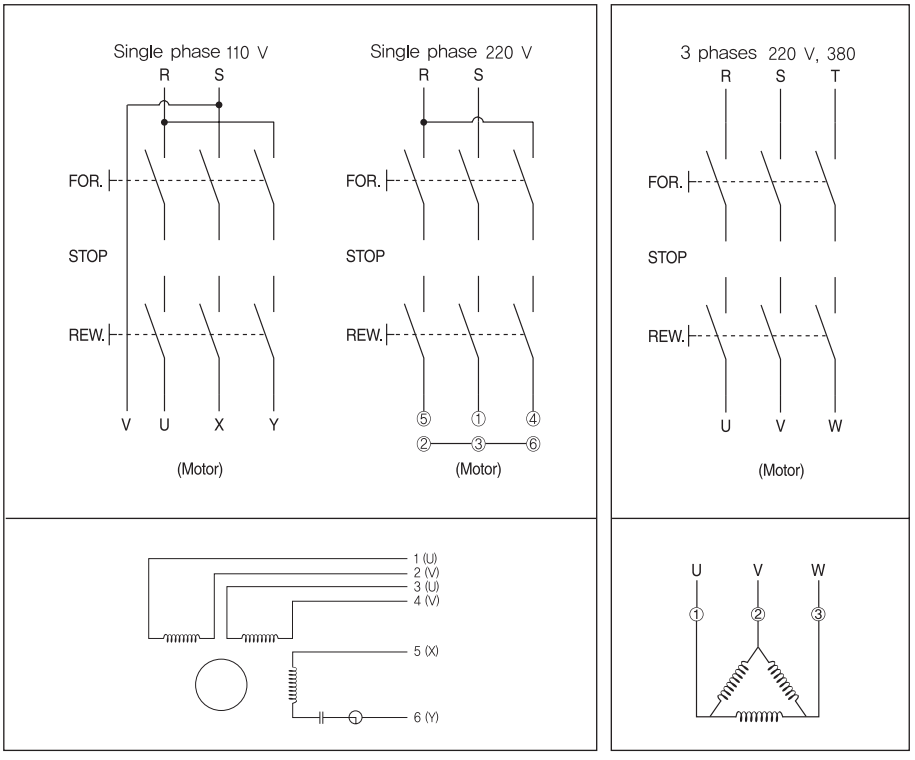
HY-500 series

Appearance	Dimension	Rating and contact composition
HY-512S		2P, 250 V a.c 15 A 
HY-514		3P, 250 V a.c 15 A 
HY-514S		3P, 250 V a.c 15 A 
HY-516		3P, 250 V a.c 15 A 

Appearance	Dimension	Rating and contact composition
HY-517		3P, 250 V a.c 15 A 
	※ When using it as a horizontal type, pull the button and rotate it.	

■ Example of Model HY-516 forward and reverse switch connection (wired internally)

- Single phase condenser running motor
- 3-phases single voltage (3 wires) motor



MAS series

Main switch

- Designed as rapid switching structure so excellent contact reliability.
- Apply the lock ring within the OFF state
- Handle and contact parts are designed as detachable structure (MAS-025)
- 2 color types of handle and handle guard (red, yellow and black, white)
- Ø22, Ø30 (MAS-025) 4 holes fixed panel mounting
- Clear indication of ON/OFF contact state (turning OFF the operation handle will block all contacts)

Suffix code

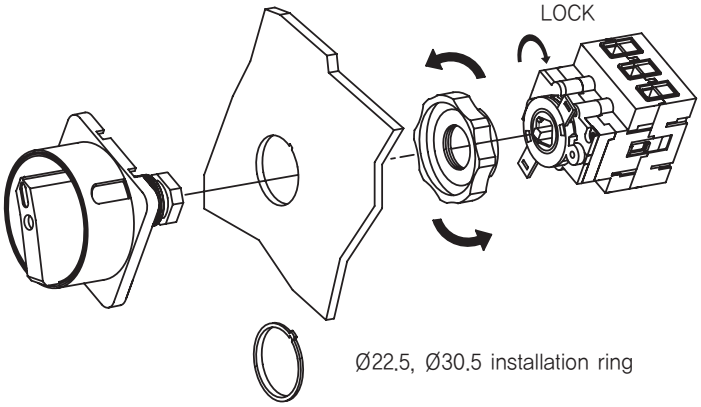
Model	Code		Information
MAS-	□	□	Main Switch
Rated current	025		25 A a.c
	063		63 A a.c
	125		125 A a.c
Color classification		A	Emergency stop type (yellow guard / red handle)
		B	Standard type (white guard / black handle)

Specification

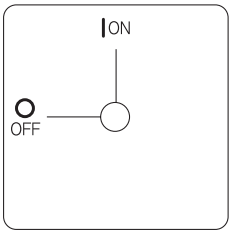
Type	MAS-025	MAS-063	MAS-125
Rated insulation voltage(Ui)	690 V a.c	690 V a.c	690 V a.c
Rated operation voltage(Ue)	600 V a.c	600 V a.c	600 V a.c
Rated electro current(Iu/Ith)	25 A	63 A	125 A
Applying categories	AC-21A		
Number of polarities	3P		
Terminal screw	M4	M5	M6
Number of lock hole/hole diameter(㎜)	3/9	3/9	3/9
Tightening torque	2.5 N · m	4 N · m	6 N · m
Protective structure	IP 64	IP 55	IP 65

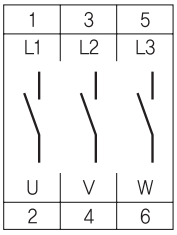
Panel mounting assembly diagram and connection diagram

■ MAS-025 assembly diagram



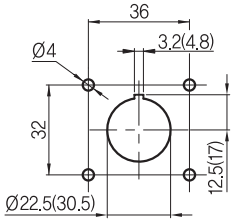
Connection diagram



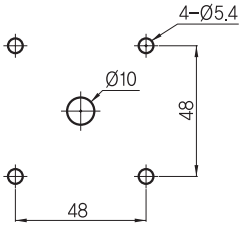


Panel cutout dimension

■ MAS-025

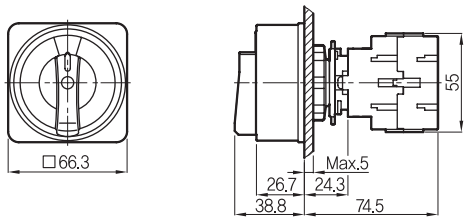
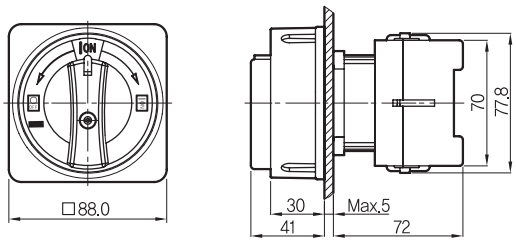
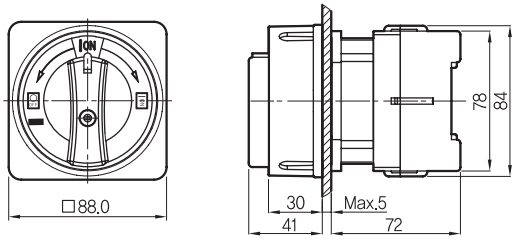


■ MAS-063/MAS-125



※ In case of the model MAS-025, install it by using Ø4 fixing bolts or installation ring

Dimension (unit : ㎜)

Appearance	Dimension	Rating and contact composition
MAS-025		
MAS-063		
MAS-125		

HY-SQ5/305/255 series

Cam switch

- Structural design that can check the contact operation state
- Electrical appliances Safety Certification
- Various surface (square, Ø25 round, Ø30 round)
- 3 types of operation handle (H type, R type, P type)
- Switch-board switch A/S, V/S, C/S standard manufacturing product
- Machine tools and various industrial electrical installation circuit formation (order-made)

Suffix code

Model		Code					Description
Appearance	□	□	□	□	□	□	Cam switch
	HY-SQ5						Square type cam switch
	HY-255						Ø25 type cam switch
	HY-305						Ø30 type cam switch
Contact type		S					Square type (standard type)
		C					Round type (for HY-SQ5)
Handle type			H				Standard type (standard industrial machine)
			R				Switch-board type (A/S, V/S)
			P				Control switch type (C/S)
Positions selection				2			2 positions selection
				3			3 positions selection
				4			4 positions selection
				5			5 positions selection
				6			6 positions selection
Number of contact unit (number of rows)					1		1 row
					2		2 rows
Serial number (contact formation diagram)						01	Label the serial number of contact formation
						02	diagram in case of order-made product

※ A/S : ammeter converting switch, V/S : voltmeter converting switch

※ Possible to manufacture 20A, 250V product only within the square type contact structure

Specification

■ Contact rating

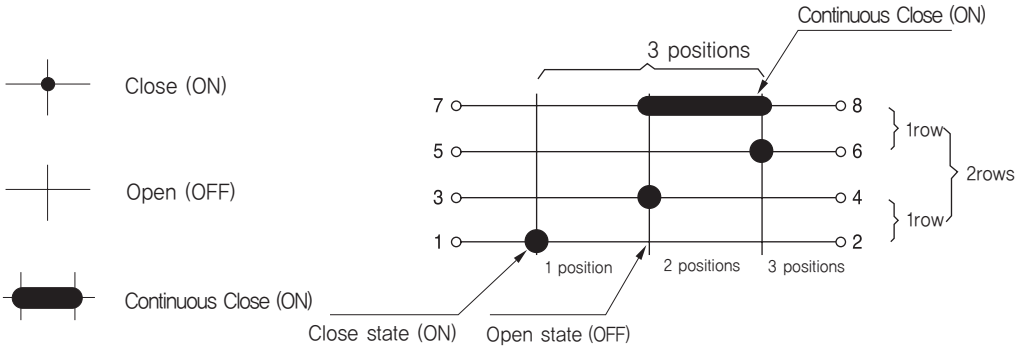
Rated insulation voltage	600 V	
Rated electro current	10 A	
Contact structure	Double block slow-make 1 position 2 contacts, max line forming: 6 rows (auto-return: up to 3 positions)	
Operation type	Each position stopping type	Spring return type
Angle selection	30˚, 45˚, 60˚, 90˚	45˚
Position selection	2 Positions ~ 12 Positions	2 Positions ~ 4 Positions
Insulation resistance	100 MΩ (500 V d.c)	
Dielectric strength	2500 V a.c, for 1min	
Mechanical life expectancy	500 thousand times	
Electrical life expectancy	100 thousand times	
Ambient temperature	-20 ~ 50 ℃	
Ambient humidity	-	
Protective structure	305, 255 (Round type) : IP 65	SQ5 (Square type) : IP 40

■ Materials of each part

Classification	Materials
Body	Thermal resistance Polycarbonate (PC)
CAM	ACETAL
Contact	Ag + Ni
Terminal	BRASS
Bolt	SWRM
Spring	STAINLESS STEEL
HANDLE	PHENOL RESIN

Operation signal of contact and standard connection diagram

■ Operation signal of contact ■ Standard connection diagram

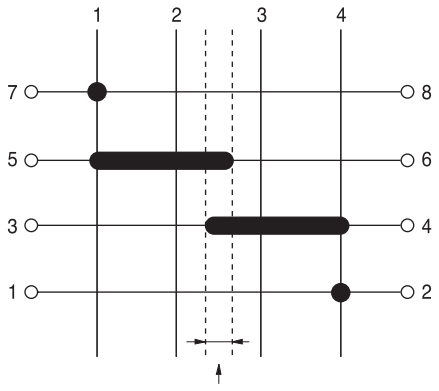


Terminology and circuit explanation

• Overlapping circuit when switching

When ON/OFF the switch, it refers to the contact circuit that has an interval where the contact becomes opened in the closed state within the middle of 2nd stage and 3rd stage and the contact that has become closed in the opened state become closed synchronously.

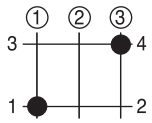
So this is the circuit that becomes overlapped when switching.



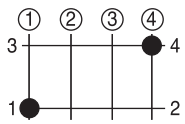
Overlapped circuit when switching

Precautions when structuring the contact

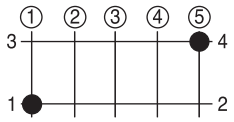
- 2 contacts that are built in the cam switch are arranged contrastably comparing to the cam so when the angle of handle rotates 180 degree then 2 contacts become opened or closed so please be cautious.



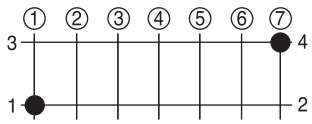
In case of 90° 3 positions switching



In case of 60° 4 positions switching

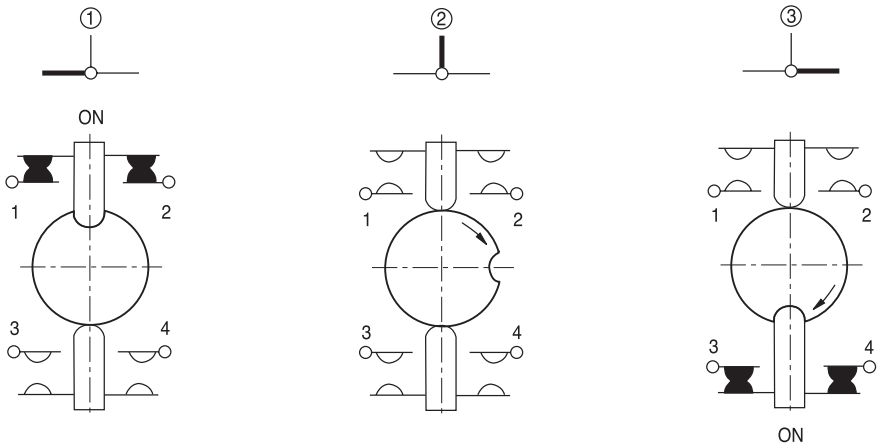


In case of 45° 5 positions switching

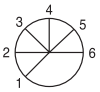
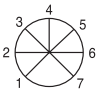
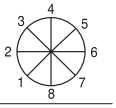
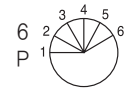
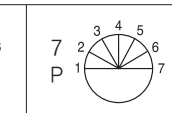
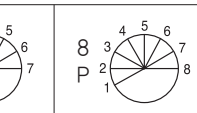
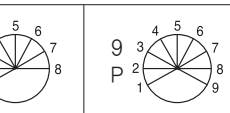
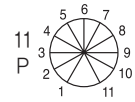
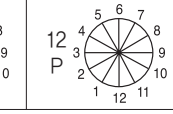


In case of 30° 7 positions switching

- Position of the built in cam, contact and handle (90 degree 3 positions)

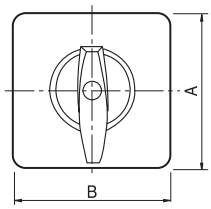


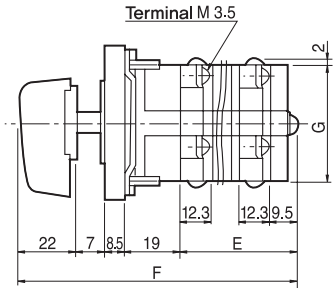
Handle operation position

Return method	Switching angle	Handle position
Manual return type (Symbol : MR)	90°	2 P 3 P 4 P ※P:Positions
	60°	2 P 3 P 4 P 5 P
	45°	3 P 4 P 5 P 6 P  7 P  8 P 
	30°	5 P 6 P  7 P  8 P  9 P 
		10 P 11 P  12 P 
Auto return type (Symbol : AR)	45°	The handle automatically returns to the middle from 1st and 2nd position
Handle suspending type (Symbol : LR)	45°	The handle automatically returns to the middle from 1st and 2nd position (but when operating the handle, please pull it and use it)
Mixed return type (Symbol : C)	45°	Auto-return from 1st position to the 2nd position Manual return from 3rd position to 2nd position
		Auto-return from 3rd position to the 2nd position Manual return from 1st position to 2nd position
		Auto-return from 1st position to the 2nd position Manual return from 2nd position to 4th position
		Auto-return from 4th position to the 2nd position Manual return from 1st position to 3rd position

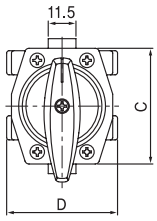
Dimension and panel cutout (unit : ㎜)

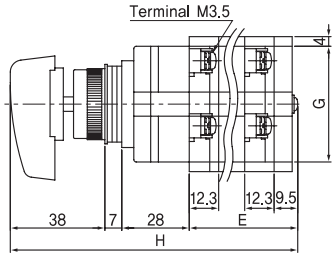
■ Square type



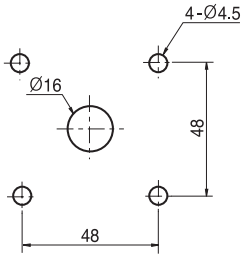


■ Round type (waterproof type)

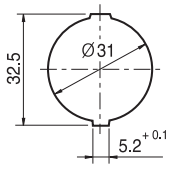




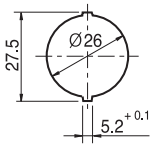
■ Panel cutout



Square type



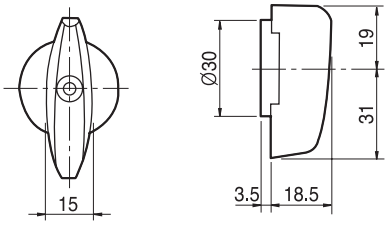
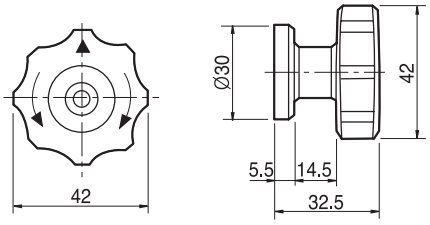
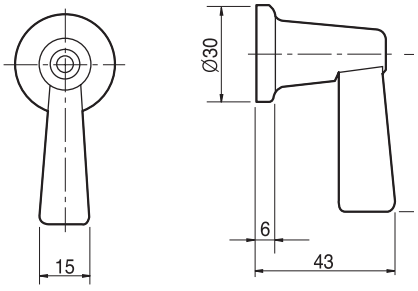
Ø30 type



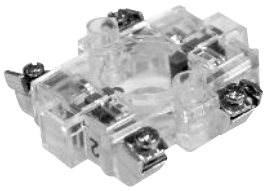
Ø25 type

Number of rows	A	B	C	D	E	F	G	H	rotational angle
1	65	65	48	48	21.8	78.8	48	94.8	30° 45° 60° 90°
2					34.1	91.1		107.1	
3					46.4	103.4		119.4	
4					58.7	115.7		131.7	
5					71	128		144	
6					83.3	140.3		156.3	
7					95.6	152.6		168.6	
8					107.9	164.9		180.9	
9					120.2	177.2		193.2	
10					132.5	189.5		205.5	

Handle types

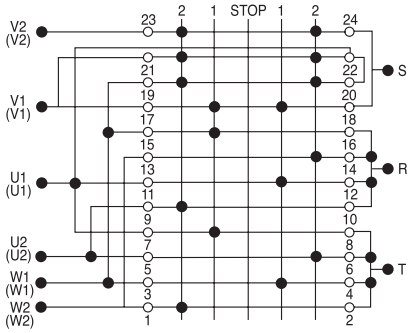
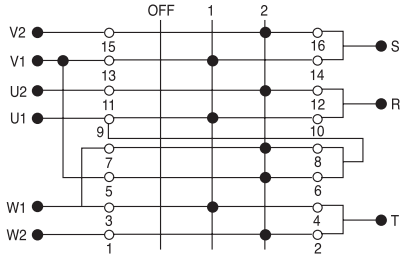
Symbol	Appearance	Usage	Materials (colors)	Dimension
H type		Selector S/W	Phenol Resin (black)	
R type		AS, VS Selector S/W	Phenol Resin (black)	
P type		C.S	Phenol Resin (black)	

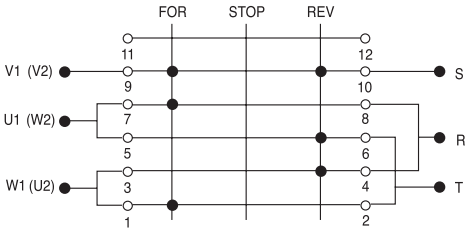
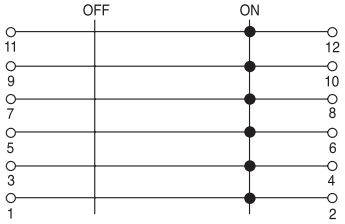
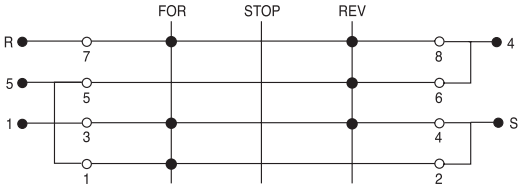
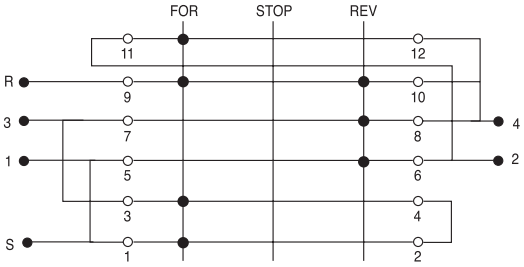
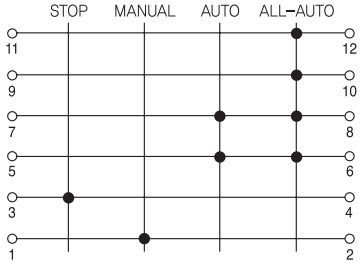
Contact and connecting terminal

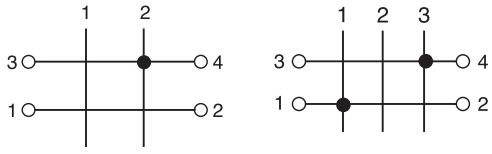
		Standard type (S type)	Round type (C type)
Contact low part		 S-10	C-10
Connecting terminal	Horizontal	S-20	C-20
	Vertical	S-30	C-30

Standard types

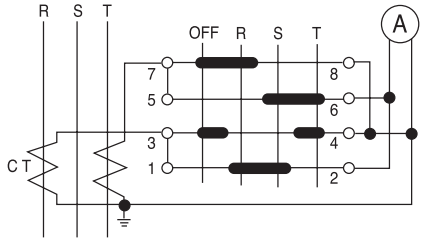
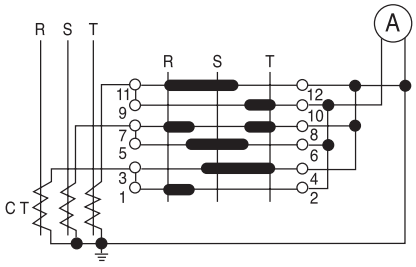
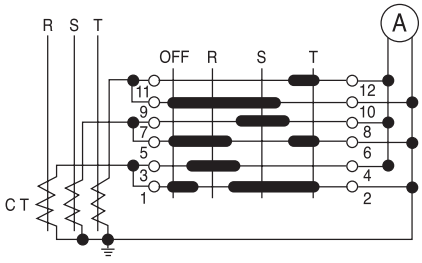
■ Industrial switch

Model and usage	Appearance	Standard circuit diagram
HY-148R (4P, 8P FOR, REV Polarity changing switch)		
HY-148P (4P, 8P Polarity changing switch)		

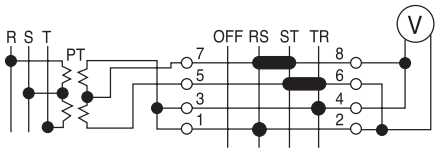
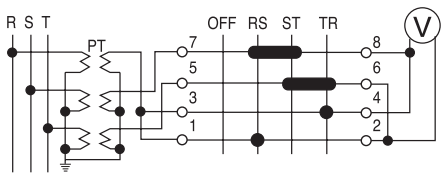
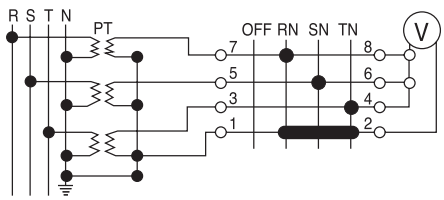
Model and usage	Appearance	Standard circuit diagram
HY-140R (4P FOR, REV switch)		
HY-140P (ON/OFF switch)		
HY-124A (Single phase 4P FOR, REV switch)		
HY-124B (Single phase 4P FOR, REV switch)		
HY-430S (Operation selecting switch)		

Model and usage	Appearance	Standard circuit diagram
HY-255SH2103(Ø25) HY-305SH2103(Ø30) (Selector switch)		 2 Positions 3 Positions

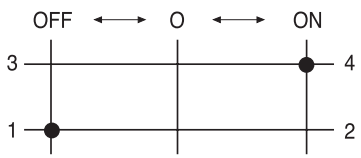
■ Ammeter circuit (A.S)

Model and usage	Appearance	Standard circuit diagram
HY-A332 (3P 3W 2 C.T)		
HY-A333 (3P 3W 3 C.T)		
HY-A343 (3P 3W 3 C.T)		

■ Voltmeter circuit (V.S)

Model and usage	Appearance	Standard circuit diagram
HY-V332 (3P 3W 2 P.T)		
HY-V332B (3P 3W 3 P.T)		
HY-V343 (3P 4W 3 P.T)		

■ Circuit Breaker Control

Model and usage	Appearance	Standard circuit diagram
HY-CS1 (Auto-return type)		
HY-CSL (Handle suspending type)		

HY-MRK

Key cam switch

- Structure is designed to check the contact operation state
- Handle lock function by the key lock device
- Rated electro current 20A, high capacity cap switch
- Switching angle 45˚, 3 positions ~ 8 positions
- Machine tools and various industrial electric installing circuit formation (order made)

Suffix code

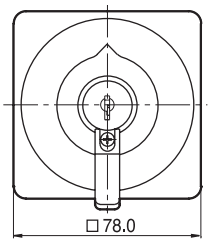
Model	Code				Description
HY-MRK	4	2	0	2	KEY-CAM SWITCH
Contact formation					Labeled the serial number (Refer to the standard circuit diagram)

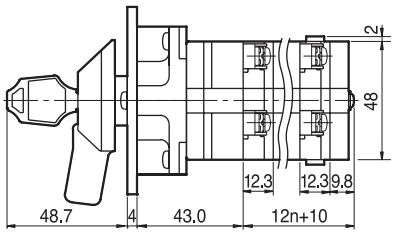
Specification

Rated electro current	20 A 250 V
Insulation resistance	100 MΩ (500 V d.c)
Dielectric strength	2500 V a.c, For 1min
Vibration resistance	Oscillation frequency 16.7 Hz (double amplitude 3 ㎜)
Shock resistance	500 ㎧ (approx. 50 g)
Opening/closing frequency	600 times / hour (temporal use)
Mechanical life expectancy	Above 500 thousand times
Electrical life expectancy	Above 200 thousand times
Ambient temperature	-20 ~ 50 ℃
Ambient humidity	45 ~ 85 % R.H.
Material	Front side : AL Die casting, contact part : RESIN

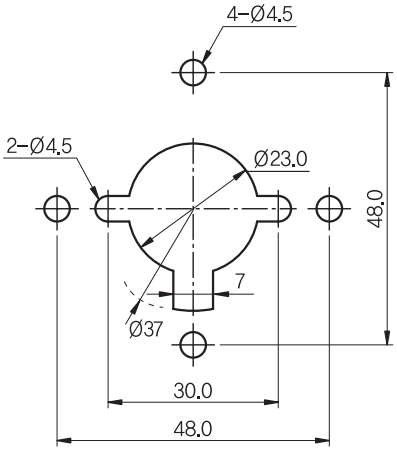
Dimension and panel cutout (unit : ㎜)

■ Dimension





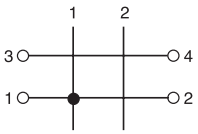
■ Panel cutout



Cam switch standard circuit diagram

■ Example of standard circuit diagram) HY- 2 1 0 1

Position Row Serial number



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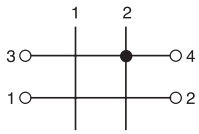

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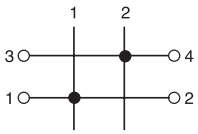

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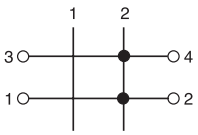

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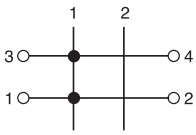

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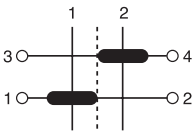

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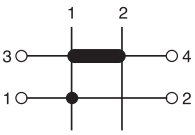

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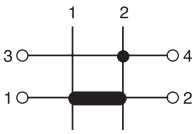

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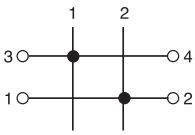

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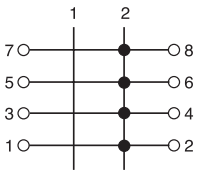

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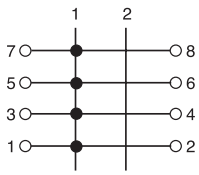

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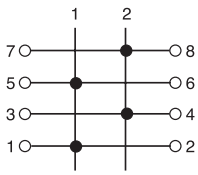

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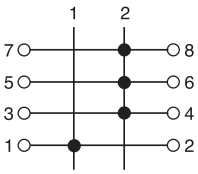

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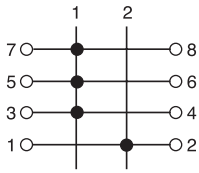

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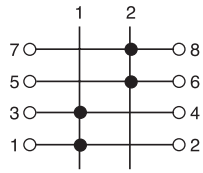

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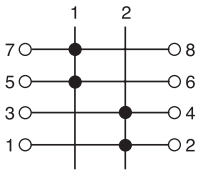

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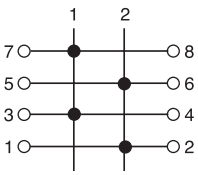

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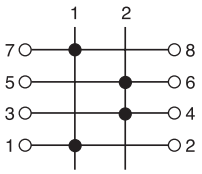

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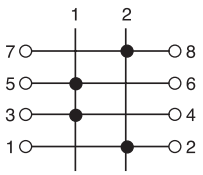

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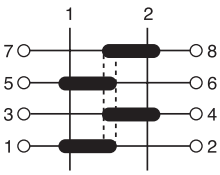

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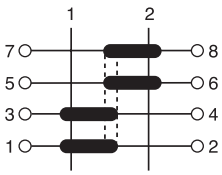

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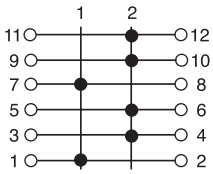

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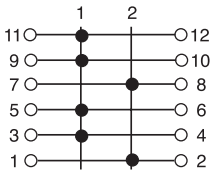

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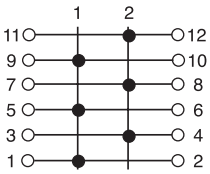

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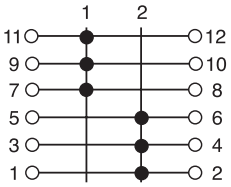

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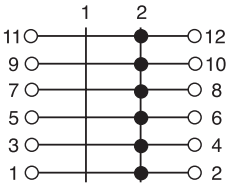

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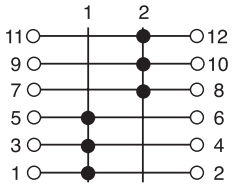

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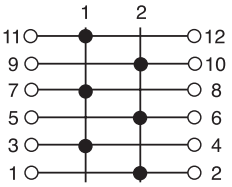

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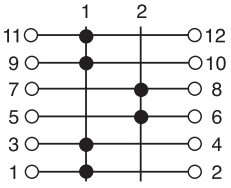

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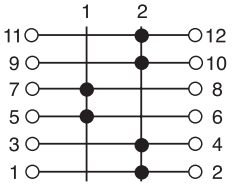

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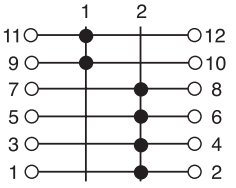

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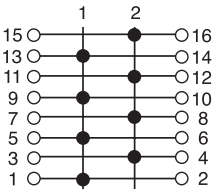

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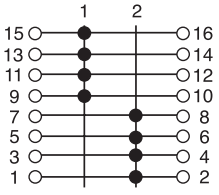

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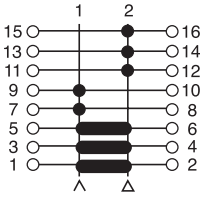

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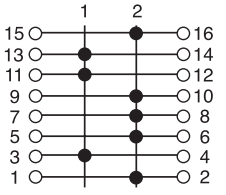

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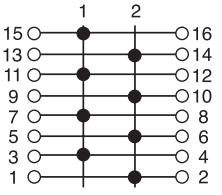

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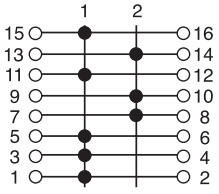

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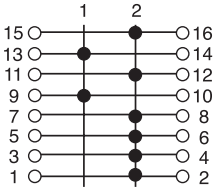

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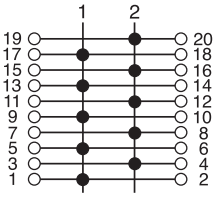

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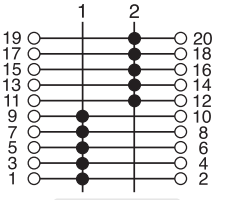

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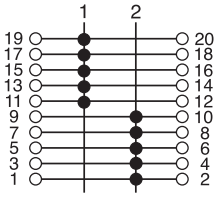

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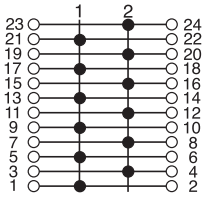

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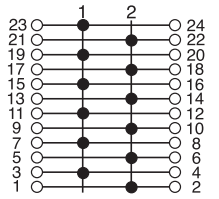

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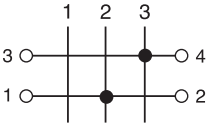

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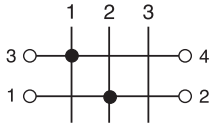

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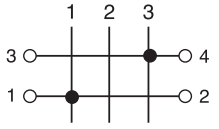

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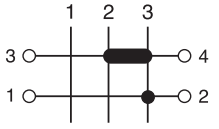

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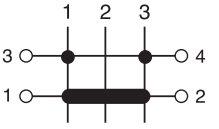

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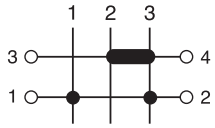
Cam switch standard circuit diagram



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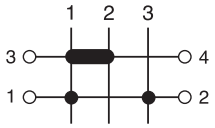

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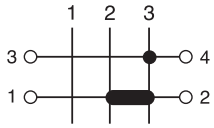

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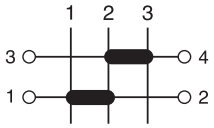

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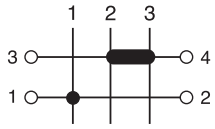

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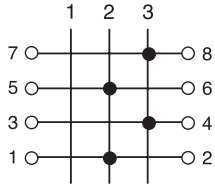

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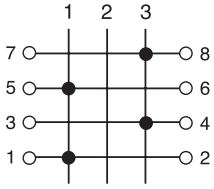

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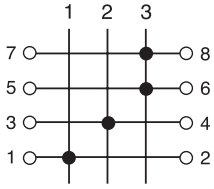

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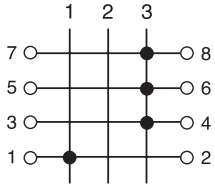

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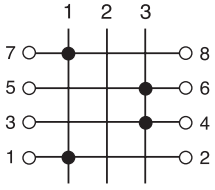

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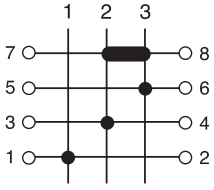

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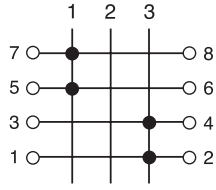

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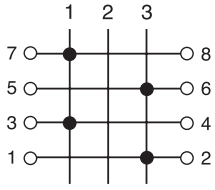

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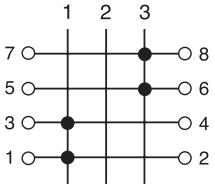

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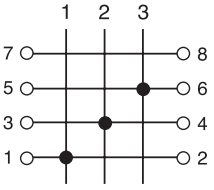

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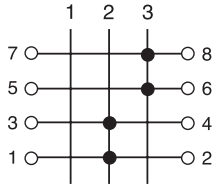

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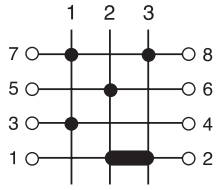

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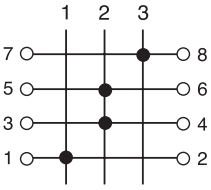

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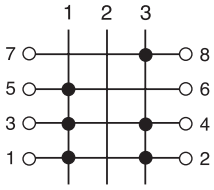

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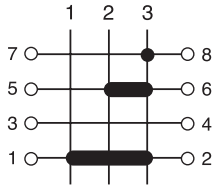

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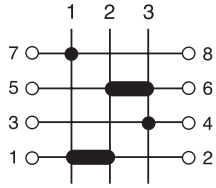

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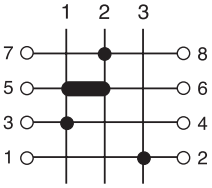

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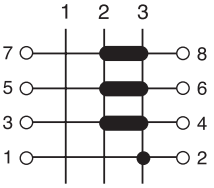

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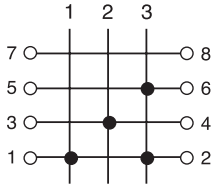

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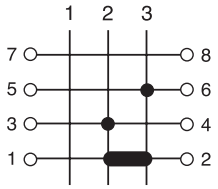

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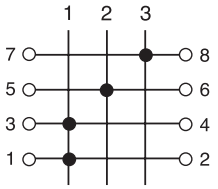

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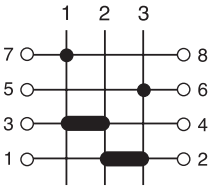

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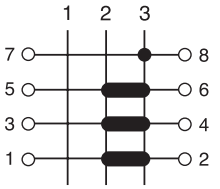

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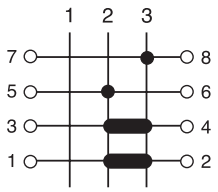

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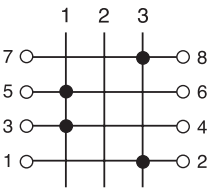

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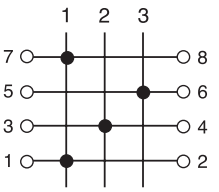

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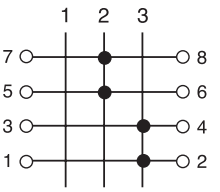

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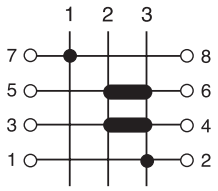

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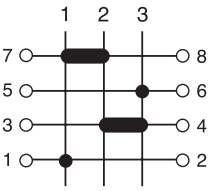

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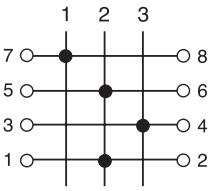

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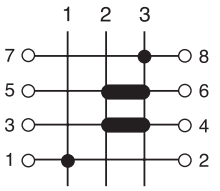

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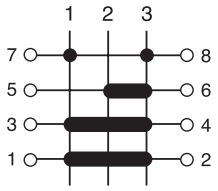

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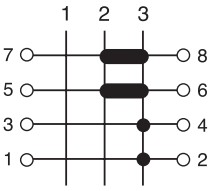

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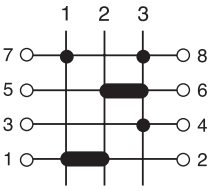

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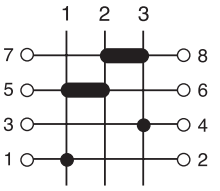

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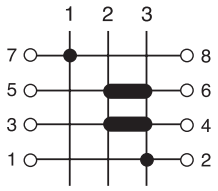

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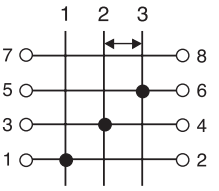

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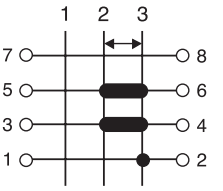

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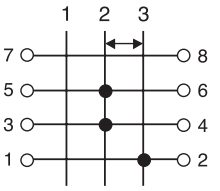

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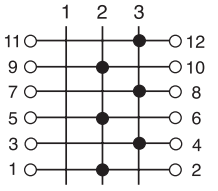

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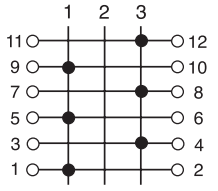

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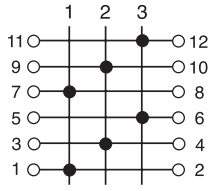

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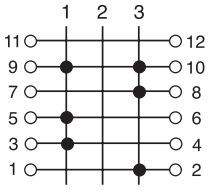

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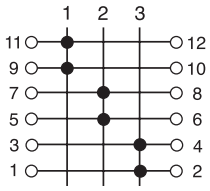
Cam switch standard circuit diagram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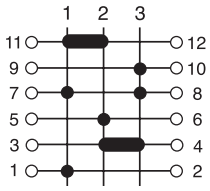
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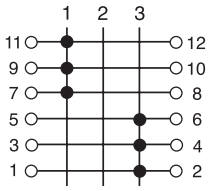
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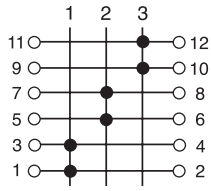
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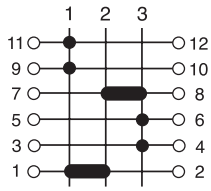
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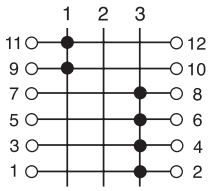
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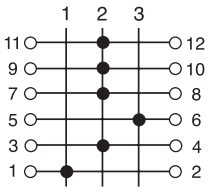
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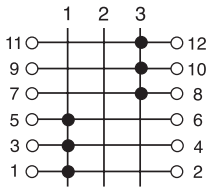
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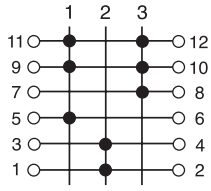
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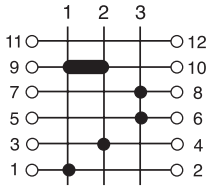
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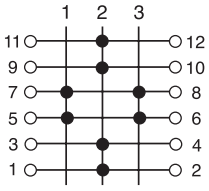
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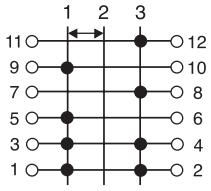
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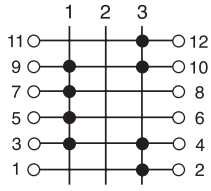
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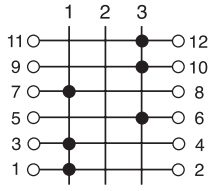
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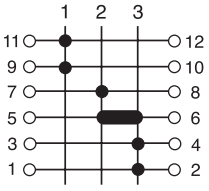
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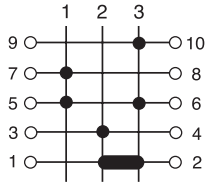
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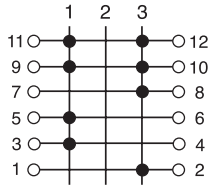
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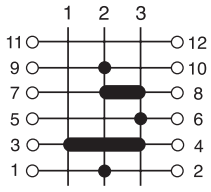
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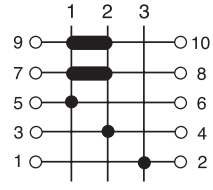
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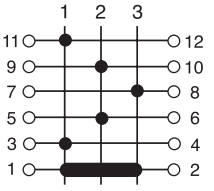
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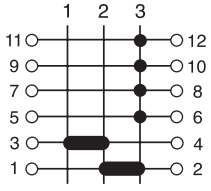
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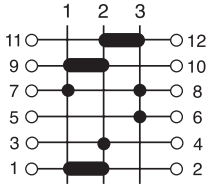
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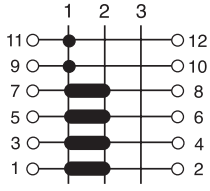
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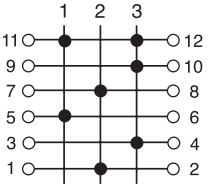
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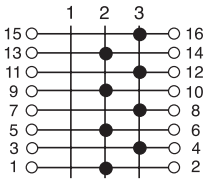

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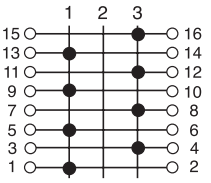

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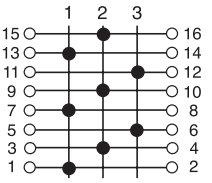

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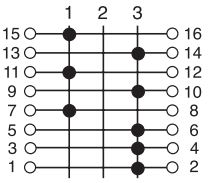

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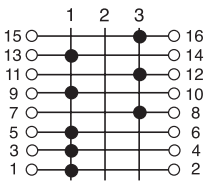

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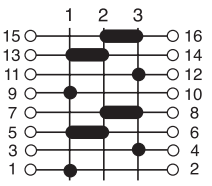

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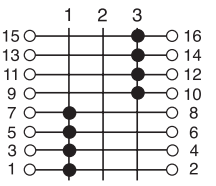

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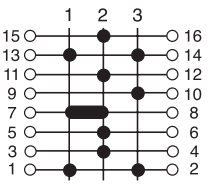

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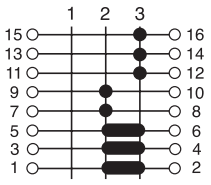

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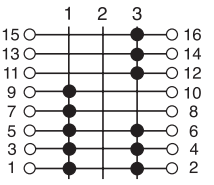

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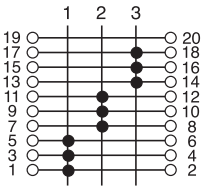

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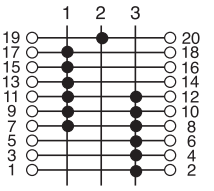

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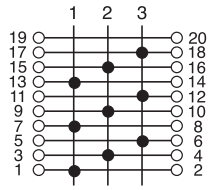

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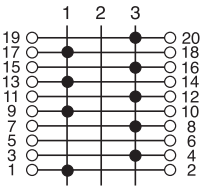

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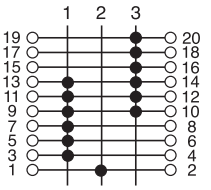

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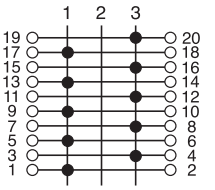

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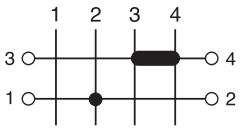

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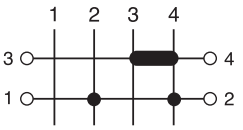

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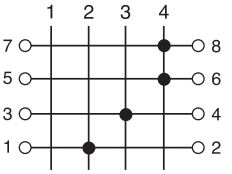

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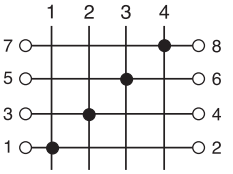

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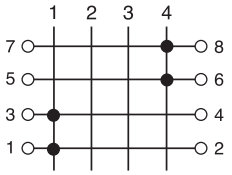

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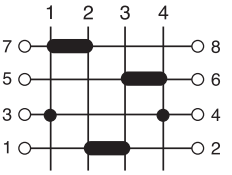

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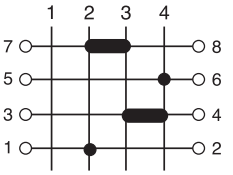

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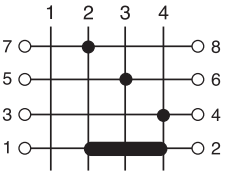
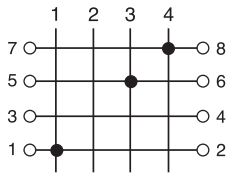


HY-4206

Cam switch standard circuit diagram



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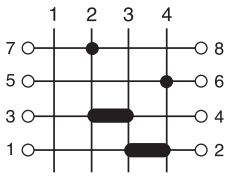

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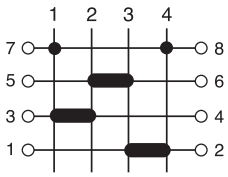

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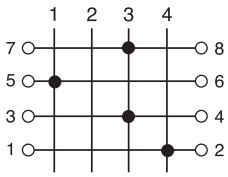

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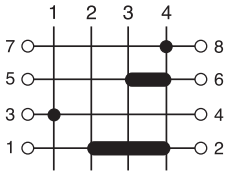

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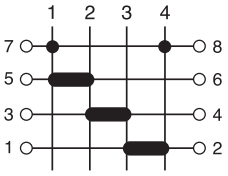

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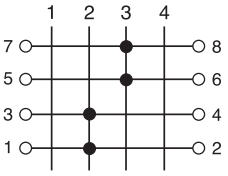

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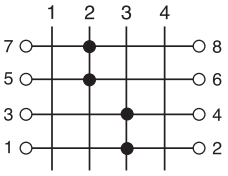

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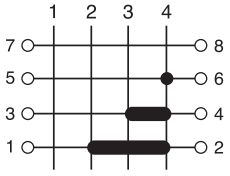

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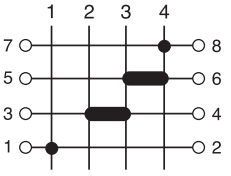

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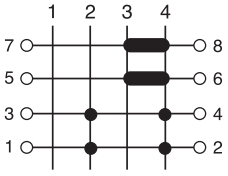

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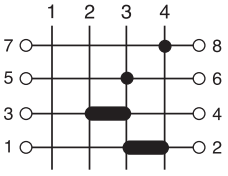

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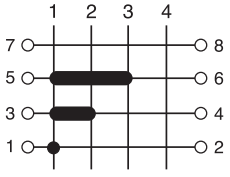

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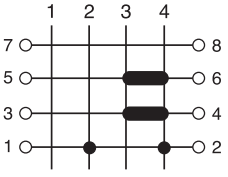

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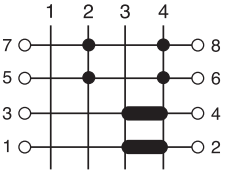

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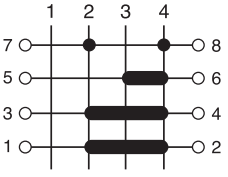

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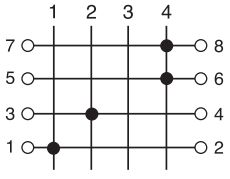

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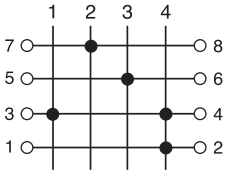

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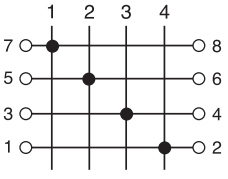

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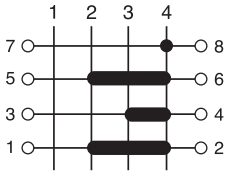

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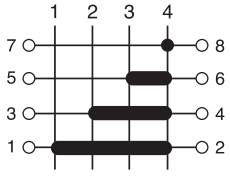

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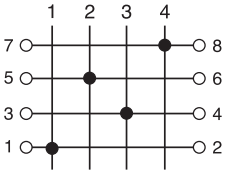

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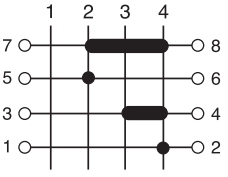

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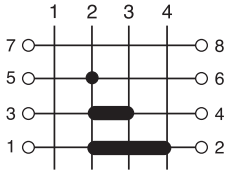

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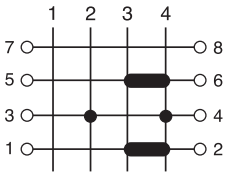

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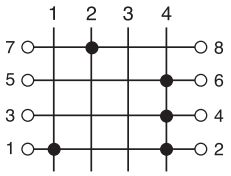

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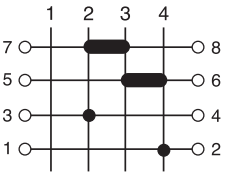

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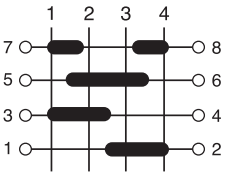

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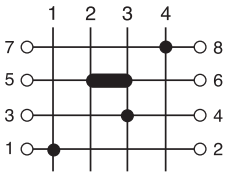

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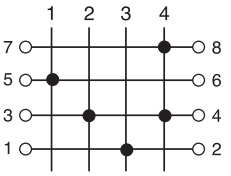

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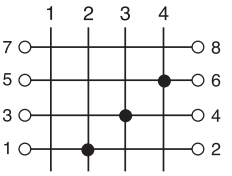

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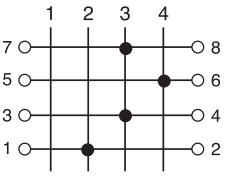

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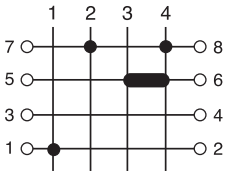

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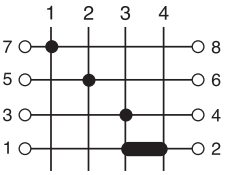

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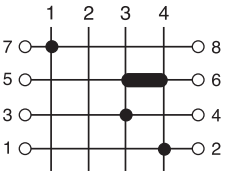

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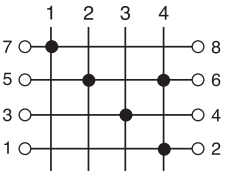

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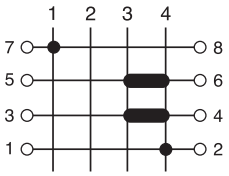

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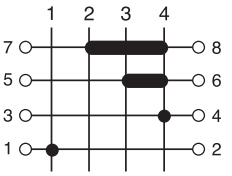

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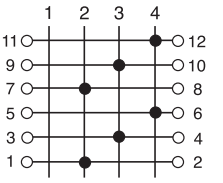

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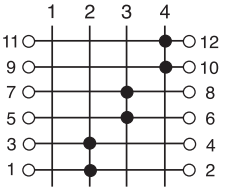

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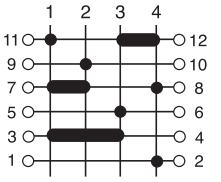

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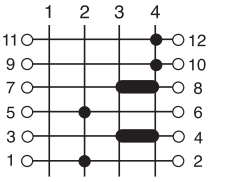

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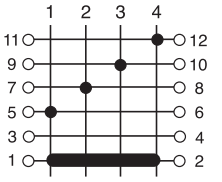

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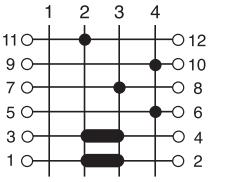

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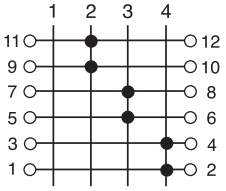

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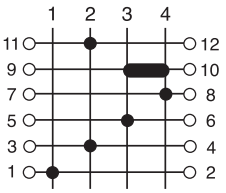

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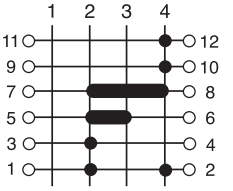

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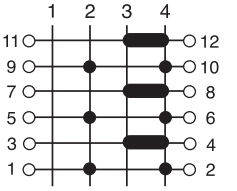

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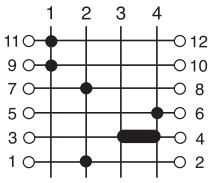
Cam switch standard circuit diagram



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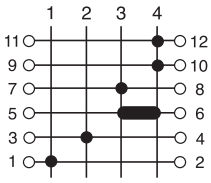

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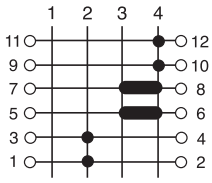

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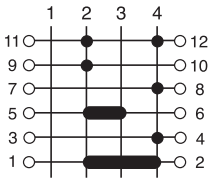

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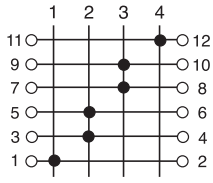

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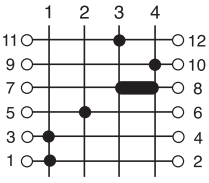

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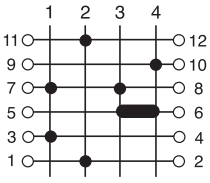

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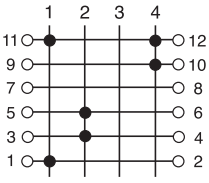

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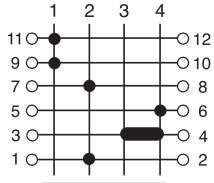

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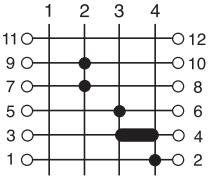

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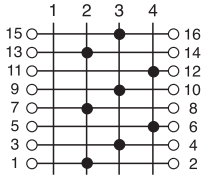

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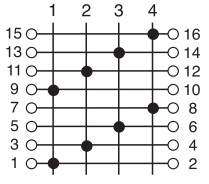

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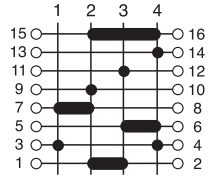

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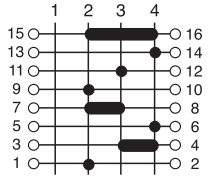

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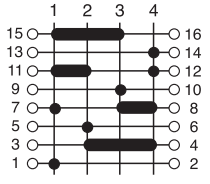

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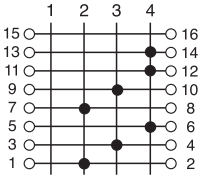

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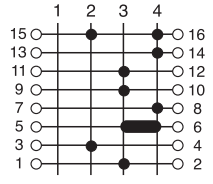

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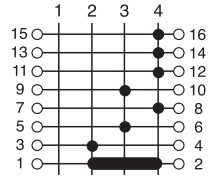

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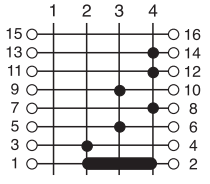

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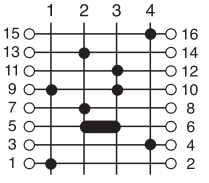

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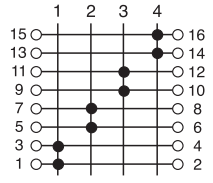

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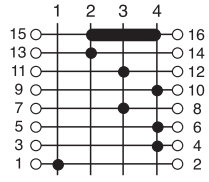

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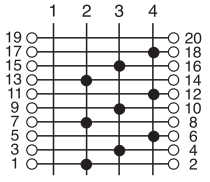

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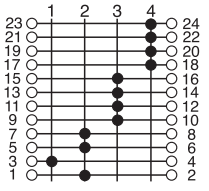

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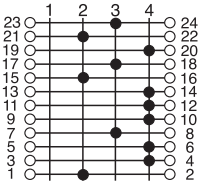

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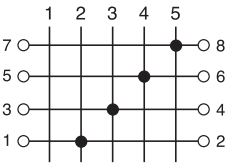

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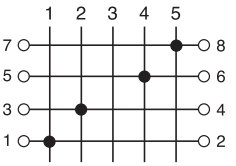

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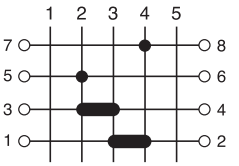

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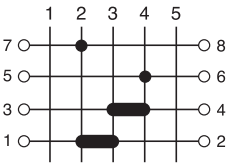

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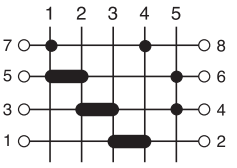

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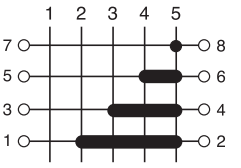

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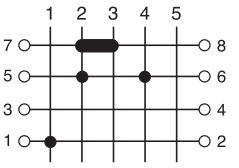

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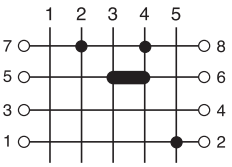

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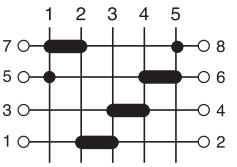

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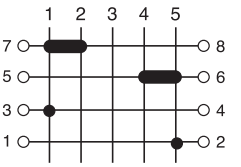

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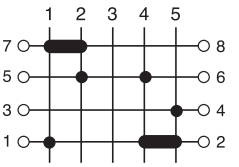

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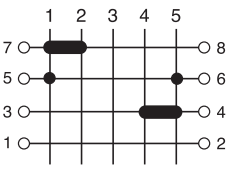

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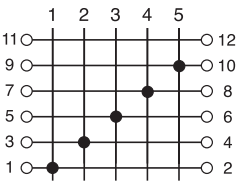

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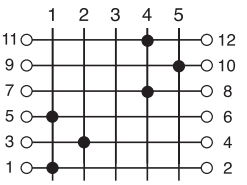

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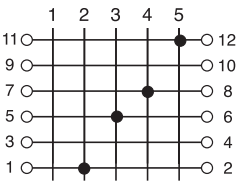

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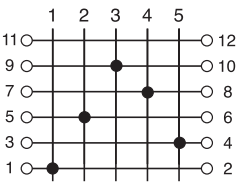

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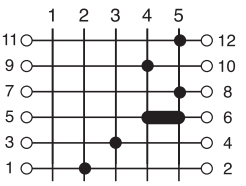

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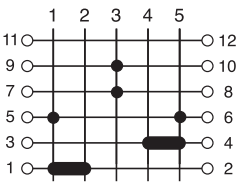

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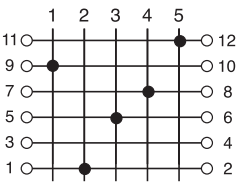

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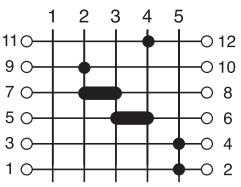

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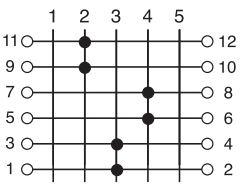

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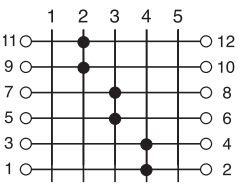

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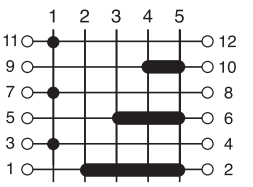

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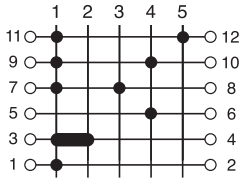
Cam switch standard circuit diagram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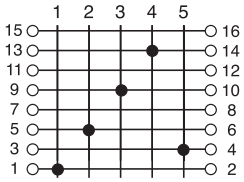
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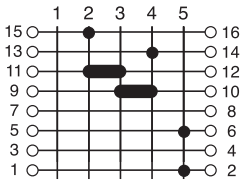
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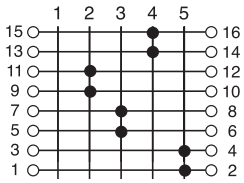
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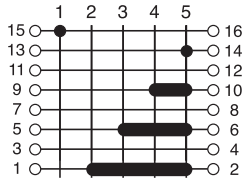
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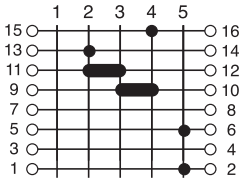
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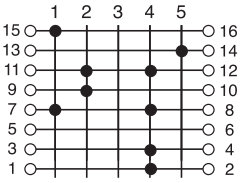
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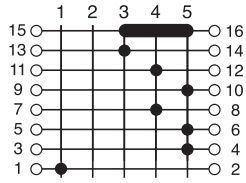
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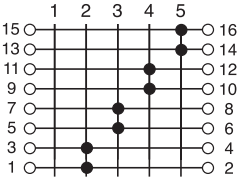
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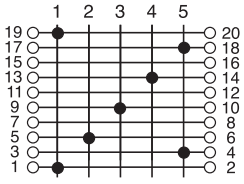
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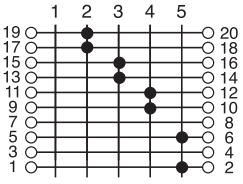
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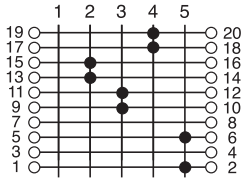
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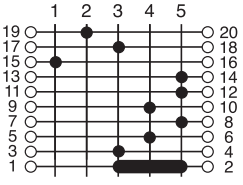
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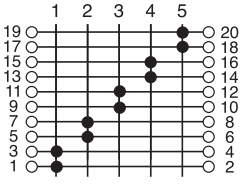
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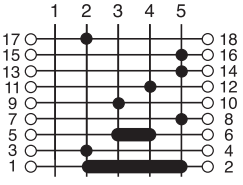
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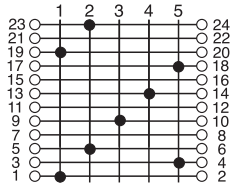
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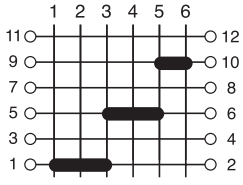
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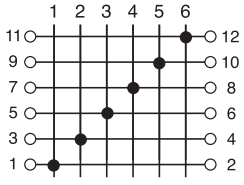
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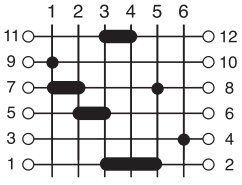
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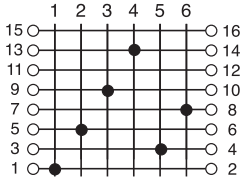
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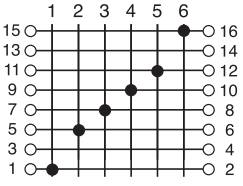
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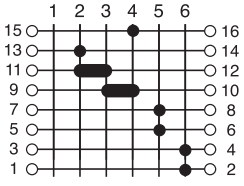
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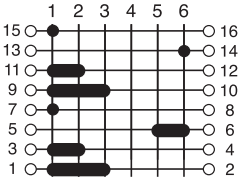
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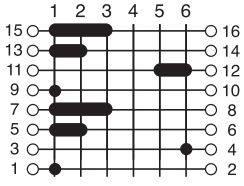
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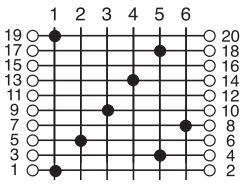

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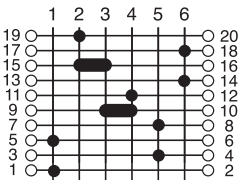

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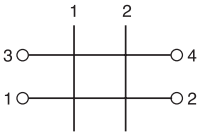

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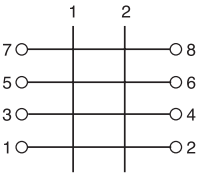

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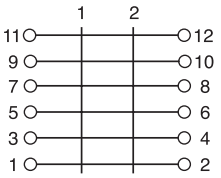

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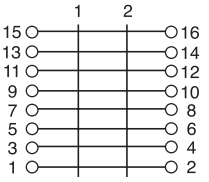

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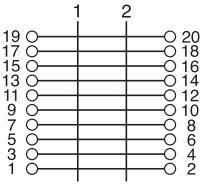

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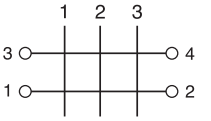

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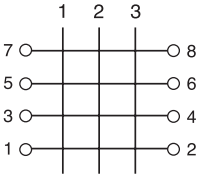

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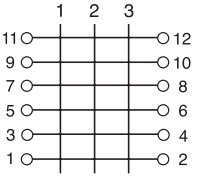

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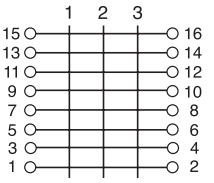

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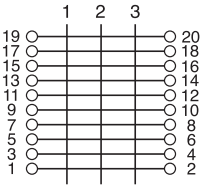

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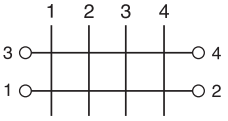

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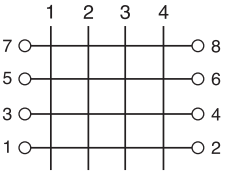

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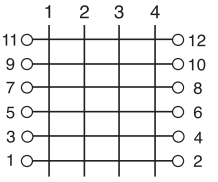

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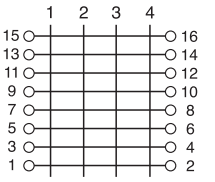

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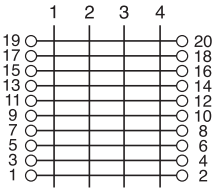

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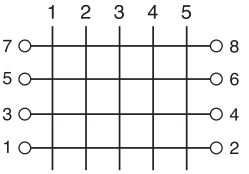

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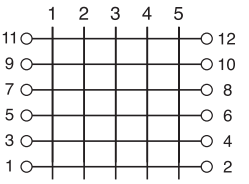

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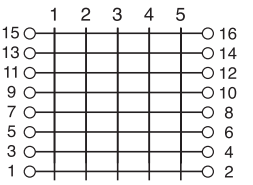

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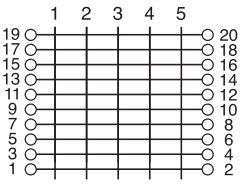

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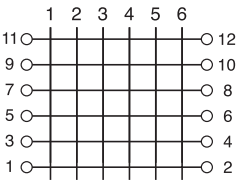

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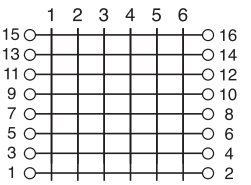

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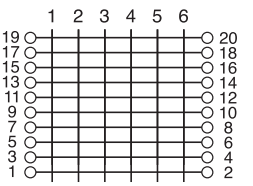


HY-

C Limit switch Micro switch

Summary of Limit switch and micro switch ------ 162
Limit switch (HY-M900 / HY-LM900 series) ------ 167
Limit switch (HY-LS800 series) ---------- 174
Compact limit switch (HY-L800 series) ---------- 178
Limit switch (ZCN-500 series) ---------- 183
Micro switch (HY-700 series) ---------- 187

Summary of Limit switch and Micro switch

Terminology explanation

■ Micro switch

It has a small contact gap and snap action tool. Also the contact tools that open/close with the rated movement and rated force are covered with the case and have an actuator on the outside. This is a compact size switch.

■ Limit switch

Limit Switch is enclosed in a case to protect a built-in basic switch from the external force, water, oil, gas, and dust.

■ Rating

Value that insures the characteristic and function of limit switch

■ Operation part

Mechanical device part that operates the actuator of limit switch

■ Inverting spring

Inverting spring is mechanical parts that switch the contact of limit switch. Sometimes called as running spring

■ Detecting object

The object, product, part and etc that operate the limit switch other than mechanical device.

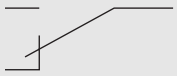
■ Actuator

The part of a switch that is subjected to an external force, transfers that force to an internal spring mechanism and moves contacts to perform switching. It is normally called as pushbutton or lever.

■ Contact composition

Depending on the various usages, it forms electrical input/output circuit of contact.
There are 2 types in the limit switch just like an image below.

• SPDT (C contact)



• 2 circuit double positions(1a1b)

Summary of Limit switch and micro switch

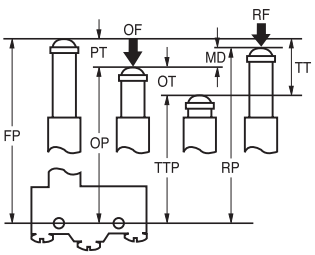
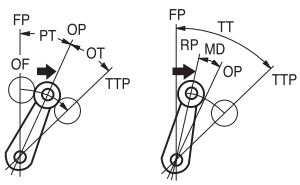
■ Mechanical life expectancy

Opening/closing life in the non electro state (After setting the rated value with the operation time)

■ Electrical life expectancy

Opening/closing life in the rated load (resistive load) (After setting the rated value with the operation time)

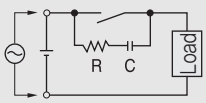
■ Operation characteristic

Definition of operation characteristic	Categories	Terminology	Symbol	Definition
	Force	Operating Force	O.F	Force that applied to the actuator in order to move from free position to the operation switch.
		Release Force	R.F	Force that applied to the actuator in order to move from operation limit position to the returning position
		Total travel Force	T.F	Force that applied to the actuator in order to move from operation position to the operation limit position.
	Movement	Pretravel	P.T	Travel distance or travel angle from free position of actuator to the operation position.
		Over travel	O.T	Travel distance or travel angle from operation position of actuator to the operation limit position.
		Movement Differential	M.D	Travel distance or travel angle from operation position of actuator to the returning position.
		Total travel	T.T	Travel distance or travel angle from free position of actuator to the operation limit position.
	Position	Free Position	F.P	the position of actuator before applying force to the actuator from the outside
		Operating Position	O.P	the position of actuator when running contact is accurately reversed in the free position state once external force is applied to the actuator.
		Release Position	R.P	the position of actuator when running contact is accurately reversed from operation position state to the free position state by decreasing force applied to the actuator
		Total travel Position	T.T.P	the position of actuator when actuator reaches the actuator stopper.

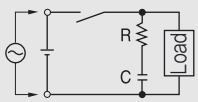
Precautions

■ Electrical precautions

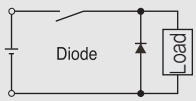
• In the inductive load opening / closing circuit, there are cases when contact impairment occurs within the contact due to the surge and inrush current. Therefore, we recommend inserting the protective circuit just like an image provided in the below for the contact protection.



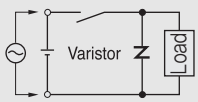
Usually applied when using d.c. R requires a lot of ohms. When using as an a.c, load capacity has to be small.
R : 10 Ω ~ 100 Ω
C : 0.05 ~ 0.1 ㎌



d.c and a.c both possible.
R : 10 Ω
C : 0.1 ~ 0.2 ㎌



Only a.c is possible. Please select the diode that can withstand reverse internal pressure sufficiently.

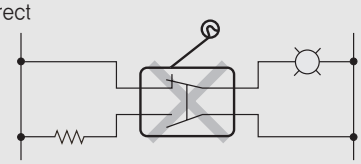


d.c and a.c both possible. Please select the Varistor 1.5 times bigger than power supply voltage.

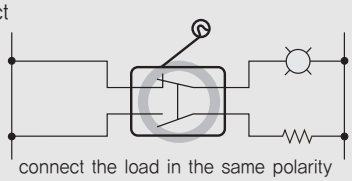
• Please do not connect different polarities from each other and different power from each other. Please do not design the circuit where a difference of voltage exists between contacts, otherwise it may result the contact welding.

Connection of different polarities from each other

Incorrect



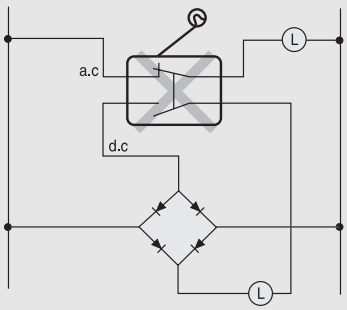
Correct



connect the load in the same polarity

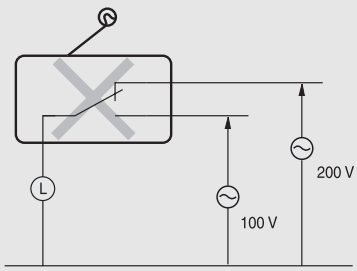
Connection of different power voltages from each other

Incorrect



Voltage trapped in between the contacts

Incorrect



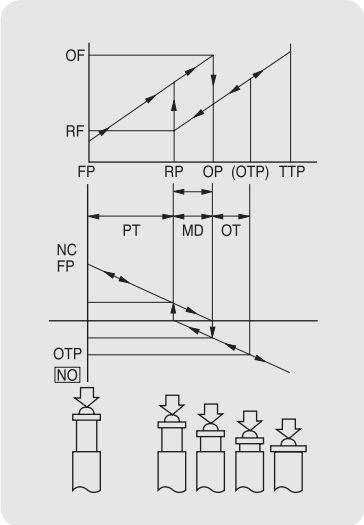
Incorrect: using the switch electrical circuit (low voltage, low current)

Summary of Limit switch and Micro switch

- If bouncing or chattering of the contacts results and causes problems, take the following countermeasures. Insert an integral circuit and suppress the generation of pulse from the contact bouncing or chattering of the contacts so that it is less than the noise margin of the load.

■ Mechanical precautions

- The following graph indicates the relationship between operating force and stroke or stroke and contact force. In order to operate the Limit Switch with high reliability, it is necessary to use the Limit Switch within an appropriate contact force range. If the Limit Switch is used in a normally closed condition, the dog must be installed so that the actuator will return to the FP when the actuator is actuated by the dog. If the Limit Switch is used in a normally open condition, press the actuator to roughly 70% to 100% of the value specified for the OT (i.e., 60% to 80% of the TT).
- If the full stroke is set close to the OP or RP, it may result the contact instability, and it may not be possible to maintain high reliability. Incorrect operation will be easily occurred due to the vibration or shock. If the full stroke is set to the TTP, the actuator or switch may be damaged due to the inertia of the dog. Therefore, adjust the stroke with the mounting panel or the dog.



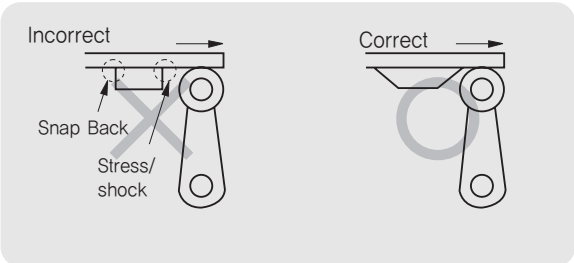
- The following graph shows an example of changes in contact force according to the stroke. The contact force near the OP or RP is unstable, and the Limit Switch cannot maintain high reliability. Furthermore, the Limit Switch cannot withstand the strong vibration or shock.

■ Precautions when selecting

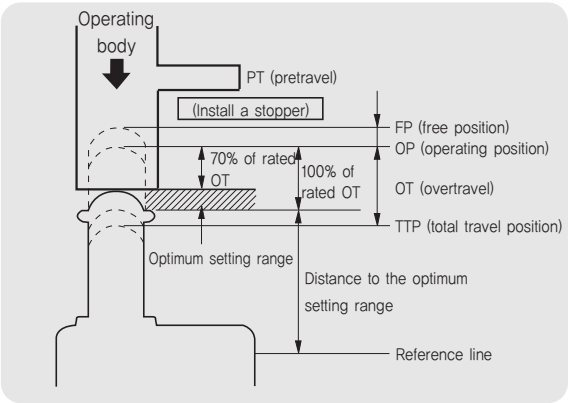
- If the operating speed is extremely low, the switching of the movable contact will become unstable, thus it may result the incorrect contact or contact weld.
- If the operating speed is extremely high, the Switch may break due to shock. If the switching frequency is high, the switching of the contacts cannot catch up with the switching frequency.

■ Precautions with the operation

- Carefully determine the position and shape of the dog or cam so that the actuator will not abruptly snap back, thus causing shock. In order to operate the Limit Switch at a comparatively high speed, use a dog or cam that keeps the Limit Switch turned ON for a sufficient time so that the relay or valve will be sufficiently energized. The method of operation, the shape of the cam or dog, the operating frequency, and the travel after operation have a large influence on the durability and operating accuracy of the Limit Switch. The cam or dog must be smooth considering the shape.



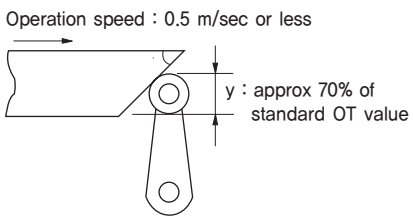
- Make sure that the actuator does not exceed the OT (overtravel) range, otherwise the Limit Switch may result the malfunction occurrence. (Cam stroke OT: 70~100%) When mounting the Limit Switch, be sure to adjust the Limit Switch carefully while considering the total movement of the actuator.

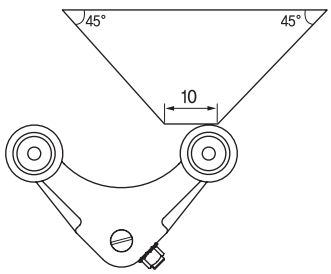


- Be sure to use the Limit Switch according to the characteristics of the actuator.
  If a roller arm lever actuator is used, do not attempt to actuate the Limit Switch in the direction shown in below.

Dog design

- Before designing a dog, carefully consider the operating speed and angle of the dog and their relationship with the shape of the actuator. The optimum operating speed (V) of a standard dog at an angle of 30 ℃ to 45 ℃ is 0.5 m/s maximum.





HY-M900 / HY-LM900 series

Limit switch

- Solid die casting case and built in the 2 circuits double micro switch
- High mechanical intensity with the heat resistance, oil proof and dust protection structure
- Various actuators (8 types) provide wide application
- IP67 protective structure (when using the company product HYC-M1 in wire opening)
- Check the operation state on the outside by attaching the operation indicator.

Suffix code

Model	Code		Description
HY-M90	□	□	Limit switch (No operation indicator)
HY-LM90			Limit switch (Operation indicator attachment type)
Actuator (operation part)	2		Roller Plunger Type
	3		Ball Plunger Type
	4		Roller Adjustable Lever Type
	7		Adjustable Rod Wire Type
	8		Roller Lever Type
	8L		Fork Roller Lever
	8R		Ø50 Roller Lever Type
	9		Coil Spring Type
Operation indicator classification (HY-LM90□□)			No operation indicator
		A	a.c indicator attachment type
		D	d.c indicator attachment type

Operation indicator attachment type classification

- M900 series limit switch is generally composed of the product with operation indicator and without operation indicator. Also divided into the a.c type and d.c type operation indicator.
- It can be used as an operation indicator just by changing the cover of limit switch. It does not need the separate connection and it selects ON/OFF by rotating the holder 180 degree.

Voltage	a.c operation indicator (250 V a.c)	d.c operation indicator (24 V d.c)
Model	HY-LM90□A (a.c)	HY-LM90□D (d.c)
Indicator type	Neon lamp	L.E.D
Leakage current	approx 1.2 ㎃ (250 V a.c)	approx 1.0 ㎃ (24 V d.c)

Ratings

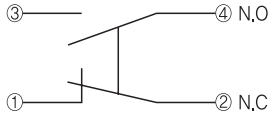
Rated voltage		Rated electro current (A)			
		Resistive load	Inductive load	electric motor load	
				N.C	N.O
a.c	125 V	15	10	3	1.5
	250 V	10	6	2	1
	480 V	3	2	1.5	0.75
d.c	8 V	15	10	–	–
	14 V	15	10	–	–
	30 V	6	5	–	–
	125 V	0.4	0.05	–	–
	250 V	0.2	0.03	–	–

※ In case of electric magnetic coil and incandescent lamp load then it is same as the electric motor load.

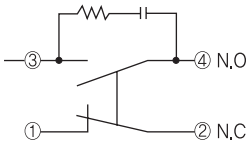
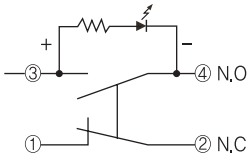
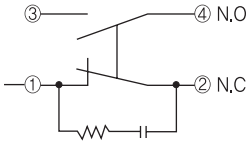
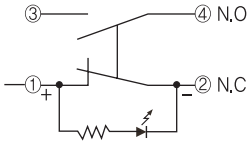
Specification

Contact structure		M4 screw tightening terminal, 2 circuits double type (1a1b)
Contact material		AgNi
Protective structure		IP67 (Only when using our company product HYC-M2 in the wire opening)
Operation indicator		a.c : Neon lamp, d.c : LED (only with the HY-LM series)
Rated current(Ie)		6 A 250 V a.c (AC-15, DC-13)
Dielectric strength		2,000 V a.c 50/60 ㎐ for 1 min (between the terminal and non-recharing metal part)
Insulation resistance		Min 100 ㏁ (500 V d.c insulated ohmmeter)
Contact resistance		Max 50 ㏁ (default value)
Rated voltage(Ue)		250 V a.c, 30 V d.c
Actuator intensity		5 times larger than O.F (force required to operate) 1min to the, operating direction
Vibration		Double amplitude 1.5mm, frequency 10 ~ 55 ㎐, continuously 2 hour
Shock		1,000 ㎧ (durability), 300 ㎧ (malfunction)
Allowable operation speed		0.1 ~ 1 ㎧ (without damaging the actuator)
Life expectancy	Mechanical	Min 1million times (open/close frequency 120 times/min)
	Electrical	Min 300 thousand times (open/close frequency 20 times/min)
Ambient temperature		-10 ~ 70 ℃
Ambient humidity		45 ~ 95 % R.H.
Weight		Approx 350 g (included the box with HY-M904)

Built in type micro switch

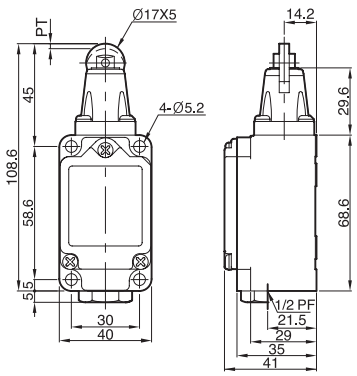
Appearance (LS-10)	Connection diagram
	

Cover for operation indicator and internal connection diagram

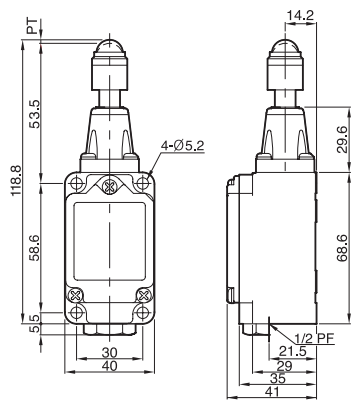
a.c	d.c
L.ON when Normal close (default) 	L.ON when Normal close (default) 
L.ON when Push 	L.ON when Push 

Dimension (unit : ㎜)

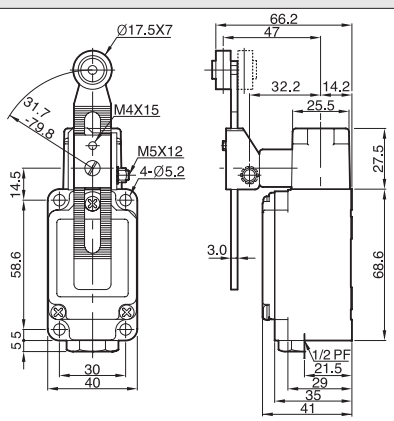
■ Roller Plunger

Appearance	Dimension	Operation characteristic
HY-M902 HY-LM902		O.F max : 28 N (2857 gf) R.F min : 8 N (816 gf) P.T : 2.0 ㎜ M.D max : 1.0 ㎜

■ Ball Plunger

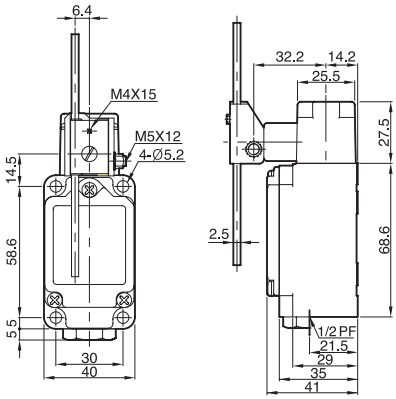
Appearance	Dimension	Operation characteristic
HY-M903 HY-LM903		O.F max : 28 N (2857 gf) R.F min: 8 N (816 gf) P.T : 2.0 ㎜ M.D max : 1.0 ㎜

■ Roller Adjustable Lever

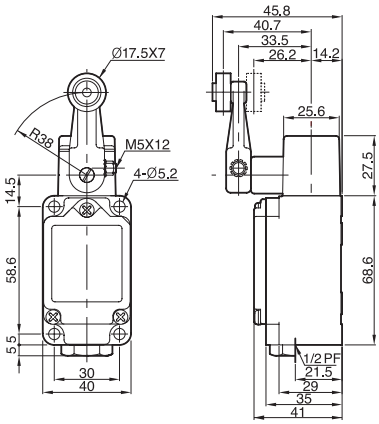
Appearance	Dimension	Operation characteristic
HY-M904 HY-LM904		O.F max : 14 N (1428 gf) R.F min: 2.1 N (214 gf) P.T : 15° ±5° M.D max : 12° T.T : 40°

HY-M900/HY-LM900 series

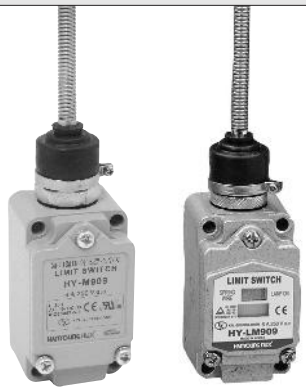
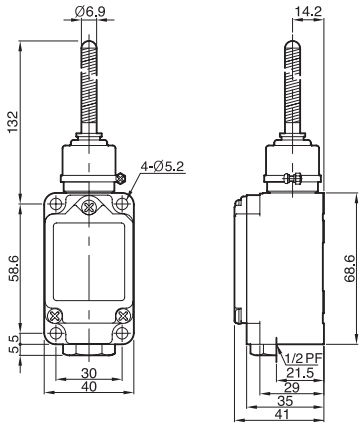
■ Rod Lever

Appearance	Dimension	Operation characteristic
HY-M907 HY-LM907		O.F max : 1.5 N (153 gf) R.F min: 0.25 N (25 gf) P.T : 15° ±5° M.D max : 12° T.T : 40°

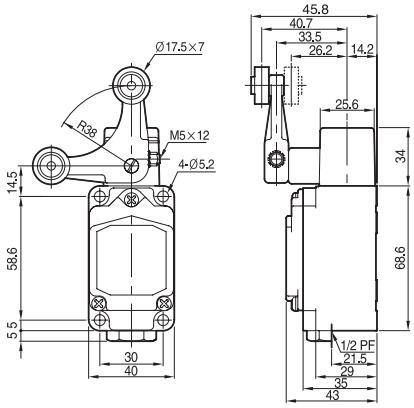
■ Roller Lever

Appearance	Dimension	Operation characteristic
HY-M908 HY-LM908		O.F max : 14 N (1428 gf) R.F min: 2.1 N (214 gf) P.T : 15° ±5° M.D max : 12° T.T : 40°

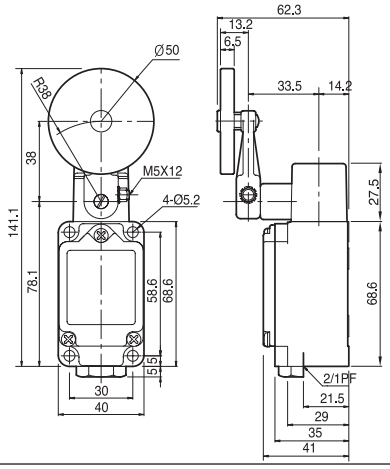
■ Coil Spring

Appearance	Dimension	Operation characteristic
 HY-M909 HY-LM909		O.F max : 1.5 N (153 gf) P.T : 20.0 ±10.0 ㎜

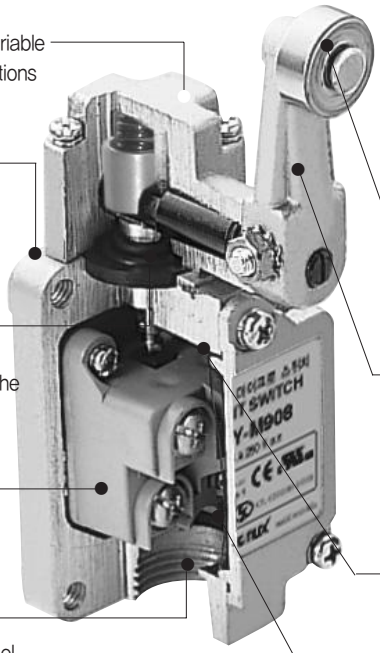
■ Fork Roller Lever

Appearance	Dimension	Operation characteristic
HY-M908L		O.F max : 11.8N(1200gf) P.T : 50° ±5° O.T max : 12° T.T : 90° ±5°

■ Ø50 Roller Lever

Appearance	Dimension	Operation characteristic
HY-M908R		O.F max : 14 N (1428 gf) R.F min: 2.1 N (214 gf) P.T : 15° ±5° M.D max : 12° T.T : 40°

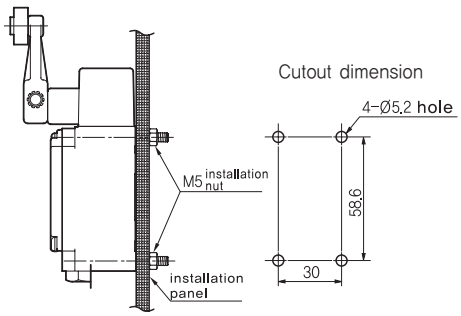
Structure



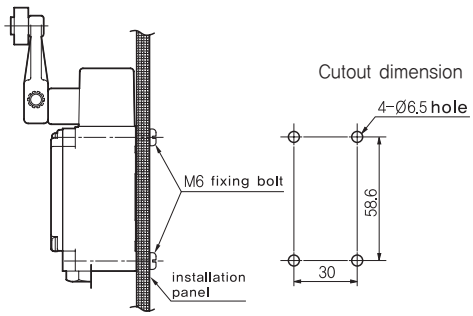
- **Head** : Al die casting roller lever type, variable roller lever type : Attach in any of 4 directions by unloosening 4 screws.
- **Case** : Al die casting, high mechanical durability and has a heat resistance, oil-proof and dust protective structure.
- **Plunger**
  Accurate manufacturing which provides excellent reciprocating motion. It makes the operation of built-in switch very smooth.
- **MICRO S/W**
  long mechanical life expectancy
- **Wire opening**
  Connector screw is PF 1/2 common parallel screw. When using it with our company connector (M1 and M2) then it will be sealed more tightly.
- **Roller**
  Excellent hardness and abrasion resistance
- **Lever** : Al die-casting (M908) variable roller lever type, variable rod type and roller lever type can set the lever position within any position (360 degree)
- **Cover Seal** : O ring. It tightens the cover properly which helps it to seal the area
- **Insulating paper**
  Excellent insulation

Installation method

■ Front installation



■ Back installation



HY-LS800 series

Limit switch

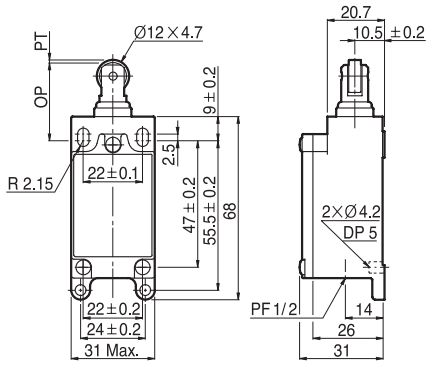
- Compact size and light weight by applying the plastic case
- Plastic case which provides safety regarding the electric leakage
- Various actuators (6 types) provide wide application
- IP54 protective structure (Applied only when using our company connector model HYC-M1 in the wire opening)
- Connector rating of wire opening : 1/2 PF

Specification

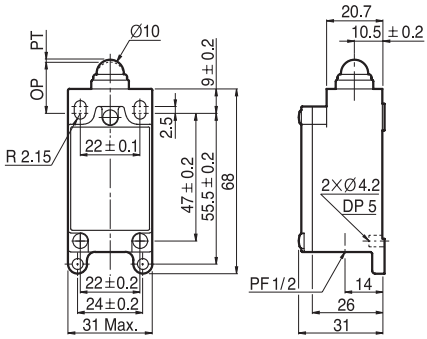
Contact structure		M3 screw tightening terminal, 2 circuits double type (1a1b)
Contact material		AgNi
Protective structure		IP54 (Only when using our company product HYC-M1, M2 in the wire opening)
Rated current(Ie)		6 A 250 V a.c, 4 A 30 V d.c (AC-12, AC-13, AC-15, DC-13)
Dielectric strength		2,000 V a.c 50/60 ㎐ for 1 min (between the terminal and non-recharing metal part)
Insulation resistance		Min 100 ㏁ (500 V d.c insulated ohmmeter)
Contact resistance		Max 25 ㏁ (default value)
Rated voltage(Ue)		250 V a.c, 30 V d.c
Actuator intensity		5 times larger than O.F (required force for the operation), operating direction 1 min
Vibration		Double amplitude 1.5mm, frequency 10 ~ 55 ㎐, continuously 2 hour
Shock		100 ㎧ (durability), 50 ㎧ (malfunction)
Allowable operation speed		0.1 ~ 0.5 ㎧ (without damaging the actuator)
Life expectancy	Mechanical	Min 1 million times (less than open/close frequency 120 times/min)
	Electrical	Min 100 thousand times (less than open/close frequency 30 times/min)
Ambient temperature		-10 ~ 70 ℃
Ambient humidity		45 ~ 95 % R.H.
Weight		Approx 60g (HY-LS803N)

Dimension (unit : ㎜)

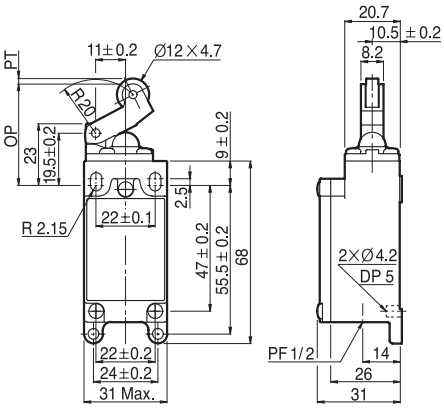
■ Roller Plunger

Appearance	Dimension	Operation characteristic
HY-LS802N		O.F max : 6.37 N (650 gf) R.F min : 1.47 N (150 gf) P.T max : 2.0 ㎜ O.T min : 4.0 ㎜ M.D max : 0.8 ㎜ O.P : 28.2 ±0.8

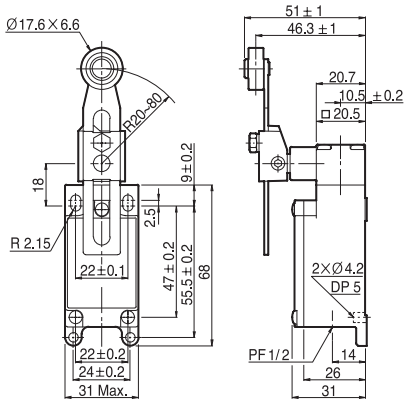
■ Push Plunger

Appearance	Dimension	Operation characteristic
HY-LS803N		O.F max : 6.37 N (650 gf) R.F min : 1.47 N (150 gf) P.T max : 2.0 ㎜ O.T min : 4.0 ㎜ M.D max : 0.8 ㎜ O.P : 18.0 ±0.5

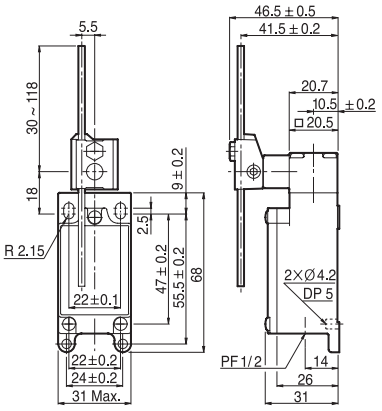
■ Roller Arm

Appearance	Dimension	Operation characteristic
HY-LS803RN		O.F max : 3.92 N (400 gf) R.F min : 0.78 N (80 gf) P.T max : 4.0 ㎜ O.T min : 5.0 ㎜ M.D max : 1.5 ㎜ O.P : 37.0 ±0.8

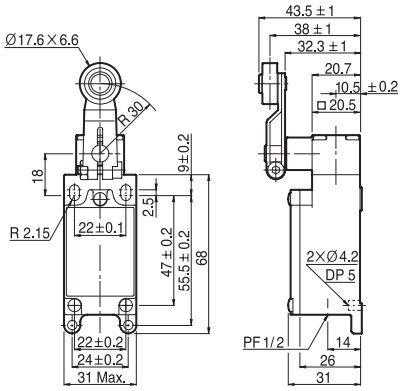
■ Roller Adjustable Lever

Appearance	Dimension	Operation characteristic
HY-LS804N		O.F max : 4.21 N (430 gf) R.F min : 0.42 N (43 gf) P.T max : 18˚ ~ 27˚ O.T min : 30˚ M.D max : 14˚

■ Adjustable Rod Lever

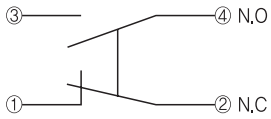
Appearance	Dimension	Operation characteristic
HY-LS807N		O.F max : 4.21 N (430 gf) R.F min : 0.42 N (43 gf) P.T max : 18˚ ~ 27˚ O.T min : 30˚ M.D max : 14˚

■ Roller Lever

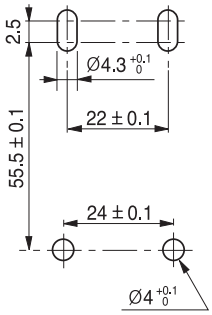
Appearance	Dimension	Operation characteristic
HY-LS808N		O.F max : 4.9 N (500 gf) R.F min : 0.49 N (50 gf) P.T max : 18˚ ~ 27˚ O.T min : 30˚ M.D max : 14˚

Structure

Switch connection diagram (external case one body type)

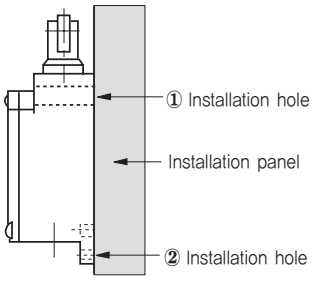


Panel cutout (unit : ㎜)



Proper using instruction

- In order to prevent the looseness when it is mounted, it is ok to use washer and mount it with 5 ~ 7 N · m torque.
- There are 2 installing holes (Ø4 ~ 4.8) in order to mount the switch solidly and when mounting it, please fix it with the installing holes ① and ②.
- Please connect the lead wire to the terminal directly or connect the pressing terminal with the 5~6 N · m torque.
- Avoid the places where temperature is high, various kinds of dust exist and possible leakage of organic gas.
- Please ask us if you are going to use it in the place where it needs the corrosiveness cold/hot cycle and long period hot resistance.
- Please ask us if you are going to change the direction of head (LS803RN, LS804N, LS807N, LS808N)



HY-L800 series

Mini limit switch

- Less installation space due to the compact size
- Zinc die-casting body and plastic cover structure provide electrical safeties
- 4 types of actuators provide wide usages
- Able to install at the front side and back side
- Simple connecting because when open the cover, the terminal part is exposed to the front side.
- Applied to the machine tools, transportation machine, assembling line and various industrial machines

Suffix code

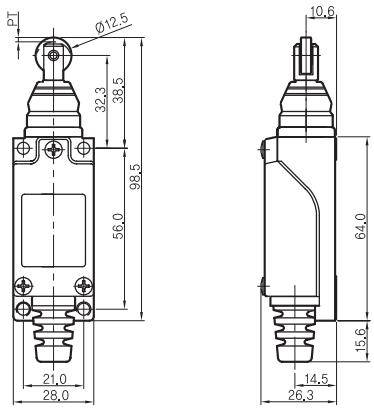
Model	Code	Description
HY-L80	□	Compact limit switch (HY-L800 series)
Actuator (operation part)	2	Roller Plunger type
	2C	Cross Roller Plunger type
	3	Top Plunger type
	4	Roller Adjustable Lever type
	7	Adjustable Rod Lever type
	8	Roller Lever type
	9	Coil Spring type

Specification

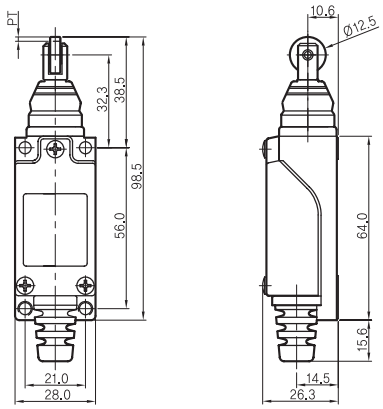
Contact structure		M3 screw tightening terminal, 2 circuits double type (1a1b)
Contact material		AgNi
Protective structure		IP 54
Rated current(Ie)		6 A 250 V a.c (AC-12, AC-13)
Dielectric strength		2,000 V a.c 50/60 ㎐ for 1 min (between the terminal and non-recharging metal part)
Insulation resistance		Min 100 ㏁ (500 V d.c insulated ohmmeter)
Contact resistance		Max 20 ㏁ (default value)
Rated voltage(Ue)		250 V a.c
Case material		Zinc die-casting and plastic body and plastic cover
Vibration		Double amplitude 1.5 mm, frequency 10 ~ 55 ㎐, continuously 2 hour
Shock		300 ㎧ (durability), 100 ㎧ (malfunction)
Max opening/closing frequency		Max 120 times / min
Life expectancy	Mechanical	Min 1 million times (less than open / close frequency 120 times/min)
	Electrical	Min 100 thousand times (less than open / close frequency 30 times/min)
Ambient temperature		-10 ~ 70 ℃
Ambient humidity		45 ~ 95 % R.H.
Weight		Approx 157g (HY-LS804 standard)

Dimension (unit : ㎜)

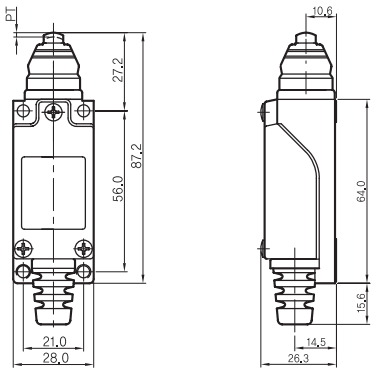
■ Roller Plunger type

Appearance	Dimension	Operation characteristic
HY-L802		O.F max : 8.83 N (900 gf) R.F min : 1.47 N (150 gf) P.T max : 1.5 ㎜ O.T min : 2.5 ㎜ M.D max : 0.8 ㎜ TTP : 3.5 ㎜

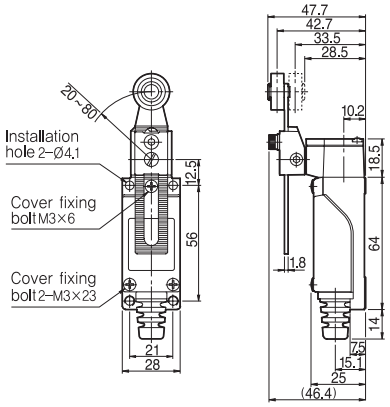
■ Cross Roller Plunger type

Appearance	Dimension	Operation characteristic
HY-L802C		O.F max : 8.83 N (900 gf) R.F min : 1.47 N (150 gf) P.T max : 1.5 ㎜ O.T min : 2.5 ㎜ M.D max : 0.8 ㎜ TTP : 3.5 ㎜

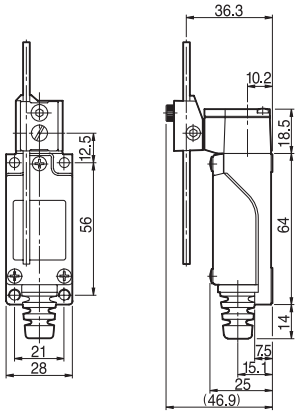
■ Top Plunger type

Appearance	Dimension	Operation characteristic
HY-L803		O.F max : 8.83 N (900 gf) R.F min : 1.47 N (150 gf) P.T max : 1.5 ㎜ O.T min : 2.1 ㎜ M.D max : 0.8 ㎜ TTP : 3.0 ㎜

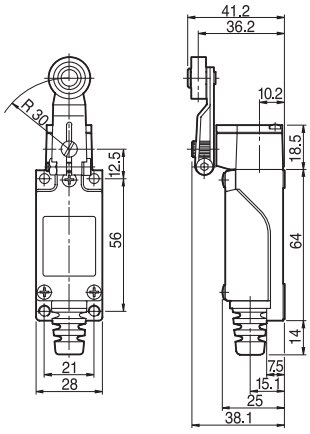
■ Roller Adjustable Lever

Appearance	Dimension	Operation characteristic
HY-L804		O.F max : 7.84 N (800 gf) R.F min : 0.2 N (21 gf) P.T max : 20 ㎜ O.T min : 70˚ M.D max : 10 ㎜

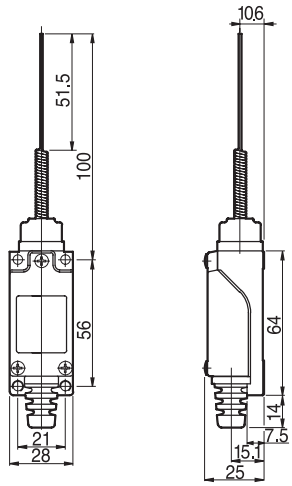
■ Adjustable Rod Lever

Appearance	Dimension	Operation characteristic
HY-L807		O.F max : 7.84 N (800 gf) R.F min : 0.1 N (21 gf) P.T max : 20 ㎜ O.T min : 70˚ M.D max : 10 ㎜

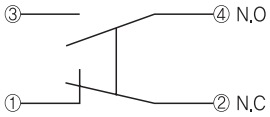
■ Roller Lever

Appearance	Dimension	Operation characteristic
HY-L808		O.F max : 5.88 N (400 gf) R.F min : 0.5 N (50 gf) P.T max : 20˚ O.T min : 70˚ M.D max : 10˚ T.T min : 90˚

■ Coil spring type

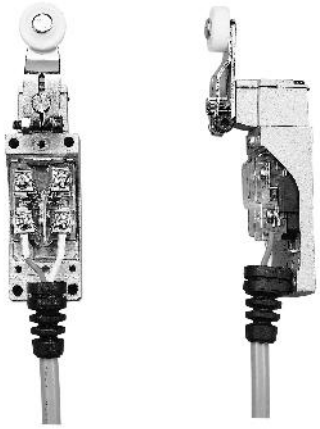
Appearance	Dimension	Operation characteristic
HY-L809		O.F max : 0.88 N (90 gf) R.F min : – P.T max : 30 ㎜ O.T min : 20 ° M.D max : – T.T min : 30 ㎜

Built in switch and connection diagram

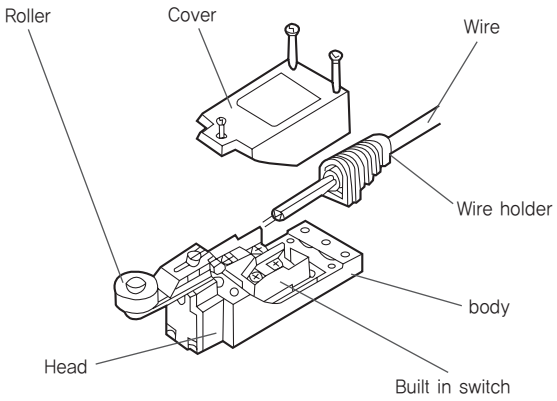
Appearance (HY-800)	Connection diagram
	

Structure and name of each part

■ Image (After completed the connection)



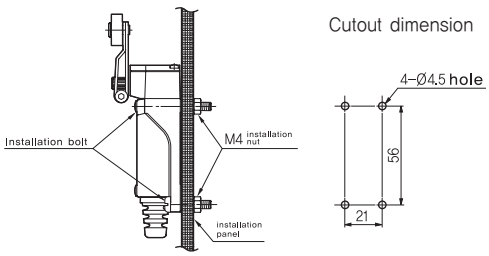
■ Name of each part (structure)



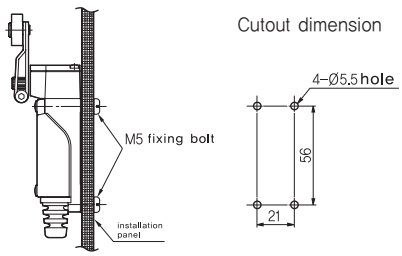
Installation method

※Front installation : Use M4 bolt, Back installation : Use M5 bolt.

■ Front installation

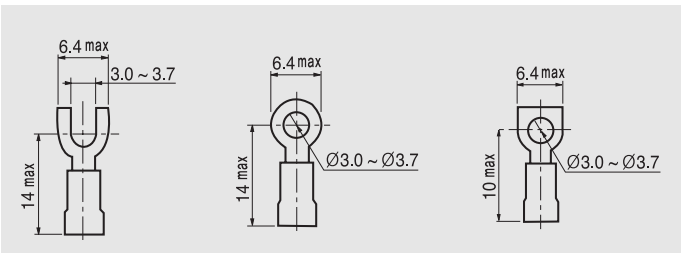


■ Back installation

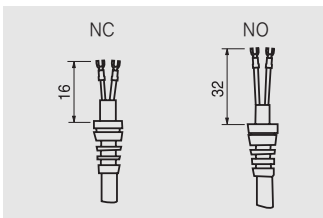


Applying pressure terminal

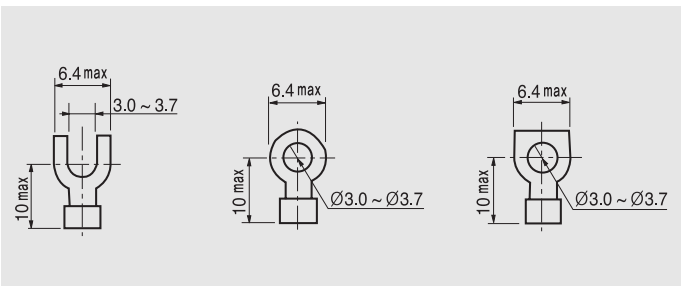
■ Insulation terminal



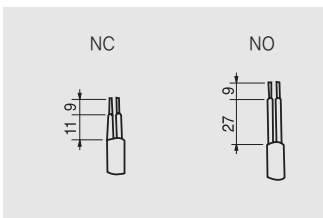
■ Wire handling when using the pressure terminal



■ Non-insulation terminal

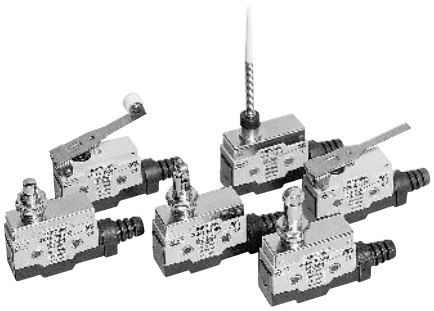


■ Wire handling when not using the pressure terminal



ZCN-500 series

Limit switch

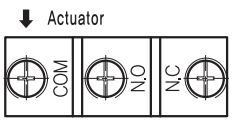
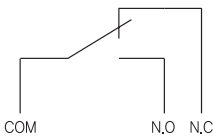


- Gap of installation cutout dimension is same as micro switch (HY-P700)
- Certain operation and long life expectancy by applying Beryllium copper and running spring to the strong chemical resistance case.
- Compact size and light weight. (Strong mechanical durability)
- 9 types of actuators which provide wide usages
- Less force required to run the operation comparing to the normal limit switch.
- Excellent sealing

Specification

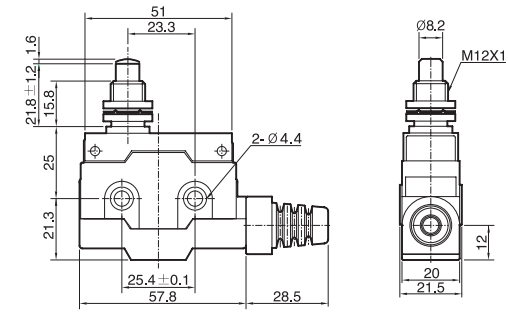
Contact structure		M4 screw tightening, 1c contact
Contact material		AgCdO
Protective structure		IP 54
Rated current(Ie)		10 A 250 V a.c
Dielectric strength		2,000 V a.c 50/60 ㎐ for 1 min (between the terminal and non-recharging metal part)
Insulation resistance		Min 100 ㏁ (500 V d.c insulated ohmmeter)
Contact resistance		Max 50 ㏁ (default value)
Rated voltage(Ue)		250 V a.c
Actuator intensity		5 times larger than O.F (force required to operate), operating direction 1 min
Vibration		Double amplitude 1.5 mm, frequency 10 ~ 55 ㎐, continuously 2 hour
Shock		1,000 ㎧ (durability), 300 ㎧ (malfunction)
Allowable operation speed		0.1 ~ 1 ㎧ (without damaging the actuator)
Life expectancy	Mechanical	Min 1 million times (less than open/close frequency 120 times/min)
	Electrical	Min 300 thousand times (less than open/close frequency 20 times/min)
Ambient temperature		-10 ~ 80 ℃
Ambient humidity		25 ~ 95 % R.H.
Weight		Approx 1010 g (10 ZCN-PR508H 1 box)

Terminal arrangement

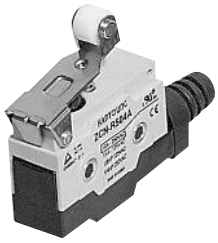
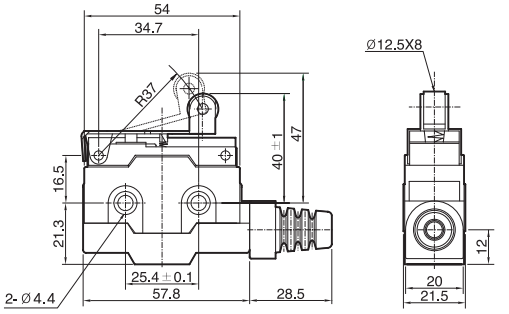
Appearance	Connection diagram
	

Dimension (unit : ㎜)

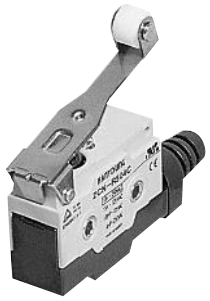
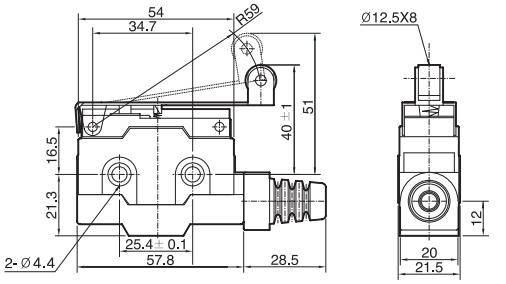
■ Plunger type

Appearance	Dimension	Operation characteristic
ZCN-P501O		O.F max : 5.88 N (600 gf) R.F min : 0.98 N (100 gf) P.T max : 1.6 ㎜ O.T min : 5 ㎜ M.D max : 0.2 ㎜ O.P : 21.8 ㎜

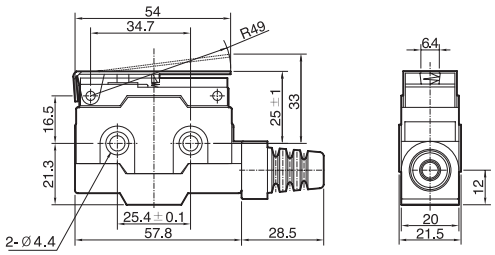
■ Hinge roller short lever type

Appearance	Dimension	Operation characteristic
 ZCN-R504A		O.F max : 5.88 N (600 gf) R.F min : 0.78 N (80 gf) O.T min : 2 ㎜ M.D max : 1.5 ㎜ F.P max : 47 ㎜ O.P : 40 ㎜

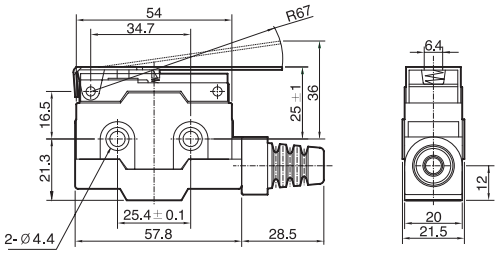
■ Hinge roller long lever type

Appearance	Dimension	Operation characteristic
 ZCN-R504C		O.F max : 2.74 N (280 gf) R.F min : 0.95 N (60 gf) O.T min: 5 ㎜ M.D max : 3 ㎜ F.P max : 51 ㎜ O.P : 40 ㎜

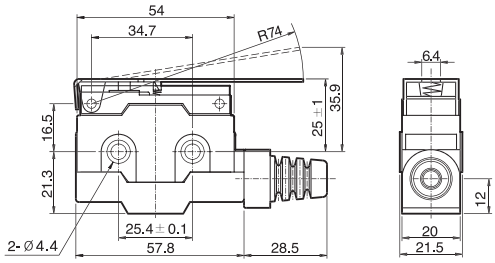
■ Hinge short lever type

Appearance	Dimension	Operation characteristic
ZCN-L507A		O.F max : 3.92 N (400 gf) R.F min : 0.78 N (80 gf) O.T min : 2.5 ㎜ M.D max : 1 ㎜ F.P max : 33 ㎜ O.P : 25 ㎜

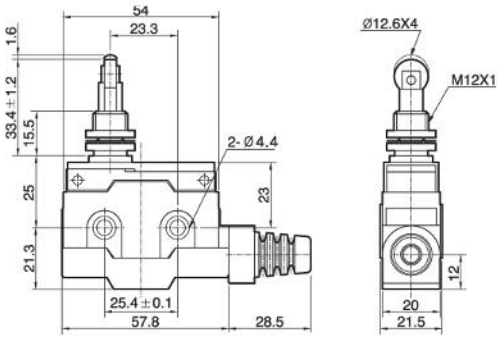
■ Hinge long lever type

Appearance	Dimension	Operation characteristic
ZCN-L507C		O.F max : 2.74 N (280 gf) R.F min : 0.59 N (60 gf) O.T min : 4 ㎜ M.D max : 1.4 ㎜ F.P max : 36 ㎜ O.P : 25 ㎜

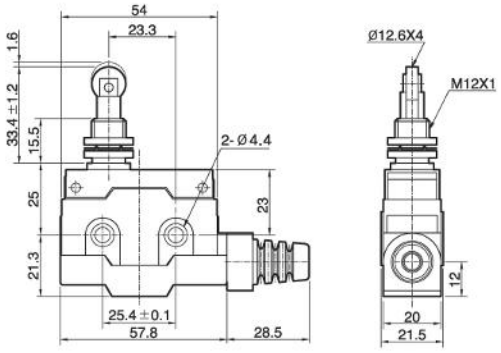
■ Hinge long lever type

Appearance	Dimension	Operation characteristic
ZCN-L507D		O.F max : 2.74 N (280 gf) R.F min : 0.59 N (60 gf) O.T min : 4 ㎜ M.D max : 1.4 ㎜ F.P max : 36 ㎜ O.P : 25 ㎜

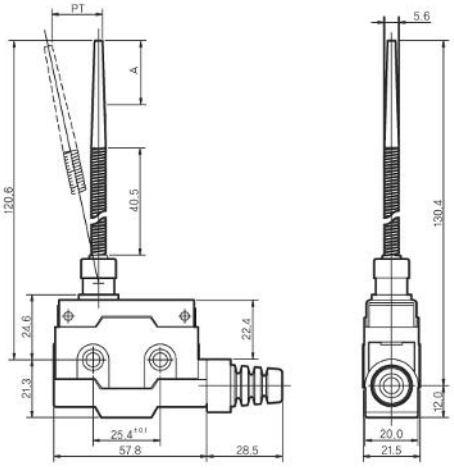
■ (Vertical) roller plunger type

Appearance	Dimension	Operation characteristic
ZCN-PR508V		O.F max : 5.88 N (600 gf) R.F min : 0.98 N (100 gf) P.T max : 1.6 ㎜ O.T min : 5 ㎜ M.D max : 0.2 ㎜ O.P : 33.4 ㎜

■ (Horizontal) roller plunger type

Appearance	Dimension	Operation characteristic
ZCN-PR508H		O.F max : 5.88 N (600 gf) R.F min : 0.98 N (100 gf) P.T max : 1.6 ㎜ O.T min : 5 ㎜ M.D max : 0.2 ㎜ O.P : 33.4 ㎜

■ Resin road coil spring type

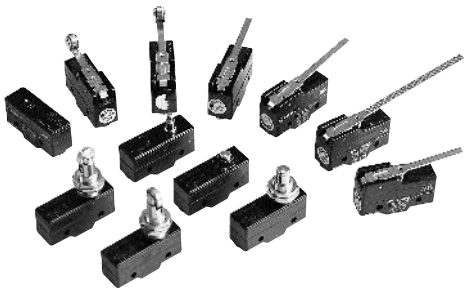
Appearance	Dimension	Operation characteristic
ZCN-L509		O.F max : 5.88 N (600gf) P.T max : 19 ㎜ T.T max : 40 ㎜

A : Optimum operating range of the resin rod is within 1/3 of the entire length from the top end

HY-700 series

Micro switch

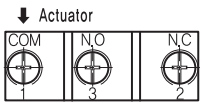
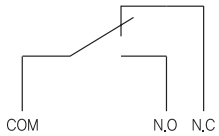
- Certain operation and long life expectancy due to the snap action tool and strong chemical resistance case (phenolic resin)
- Excellent repetitive accuracy and 10A opening / closing capacity
- Standard type, hole gap of installation cutout dimension : 25.4mm, fix with M4 bolt
- 9 types of actuators provide wide usages
- Terminal protective cover (optional)



Specification

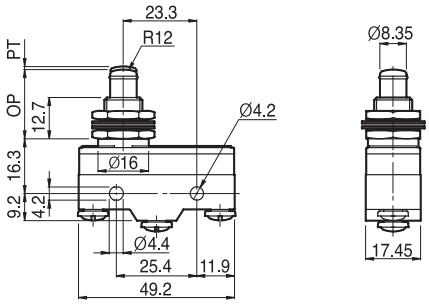
Contact structure		M4-5.5 screw tightening, 1c contact
Contact material		AgCdO
Protective structure		Standard type
Rated current(Ie)		10 A 250 V a.c
Dielectric strength		2,000 V a.c 50/60 ㎐ for 1min (between the terminal and non-recharging metal part)
Insulation resistance		Min 100 ㏁ (500 V d.c insulated ohmmeter)
Contact resistance		Max 50 ㏁ (default value)
Rated voltage(Ue)		250 V a.c
Vibration		Double amplitude 1.5mm, frequency 10 ~ 55 ㎐, continuously 2 hour
Shock		100 ㎧ (durability), 50 ㎧ (malfunction)
Allowable operation speed		0.1 ㎧ ~ 1 ㎧
Life expectancy	Mechanical	Min 1 million times (less than open/close frequency 120 times/min)
	Electrical	Min 300 thousand times (less than open/close frequency 20 times/min)
Ambient temperature		-10 ~ 80 ℃
Ambient humidity		25 ~ 95 % R.H.
Weight		Approx 800g (10 HY-R704B 1 box)

Terminal arrangement

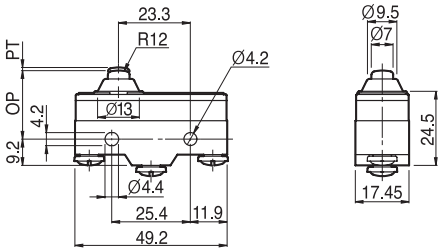
Appearance	Connection diagram
	

Dimension (unit : ㎜)

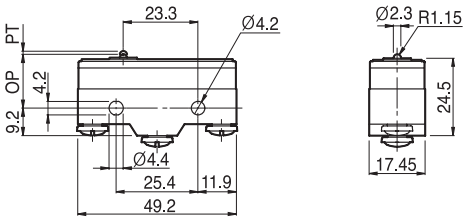
■ Panel mounting type

Appearance	Dimension	Operation characteristic
HY-P701A (Z4G1P05B)		O.F max : 3.73 N (380 gf) R.F min : 1.12 N (114 gf) P.T max : 1.0 ㎜ O.T min : 5.2 ㎜ M.D max : 0.13 ㎜ O.P : 21.8 ±0.8 ㎜

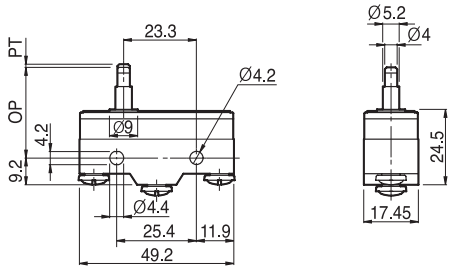
■ Spring single push button type

Appearance	Dimension	Operation characteristic
HY-P701B (Z4G1P09B)		O.F max : 3.73 N (380 gf) R.F min : 1.12 N (114 gf) P.T max : 1.0 ㎜ O.T min : 1.3 ㎜ M.D max : 0.13 ㎜ O.P : 21.8 ±0.8 ㎜

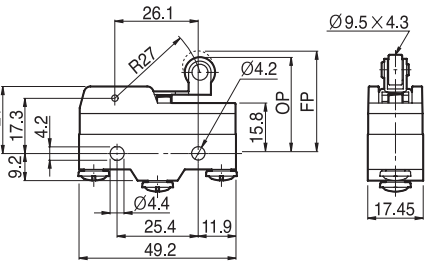
■ Pin push button type

Appearance	Dimension	Operation characteristic
HY-P701C (Z4G1P01B)		O.F max : 3.73 N (380 gf) R.F min : 1.12 N (114 gf) P.T max : 1.0 ㎜ O.T min : 0.13 ㎜ M.D max : 0.13 ㎜ O.P : 16.0 ±0.5 ㎜

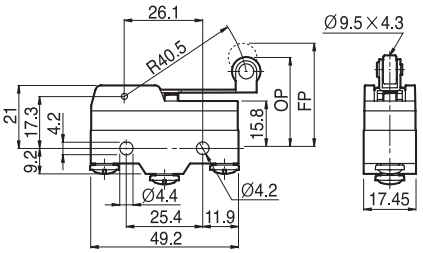
■ Spring stander push button type

Appearance	Dimension	Operation characteristic
HY-P701D (Z4G1P03B)		O.F max : 3.73 N (380 gf) R.F min : 1.12 N (114 gf) P.T max : 1.0 ㎜ O.T min : 1.3 ㎜ M.D max : 0.13 ㎜ O.P : 28.2 ±0.6 ㎜

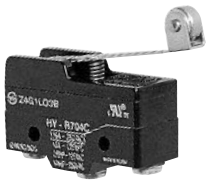
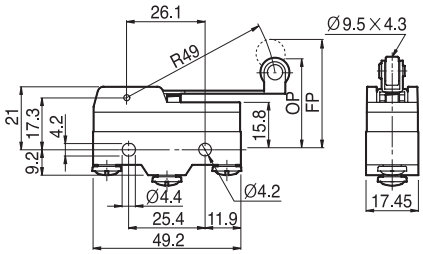
■ Hinge roller single lever type

Appearance	Dimension	Operation characteristic
HY-R704A (Z4G1L07B)		O.F max : 1.57 N (160 gf) R.F min : 0.27 N (28 gf) P.T max : 5.0 ㎜ O.T min : 2.0 ㎜ M.D max : 1.2 ㎜ O.P : 30.2 ±1.0 ㎜

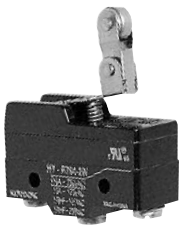
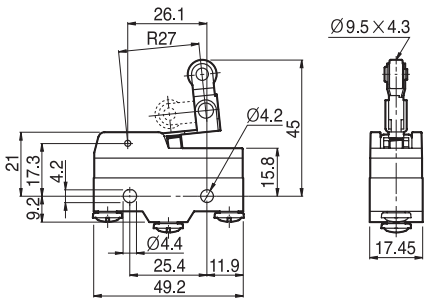
■ Hinge roller middle lever type

Appearance	Dimension	Operation characteristic
HY-R704B		O.F max : 1.18 N (120 gf) R.F min : 0.2 N (28 gf) P.T max : 5.0 ㎜ O.T min : 2.0 ㎜ M.D max : 1.2 ㎜ O.P : 30.2 ±1.0 ㎜

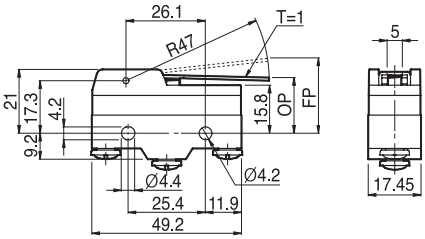
■ Hinge roller lever type

Appearance	Dimension	Operation characteristic
 HY-R704C (Z4G1L03B)		O.F max : 0.98 N (100 gf) R.F min : 0.14 N (14 gf) P.T max : 8.0 ㎜ O.T min : 3.6 ㎜ M.D max : 2.4 ㎜ O.P : 30.2 ±1.0 ㎜

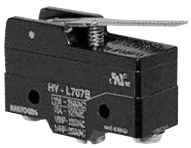
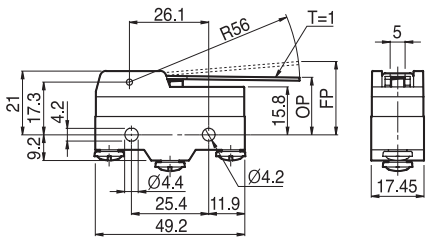
■ 2 positions roller lever type

Appearance	Dimension	Operation characteristic
 HY-R704-2W		O.F max : 0.98 N (100 gf) R.F min : 0.14 N (14 gf) P.T max : 8.0 ㎜ O.T min : 3.6 ㎜ M.D max : 0.5 ㎜ O.P : 43.2 ±1.4 ㎜

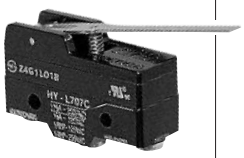
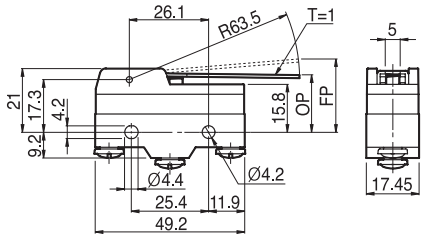
■ Single position lever type

Appearance	Dimension	Operation characteristic
HY-L707A		O.F max : 1.57 N (160 gf) R.F min : 0.27 N (28 gf) P.T max : 5.0 ㎜ O.T min : 2.0 ㎜ M.D max : 1.2 ㎜ O.P : 19.1 ±1.0 ㎜

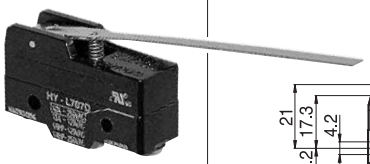
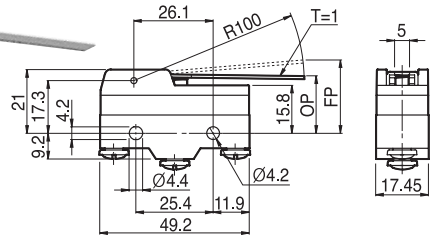
■ Middle lever type

Appearance	Dimension	Operation characteristic
 HY-L707B		O.F max : 1.18 N (120 gf) R.F min : 0.20 N (20 gf) P.T max : 6.5 ㎜ O.T min : 2.8 ㎜ M.D max : 1.8 ㎜ O.P : 19.1 ±1.0 ㎜

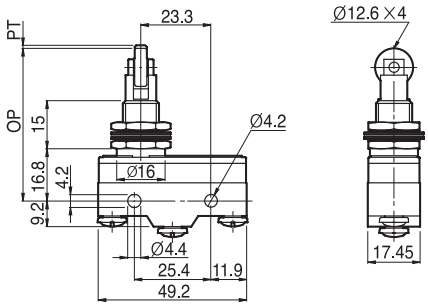
■ Hinge lever type

Appearance	Dimension	Operation characteristic
 HY-L707C (Z4G1L01B)		O.F max : 0.98 N (100 gf) R.F min : 0.14 N (14 gf) P.T max : 1.0 ㎜ O.T min : 4.0 ㎜ M.D max : 2.4 ㎜ O.P : 19.1 ±1.0 ㎜

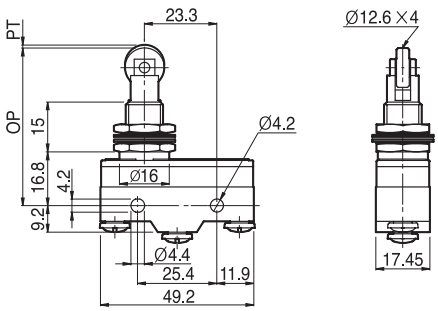
■ Special lever type

Appearance	Dimension	Operation characteristic
 HY-L707D		O.F max : 0.78 N (80 gf) R.F min : 0.1 N (10 gf) P.T max : 1.4 ㎜ O.T min : 5.6 ㎜ M.D max : 3.5 ㎜ O.P : 19.1 ±1.0 ㎜

■ Roller panel mounting type (Vertical)

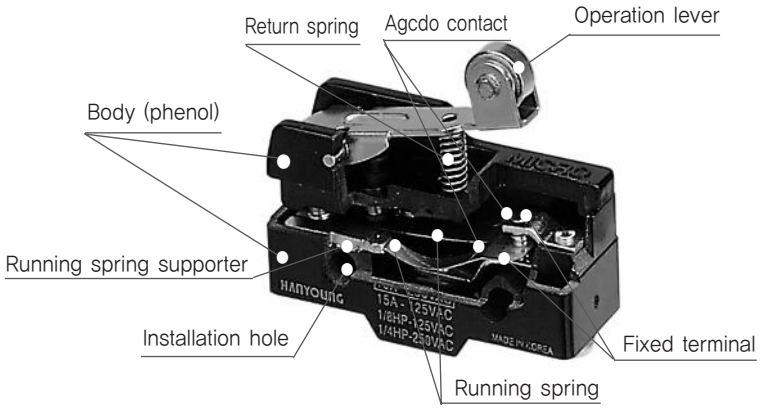
Appearance	Dimension	Operation characteristic
HY-PR708A		O.F max : 3.73 N (380 gf) R.F min : 1.12 N (114 gf) P.T max : 1.0 ㎜ O.T min : 3.2 ㎜ M.D max : 0.13 ㎜ O.P : 33.3 ±1.4 ㎜

■ Roller panel mounting type

Appearance	Dimension	Operation characteristic
HY-PR708B (Z4G1P07B)		O.F max : 3.73 N (380 gf) R.F min : 1.12 N (114 gf) P.T max : 1.0 ㎜ O.T min : 3.2 ㎜ M.D max : 0.13 ㎜ O.P : 33.3 ±1.4 ㎜

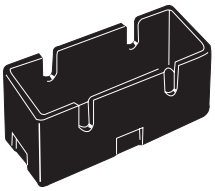
Structure

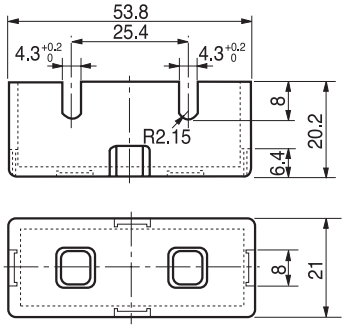
■ Internal structure



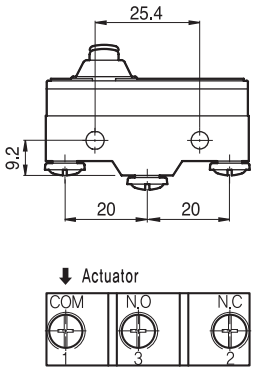
■ Terminal protective cover

MS-10





■ Dimension and terminal arrangement



D Hoist switch
Foot switch
Mono lever switch

Hoist switch (HY-1020 series) ---------- 196
Foot switch (HY-100 series) ---------- 204
Mono lever switch (LEL / LES) ---------- 206

HY-1020 Series

Hoist switch

- Applied to the hoist, crane, power lift of truck, electric lift and etc
- Case is made of the ABS copolymer which has an excellent mechanical intensity and excellent electrical features. Due to the fact, it has an excellent durability from the shock, it is light weight and it protects from the electric shock.
- Manufactured an emergency switch attachment type that can cut OFF the operation power.
- Various contact unit composition which makes to select an electric motor velocity controlling 2 Positions contact unit lock-up, seesaw and momentary operation contact unit.
- Various push buttons so wide application possible

Suffix code

Model	Code						Description	
HY-102	□	□	□	□	□	□	Hoist switch	
No. of switch	2						2	Excluded an emergency switch
	4						4	
	6						6	
	8						8	
	9						9	
Emergency button							No	
		S					Yes	
Switch unit type			A	A	A	A	102A contact unit	2 buttons / unit
			B	B	B	B	102B contact unit	
			C	C	C	C	102C contact unit	
			D	D	D	D	102D contact unit	
			E	E	E	E	102E contact unit	

※ Within the switch unit type, AAAA indication means 4 switch units.

Standard model

※ L : large size cover

Model	No. of buttons	Standard button marking	Cable bushing
HY-1022B	2	Up down	A (Ø10.3 – 13.5) Black rubber angle 40˚
HY-1022SB(L)	3 (Included the emergency button)		
HY-1024AB	4	ON OFF Up down	
HY-1024BB	4	Up down forward back	
HY-1024SBB(L)	5 (Included the emergency button)		
HY-1026ABB	6	ON OFF Up down forward back	A (Ø16.3 – 19.5) Black rubber angle 40˚
HY-1026BBB	6	Up down forward back left right	
HY-1026SBBB	7 (Included the emergency button)	Up down forward back left right	
HY-1026SBBB-L	7 (Included the emergency button)	(※ Please refer to the cover size for the L type)	
HY-1028ABBB	8	ON OFF Up down forward back left right	
HY-1029SBBB	10(Included the emergency button)	Indicator, selector, push button Up down forward back left right	Possible to change the specification

Button marking types

Standard specification	OFF ON Up down forward back left right 동 서 남 북
Order-made specification	ON 上 下 左 右 東 西 南 北 前 後 열림 닫힘 OFF UP DW E W S N R L CO DN ⬆ ↗ ⬆⬆ ↙

Structures

① Wire protector
For the water-proof packing and wire protection (2 types)

② Body
Consider the number of buttons (2 buttons~8 buttons) and use it

③ Bushing holder (internal)
Designed to be applied disregarding the size of wire protector.

④ Lamp / Alarm switch
There are no holes in the body when not assigning as an exclusive compact lamp and alarm buzzer switch.

⑤ Emergency button
Cut OFF the power in an emergency situation. Standard application for the crane design has followed the Industrial Safety and Health Act 34 sects 1~6 clauses, safety standard and test standard 37 sects 2, and 38 sects.

⑥ Indicator

⑦ Selector switch

⑧ Push button switch

Optional

⑨ Button
Please use the proper button in a proper situation

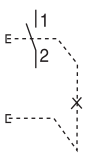
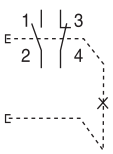
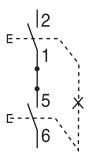
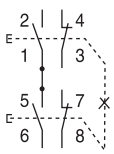
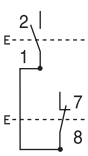
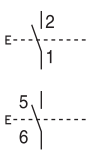
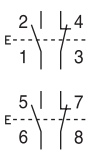
⑩ Marking
Possible to manufacture the customized markings other than standard markings

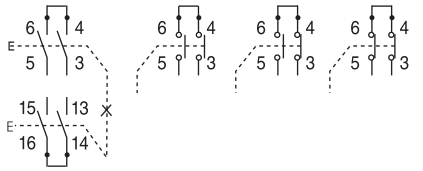
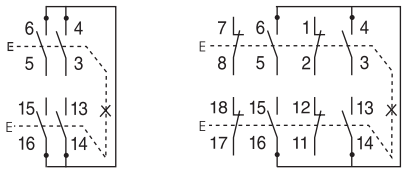
⑪ Hook (back)
Hook that can hang the body

Specification

Rated current	6 A 250 V a.c
	10 A 250 V a.c emergency switch (push lock-turn reset)
Insulation resistance	100 MΩ (500 V d.c)
Dielectric strength	2000 V a.c. for 1 min (between the recharging part and non-recharging part)
Protective structure	IP-66 suitable (exclude the emergency switch attachment type)
Materials	Case : strong shock resistance ABS copolymer
	Button and wire protector : special rubber
Vibration resistance	10 - 55 Hz double amplitude 1.0 mm
Shock resistance	500 m/s²
Ambient temperature	-10 ~ 45 ℃
Ambient humidity	45 ~ 85 % R.H.

Contact unit

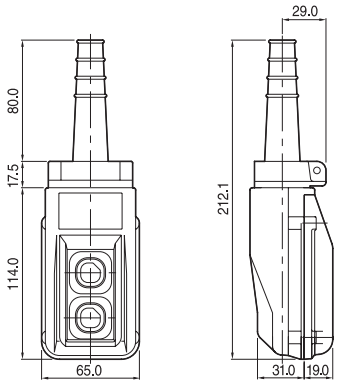
Model	Appearance	Contact composition	Explanation
102 A		102A10 (1a)  102A11 (1a1b) 	※ On/Off switch • Pressing the On button will turn ON the power and self-maintenance will be performed • Pressing the Off button will turn OFF the power.
102 B		102B20 (1a-1a)  102B22 (1a1b-1a1b) 	※ Up/Down, forward/back, left/right • This is for the typical circuit. It is a seesaw type so pressing it synchronously is impossible
102 C		102C11 (1a-1b)  102C20 (1a-1a)  102C22 (1a1b-1a1b) 	※ Typical circuit • No mechanical interlock is included, so two buttons can be operated independently.

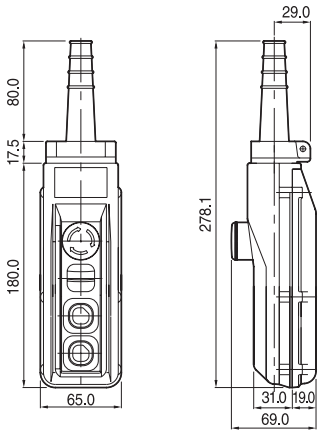
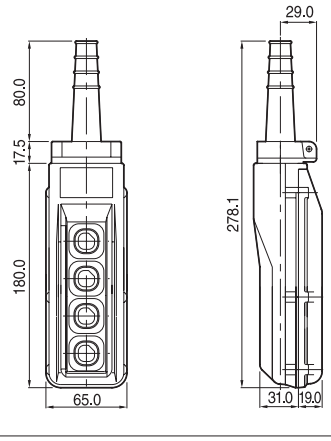
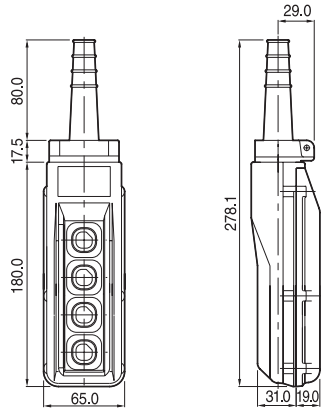
Model	Appearance	Contact composition	Explanation
102 D		102D(2a-2a) neutrality 1 position 2 positions 	※ 2 stages switch • Contact separated in 2 stages and operated • Velocity controlling, 2 circuits controlling • Seesaw type so pressing it synchronously is impossible
102 E		102E20 (2a-2a) 102E22 (2a2b-2a2b) 	※ Typical circuit • Max 2a2b-2a2b, 2a-2b • Seesaw type so it is impossible to press it synchronously

Contact unit (emergency switch)

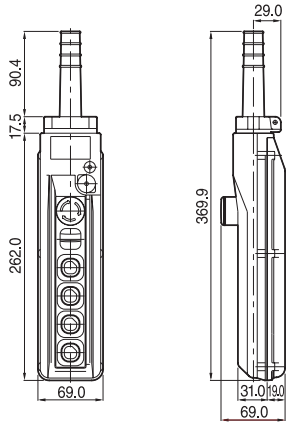
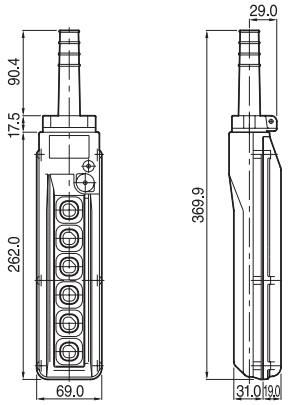
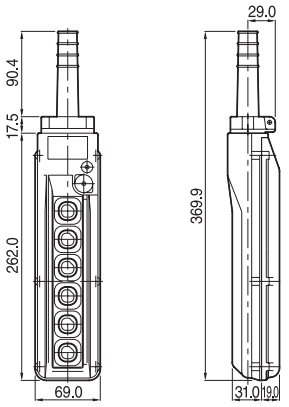
Model	Appearance	Contact composition	Explanation
102 S			※ Emergency switch (Red) (Push lock-turn reset) • Cut off the power when pressing the button (becomes self-maintenance) • It will return once rotating the button to the printing direction.

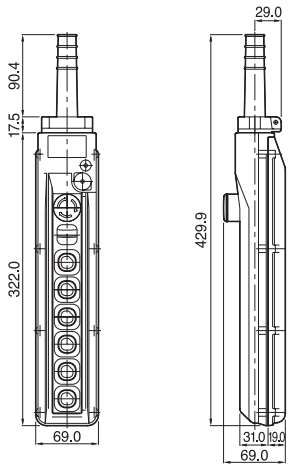
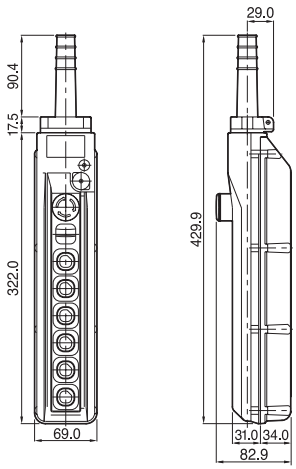
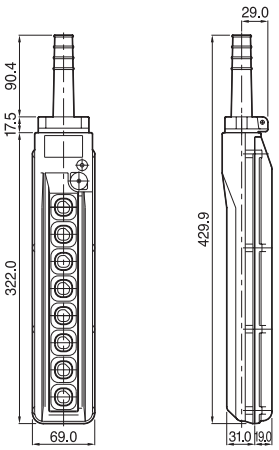
Dimension (unit : ㎜)

Model	Appearance	Dimension
HY-1022 B		

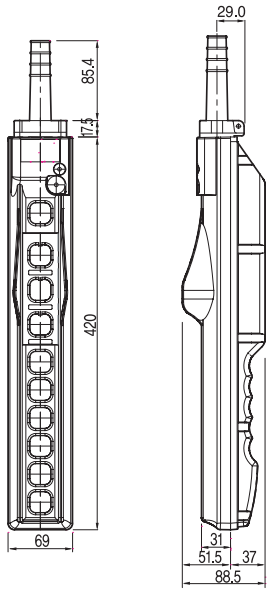
Model	Appearance	Dimension
HY-1022 SB		
HY-1024 AB		
HY-1024 BB		

HY-1020 series

Model	Appearance	Dimension
HY-1024 SBB		
HY-1026 ABB		
HY-1026 BBB		

Model	Appearance	Dimension
HY-1026 SBBB		
HY-1026 SBBB-L (L : large cover)		
HY-1028 ABBB		

HY-1020 series

Model	Appearance	Dimension
HY-1029 SBBB		

HY-100 series

Foot switch

- High mechanical safety due to the aluminum case
- Built in the micro switch that has an excellent electrical reliability
- Protective cover from the falling materials and attached a safety latch lever. (HY-104)
- Applied the cable locker (HY-103N, 104)
- Economical price of plastic case (HY-101)

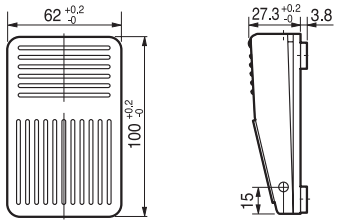
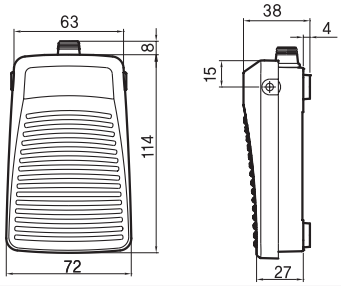
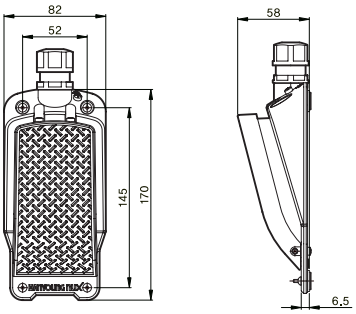
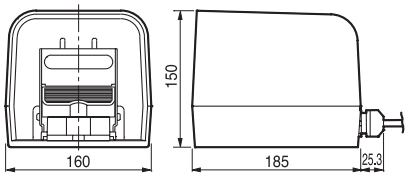
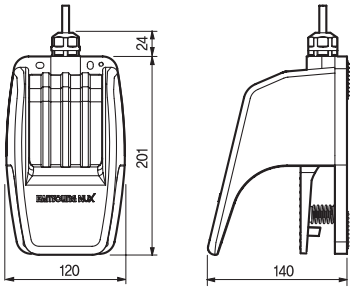
Suffix code

Model	Code	Description
HY-10	□	Foot Switch
Appearance	1	Plastic foot switch
	2N	Aluminum foot switch
	3N	Middle size aluminum foot switch
	4	Large size aluminum foot switch
	5	Large size aluminum foot switch

Specification

Model	HY-101	HY-102N	HY-103N	HY-104	HY-105
Dimension(㎜)	62 X 100 X 31	72 X 114 X 38	82 X 170 X 58	160 X 210 X 150	120 X 225 X 140
Rated current	10 A 250 V a.c		10 A 250 V a.c		
Protective structure	–	–	–	Protective cover which protects from the falling materials and attached Latch lever	
Foot switch material	Plastic	Aluminum	Aluminum	Aluminum green color Hammer coating	
Built in switch	Micro switch (SMV-61A-07H)		Micro switch (HY-P701B)	Micro switch (HY-P701D)	Micro switch (HY-P701B)
Contact structure	C contact				
Cable	0.75 ㎟ X 2P, 1.5 m		0.75 ㎟ X 2P, 1.5 m		0.75 ㎟ X 3P, 1.5 m

Dimension and connection diagram (unit : ㎜)

Appearance	Dimension	connection diagram (Contact composition)
HY-101		N.O (Black) — COM(Black)
HY-102N		N.O (Black) — COM(Black)
HY-103N		N.O (Brown) — COM(Green) N.C (Blue)
HY-104		N.O (Brown) — COM(Green) N.C (Blue)
HY-105		N.O (Brown) — COM(Green) N.C (Blue)

LEL/LES series

Mono lever switch

- 4 directions switch that can operate 4 directions in a single lever.
- Contact part operates to the direction where lever leans to so we have minimized the malfunction when operating. This is suitable with the products that change its direction frequently.
- There are auto returning type, manual returning type and mixed type depending on the lever operation type.
- Circuit formation of the contact part is flexible and installation cutout hole is Ø30.

Suffix code

Model	Code			Description
LE	□	□	□	Mono lever switch
Lever selection	L			Long lever
	S			Short lever
Stage selection		01		Select 1 position
		02		Select 2 positions
		03		Select 3 positions
		04		Select 4 positions
Returning type			1	Auto returning
			2	Manual returning

※ Mixed returning type is an order-made product so when placing an order please record the returning operation within each channel. Standard contact composition (each direction of product) is 1a.

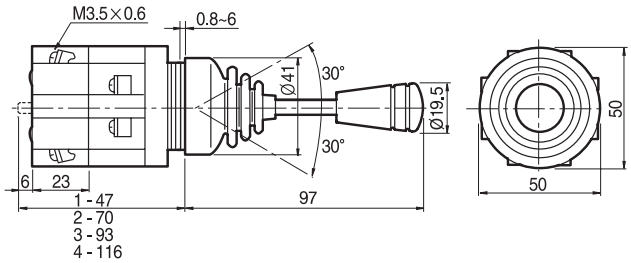
Specification

■ Standard specification

Rated insulation voltage	600 V
Rated electro current	3 A 250 V a.c
Contact composition	Double block Slow-make (1 line 2 contacts, max forming line : 4)
Insulation resistance	100 mΩ (500 V d.c)
Dielectric strength	2500 V a.c, for 1min (between the recharging part and non recharging part)
Contact resistance	Max 20 MΩ (default value)
Mechanical life expectancy	Above 500 thousand times
Electrical life expectancy	Above 100 thousand times
Ambient temperature	-20 ~ 50 ℃
Ambient humidity	45 ~ 85 % R.H.

Dimension (unit : ㎜)

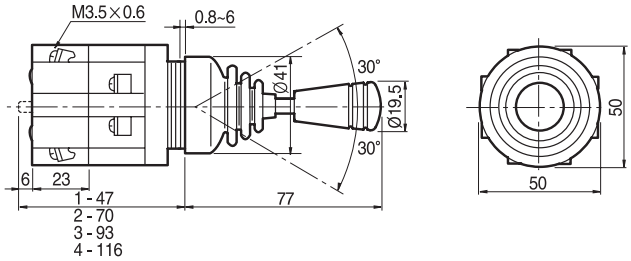
■ Long lever

Appearance	Dimension
	

※ When installing continuously, please make the middle gap of panel cutout above 110mm.

Type	Lever operation method	Lever returning type	Contact composition	Reference
LEL	1 ~ 4 stages direction	Auto returning type Manual returning type Mixed returning type	1a, 1b, 1a1b 2a, 2b, 2a2b unit	(OPTION)

■ Short lever

Appearance	Dimension
	

※ When installing continuously, please make the middle gap of panel cutout above 70 mm.

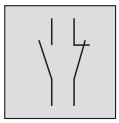
Type	Lever operation method	Lever returning type	Contact composition	Reference
LES	1 ~ 4 stages direction	Auto returning type	1a, 1b, 1a1b 2a, 2b, 2a2b	
		Manual returning type		
		Mixed returning type		(OPTION)

Contact composition and contact unit

■ Contact composition

MO-10a

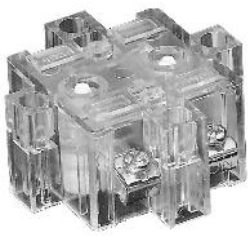
MO-20b



MO-30b

■ Contact unit

MO-10a (a Contact)
MO-20b (b Contact)
MO-30b (1a1b Contact)



E Sign tower / Signal light

Sign tower

STS series (Ø40/Ø60/Ø80) ---------- 210

STL series (Ø25/Ø40/Ø60/Ø80) ---------- 215

STA series (Ø25) ---------- 226

HY-TN series (Ø55) ---------- 229

Cube tower

CTB-TB (82 angle) ---------- 233

Cube tower(Turn light)

CTB-KBB (82 angle) / CTC-KBM (116 angle) ---------- 235

Wall mounted light

WME series ---------- 238

WMS series ---------- 241

WT/WTS series ---------- 244

Turn light

TLB series (Ø60/Ø100/Ø150) ---------- 248

T series (Ø84) ---------- 259

TL100 series (Ø100) ---------- 263

RLA-KB/KBB (Ø118) ---------- 266

Warning light

RLA-WX/WXB (Ø118) ---------- 269

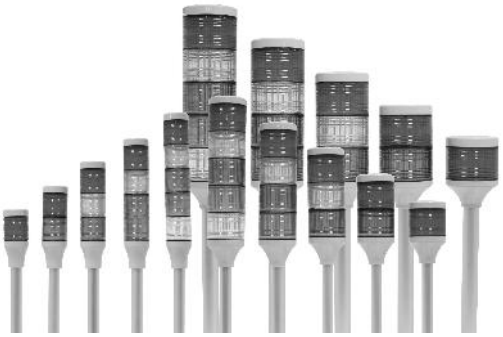
LT series (Ø84) ---------- 272

SLB series (Ø70) ---------- 275

STS series

Sign tower

- Ø40, Ø60 and Ø80 various sizes
- Long life expectancy due to the HID LED light source
- 1~5 modules stacking structure and colors (5 kinds)
- 3 types of installation method
- Sign tower continuous light



Suffix code

Model	Code				Description
STS	□	-□	□	□	Sign tower continuous light
Diameter size	040				Ø40 cylinder type
	060				Ø60 cylinder type
	080				Ø80 cylinder type
Power supply voltage		C51			24 V d.c / a.c 50 – 60 ㎐ (Dual usage)
		C41			12 V d.c / a.c 50 – 60 ㎐ (Dual usage)
Stacking modules			1		1 stack (Red)
			2		2 stack (Red, Green)
			3		3 stack (Red, Yellow, Green)
			4		4 stack (Red, Yellow, Green, Blue)
			5		5 stack (Red, Yellow, Green, Blue, White)
Supporter selection				M	Plastic round supporter (Standard)
				L	L type supporter
Optional					Elbow type supporter (ETM)

※ 12 V d.c/a.c : order made product.

■ Applied the lens color to the HID LED

Emit the clear light by unifying the lens with Red LED, Yellow LED, Green LED, Blue LED and White LED.

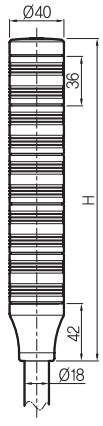
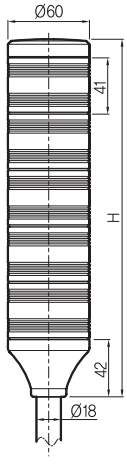
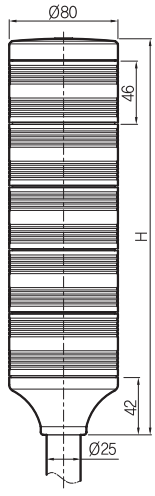
■ Simple color change

Because LED unit is designed as connector structure type, changing the color or repairing is simple.

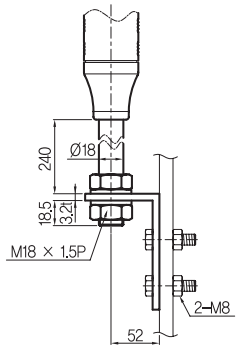
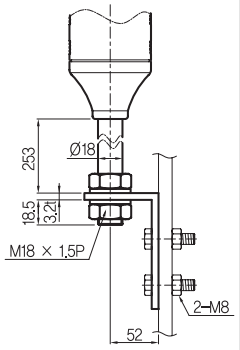
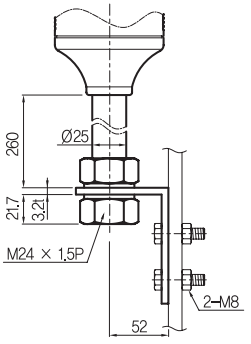
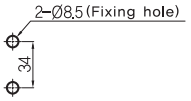
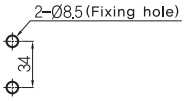
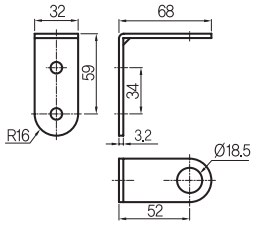
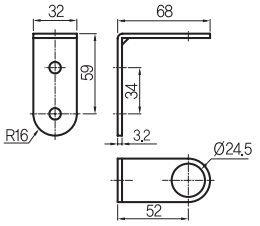
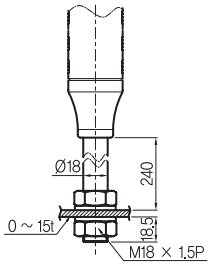
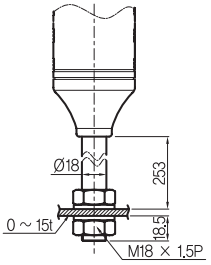
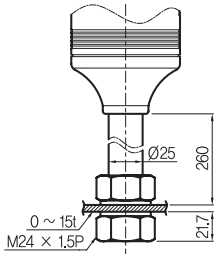
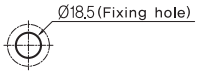
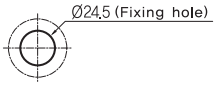
Specification

Model	STS040-□□□	STS060-□□□	STS080-□□□
Circumference size (diameter)	Ø40	Ø60	Ø80
Power supply voltage	24 V d.c / a.c 50 - 60 ㎐ (Dual usage)		
Power consumption	Less than approx 6 W. (Base on 5 stack, 0.9 W for each stage)		
Light source	LED		
Light types	Steady light only		
Radiating angle	360˚		
Lens material	Polycarbonate (P.C)		
Body material	Heat resistance ABS		
Pipe	Aluminum (Ø18)		Aluminum (Ø25)
Wire length	700 ㎜		
Lens color	R, G, Y, B and W		
Ambient temperature	-5 ~ 50 ℃		
Ambient humidity	35 - 85 % R.H.		
Degree of protection	IP54		

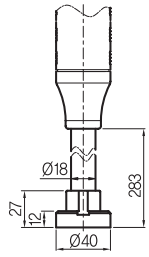
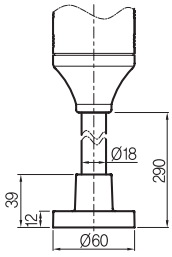
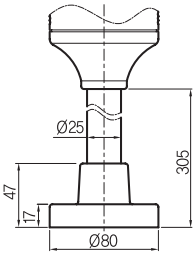
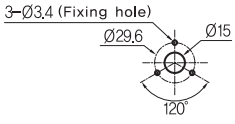
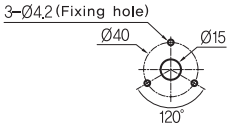
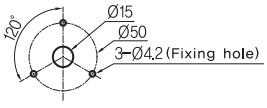
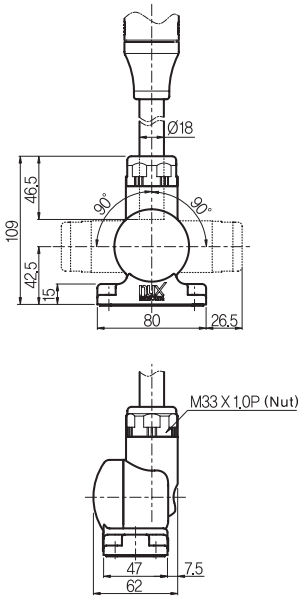
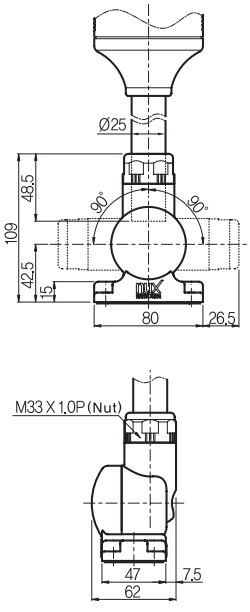
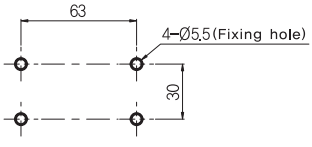
Dimension (unit : ㎜)

Model		STS040-□□□	STS060-□□□	STS080-□□□
Dimension				
Height(H) ㎜	1 stack	93	99	107
	2 stack	129	140	153
	3 stack	165	181	199
	4 stack	201	222	245
	5 stack	237	263	291

Dimension and panel cutout (unit : ㎜)

Appearance	STS040-□□□	STS060-□□□	STS080-□□□
L type supporter			
			
			
			
			

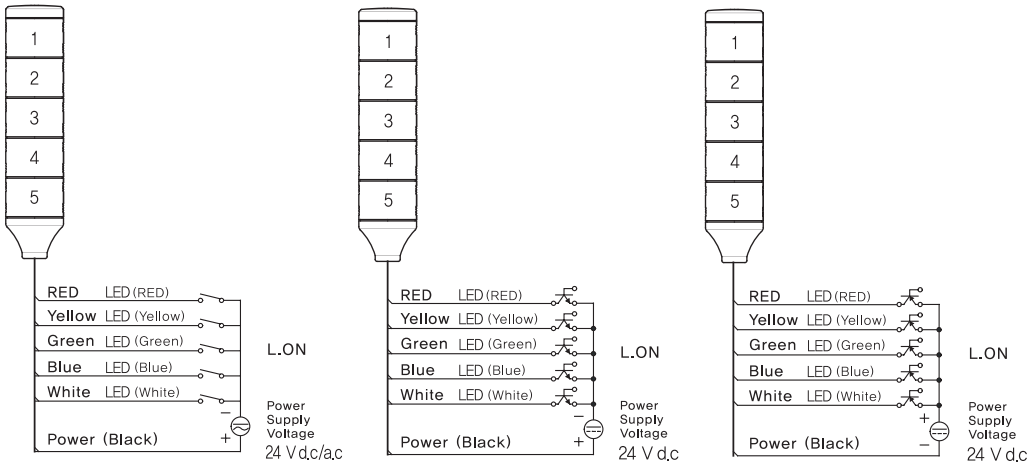
STS series

Appearance	STS040-□□□	STS060-□□□	STS080-□□□
Plastic round supporter			
			
ETM elbow type supporter (optional)			
			

※ Elbow type supporter : Applied to the Ø18, Ø25 pipe due to the plastic bushing

Connection diagram

■ Contact running (NPN) ■ NPN transistor running ■ PNP transistor running



※ Wire length : 700 ㎜

※ L.ON : Light On

STL series (Ø25)

Sign tower

- Ø25 cylinder type, suitable design for the small machine and narrow space
- Long life expectancy due to the HID LED light source
- 1~5 modules stacking structure and colors (5 kinds)
- Install the aluminum pipe directly, simple installation structure design
- Only for continuous light so economical price
- Protective structure IP 54

Suffix code

Model	Code				Description
STL	□	-□	□	□	Sign tower
Diameter size	025				Ø25 cylinder type
Power supply voltage		D51			24 V d.c (L.E.D light source)
Stacking modules			1		1 stack (Red)
			2		2 stack (Red, green)
			3		3 stack (Red, yellow, green)
			4		4 stack (Red, yellow, green, blue)
			5		5 stack (Red, yellow, green, blue, white)
Polarity				N	NPN (Common Anode)
				P	PNP (Common Cathode)

※ Color of modules can be changed at customer's request
※ L type supporter sold separately

Specification

Model	STL025-D511	STL025-D512	STL025-D513	STL025-D514	STL025-D515
Number of stacks	1 stack	2 stack	3 stack	4 stack	5 stack
Diameter size	Ø25 (Aluminum pipe)				
Power supply voltage	24 V d.c				
Power consumption	approx. less than 4W (5 stacks standard, 0.6W for each stacks)				
Light source	LED				
Light type	Continuous light only				
Radiating angle	360°				
Lens material	Polycarbonate (P.C)				
Lens color	red, yellow, green, blue and white				
Degree of protection	IP 54				

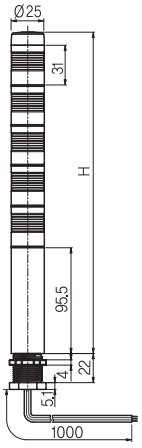
■ Applied the lens color to the HID LED

Emit the clear light by unifying the lens with Red LED, Yellow LED, Green LED, Blue LED and White LED.

■ Simple color change

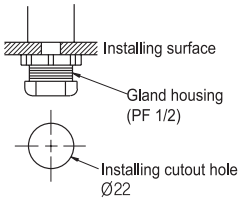
Because LED unit is designed as connector structure type, changing color or repairing is simple.

Dimension and panel cutout (unit : ㎜)

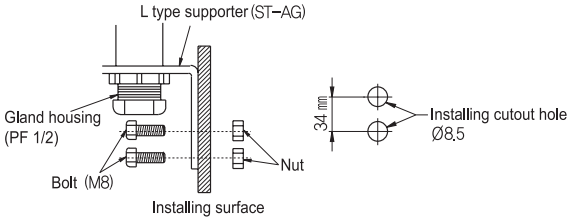
Model	Stacking	Height(H)	Dimension
STL025-D511	1 stack	135	
STL025-D512	2 stack	166	
STL025-D513	3 stack	197	
STL025-D514	4 stack	228	
STL025-D515	5 stack	259	

※ Wire length : approx 1,000 ㎜

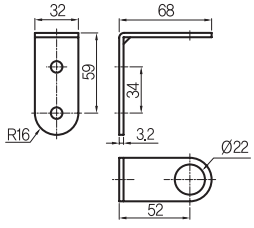
Installation method



※ Panel thickness : less than 10 ㎜



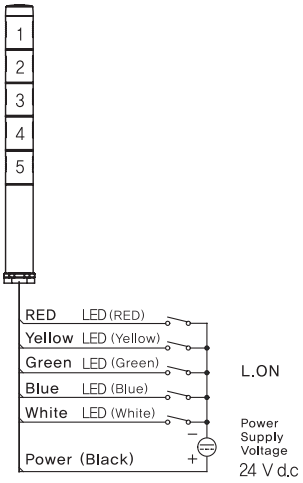
• ST-AG (Sold separately)



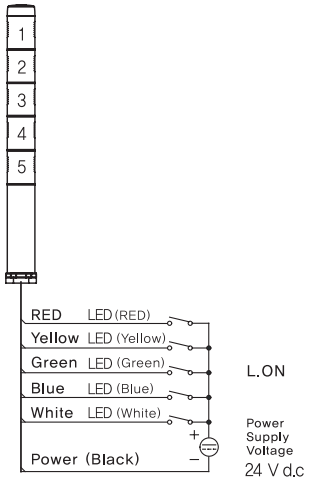
Connection diagram

■ Contact drive

• Polarity N (Common Anode)

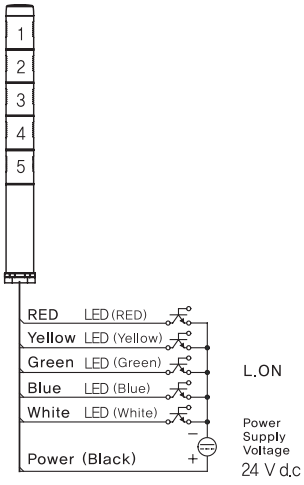


• Polarity P (Common Cathode)



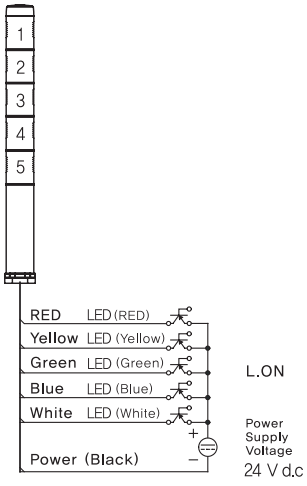
■ NPN transistor drive

• Polarity N (Common Anode)



■ PNP transistor drive

• Polarity P (Common Cathode)



※ L.ON : Light On

STL series (Ø40, Ø60, Ø80)

Sign tower

- Ø40, Ø60 and Ø80 various sizes (various cylinder type)
- Long life expectancy due to the HID LED light source
- 1~5 modules stacking structure and colors (5 kinds)
- Various installation method
- Continuous light only, continuous light, flashing light, Buzzer (selected by the external signal)

Suffix code

Model	Code					Description
STL	□–	□	□	□	□	Sign tower (LED light source)
Diameter size	040					Ø40 cylinder type
	060					Ø60 cylinder type
	080					Ø80 cylinder type
Function		A				Continuous light only
		F				Continuous light, flashing light and buzzer (selected by the external signal)
Power supply voltage			C51			24 V d.c / a.c 50 – 60 Hz (dual usage)
			A11			100 – 240 V a.c 50 – 60 Hz
Stacking modules				1		1 stack (Red)
				2		2 stack (Red, green)
				3		3 stack (Red, yellow, green)
				4		4 stack (Red, yellow green, blue)
				5		5 stack (Red, yellow, green, blue, white)
Supporter selection					D	Direct installation (bolt fixing installation)
					L	L type supporter
					M	Plastic round supporter
Optional						Selecting type supporter (STM)
						Elbow type supporter installation (ETM)

※ Composition of stacking modules: Upper side (1st stack) to the lower side.

Specification

Model	STL040-□□□□	STL060-□□□□	STL080-□□□□
Diameter size	Ø40	Ø60	Ø80
Function	Continuous light only, continuous light, flashing light, Buzzer (selected by the external signal)		
Number of stacks	1 ~ 5 stack		
Flashing time	60 times / 1min		
Buzzer melody type	Short beeping / Beeping (Volume of buzzer melody spreads out to 1m)		
Buzzer melody volume	75 dB	85 dB	
Power supply voltage	24 V d.c / a.c (dual usage), 100 – 240 V a.c. 50 – 60 Hz		
Power consumption	Approx less than 8 W (5th stack standard, 1.2W for each stacks)		
Light source	LED		
Radiating angle	360˚		
Lens material	Polycarbonate (P.C)		
Pipe material	Aluminum		
Lens color	Red, yellow, green, blue and white		
Degree of protection	IP 54		

■ Applied the lens color to the HID LED

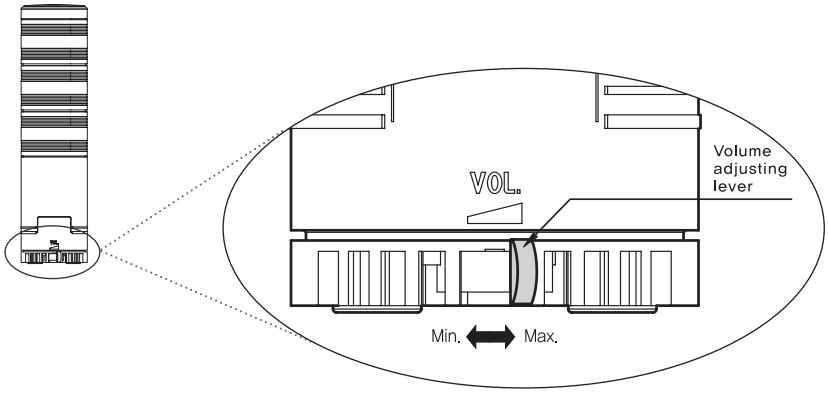
Emit the clear light by unifying the lens with Red LED, Yellow LED, Green LED, Blue LED and White LED.

■ Simple color change

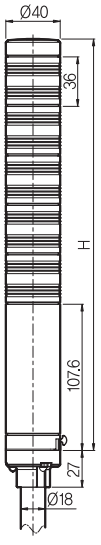
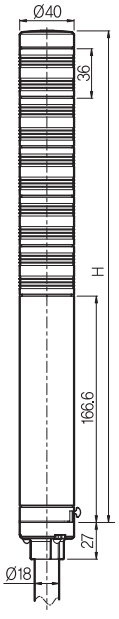
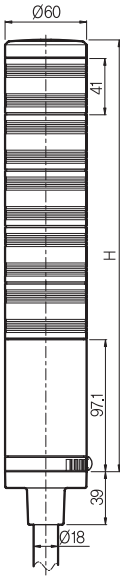
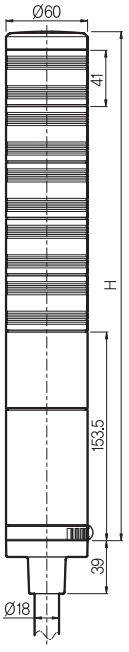
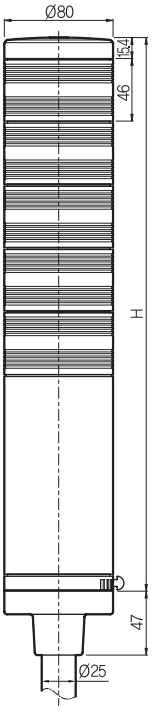
Because LED unit is designed as connector structure type, changing color or repairing is simple.

■ Buzzer melody adjustment

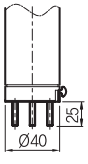
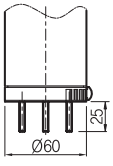
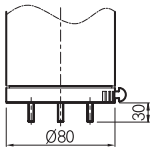
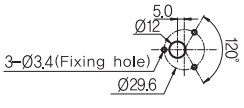
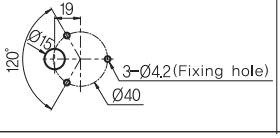
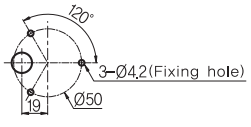
There is a lever that can adjust the volume of buzzer (located at the bottom part of body)



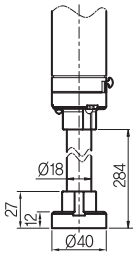
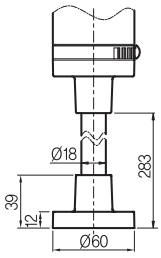
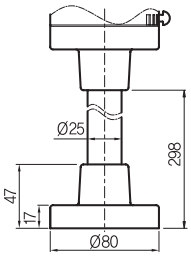
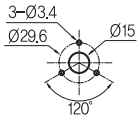
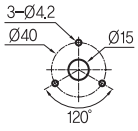
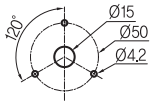
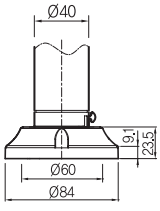
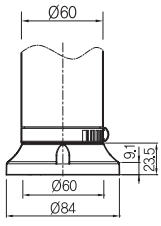
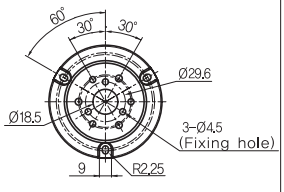
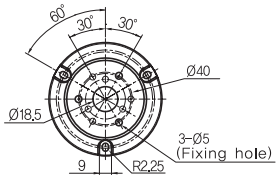
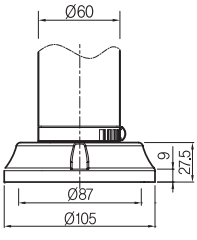
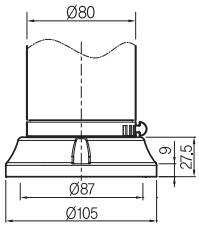
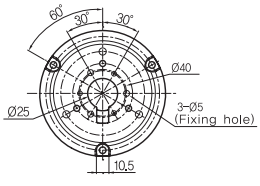
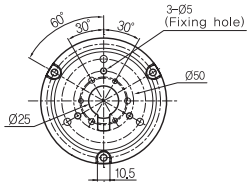
Dimension (unit : ㎜)

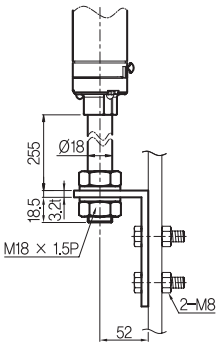
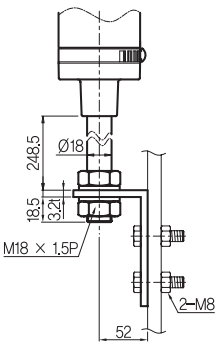
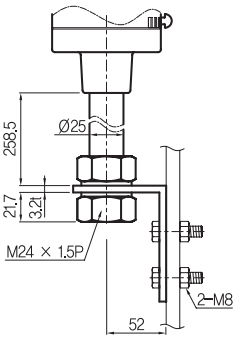
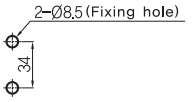
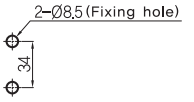
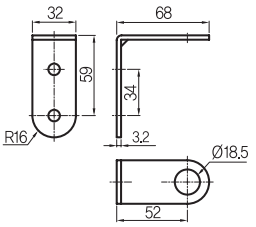
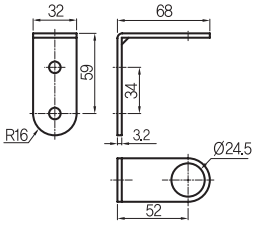
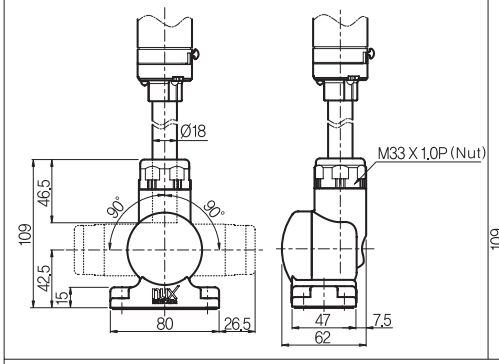
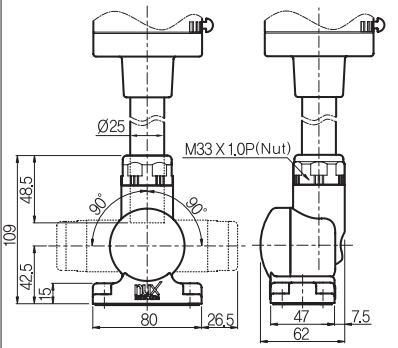
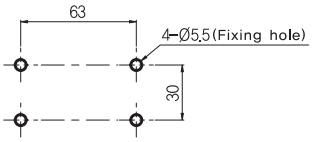
Model		STL040		STL060		STL080
		STL040-□C51	STL040-□A11	STL060-□C51	STL060-□A11	STL080-□□
Appearance						
Height(H) ㎜	1 stack	159	217	153	210	223
	2 stack	195	253	194	251	269
	3 stack	231	289	235	292	315
	4 stack	267	325	276	333	361
	5 stack	303	361	317	374	407

Dimension and panel cutout (unit : ㎜)

Appearance	STL040-□□□□	STL060-□□□□	STL080-□□□□
			
Direct installation			

STL series (Ø40, Ø60, Ø80)

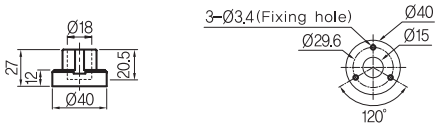
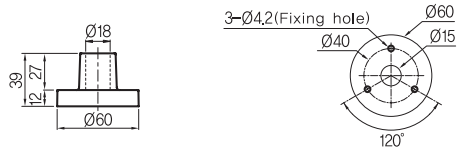
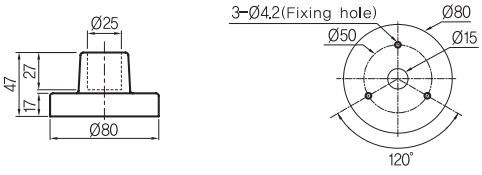
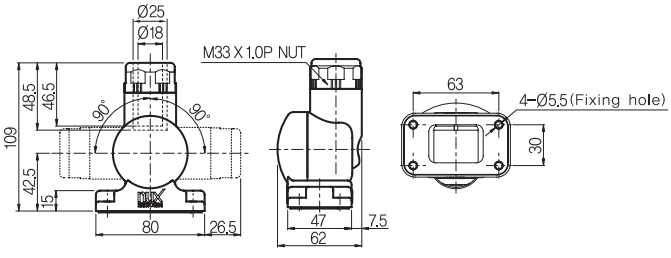
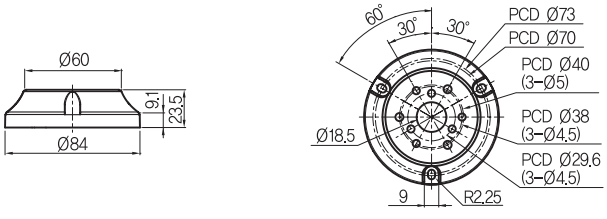
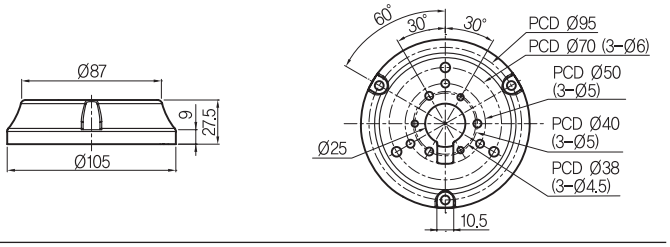
Appearance	STL040-□□□□	STL060-□□□□	STL080-□□□□
Plastic round supporter			
			
STM-84 Supporter (optional)			Inapplicable
			
STM-105 Supporter (optional)	Inapplicable		
			

Appearance	STL040-□□□□	STL060-□□□□	STL080-□□□□
L type supporter			
			
			
ETM Elbow supporter (optional)			
			

※ Elbow type supporter : Applied to the Ø18, Ø25 pipe due to the plastic bushing

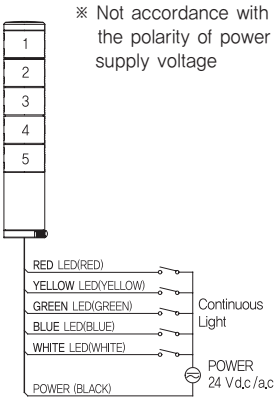
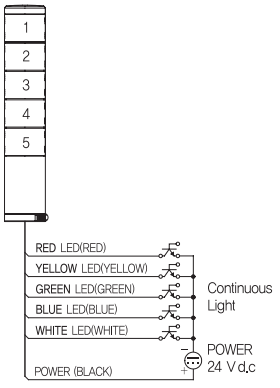
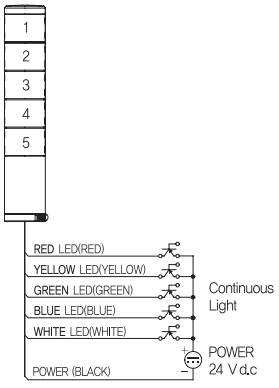
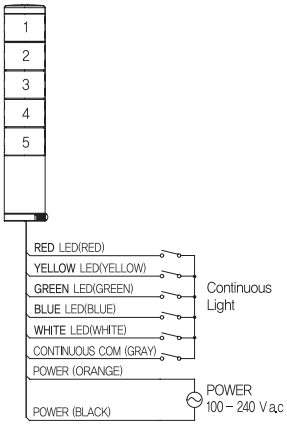
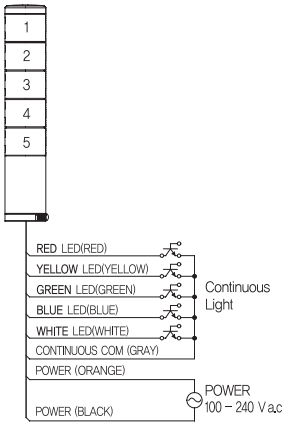
STL series (Ø40, Ø60, Ø80)

Supporter dimension (unit : ㎜)

Appearance	Dimension and panel cutout
MP-40	
MP-60	
MP-80	
ETM (optional)	
STM-84 (optional)	
STM-105 (optional)	

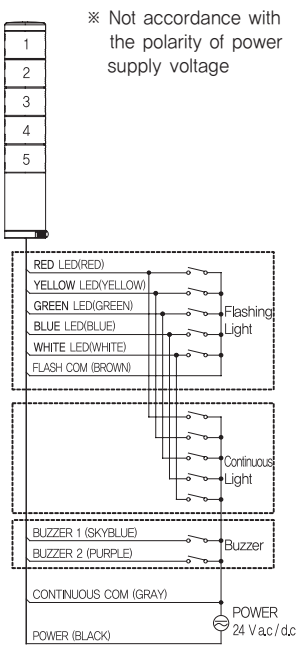
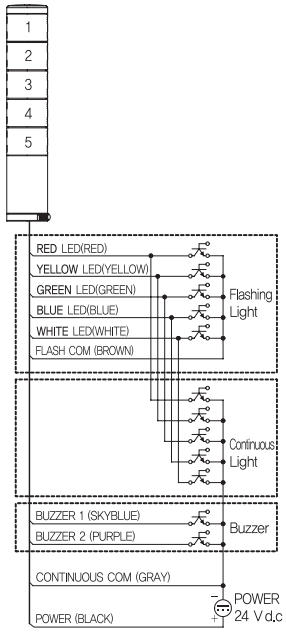
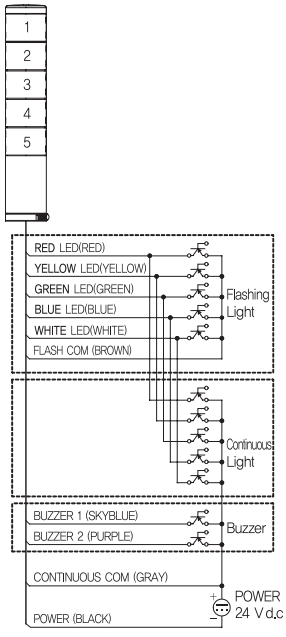
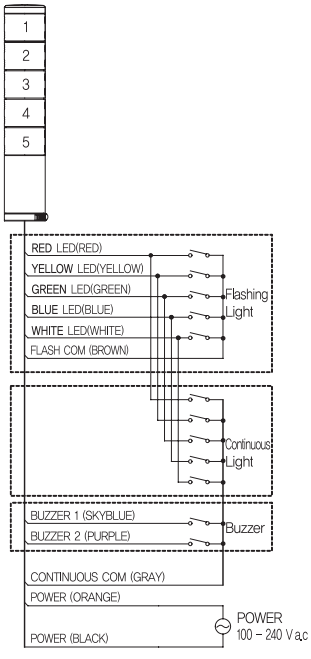
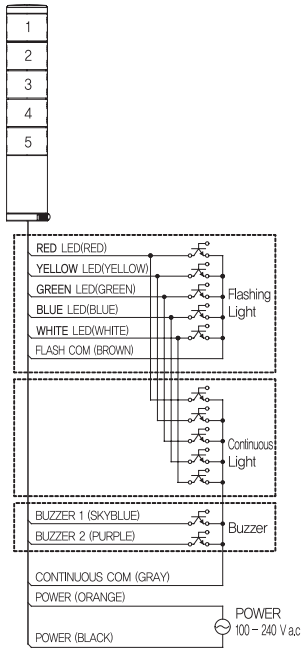
Connection diagram

■ Continuous light only (STL-040A, STL-060A, STL-080A)

Contact drive	NPN transistor drive	PNP transistor drive
Power supply voltage 24 V d.c / a.c	Power supply voltage 24 V d.c	Power supply voltage 24 V d.c
		
Power supply voltage 100 - 240 V a.c	Power supply voltage 100 - 240 V a.c	
		Inapplicable

STL series (Ø40, Ø60, Ø80)

■ Continuous light, flashing light, buzzer (STL-040F, STL-060F, STL-080F)

Contact drive	NPN transistor drive	PNP transistor drive
Power supply voltage 24 V d.c/a.c	Power supply voltage 24 V d.c	Power supply voltage 24 V d.c
		
Power supply voltage 100 – 240 V a.c	Power supply voltage 100 – 240 V a.c	
		Inapplicable

STA series (Ø25)

Sign tower

- Ø25 cylinder type, suitable for the small machine and narrow space
- Incandescent lamp indicator (socket type)
- 2 ~ 4 modules stacking structure and 4 types of colors
- Pipe direct installation structure, simple installation
- Continuous light only

Suffix code

Model	Code		Description
STA-	□	□	Sign tower (Ø25)
Power supply voltage	01		12 V d.c/a.c
	02		24 V d.c/a.c
	10		110 V a.c
	20		220 V a.c
Stacking modules		2	2 stack (Red, green)
		3	3 stack (Red, yellow, green)
		4	4 stack (Red, yellow, green, blue)

※ L type supporter : Sold separately

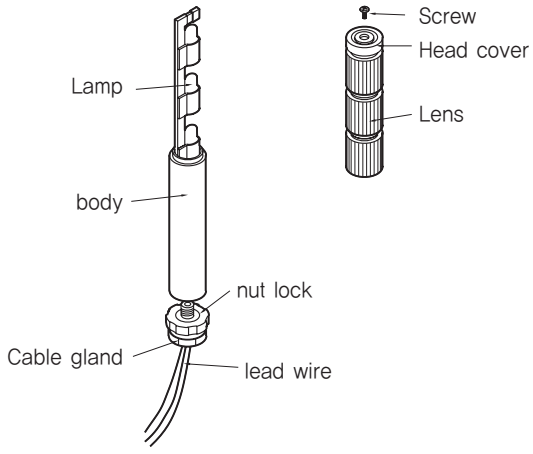
Specification

Model	STA-□2	STA-□3	STA-□4
Function	Continuous light only		
Diameter size	Ø25		
Number of stacking	2 stack	3 stack	4 stack
Power supply voltage	12 V d.c/a.c, 24 V d.c/a.c, 110 V a.c, 220 V a.c		
Power frequency	50/60 ㎐ (dual usage)		
Light source	incandescent lamp (socket type)		
Radiating angle	360˚		
Lens material	Polycarbonate (P.C)		
Pipe material	aluminum		
Lens color	2 stack (Red, green), 3 stack (Red, yellow, green), 4 stack (Red, yellow, green, blue)		
Degree of protection	IP 54		

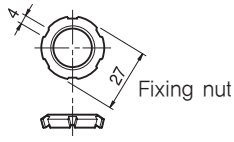
Lamp specification

Power supply voltage		12 V a.c/d.c	24 V a.c/d.c	110 V a.c	220 V a.c
Lamp capacity		12 V a.c / 2 W	24 V a.c / 2 W	110 V a.c / 2 W	220 V a.c / 2 W
Power consumption	2 stack	4 W	4 W	4 W	4 W
	3 stack	6 W	6 W	6 W	6 W
	4 stack	8 W	8 W	8 W	8 W

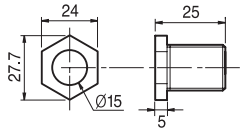
Name of each part



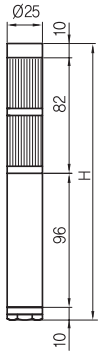
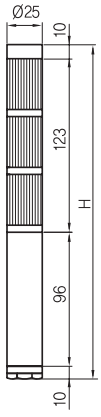
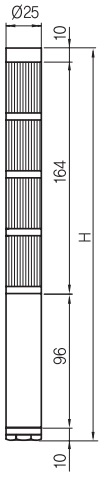
• Mounting part



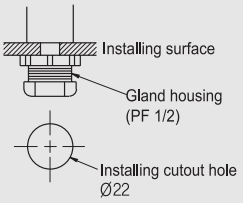
• Cable gland



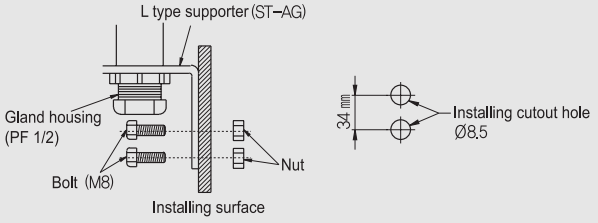
Dimension (unit : ㎜)

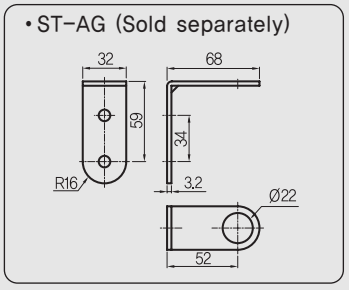
Model	STA-□2	STA-□3	STA-□4
Dimension			
Stacking	2 stack	3 stack	4 stack
Height(H)	188	229	270

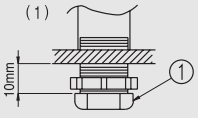
Installation method



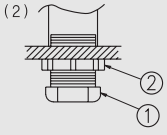
※ Panel thickness : Less than 10mm



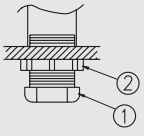




Rotate the indicated number ① more than 3 threads (5mm).



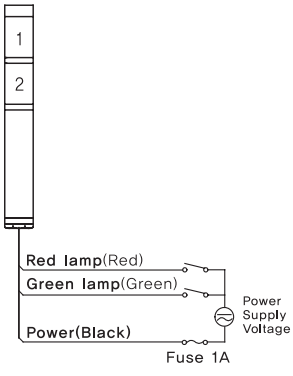
Please hold the indicated number ① and rotate the indicated number ② until it touches fixing plate .



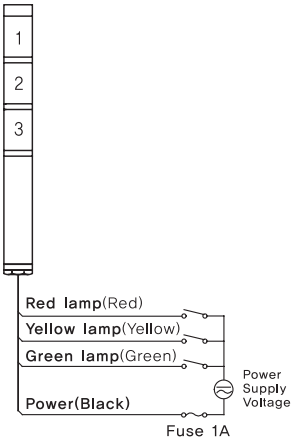
Fix the indicated number ① with the M24 spanner and tighten the indicated number ② with the M27 spanner.

Connection diagram

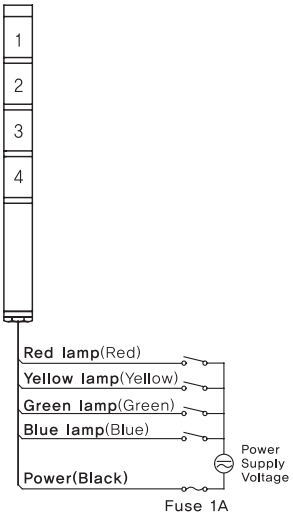
■ 2 stack



■ 3 stack



■ 4 stack

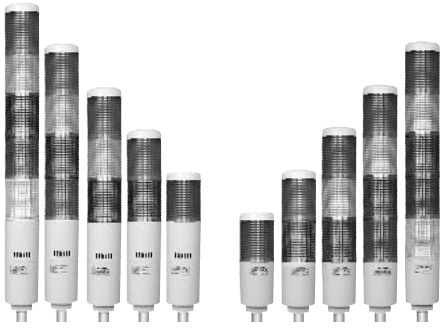


※ DC power supply voltage: ignore the polarity
※ Wire length : 500mm

HY-TN series (Ø55)

Sign tower

- Ø55 cylinder type
- Applied the socket type incandescent lamp
- 1~5 stacking structure and 5 kinds of colors
- Continuous light only, continuous light, flashing light, Buzzer (selected by the external signal)



Suffix code

Model	Code				Description	
HY-	□	□	□	□	HY-TN series sign tower	
Function	TN				Continuous light only	Bulb type
	TWN				Continuous light, flashing light	
	TBN				Continuous light, buzzer	
	TWBN				Continuous light, flashing light, buzzer	
	TLN				Continuous light only	LED type
	TWLN				Continuous light, flashing light	
	TBLN				Continuous light, buzzer	
	TWBLN				Continuous light, flashing light, buzzer	
Power supply voltage		12			12 V d.c	
		24			24 V d.c	
		110			110 V a.c	
		220			220 V a.c	
Stacking modules			1		1 stack (Red)	
			2		2 stack (Red, green)	
			3		3 stack (Red, yellow, green)	
			4		4 stack (Red, yellow, green, blue)	
			5		5 stack (Red, yellow, green, blue, white)	
Supporter selection					None (L type bracket standard)	
Optional					Plastic bracket installation (ST-011)	

Light source

Bulb	LED(HY-LP□□)

Specification

Model	HY-TN □□	HY-TWN □□	HY-TBN □□	HY-TWBN □□	HY-TLN □□	HY-TWLN □□	HY-TBLN □□	HY-TWBLN □□
Function	continuous light only	continuous light, flashing light	continuous light, Buzzer	continuous light, flashing light, Buzzer	continuous light only	continuous light, flashing light	continuous light, Buzzer	continuous light, flashing light, Buzzer
Diameter	Ø55							
Number of stacks	1 ~ 5 stack							
Flashing time	–	60 times/1min	–	60 times/1min	–	60 times/1min	–	60 times/1min
Buzzer melody type	–		Single melody, beeping		–		Single melody, beeping	
Buzzer melody volume	–		80 dB (1 m distance)		–		80 dB (1 m distance)	
Power supply voltage	12 V d.c, 24 V d.c, 110 V a.c, 220 V a.c 50/60 Hz							
Light source	Incandescent lamp (BA 15S)				LED (BA 15S)			
Radiating angle	360°							
Lens material	SAN							
Pipe material	Aluminum							
Lens color	Red, Yellow, Green, Blue, White							
Degree of protection	In door							
Cetification	CE							
IK cord	IK06							

Lamp specification and current consumption

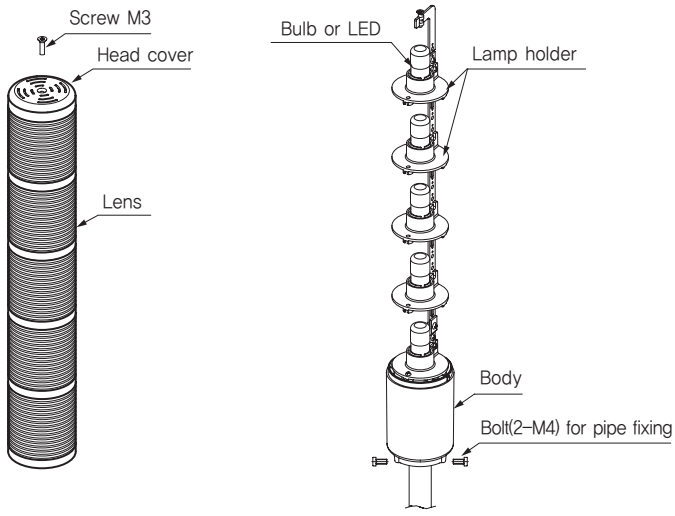
■ Bulb (BA 15S)

Power supply voltage		12 V d.c	24 V d.c	110 V a.c	220 V a.c
Lamp capacity		5 W			
Light source type		Bulb (BA 15S)			
Current consumption	1 stack	0.42 A	0.21 A	0.07 A	0.04 A
	2 stack	0.84 A	0.42 A	0.14 A	0.08 A
	3 stack	1.26 A	0.63 A	0.20 A	0.11 A
	4 stack	1.68 A	0.84 A	0.27 A	0.14 A
	5 stack	2.10 A	1.05 A	0.33 A	0.17 A

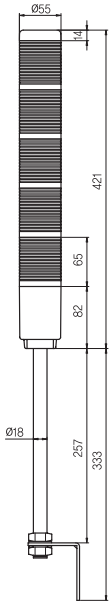
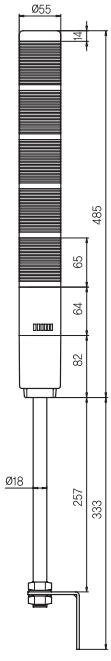
■ LED (BA 15S)

Power supply voltage		12 V d.c	24 V d.c	110 V a.c	220 V a.c
Lamp capacity		1.2 VA	1.2 VA	2 VA	4 VA
Light source type		LED (BA 15S)			
Current consumption	1 stack	96 ㎃	48 ㎃	18 ㎃	18 ㎃
	2 stack	192 ㎃	96 ㎃	36 ㎃	36 ㎃
	3 stack	288 ㎃	144 ㎃	54 ㎃	54 ㎃
	4 stack	384 ㎃	192 ㎃	72 ㎃	72 ㎃
	5 stack	480 ㎃	240 ㎃	90 ㎃	90 ㎃

Name of each part



Dimension (Unit : ㎜)

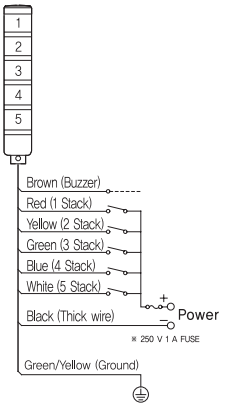
HY-TN, HY-TWN, HY-TLN, HY-TWLN type		HY-TBN, HY-TWBN, HY-TBLN, HY-TWBLN type	
Appearance	Dimension	Appearance	Dimension
			

Installation method

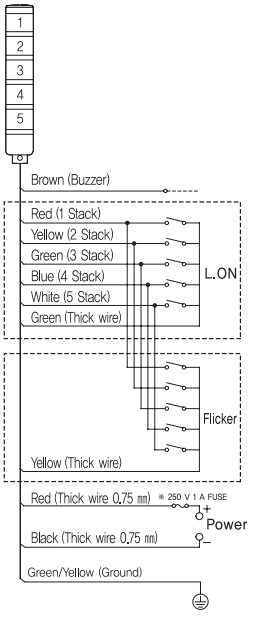
- When controlling more than 2 sign towers at the same time, please use independent contact. (TWN type)
- With the 110 V, 220 V a.c specification of TWN type and TWBN type, please do not connect the yellow and green wire to the power line (red and black)
- When operating the Buzzer, please connect the brown wire (for buzzer) to the L.ON (light on) wire or flashing wire. It is able to select as continuous melody (TNB type) and single melody. (TWBN type)
- When operating the buzzer and indicator at the same time, please connect the brown wire of buzzer to the signal input wire of indicator that users want to operate the buzzer. Single melody when light is flashing and continuous melody when light is continuously ON.
- With the 12 V d.c and 24 V d.c specifications, black wire (thickness : 0.75 mm) is (–).
- please connect ground wire (Green/Yellow) to the ground contact part of the main machine. (only for AC)

Connection diagram

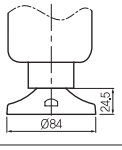
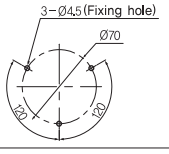
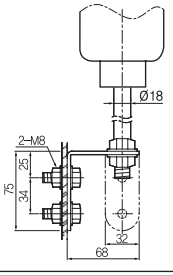
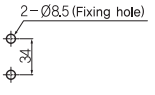
■ HY-TN type, HY-TWN type, HY-TLN type, HY-TWLN type



■ HY-TBN type, HY-TWBN type, HY-TBLN type, HY-TWBLN type



Supporter appearance and panel cutout (Unit : ㎜)

Appearance	Dimension and panel cutout
ST-011	 
L type supporter	 

CTB-TB series

Cube tower

- Side length 82 mm square pillar type
- 1 stack or 2 stacks structures and 4 kinds of colors
- Incandescent lamp and square pillar type indicator
- Direct installation type and built in the lamp lock ring

Suffix code

Model	Code		Description
CTB-TB	□	□	82 mm square pillar type indicator (only for Light on)
Power supply voltage	01		12 V d.c/a.c
	02		24 V d.c/a.c
	10		110 V a.c
	20		220 V a.c
Stacking		1	1 stack (red) ※ order-made
		2	2 stack (red, blue)

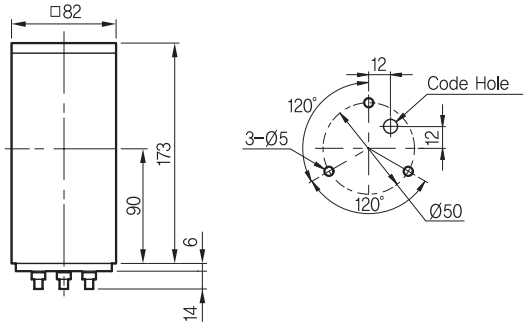
Specification

Model	CTB-TB□1	CTB-TB□2
Diameter size	82 mm square pillar	
Function	Continuous light Only	
Number of stacking	1 stack (Order made)	2 stack
Light source	Incandescent lamp (base : E12)	
Lens material	Acrylic resin	
Lens color	Selectable among red, yellow, green and blue	
Degree of protection	For indoor usage	
Ambient temperature	-10 ~ 55 ℃	

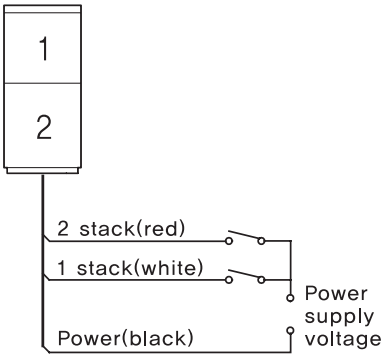
Power specification

Stacking	Power supply voltage	Lamp capacity	Lamp base	Weight
2 stacking standard	12 V d.c	12 V 10 W	E 12	1 stack : 300 g 2 stack : 500 g
	24 V d.c	24 V 10 W		
	110 V a.c	110 V 10 W		
	220 V a.c	220 V 10 W		

Dimension (unit : ㎜)

Model	Appearance	Dimension and panel cutout
CTB-TB		

Connection diagram

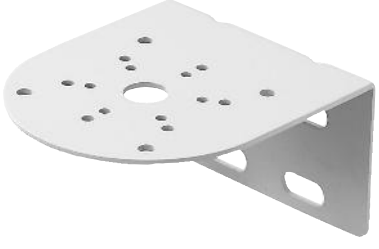
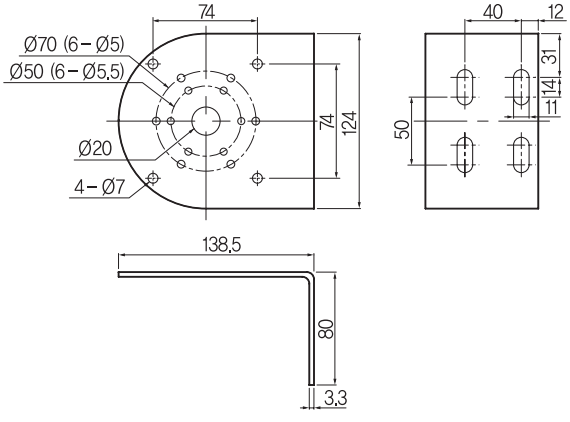


※ d.c power supply voltage : ignore the polarity

※ Wire length : 920 ㎜

Supporter (optional) (unit : ㎜)

Multi installation supporter that can be applied to the Ø25 indicator, and side length 82 ㎜ / 116 ㎜ cube tower : rotating, flashing light and etc

Appearance	Dimension
 ST-013	

CTB-KBB/CTC-KBM

Square pillar type Cube tower (Turn light)

- Various square pillar type such as side length 82mm and 116mm
- 1~3 stacking structure and 3 kinds of colors
- Incandescent lamp light source, square pillar type rotating indicator
- Rotating continuous light, buzzer or rotating continuous light, 4 melodies

Suffix code

Model	Code		Description
CTB-KBB	□	□	82 mm square pillar type Cube tower (Turn light) (buzzer built in)
CTC-KBM	□	□	116 mm square pillar type Cube tower (Turn light) (4 melody type built in)
Power supply voltage	02		24 V d.c/a.c
	10		110 V a.c
	20		220 V a.c
Stacking modules		1	1 stack (Red)
		2	2 stack (Red, green)
		3	3 stack (Red, yellow, green)

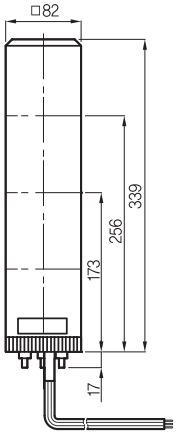
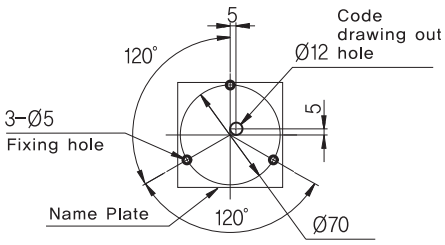
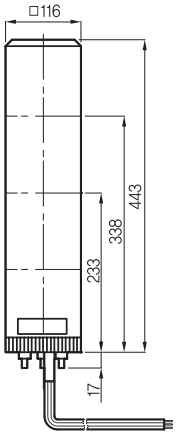
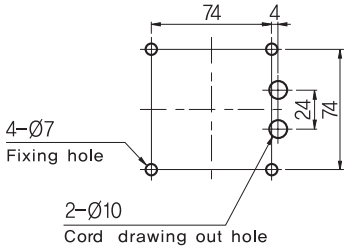
Specification

Model	CTB-KBB□□	CTC-KBM□□
Diameter size	82 Square Pillar	116 Square Pillar
Function	Rotating continuous light and buzzer	Rotating continuous light and 4 melodies
Stacking	1 ~ 3 stack	
Rotating speed	160 times/1 min	
Alarm	Buzzer	4 melodies
Light source	Incandescent lamp (BA 15S)	
Lens material	Acrylic resin	
Lens color	red, yellow, green	
Degree of protection	IP 23	
Ambient temperature	-10 ~ 55 ℃	

Power specification

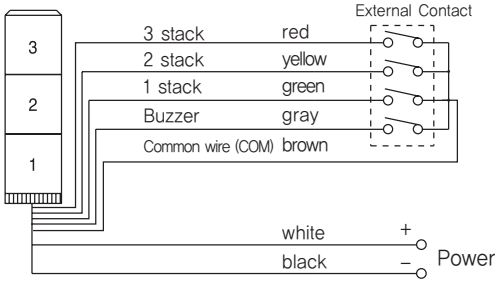
Stacking number	Power supply voltage	Lamp capacity	Lamp base	Weight (g)	
				CTB-KBB□□	CTC-KBM□□
1 stack	24 V d.c	24 V 10 W	BA 15S	500	1,300
	110 V a.c	12 V 5 W		700	1,600
	220 V a.c	12 V 5 W			
2 stack	24 V d.c	24 V 10 W	BA 15S	800	2,000
	110 V a.c	12 V 5 W		1,200	2,500
	220 V a.c	12 V 5 W			
3 stack	24 V d.c	24 V 10 W	BA 15S	1,200	2,500
	110 V a.c	12 V 5 W		1,600	3,000
	220 V a.c	12 V 5 W			

Dimension (unit : ㎜)

Appearance	Dimension	panel cutout
CTB-KBB□3		
CTC-KBM□3		

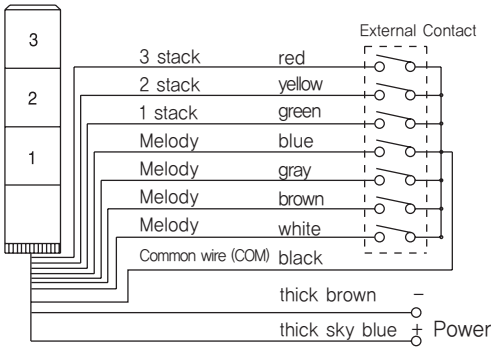
Connection diagram

■ CTB-KBB (82 square pillar type)



- Power supply voltage wires are white and black. The rest is external signal wire
- Please do not supply power into the external signal wire.
- Thick white wire is "+" in case of d.c power voltage
- After completing the wiring, please insulate the wires that users do not use.

■ CTC-KBM (116 square pillar type)

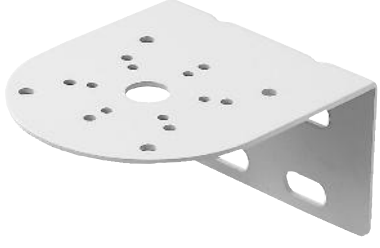
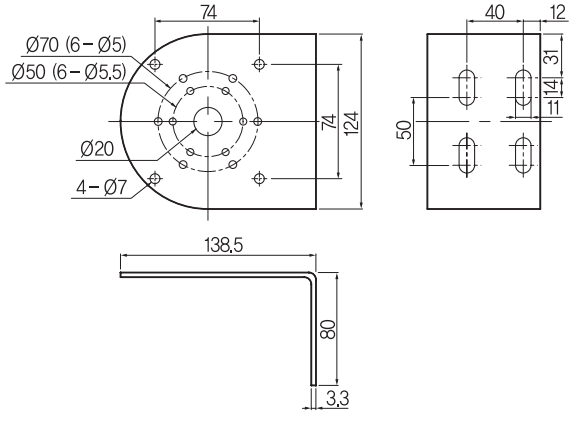


※ Wire length : 400 ㎜

- Power supply voltage wires are thick brown and sky blue. The rest is external signal wire
- Please do not supply power into the external signal wire
- Thick sky blue wire is "+" in case of d.c power voltage
- After completing the wiring, please insulate the wires that users do not use
- Melody types
  ① Brown : dingdong-dingdong
  ② Gray : tidi-tidi
  ③ Blue : for Alice
  ④ White : repeats above three melodies

Supporter (optional) (unit : ㎜)

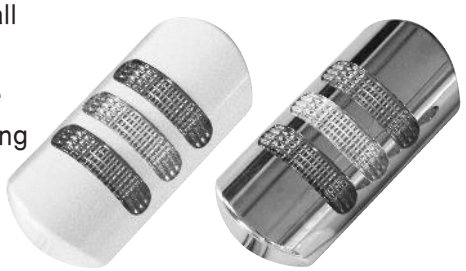
Multi installation supporter that can be applied to the Ø25 indicator, and side length 82 ㎜ / 116 ㎜ cube tower : rotating, flashing light and etc

Appearance	Dimension
 ST-013	

WME series

Wall mounted light

- 3 colors of light slim type and suitable for wall mounting
- Long life expectancy by HID LED light source
- 2 types of body : Beige color or chrome plating
- Continuous light indication, flashing light indication, 2 melodies buzzer built in
- Degree of protection IP54



Suffix code

Model	Code			Description
WME-	□	□	□	Wall mounted light
Appearance	B			Beige color body
	C			Chrome plating body
Function		A		Continuous light indication
		F		Continuous light indication, flashing light indication, buzzer (selected by the external signal)
Power supply voltage			C51	24 V d.c/a.c dual usage, 50 – 60 Hz
			C41	12 V d.c/a.c dual usage, 50 – 60 Hz ※ C41 optional

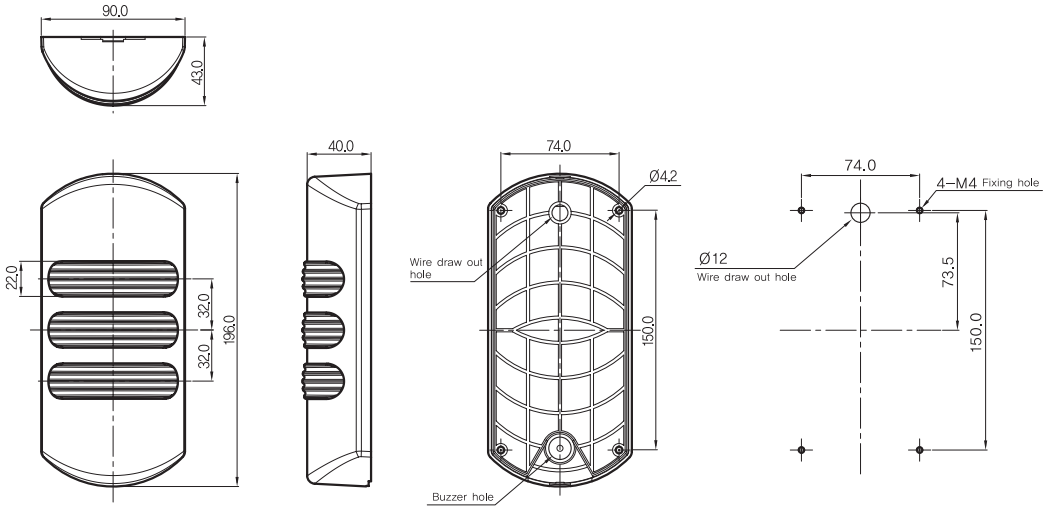
Specification

Model	WME-BA	WME-CA	WME-BF	WME-CF
Appearance	Beige color body	Chrome plating body	Beige color body	Chrome plating body
Function	Only for continuous light		Continuous light, flashing light, buzzer (selected by the external signal)	
Stacking number	3 stack			
Flashing time	–		Approx 60 times / 1min	
Buzzer	–		2 types of melodies (single melody/beeping) approx 80 dB (1 m distance)	
Power supply voltage	24 V d.c/a.c (dual usage), 50 – 60 Hz ※ 12 V d.c/a.c (Order made)			
Current consumption	Max 2.1 W			
Light source	LED			
Material	Lens : Polycarbonate (P.C), Body : ABS			
Lens color	Red, Yellow, Green			
Degree of protection	IP54			

Slim type wall mounted light

It is able to install it on the wall in vertical direction or horizontal direction and since it is a slim type (extended 43mm), it occupies a less space to install.

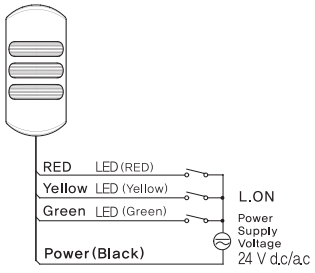
Dimension and panel cutout (unit : ㎜)



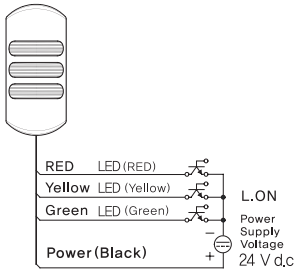
Connection diagram

■ WME-BA, WME-CA (Continuous light only)

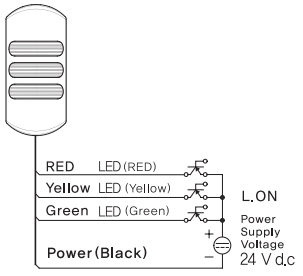
• Contact drive



• NPN transistor drive

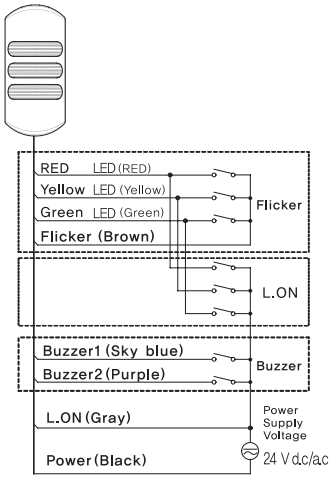


• PNP transistor drive

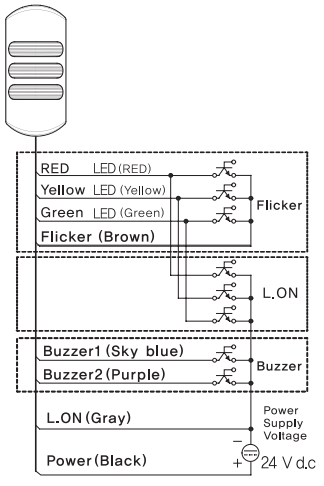


■ WME-BF, WME-CF (Continuous light, flashing light, buzzer)

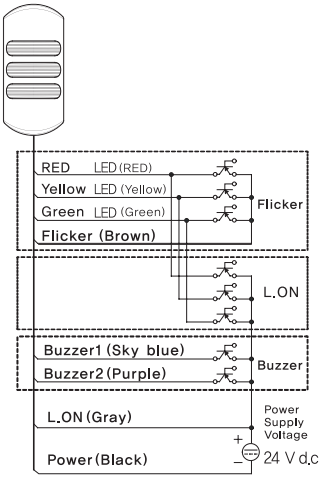
• Contact drive



• NPN transistor drive



• PNP transistor drive



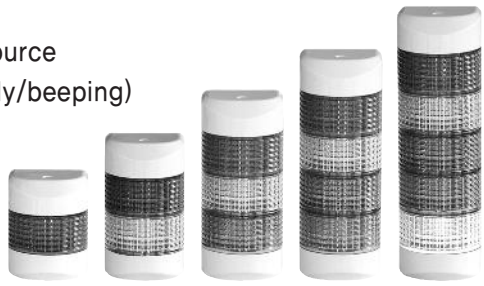
※ Wire length : 1,000 ㎜

※ L.ON : Light on

WMS series

Wall mounted light

- 1~5 modules, suitable for wall mounting
- Long life expectancy by HID LED light source
- 2 types of buzzer melodies (single melody/beeping)
- Continuous light indication, flashing light indication
- Degree of protection IP54



Suffix code

Model	Code			Description
WMS-	□	□	□	Wall mounted light
Function	A			Only for continuous light
	F			Continuous light, flashing light, buzzer (selected by the external signal)
Power supply voltage		C51		24 V d.c/a.c dual usage, 50 – 60 Hz (Standard specification)
		C41		12 V d.c/a.c dual usage, 50 – 60 Hz ※ "C41" Order made
Stacking modules			1	1 stack (Red)
			2	2 stack (Red, Green)
			3	3 stack (Red, Yellow, Green)
			4	4 stack (Red, Yellow, Green, Blue)
			5	5 stack (Red, Yellow, Green, Blue, White)

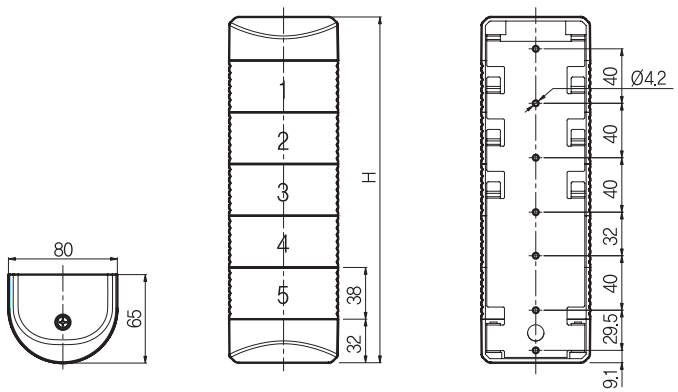
Specification

Model	WMS-A□C51	WMS-F□C51
Function	Only for continuous light	Continuous light, flashing light, buzzer (selected by the external signal)
Stacking number	1 ~ 5 stack	
Flashing time	–	Approx 60 times / 1 min
Buzzer	–	2 types of melodies (single melody/beeping) 70 dB (1 m distance)
Power supply voltage	24 V d.c/a.c (Dual usage), 50 – 60 Hz ※ 12 V d.c/a.c 50 – 60 Hz (Order made)	
Power consumption	3.2 W max (including the 5 buzzer) ※But, 0.5 W (Lamp/1 stack)	
Light source	LED	
Material	Lens : Polycarbonate (P.C), Body : ABS	
Lens color	Red, Yellow, Green, Blue, White (Left to right, top to button)	
Degree of protection	IP54	

Slim type wall mounted light

It is able to install it on the wall in vertical direction or horizontal direction and since it is a slim type (extended 65mm), it occupies a less space to install.

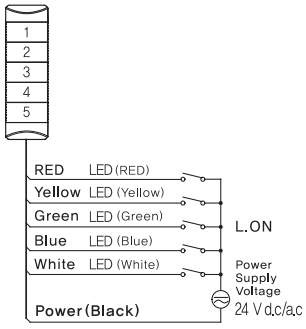
Dimension and panel cutout (unit : ㎜)

Model	Dimension				
Dimension					
Panel cutout					
Stacks	1 stack	2 stack	3 stack	4 stack	5 stack
Height (H)	102	140	178	216	254

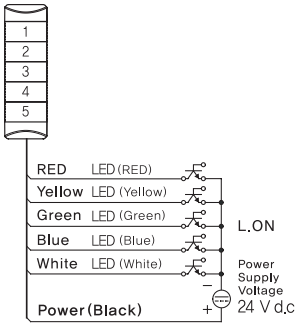
Connection diagram

■ WMS-A (Continuous light only)

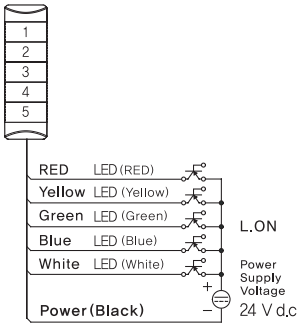
• Contact drive



• NPN transistor drive

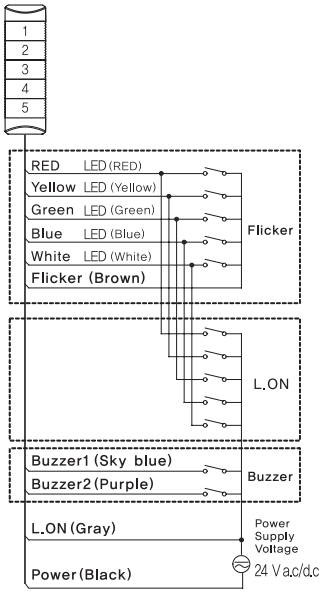


• PNP transistor drive

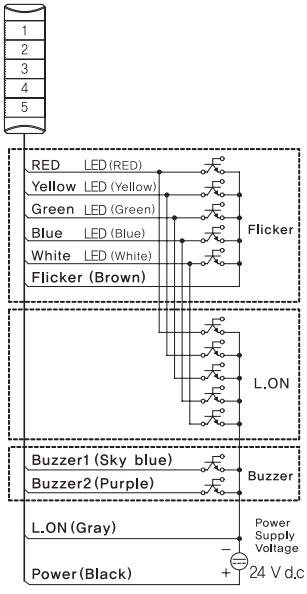


■ WMS-F (Continuous light, Flashing light, Buzzer)

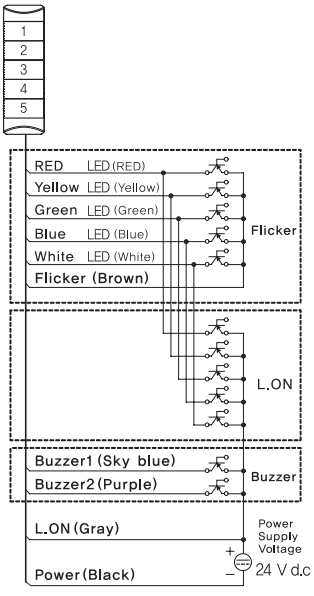
• Contact drive



• NPN transistor drive



• PNP transistor drive



※ Wire length : 1,000 ㎜

※ L.ON : Light on

WT/WTS series

Turn light with sensor

- Semi-permanent life expectancy by applying the LED light source
- Excellent resistance from the vibration by applying the flat type LED light source
- Standard color: Red, Yellow and Green
- Suitable for security issue (Sensor one-body type)
- Turn light starts to operate when motion is detected. (Sensor one-body type)
- Simple wiring and installing due to applying the wall mounted installation type
- Excellent diffusivity by applying the spinning reflector exclusive for LED
- Not only the turn light is built in, but also 4 melody tones (90dB) are built in.

Suffix code

Model	Code			Information
WTS-	□	□	□	Sensor one-body type (Infrared sensor attached)
WT-				Turn light indicator
Cap shape	P			Round cap
	F			Square cap
Power supply voltage		C51		24 V d.c / a.c, 50 - 60 Hz
		A11		100 - 240 V a.c, 50 - 60 Hz
Cap color			R	Red
			Y	Yellow
			G	Green

Specification

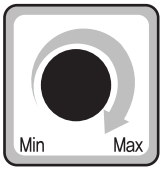
Model	WT-□C51□	WT-□A11□	WTS-□C51□	WTS-□A11□
Function	Turn Light		Turn light with sensor	
	4 types melody(Fire, Ambulance, Police, For Elise)			
Power supply voltage	24 V d.c / a.c, 50 - 60 Hz	100 - 240 V a.c, 50 - 60 Hz	24 V d.c / a.c, 50 - 60 Hz	100 - 240 V a.c, 50 - 60 Hz
Power consumption	3.3 W max	6 W max	3.3 W max	6 W max
Revolution	Approx. 180 times/1 min (reflector)			
Light source	Flat type LED (1 W)			
Melody tone	Approx. 90 dB (4 melody tones)			
Cap(sensor)material	P.C(Polycarbonate)			
Body	Heat resistant ABS copolymer			
Cap color	Red, Yellow, Green			
Environmental operation range	Temperature : -5 ~ 50 ℃, humidity : 35 ~ 85 % R.H without dew condensation			

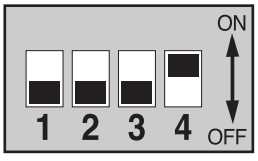
Simple wall mounted installation structure

It is designed as fixing the terminal by separating from the body so it allows users to install easily. Also, wiring is simple because the turn light is one-body type. (WTS sensor one-body type)

Melody setting

Set one of 4 types of melody to ON by using the deep switch which is built inside of the case then melody will be generated once the turn-light is operated. Increase the melody volume by turning the inner volume to the right side.



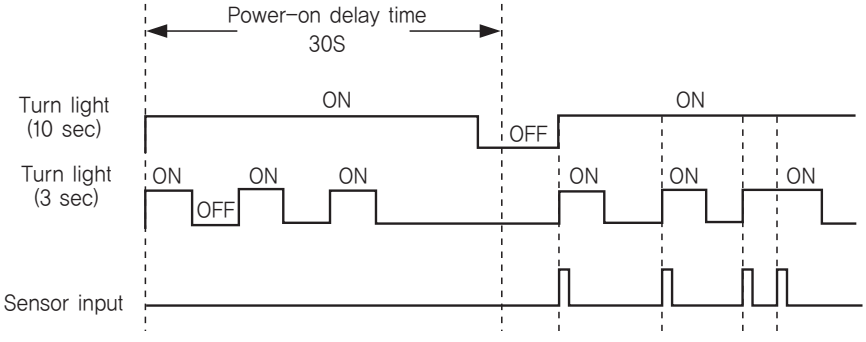


1	FIRE
2	AMBULANCE
3	POLICE
4	For Elise

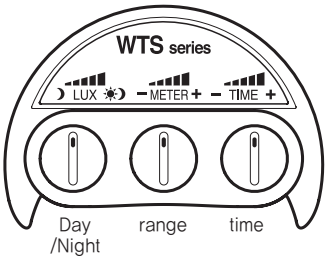
※ Melody default setting is number 4 (For Elise)

Infrared (PIR) sensor operation ※ WTS Series

- Attach the Infrared light sensor to the turn light. Turn light will be operated when it detects any motion.
- Setting for detection range (10 m max.), day/night operation, output time (10 sec max.) of sensor can be adjusted by the external volume.
- After supplying the power, it requires approx. 30 sec of the power on delay time. Power on delay time is known as the preparation time for the initial sensor input and it operates the turn light just like an image provided in the below.
- ON time is increased or decreased depending on the set time and it operates properly after elapsing the Power on delay time.
- The turn light continuously operates as long as sensor input is in present.



Infrared (PIR) sensor volume adjustment ※ WTS Series



■ Day/Night operation setting

- Turning the volume to the right end will always operate the infrared light disregardingthe day/night time and turning the volume to the left end will operate only in a night time

■ Detection range setting

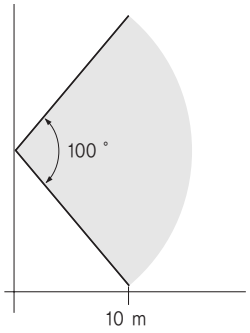
- Longer detection range as turning the volume to the right side. (Max. 10 m)

■ Output time setting (Turn light operation time setting)

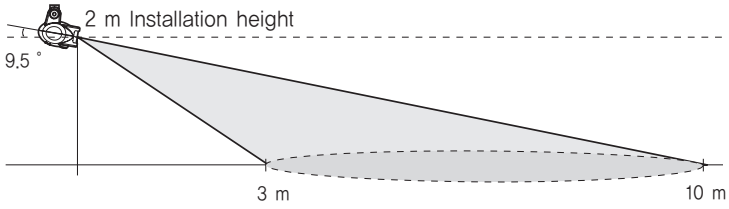
- Longer output time as turning the volume to the right side. (Max. 10 sec)

■ Infrared (PIR) sensor detection range

- Top view



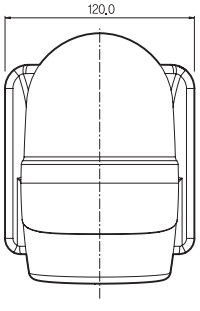
- Side view

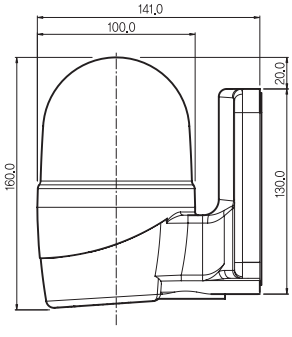


- The infrared sensor detects the motion which of distance more than 30 cm per 1 sec so even though when people or animals are within the detection range, sensor will not be operated if they make no such movements within the sensing range.
- It may not detect the object if the object heads toward to the infrared sensor directly.

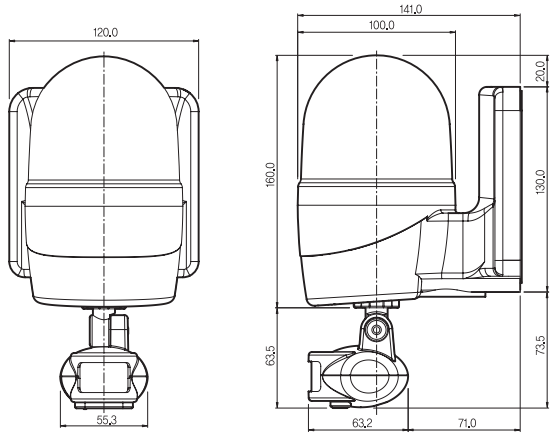
Dimension and installation panel cutout Unit : [㎜]

■ WT

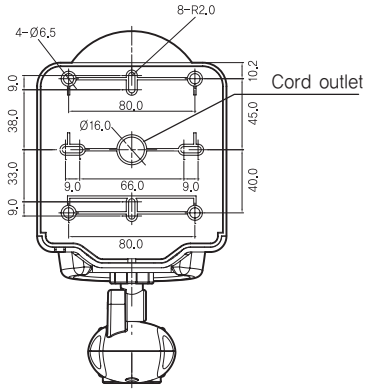




■ WTS



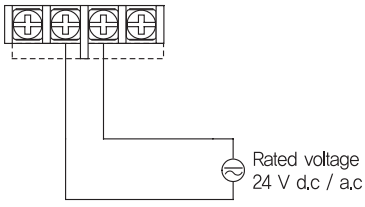
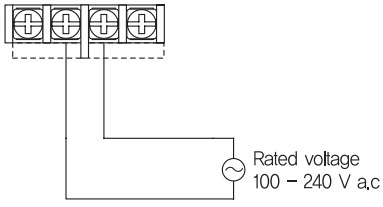
■ Installation panel cutout



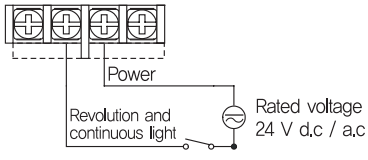
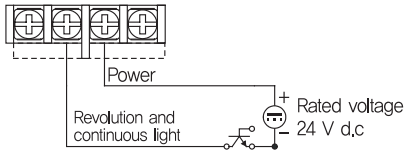
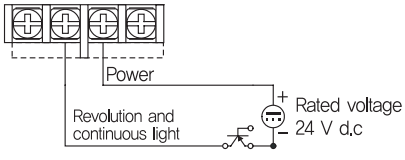
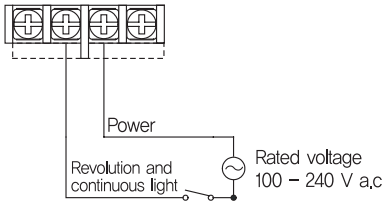
※ WT and WTS have same installation panel cutout

Connection diagram

■ Sensor one body type turn light (WTS)

WTS-□C51□ Drive by the sensor operation	WTS-□A11□ Drive by the sensor operation
	

■ Turn light (WT)

WT-□C51□ Contact drive	WT-□C51□ NPN Transistor drive
	
WT-□C51□ PNP Transistor drive	**WT-□A11□ Contact drive**
	

TLB series

TLB060 Turn light

- Ø70 compact flashing light
- Rotating continuous light,
  rotating continuous light and buzzer
- Incandescent lamp indicator (socket type)
- Direct mounting type, support mounting type
- 24 V d.c/a.c or 100 - 240 V a.c.

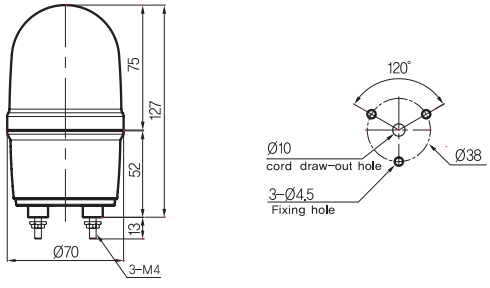
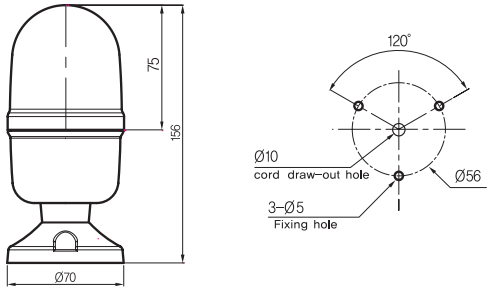
Suffix code

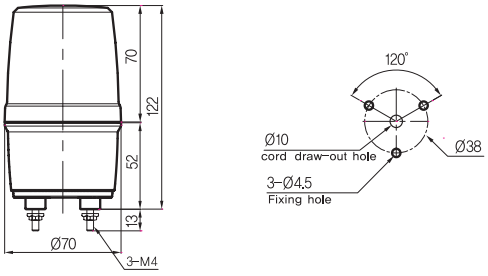
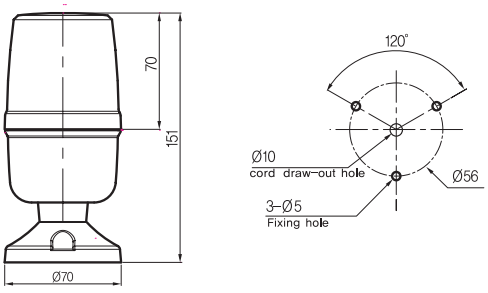
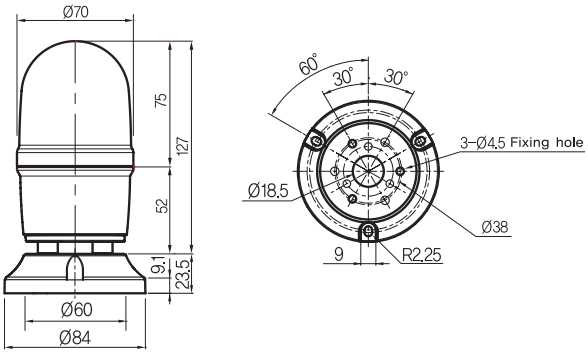
Model	Code					Description	
TLB	□	-□	□	□	□	Turn light	
Dimension	060					Ø70 Cap	
Cap shape		P				Round cap direct installation	※ Optional (supporter: STM-84)
		F				Rectangular cap direct installation	
		R				Round cap support installation	※ "F" function selection excluded
		X				Rectangular cap support installation	
Function			A			Rotating continuous light	
			F			Rotating continuous light, Buzzer	※ Cap shape, R, X type excluded
Power supply voltage				C51		24 V d.c/a.c 50 - 60 Hz	
				A11		100 - 240 V a.c 50 - 60 Hz	
Cap color					R	Red	
					Y	Yellow	
					G	Green	

Specification

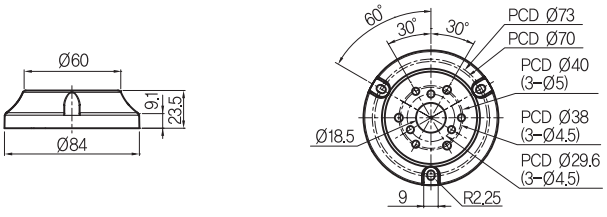
Model	TLB060-□AC51	TLB060-□AA11	TLB060-PFC51 TLB060-FFC51	TLB060-PFA11 TLB060-FFA11
Function	Rotating continuous light		Rotating continuous light, buzzer	
Dimension	Ø70			
Power supply voltage	24 V d.c/a.c	100 - 240 V a.c	24 V d.c/a.c	100 - 240 V a.c
Power frequency	50 ~ 60 Hz			
Power consumption	max 7 W	max 11 W	max 7 W	max 11 W
Rotation speed	Approx 210 times/min			
Light source (socket)	Incandescent lamp (BA 15S)			
Lamp capacity	24 V 5 W			
Buzzer	-		Buzzer built in(approx 80dB from distance 1m)	
Cap material	Polycarbonate (P.C)			
Body	ABS resin			
Cap color	Red, Yellow, Green			
Degree of protection	IP54			

Dimension and panel cutout (unit : ㎜)

Model	Appearance	Dimension and panel cutout
TLB060-P		
TLB060-R		

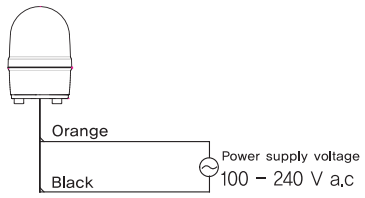
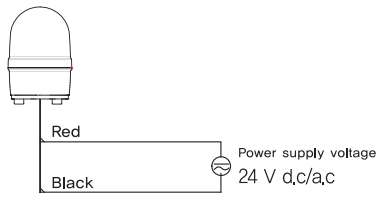
Model	Appearance	Dimension and panel cutout
TLB060-F		
TLB060-X		
Support: STM-84 (optional)		

Supporter dimension (unit : ㎜)

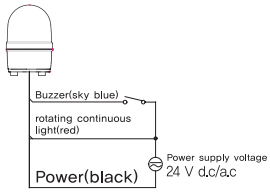
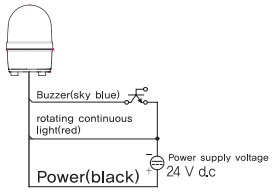
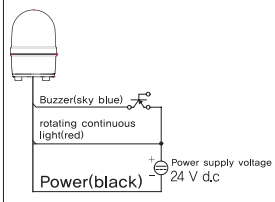
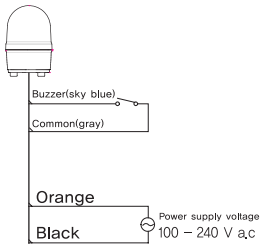
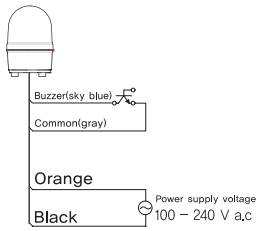
Appearance	Dimension and panel cutout
 STM-84 (Optional)	

Connection diagram

■ Rotating continuous light

TLB060-□AA11	TLB060-□AC51
	

■ Rotating continuous light, buzzer

Model	Contact drive	NPN transistor drive	PNP transistor drive
TLB060-□FC51			
TLB060-□FA11			Inapplicable

※ We recommend installing the fuse at inner part of the power input wire for the safety

※ In case of using transistor, please consider the polarity of power input even with the 24 V d.c/a.c power supply voltage.

TLB series

TLB100 Turn light

- Ø100 middle size rotating flashing light
- Rotating continuous light, rotating continuous light and buzzer
- Incandescent lamp indicator (socket type)
- Direct mounting type (support mounting type is optional)
- 24 V d.c/a.c or 100 - 240 V a.c.

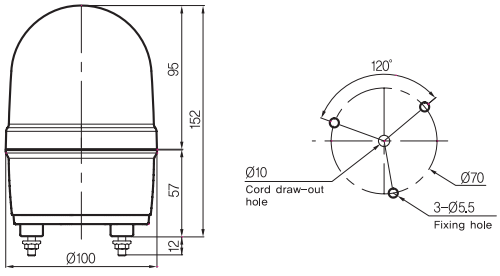
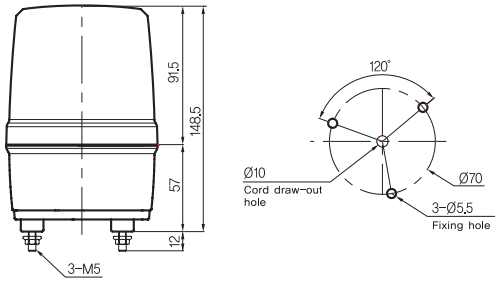
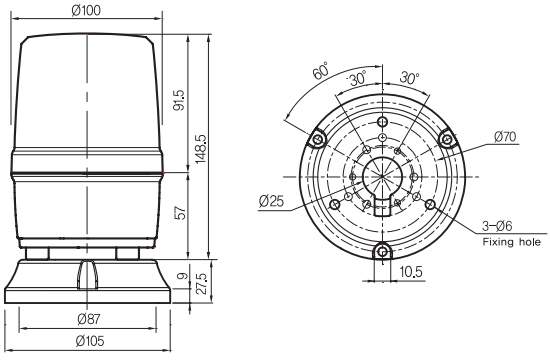
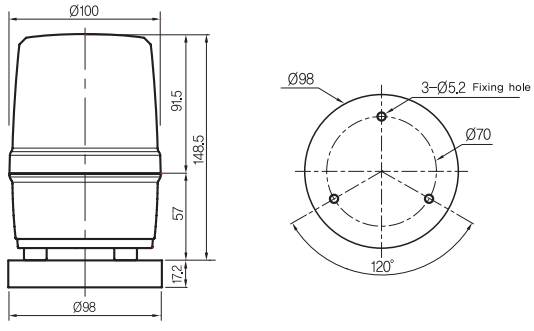
Suffix code

Model	Code					Description	
TLB	□	-□	□	□	□	Turn light	
Dimension	100					Ø100 Dimension	
Cap shape		P				Round cap direct installation	※ Optional
		F				Rectangular cap direct installation	Supporter : STM-105, MTM-98
Function			A			Rotating continuous light	
			F			Rotating continuous light, Buzzer	
Power supply voltage				C51		24 V d.c/a.c 50 - 60 ㎐	
				A11		100 - 240 V a.c 50 - 60 ㎐	
Cap color					R	Red	
					Y	Yellow	
					G	Green	

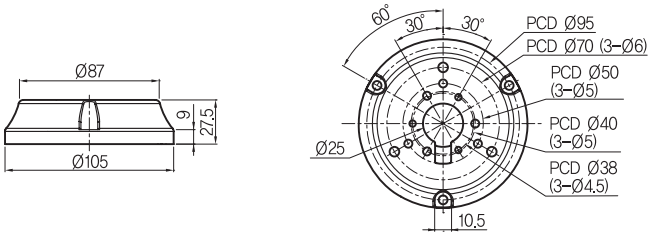
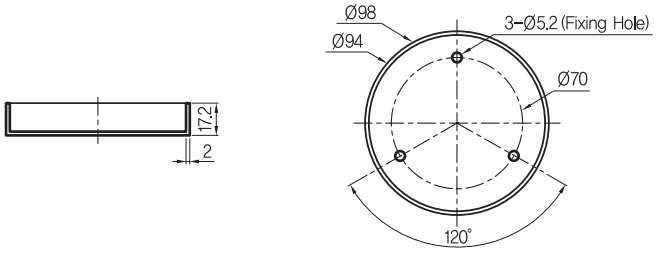
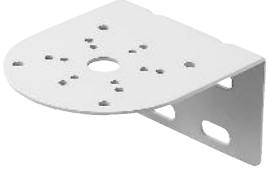
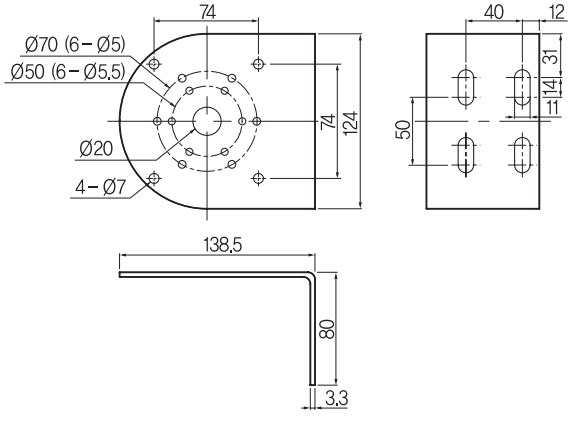
Suffix code

Model	TLB100-□AC51	TLB100-□AA11	TLB100-□FC51	TLB100-□FA11
Function	Rotating continuous light		Rotating continuous light, Buzzer	
Dimension	Ø 100 cap			
Power supply voltage	24 V d.c/a.c	100 V - 240 V a.c	24 V d.c/a.c	100 V - 240 V a.c
Power frequency	50 - 60 ㎐			
Power consumption	Max 12 W	Max 15 W	Max 12 W	Max 15 W
Rotation speed	Approx 170 times/min			
Light source (socket)	Incandescent lamp (BA 15S)			
Lamp capacity	24 V 10 W			
Buzzer	-		Buzzer built in (Approx 90 db from distance 1m)	
Cap material	Polycarbonate (P.C)			
Body	ABS resin			
Cap color	Red, Yellow, Green			
Degree of protection	IP54			

Dimension and panel cutout (unit : ㎜)

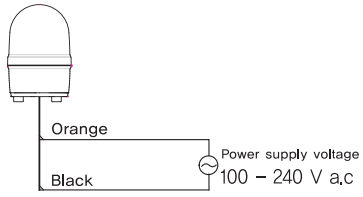
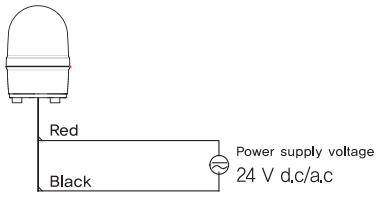
Model	Appearance	Dimension and panel cutout
TLB-100P		
TLB-100F		
Supporter : STM-105 (Optional)		
Magnet supporter: MTM-98 (Optional)		

Supporter dimension (unit : ㎜)

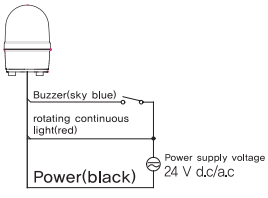
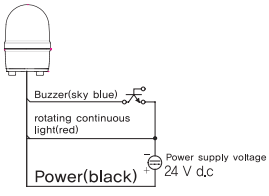
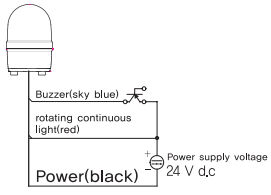
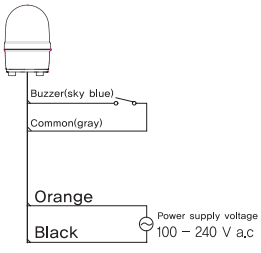
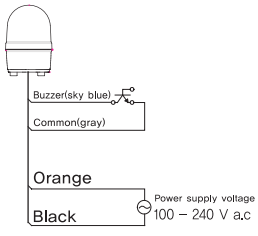
Appearance	Dimension and panel cutout
 STM-105 (Optional)	 Various application plastic supporter (5 type), used for the direct mounting type Ø70 (3-Ø6), Ø50 (3-Ø5), Ø40 (3-Ø5), Ø38 (3-Ø4.5), Ø25 (middle fixing hole)
Magnet supporter MTM-98 (Optional)	 Because the supporter is made of magnet, it is able to attach/detach to the iron structure, iron case, car and etc easily.
 ST-013 (Optional)	

Connection diagram

■ Rotating continuous light

TLB100-□AA11	TLB100-□AC51
	

■ Rotating continuous light, buzzer

Model	Contact drive	NPN transistor drive	PNP transistor drive
TLB100-□FC51			
TLB100-□FA11			Inapplicable

※ We recommend installing the fuse at inner part of the power input wire for the safety.

※ In case of using transistor, please consider the polarity of power input even with the 24V d.c/a.c power supply voltage.

TLB series

TLB150 Turn light

- Ø140 large size rotating flashing light
- Rotating Continuous light, rotating continuous light and buzzer
- Incandescent lamp indicator (socket type)
- 24 V d.c/a.c or 100 - 240 V a.c.

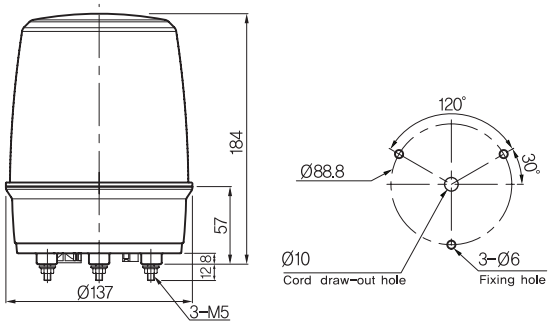
Suffix code

Model	Code					Description
TLB	□	-□	□	□	□	Turn light
Dimension	150					Ø140 cap
Cap shape		F				Rectangular cap direct installation
Function			A			Rotating continuous light
			F			Rotating continuous light, Buzzer
Power supply voltage				C51		24 V d.c/a.c 50 - 60 Hz
				A11		100 - 240 V a.c 50 - 60 Hz
Cap color					R	Red
					Y	Yellow
					G	Green

Specification

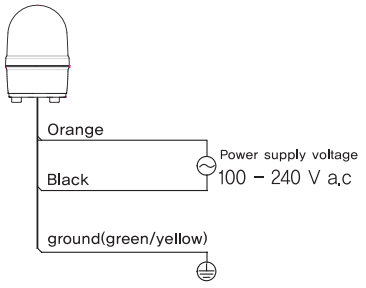
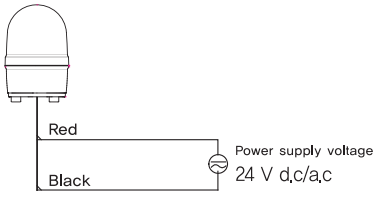
Model	TLB150-FAC51	TLB150-FAA11	TLB150-FFC51	TLB150-FFA11
Function	Rotating continuous light		Rotating continuous light, buzzer	
Dimension	Ø140 Cap			
Power supply voltage	24 V d.c/a.c	100 V – 240 V a.c	24 V d.c/a.c	100 V – 240 V a.c
Power frequency	50 – 60 Hz			
Power consumption	24 W max	33 W max	24 W max	33 W max
Rotation speed	Approx 85 times/min			
Light source (socket)	Incandescent lamp (BA 15S)			
Lamp capacity	24 V 21 W			
Buzzer	None		Buzzer built in (Approx 90 dB from distance 1m)	
Cap material	Polycarbonate (P.C)			
Body	ABS copolymer			
Lens color	Red, Yellow, Green			
Degree of protection	IP54			

Dimension and panel cutout (unit : ㎜)

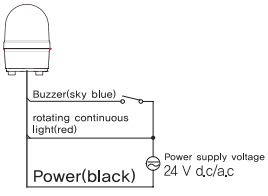
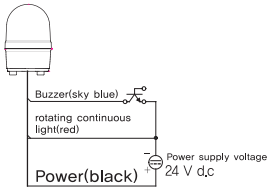
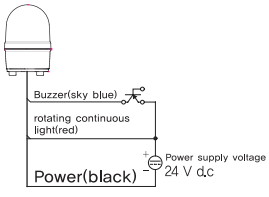
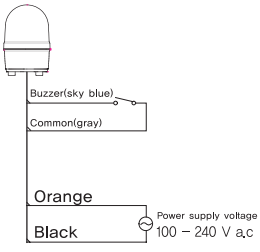
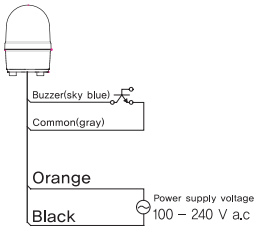
Model	Appearance	Dimension and panel cutout
TLB150		

Connection diagram

■ Rotating continuous light

TLB150-FAA11	TLB150-FAC51
	 ※ Ignore the polarity when power voltage is d.c

■ Rotating continuous light, buzzer

Model	Contact drive	NPN transistor drive	PNP transistor drive
TLB150-FFC51			
TLB150-FFA11			Inapplicable

※ We recommend installing the fuse at inner part of the power input wire for the safety

※ In case of using transistor, please consider the polarity of power input even with the 24V d.c/a.c power supply voltage.

T series

Turn light

- Ø84 rotating continuous light, rotating continuous light and buzzer
- Incandescent lamp indicator (socket type)
- Various supporter mounting type (TR type, TX type)
- Economical price, simple installation structure

- Protective cap with solid poly-carbonate material
- Rotational structure with the excellent abrasion resistive acetal gear
- Degree of protection IP 54

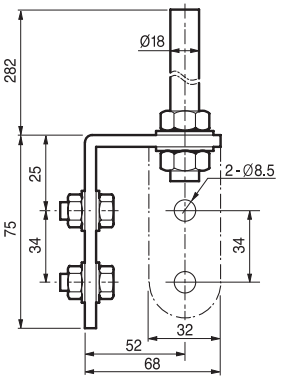
Suffix code

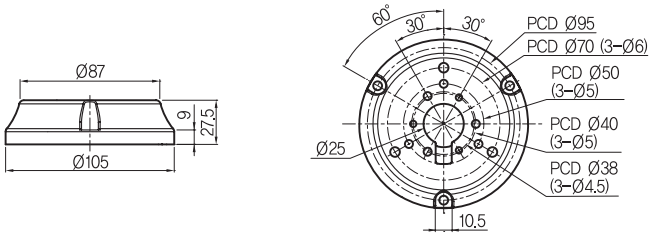
Model		Code		Description	
Dimension and function	□ –	□	□	Turn light (Ø 84)	
	TR			Round type cap supporter attaching installation	Rotating continuous light
	TX			Rectangular type cap supporter attaching installation	
	TF			Rectangular type cap direct installation	
	TP			Round type cap direct installation	
	TFB			Rectangular type cap direct installation	Rotating continuous light, buzzer
	TPB			Round type cap direct installation	
Power supply voltage		12		12 V d.c	
		24		24 V d.c	
		012		110/220 V a.c, 50 / 60 Hz	
Cap color			R	Red	
			Y	Yellow	
			G	Green	
			B	Blue	

Specification

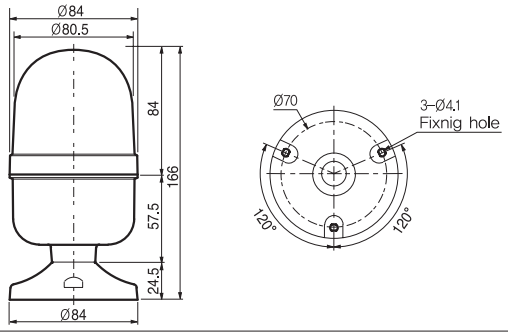
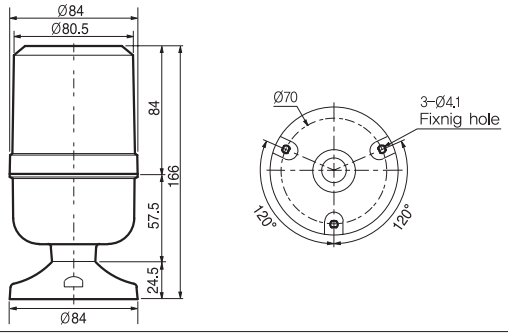
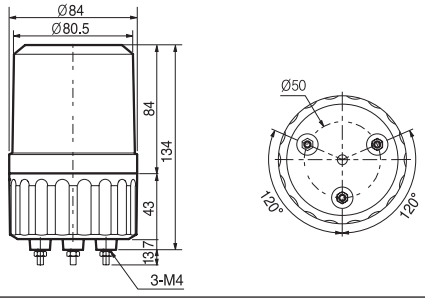
Model	TR-□□	TX-□□	TF-□□	TP-□□	TFB-□□	TPB-□□
Function	Rotating continuous light				Rotating continuous light, buzzer	
Dimension	Round type cap supporter attachment	Rectangular type cap supporter attachment	Rectangular type cap direct attachment	Round type cap direct attachment	Rectangular type cap direct attachment	Round type cap direct attachment
Power supply voltage	12 V d.c, 24 V d.c, 110/220 V a.c, 50/60 Hz					
Current consumption	0.9 A (When power supply voltage is 12 V d.c), 0.5 A (When power supply voltage is 24 V d.c) 0.1 A (When power supply voltage is 110 V a.c), 0.05 A (When power supply voltage is 220 V a.c)					
Rotating speed	Approx 130 time/min					
Light source	Incandescent lamp (BA 15S)					
Lamp capacity	12 V 5 W (When power supply voltage is 12 V d.c), 24 V 5W (When power supply voltage is 24 V d.c) 12 V 5 W (When power supply voltage is 110/220 V a.c)					
Buzzer volume	–				Approx 80 dB	
Cap material	Polycarbonate (P.C) resin					
Body	ABS resin					
Lens color	Red, Yellow, Green, Blue					
Degree of protection	IP54					

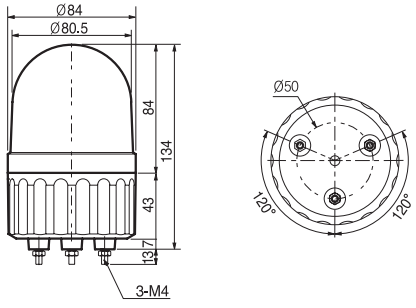
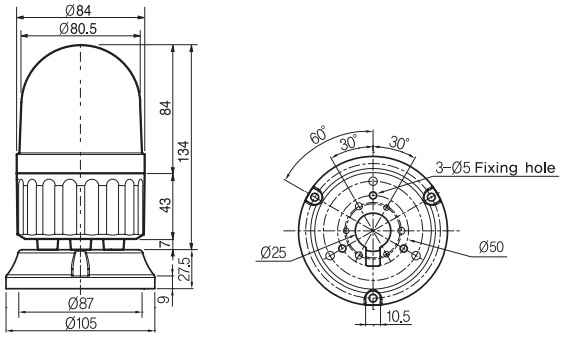
Supporter dimension (unit : ㎜)

Appearance	Dimension and panel cutout
 SP-2 (Optional)	

Appearance	Dimension and panel cutout
	
STM-105 (Optional)	Various application(5 types) Plastic Supporter, used for the direct mounting type Ø70(3-Ø6), Ø50(3-Ø5), Ø40(3-Ø5), Ø38(3-Ø4.5), Ø25(middle fixing hole)

Dimension and panel cutout (unit : ㎜)

Model	Appearance	Dimension and panel cutout
TR-□□		
TX-□□		
TF-□□ TFB-□□		

Model	Appearance	Dimension and panel cutout
TP-□□ TPB-□□		
Supporter : STM-105 (Optional)		

Connection diagram

Connection diagram for each power supply voltage are as follows. Also, buzzer (buzzer built in type) is connected to the power line.

Power supply voltage	Wire folder
12 V d.c	White (+), Black (-)
24 V d.c	
110/220 V a.c, 50/60 ㎐	Black-White (when using at a.c 110v)
	Black-Red (when using at a.c 220v)

TL100 series

Turn light

- Long life expectancy due to the flush type HID LED light source
- Excellent diffusibility by applying the rotating reflector (exclusive for LED)
- Simple wiring by applying the terminal method
- Built in the rotating Continuous light and 90dB single melody electrical buzzer.
- Power supply voltage 24 V d.c/a.c or 100 - 240 V a.c 50 - 60 ㎐.

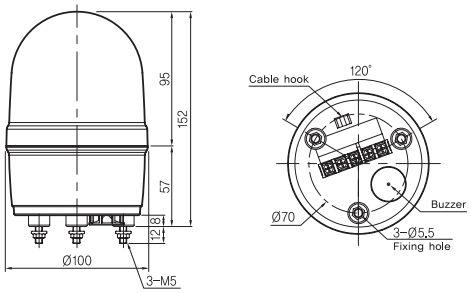
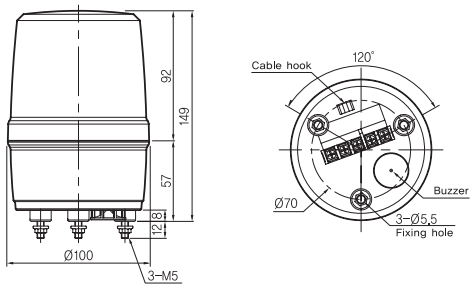
Suffix code

Model	Code				Description
TL100-	□	□	□	□	Turn light (Ø100)
Appearance	P				Round cap direct mounting type
	F				Rectangular cap direct mounting type
Operation function		A			Rotating continuous light
		F			Rotating continuous light and buzzer
Power supply voltage			C51		24 V d.c/a.c 50 - 60 ㎐
			C41		12 V d.c/a.c 50 - 60 ㎐ (※ Order-made)
			A11		100 - 240 V a.c 50 - 60 ㎐
Cap color				R	Red
				Y	Yellow
				G	Green

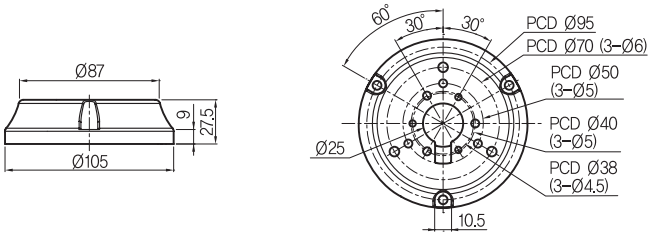
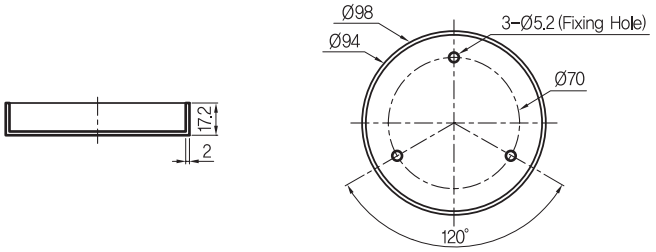
Specification

Model	TL100-□A C51□	TL100-□F C51□	TL100-□AA11□	TL100-□FA11□
Function	Rotating continuous light	Rotating continuous light, buzzer	Rotating continuous light	Rotating continuous light, buzzer
Dimension	Ø100 Dimension			
Power supply voltage	24 V d.c/a.c		100 - 220 V a.c, 50 - 60 ㎐	
Current consumption	Max 3.2 W	Max 3.2 W	Max 5.5 W	
Rotating speed	Approx 180 times/min (reflector)			
Light source	LED (1 Watt)			
Buzzer volume	Approx 90 ㏈ (1 m distance)			
Cap material	Polycarbonate (P.C)			
Body	heat resisting ABS resin			
Cap color	Red, Yellow, Green			
Degree of protection	IP53			

Dimension and panel cutout (unit : ㎜)

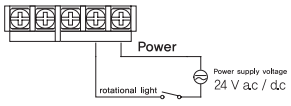
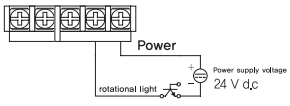
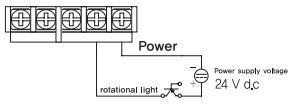
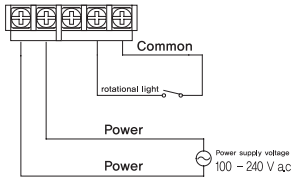
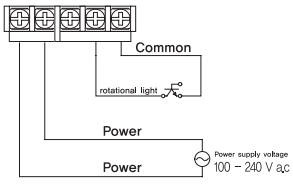
Model	Appearance	Dimension and panel cutout
TL100-P		
TL100-F		

Supporter dimension (unit : ㎜)

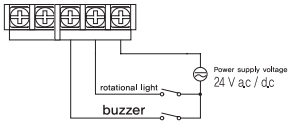
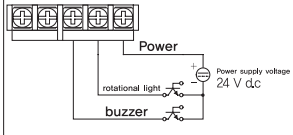
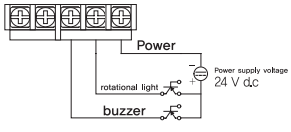
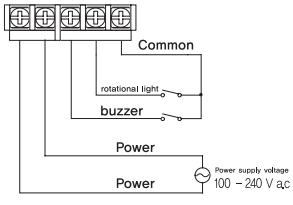
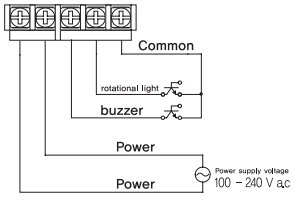
Appearance	Dimension and panel cutout
STM-105 (Optional)	 Various application (5 types) plastic supporter, used for the direct mounting type Ø70(3-Ø6), Ø50(3-Ø5), Ø40(3-Ø5), Ø38(3-Ø4.5), Ø25(middle fixing hole)
MTM-98 (Optional)	 Because the supporter is made of magnet, it is able to attach/detach to/from the iron-made structure, iron case, car and etc easily.

Connection diagram

■ Rotating Continuous light

Model	Contact drive	NPN transistor drive	PNP transistor drive
TL100-□ AC51□			
TL100-□ AA11□			Inapplicable

■ Rotating continuous light, buzzer

Model	Contact drive	NPN transistor drive	PNP transistor drive
TL100-□ AC51□			
TL100-□ AA11□			Inapplicable

Reflector and LED structure

- Due to applying the flush type HID LED light source, it emits the strong rotational light and because of the buzzer function, it has an excellent information transmitting function, strong vibration durability and long life expectancy.
- Simple wiring by applying the terminal method.

LED

Terminal

RLA-KB/KBB

Turn light

- Ø118 rotating continuous light, rotating continuous light and buzzer built in
- Incandescent lamp lighting (BA 15S)
- Used the special power transmitting plant, less noise and long life expectancy.
- Large size rotational reflector is built in, excellent light reflection
- Excellent attaching / detaching due to the permanent magnet attachment type (refer to the suffix code)
- Degree of protection IP54

Suffix code

Model	Code			Description	
RLA-	□	□	□	Turn light (Ø118)	
Function	KB			Rotating continuous light	
	KBB			Rotating continuous light and buzzer built in	
Power supply voltage and installation method		01		12 V d.c	※ Direct installing type
		02		24 V d.c	
		012		110 / 220 V a.c	
		012M		110 / 220 V a.c	※ Magnet supporter
		01A		12 V d.c	※ Cigar jack attachment magnet supporter
		02A		24 V d.c	
			R	Red	
			Y	Yellow	
			G	Green	

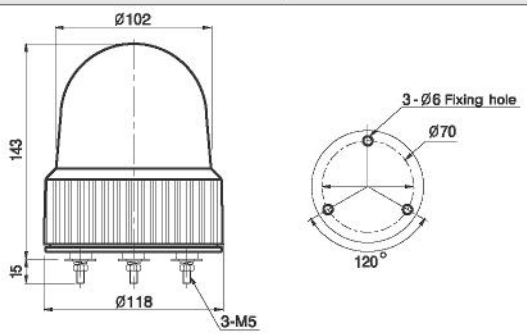
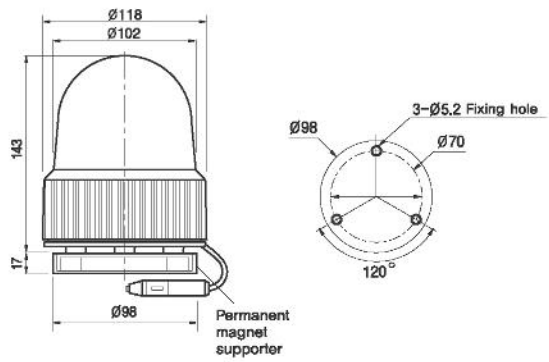
Specification

Model	RLA-KB□□	RLA-KBB□□
Function	Rotating continuous light	Rotating continuous light, buzzer
Dimension	Ø118 Cap	
Power supply voltage	12 V d.c, 24 V d.c, 110/220 V a.c 50/60 ㎐	
Power consumption	4.0 W (when power supply voltage is 24 V d.c), 4.5 W (when power voltage is 220 V a.c)	
Rotating speed	Approx 80 times/min	
Light source	Incandescent lamp (base rating : BA 15S)	
Buzzer volume	-	Approx 90 ㏈
Material	Cap: acryl resin, Body : ABS resin	
Cap color	Red, Yellow, Green	
Degree of protection	IP54	

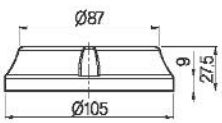
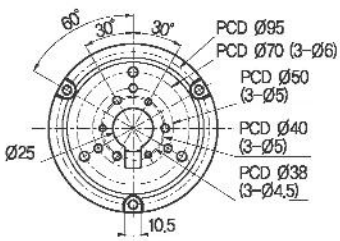
Power specification

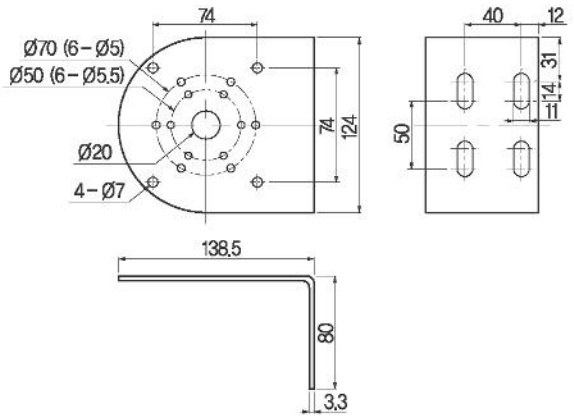
Model		Power supply voltage	Current	Rotational	Lamp
RLA -KB01(A)□	RLA-KBB01(A)□	12 V d.c	0.9 A	80 times/min	12 V
RLA -KB02(A)□	RLA-KBB02(A)□	24 V d.c	0.4 A		24 V
RLA-KB012(M)□	RLA-KBB012(M)□	110 V a.c	0.1 A		110 V
		220 V a.c	0.05 A		220 V

Dimension and panel cutout (unit : ㎜)

Model	Appearance	Dimension and panel cutout
RLA-KB□□ RLA-KBB□□ (Normal type)		
RLA-KB□□ RLA-KBB□□ (automobile)		

Supporter dimension (unit : ㎜)

Appearance	Dimension and panel cutout
 STM-105 (Optional)	 

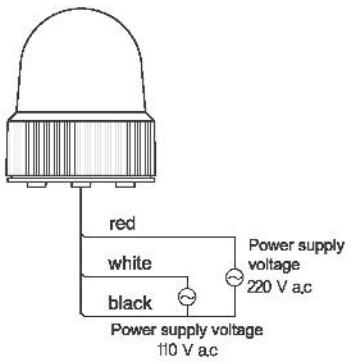
Appearance	Dimension and panel cutout
 ST-013 (Optional)	

Connection diagram

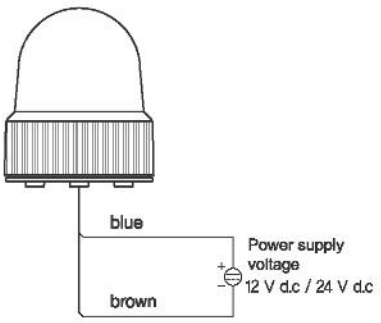
Buzzer (buzzer built in type) is connected to the power wire

Model	Power supply voltage	Wire color
RLA-□01(A)□	12 V d.c	Cigar jack or
RLA-□02(A)□	24 V d.c	blue (+), brown (-)
RLA-□012(M)□	110 V a.c 50/60 Hz	black - white (3P)
	220 V a.c 50/60 Hz	black - red (3P)

■ AC



■ DC



RLA-WX/WXB

Signal light (XENON Lamp)

- Ø118 rotating continuous light, rotating continuous light and buzzer built in
- Xenon tube strobe light
- Excellent instant light emitting and high brightness
- Less current consumption compares to the rotating light and 4 times longer life expectancy compares to the regular lamp
- Simple attaching/detaching due to the permanent magnet attachment type (for cars)
- Degree of protection IP54

Suffix code

Model	Code			Description	
RLA-	□	□	□	Signal light (Ø118)	
Function	WX			Strobe light	
	WXB			Strobe light and buzzer built in type	
Power supply voltage and installation method		01		12 V d.c	※ Direct installation type
		02		24 V d.c	
		10		110 V a.c	
		20		220 V a.c	
		10M		110 V a.c	※ Permanent magnet supporter
		20M		220 V a.c	
		01A		12 V d.c	※ Cigar jack attachment, magnet supporter attachment
		02A		24 V d.c	
Cap color			R	Red	
			B	Blue	

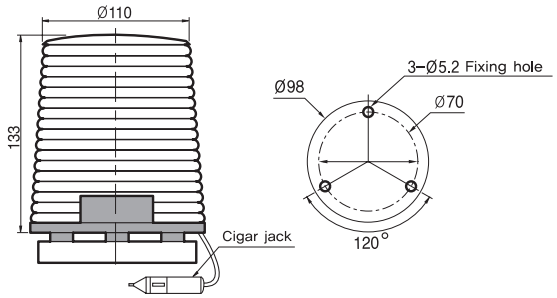
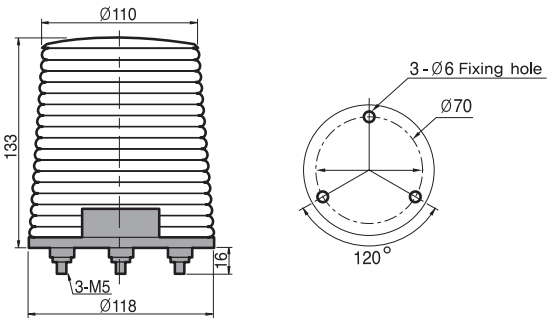
How to use

- Simple installation method and protect the surface of automobile from the scratches when attaching this product by covering this product with the rubber cover.
- 12V d.c and 24V d.c use cigar jack to operate. Simple power usage (refer to the suffix code)
- Do not separate the cover when power is supplying. Possibility of electric shock because high voltage is being charged.
- Using supporter with the direct installation type provides simple usage (optional)

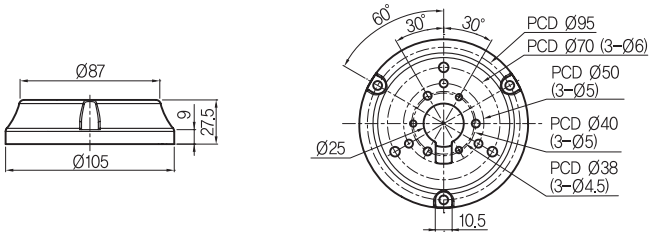
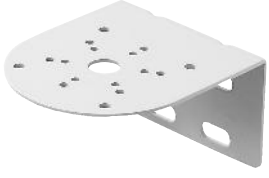
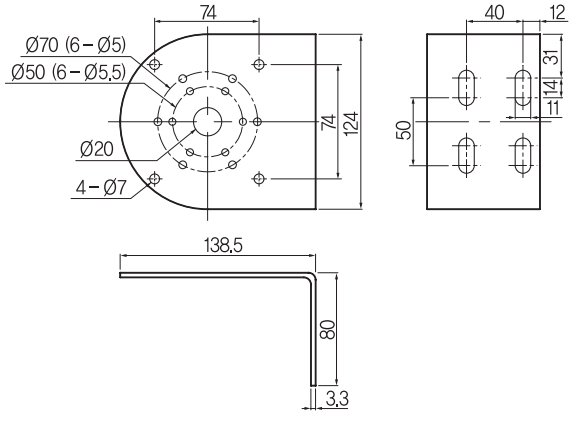
Specification

Model	RLA-WX□□	RLA-WXB□□
Function	Strobe only	Strobe, Buzzer
Dimension	Ø118 rectangular cap (Direct installation, Magnet attachment type supporter, Magnet attachment type supporter and cigar jack)	
Power supply voltage	12 V d.c, 24 V d.c, 110 V a.c, 220 V a.c 50/60 Hz Selected by the suffix code	
Power consumption	7.2 W (when power supply voltage is 24 V d.c), 12 W (when power supply voltage is 220 V a.c)	
Strobe speed	Approx 60 times/min	
Light source	Xenon tube Strobe light	
Buzzer	–	Buzzer built in (approx 90 dB from distance 1m)
Material	Cap: acryl resin, Body : ABS resin	
Cap color	Red, Blue, White	
Degree of protection	IP54	

Dimension and panel cutout (unit : ㎜)

Model	Appearance	Dimension and panel cutout
RLA-WX□□ (Magnet supporter)		
RLA-WXB□□ (Direct installation)		

Supporter dimension (unit : ㎜)

Appearance	Dimension and panel cutout
STM-105 (Optional)	
 ST-013 (Optional)	

Connection diagram

Buzzer (buzzer built in type) is connected to the power line

Model	Power supply voltage	Wire Color
RLA-□01□	12 V d.c	white (+), black (-)
RLA-□01A□		Cigar jack
RLA-□02□	24 V d.c	white (+), black (-)
RLA-□02A□		Cigar jack
RLA-□10□	110 V a.c 50/60 ㎐	black - white (Only for 2P)
RLA-□10M□		
RLA-□20□	220 V a.c 50/60 ㎐	black - red (Only for 2P)
RLA-□20M□		

LT series

Signal light

- Rotational flickering function by the sequential flashing
- Long life expectancy due to the HID LED light source
- Select Ø84 round cap, direct mounting or supporter mounting
- Excellent visible rays transmissivity due to using an acryl cap
- Solid and smart design
- Degree of protection IP54

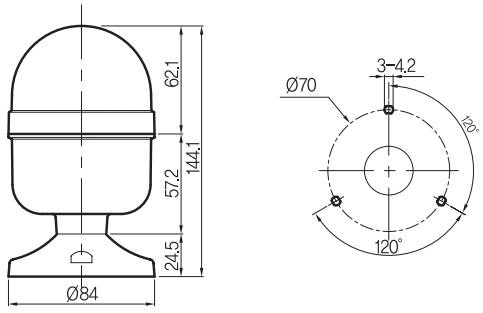
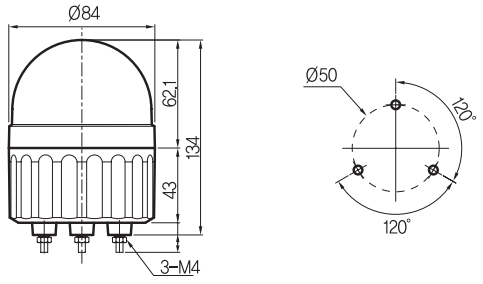
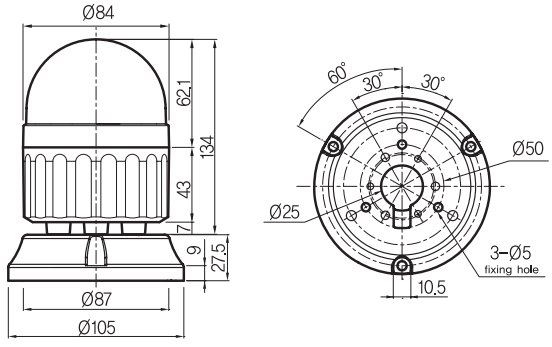
Suffix code

Model	Code			Description	
LT-	□	□	□	Signal light (Ø84 Cap)	
Installation type (Function)	R			Supporter mounting (rotating, flashing)	
	P			Direct mounting (rotating, flashing)	※ Optional supporter (STM-105)
	PB			Direct mounting (rotating, flashing, buzzer built in)	
Power supply voltage		12		12 – 48 V d.c, 12 – 24 V a.c 50 – 60 Hz	
		012		110/220 V a.c 50 – 60 Hz	
Cap color			R	Red	
			Y	Yellow	
			G	Green	

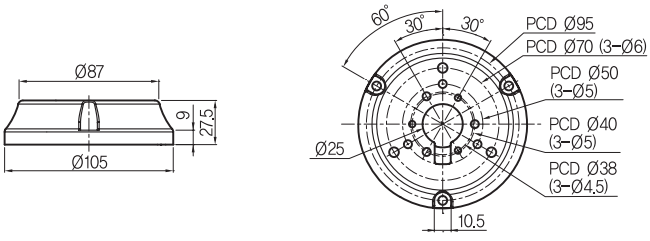
Specification

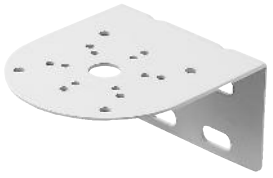
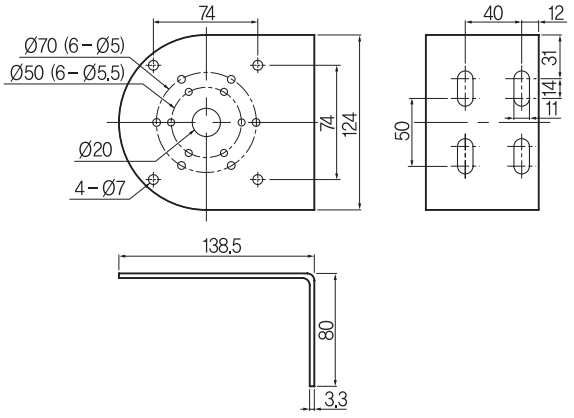
Model	LT-R□□	LT-P□□	LT-PB□□
Function	Rotating, Flashing		Rotating, Flashing, Buzzer
Cap shape	Round type cap (Ø84)		
Installation type	supporter mounting installation	direct installation	
Power supply voltage	12 – 48 V d.c, 12 – 24 V a.c, 110/220 V a.c 50/60 Hz		
Power consumption	Max 2.9 W (Power supply voltage : 12 – 48 V d.c) Max 5 W (Power supply voltage : 110 / 220 V a.c)		
Sequential number of rotation	Approx 90 times / Min (flashing speed approx. 50 times / min)		
Light source	LED ※ LED quantity : 24		
buzzer	–		Buzzer melody 2 kinds (single, beeping) sound pressure decibel : 80 dB (1m distance)
Material	Protective cap: acryl resin, Body: ABS resin		
Cap color	Red, Yellow, Green		
Degree of protection	IP54		

Dimension and panel cutout (unit : ㎜)

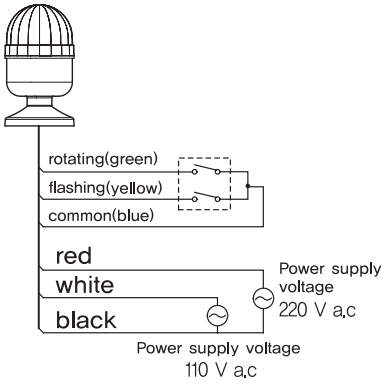
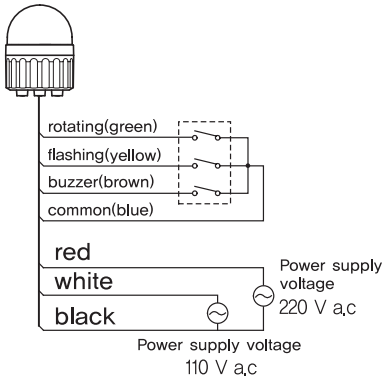
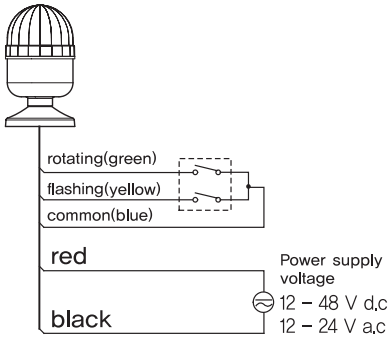
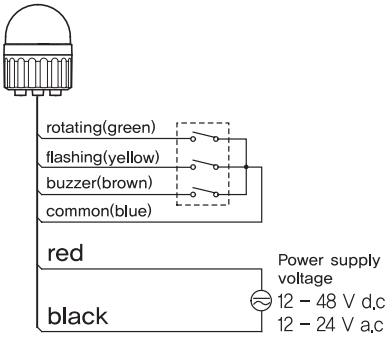
Model	Appearance	Dimension and panel cutout
LT-R□□		
LT-P□□ LT-PB□□		
STM-105 Supporter (Optional)		

Supporter dimension (unit : ㎜)

Appearance	Dimension and panel cutout
STM-105 (Optional)	

Appearance	Dimension and panel cutout
 ST-013 (Optional)	

Connection diagram

Model	LTR-12 / LTR-012	LTPB-12 / LTPB-012
Power supply voltage 110 / 120 V a.c		
Power supply voltage 12 - 48 V d.c 12 - 24 V a.c		

SLB series

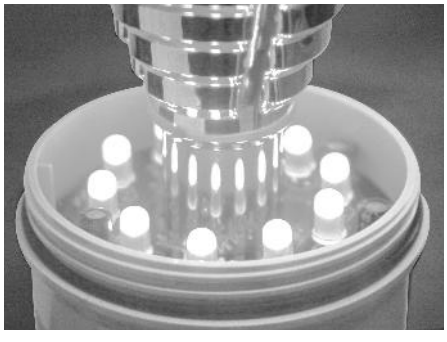
Signal light

- Continuous light and buzzer selection by the external signal
- Long life expectancy by the HID LED light source
- Select Ø60 round type cap, rectangular type cap, direct installation, supporter mounting installation
- Economical price, simple installation structure
- Solid poly-carbonate material protective cap
- Degree of protection IP54

Suffix code

Model	Code				Description	
SLB	□	-□	□	□	Signal light	
Dimension	060				Ø70 cap	
Design and function		RA			Round type cap supporter mounting installation	Only for Continuous light
		XA			Rectangular type cap supporter mounting installation	
		PA			Round type cap direct installation	
		FA			Rectangular type cap direct installation	
		PF			Round type cap direct installation	Continuous light, flashing light and buzzer (selected by the external signal)
		FF			Rectangular type cap direct installation	
Power supply voltage			C51		24 V d.c/a.c 50 - 60 Hz	
			C41		12 V d.c/a.c 50 - 60 Hz (※ Order-made)	
			A11		110 - 240 V a.c, 50 - 60 Hz	
Cap color				R	Red	
				Y	Yellow	
				G	Green	

Reflector and LED structure

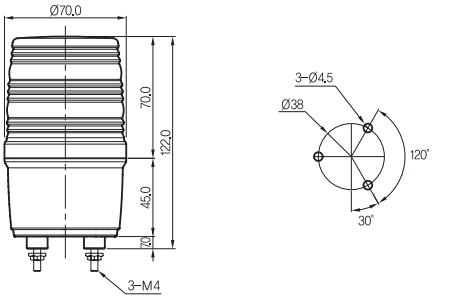
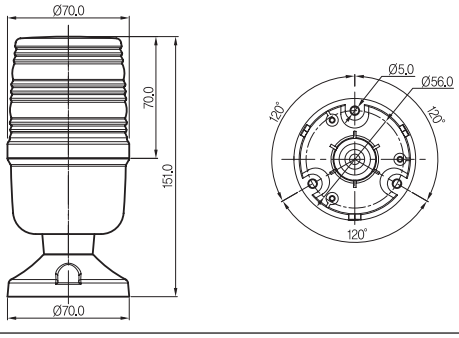


Specification

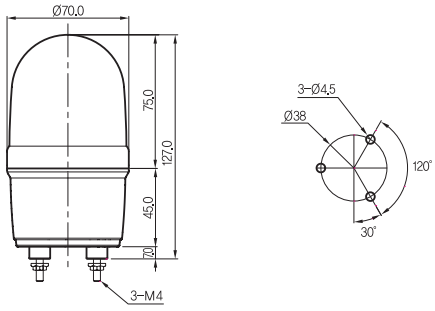
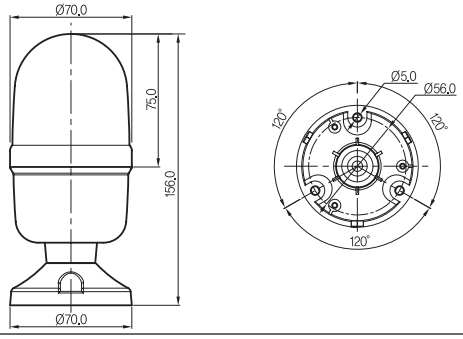
Model	SLB060-RA□□, SLB060-XA□□ SLB060-PA□□, SLB060-FA□□	SLB060-PF□□ SLB060-FF□□
Dimension	Round type cap (Ø70)	Rectangular type cap (Ø70)
Power supply voltage	24 V d.c/a.c, 100 – 240 V a.c 50 – 60 ㎐	
Power consumption	Max 2 W (24 V d.c/a.c), Max 3.5 W (100 – 240 V a.c)	
Flickering speed	Approx 60 times/min	
Light source	LED	
Buzzer	2 types of buzzer melodies (single melody, beeping), volume 80 ㏈ (1 m distance)	
Material	Protective cap: acryl resin, Body: ABS resin	
Cap color	Red, Yellow, Green	
Degree of protection	IP54	

Dimension and panel cutout (unit : ㎜)

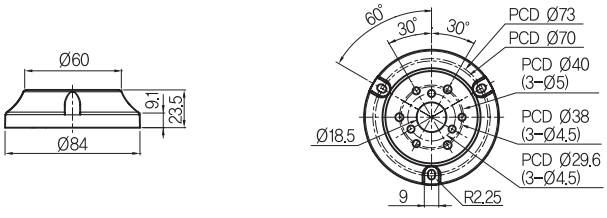
■ Rectangular cap

Model	Appearance	Dimension and panel cutout
SLB-060FA SLB-060FF (Rectangular cap direct installation)		
SLB-060XA (Rectangular cap supporter mounting)		

■ Round cap

Model	Appearance	Dimension and panel cutout
SLB-060PA SLB-060PF (Round cap direct installation)		
SLB-060RA (Round cap supporter mounting)		

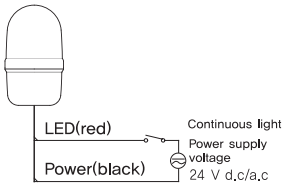
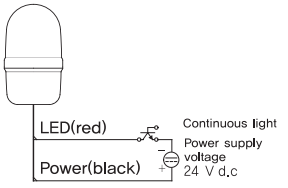
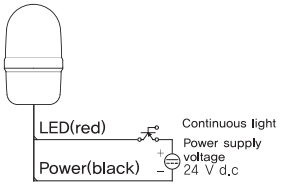
Supporter dimension (unit : ㎜)

Appearance	Dimension and panel cutout
 STM-84 (Optional)	

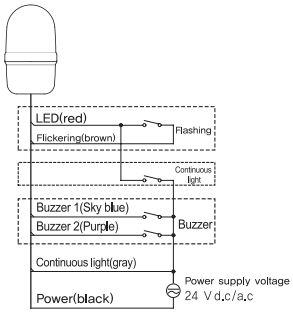
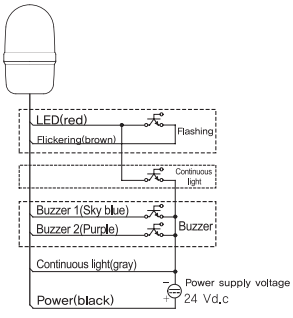
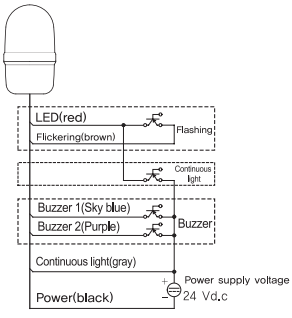
※ Applied to the direct installation type

Connection diagram

■ Continuous light only

Model	Contact drive	NPN transistor drive	PNP transistor drive
SLB-060 □AC51			

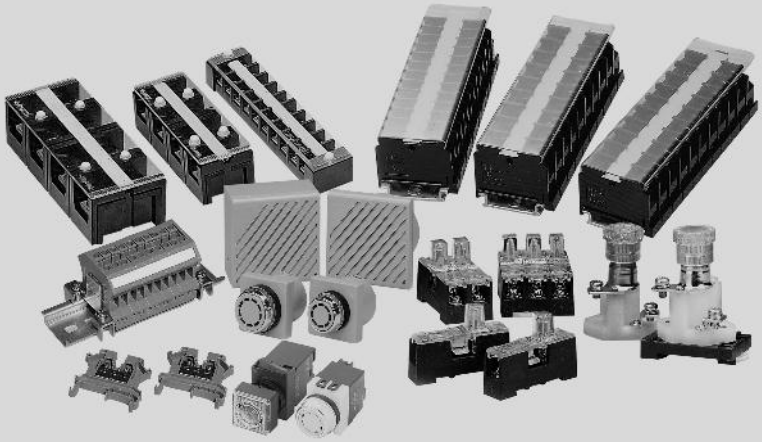
■ Continuous light and flashing light, buzzer

Model	Contact drive	NPN transistor drive	PNP transistor drive
SLB-060 □FC51			

※ Buzzer melody classification : Buzzer 1 – Single melody
Buzzer 2 – Beeping

F Buzzer / Terminal block Fuse holder

Power buzzer (HY-256/306/606/606N) ---------- 280
4 tones melody buzzer (HY-606MD/HY-606MA)----- 282
3 tones electronic buzzer (HY-226M/HY-256M)------ 284
Assembling terminal block (HYBT series)--------- 286
N type assembling terminal block (HY-NBT15) ---- 294
Fixing type terminal block (HYT series)---------- 295
Fuse holder (HY-F15 series)---------- 299
Fuse holder (HY-F30 series)----------300



HY-256/306/606/606N

Power buzzer

- Compact size, light weight, high capacity buzzer melody
- Excellent alarm function
- Suitable for panel installation
- Low power consumption

Suffix code

Model	Code		Description
HY-	□-	□	Power Buzzer
Dimension	256		For Ø25
	306		For Ø30
	606		Rectangular panel flush type (For Ø66)
	606N		Rectangular panel extended type (□80)
Power supply voltage		1	110 V a.c, 50/60 ㎐
		2	220 V a.c, 50/60 ㎐
		12	12 V d.c
		24	24 V d.c

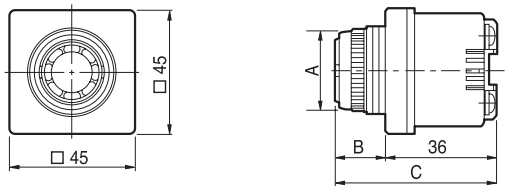
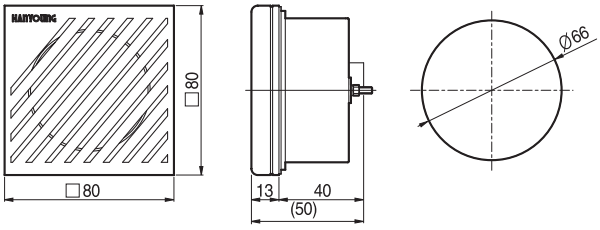
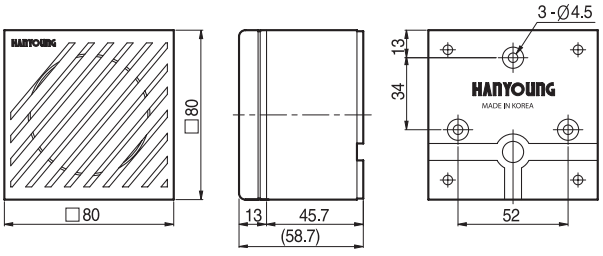
Specification (HY-256, HY-306)

Model	Ø25	HY-256-1	HY-256-2	HY-256-12	HY-256-24
	Ø30	HY-306-1	HY-306-2	HY-306-12	HY-306-24
Power supply voltage		110 V a.c	220 V a.c	12 V d.c	24 V d.c
Power frequency		50/60 ㎐		-	
Power consumption		Approx 4 VA		30 ㎃ max.	
Decibel		85 ㏈ (1m distance)			
Insulation resistance		100 ㏁ (500V d.c insulation resistance meter)			
Dielectric strength		1,000 V a.c for 1min (recharging part-non recharging part)			
Ambient temperature		-10 ℃ ~ 55 ℃			
Ambient humidity		45 - 85 % R.H.			

Specification (HY-606, HY-606N)

Model	flush type	HY-606-1	HY-606-2	HY-606-12	HY-606-24
	extended type	HY-606N-1	HY-606N-2	HY-606N-12	HY-606N-24
Power supply voltage		110 V a.c	220 V a.c	12 V d.c	24 V d.c
Power frequency		50/60 Hz		-	
Power consumption		Approx 8 VA		30 mA max.	
Decibel		85 dB (1m distance)		80 dB (1m distance)	
Insulation resistance		100 MΩ (500 V d.c insulation resistance meter)			
Dielectric strength		1,000 V a.c for 1 min (recharging part-non recharging part)			
Ambient temperature		-10 ℃ ~ 55 ℃			
Ambient humidity		45 - 85 % R.H.			

Dimension (unit : mm)

Model	Appearance	Dimension
HY-256 HY-306		
HY-606		
HY-606N		

Model	A	B	C	panel cutout
HY-256	Ø31	27.5	74	$Ø25.5^{+0.5}_{0}$ mm
HY-306	Ø36	27.5	74	$Ø30.5^{+0.5}_{0}$ mm

HY-606MD/HY-606MA

4 tones melody buzzer

- 4 tones of melody selectable
- Compact, light weight, high capacity tones
- Low power consumption and long life expectancy
- Simple installation structure due to the panel installation type

Suffix code

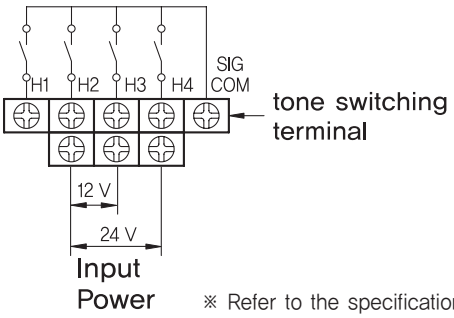
Model	Code	Description
HY-606	□	4 tones melody buzzer
Power supply voltage	MD	12 - 24 V d.c
	MA	110 - 240 V a.c

Specification

Model		HY-606MD	HY-606MA
Power supply voltage		12 - 24 V d.c	110 - 240 V a.c
Power frequency		-	50/60 ㎐ (Dual usage)
Power consumption		Approx 2.5 W	
Decibel		98 ㏈ Max.	
Installation hole		Ø66 panel cutout	
Tone types	H1	Fire	
	H2	Ambulance	
	H3	Police	
	H4	Music (For Elise)	

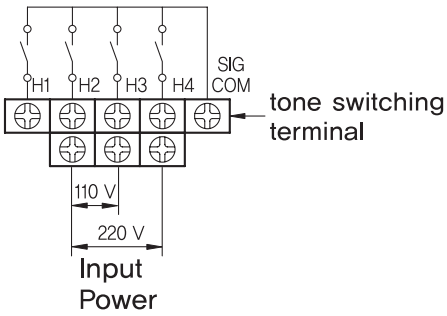
Wiring diagram

■ HY-606MD (d.c)



※ Refer to the specification for melodies type (H1~H4)

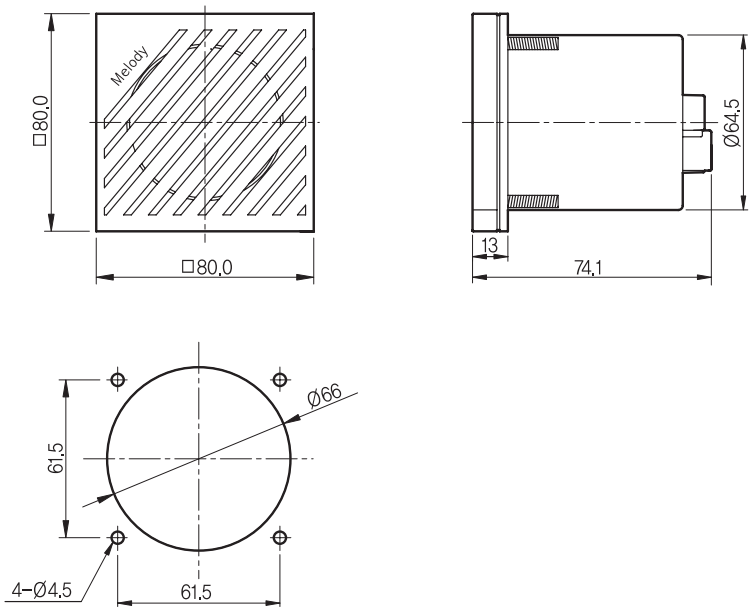
■ HY-606MA (a.c)



Precautions

- Do not supply any voltage into the tone switching terminal. Doing so may damage the product.
- When wiring to the terminal, please use the crimp-type terminal less than Ø6.0 (outer diameter) and more than Ø3.1 (inner diameter).
- Supply the power after confirming the correct wiring.

Dimension and panel cutout (unit : ㎜)



HY-226M/HY-256M

3 tones electronic buzzer

- Compact, light weight and composed of 3 melodies
- Front LED lighted when operating the buzzer
- Excellent attachment due to the panel type
- Low power consumption

Suffix code

Model	Code		Description
HY-	□	□	3 tones electronic buzzer
Dimension	226		Ø22 / Ø25 dual usage (Rectangular shaped front)
	256		For Ø25 installation (Round shaped front)
Power supply voltage		MD	12 – 24 V d.c
		MA	100 – 240 V a.c

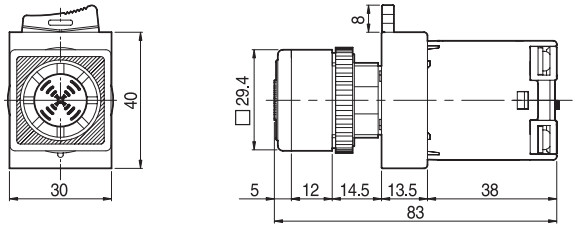
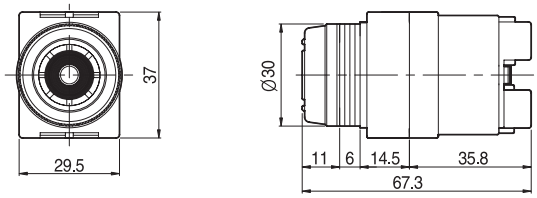
Specification

Model	HY-226MD	HY-226MA	HY-256MD	HY-226MA
Installation diameter	Ø22 / Ø25 dual usage		Ø25	
Power supply voltage	12 – 24 V d.c	100 – 240 V a.c (50 – 60 Hz)	12 – 24 V d.c	100 – 240 V a.c (50 – 60 Hz)
Power consumption	0.6 W	13.5 W	0.6 W	13.5 W
Volume	80 dB	80 dB	80 dB	80 dB

Tone selection

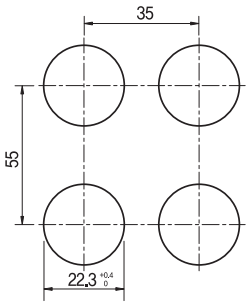
Tone selection	Tone symbol	Information
SELECT-1	◁·····	fast beeping
SELECT-2	◁- - - - - - - - - -	slow beeping
REMOVE	◁————	Continuous tone

Dimension (unit : ㎜)

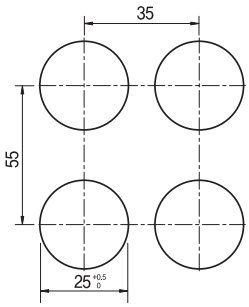
Model	Appearance	Dimension
HY-226		
HY-256		

Panel cutout dimension (unit : ㎜)

• HY-226



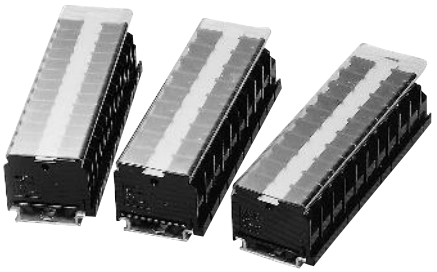
• HY-226 / HY-256



HYBT series

Assembling terminal block

- DIN rail installation structure
- Possible to assemble the terminal block with different capacity to the same fixing plate
- Excellent attaching / detaching of terminal at the temporal position
- Various specification for each rated current



Specification

Model	HYBT-10A	HYBT-15A HYBT-15A2	HYBT-25A	HYBT-35A	HYBT-60A	HYBT-100A
Rated current	10 A	15 A	25 A	35 A	60 A	100 A
Rated insulation voltage	600 V					
Insulation resistance	Min 100 MΩ (each mutual recharging part and between the each recharging part and installation metal plate)					
Dielectric strength	2,500 V a.c for 1min (between the recharging part and non recharging part)					
Terminal bolt	M3	M3.5	M4		M6	
Tightening torque (N · ㎝)	5.1	8.2	12.2		25.5	
Ambient temperature	-20 ~ 55 ℃					
Ambient humidity	45 - 85 % R.H.					

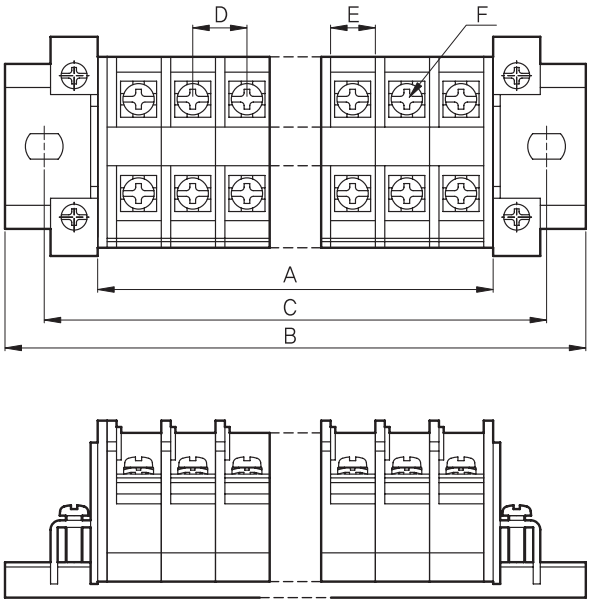
Assembling dimension

Unit length	A = terminal width (8.2 ㎜) × number of polarity (P) + separator thickness
Rail length	B = A + 50 (min 30 ㎜) But please cut as it becomes multiples of 15 mm)
Rail fixing pitch	C = B - 15 ㎜

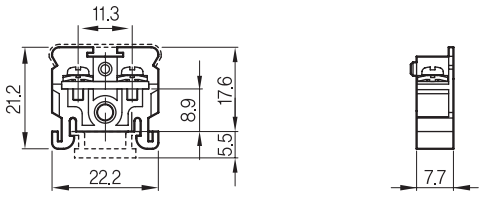
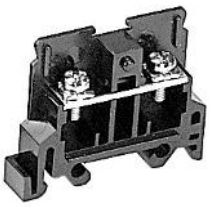
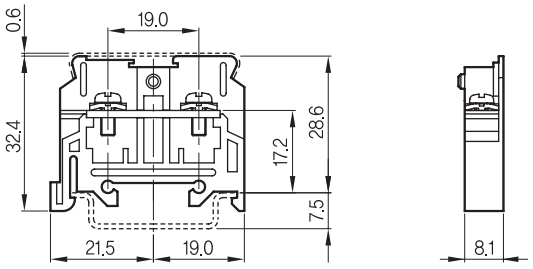
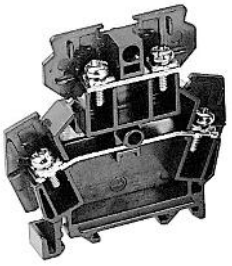
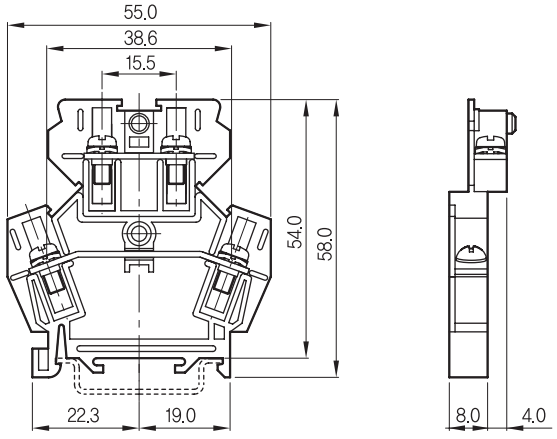
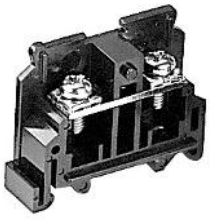
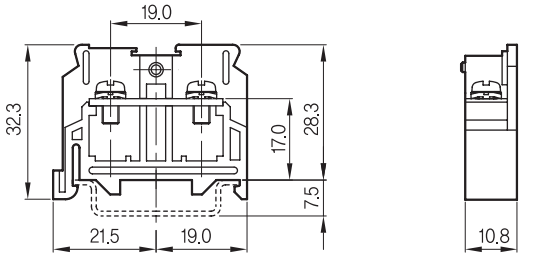
■ Model dimensions (base on 10p)

Model	HYBT-10A	HYBT-15A / HYBT-15A2		HYBT-25A	HYBT-35A	HYBT-60A	HYBT-100A
Rated current	10 A	15 A		25 A	35 A	60 A	100 A
A length	82	86.2	88	112	119	156	203
B length	148.5	125		150	150	187.5	237.5
C length	135	112.5		137.5	137.5	175	225
D length	7.7	8.1	8.0	10.8	11.5	15.0	19.7
E length	6.7	7.0	6.8	8.8	9.5	12.6	16.7
F size	M3	M3.5		M4	M4	M6	M6

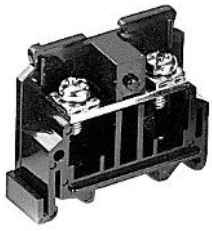
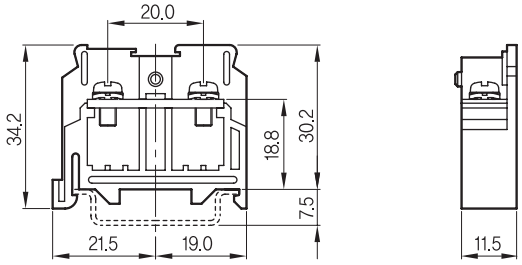
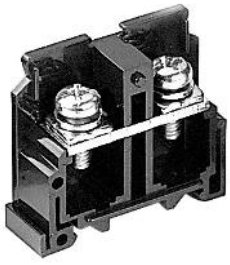
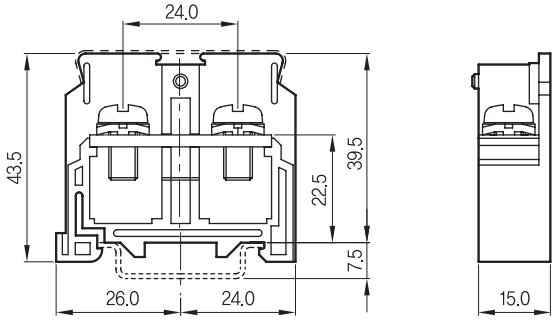
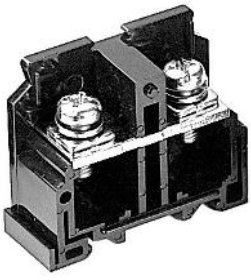
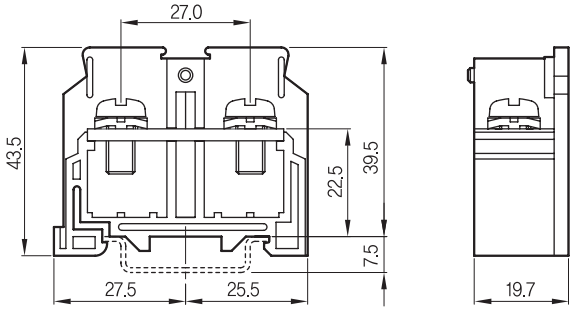
■ HYBT dimension diagram



Dimension (unit : ㎜)

Model	Appearance	Dimension
HYBT-10A		
HYBT-15A		
HYBT-15A2		
HYBT-25A		

HYBT series

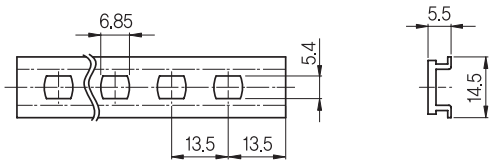
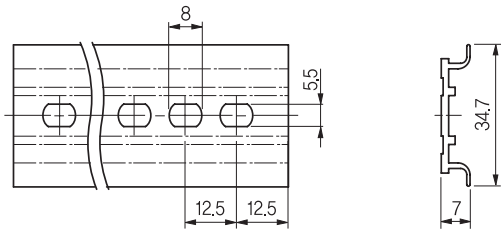
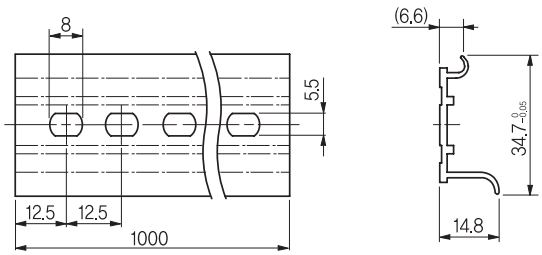
Model	Appearance	Dimension
HYBT-35A		
HYBT-60A		
HYBT-100A		

Accessory

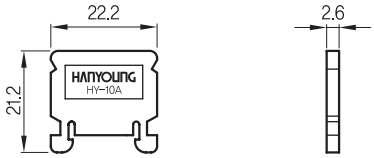
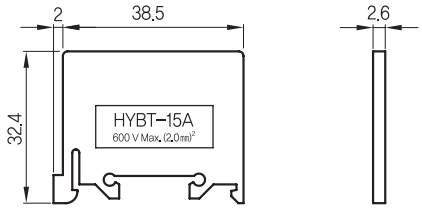
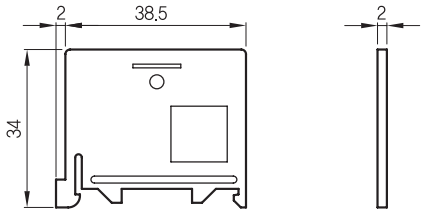
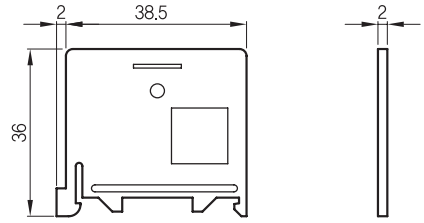
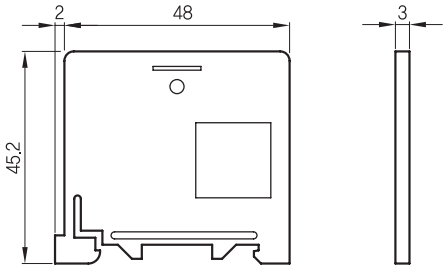
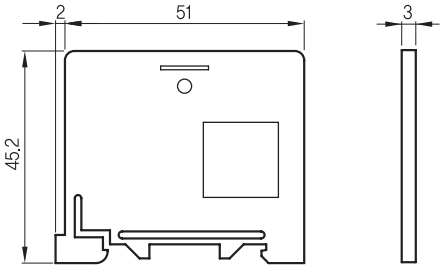
■ Applying accessories classification

Model	HYBT-10A	HYBT-15A HYBT-15A2	HYBT-25A	HYBT-35A	HYBT-60A	HYBT-100A
Rail	HYBT-CH10	HYBT-01				
Separator	HYBT-SP10	HYBT-02 HYBT-12	HYBT-03	HYBT-04	HYBT-05	HYBT-06
Stopper	HYBT-ST10	HYBT-07				
Terminal cover	HYBT-CV10	HYBT-08			HYBT-09	
Number plate	NBT-03	HYBT-10	HYBT-11			
Short terminal	-	HYBT-13	-	-	-	-

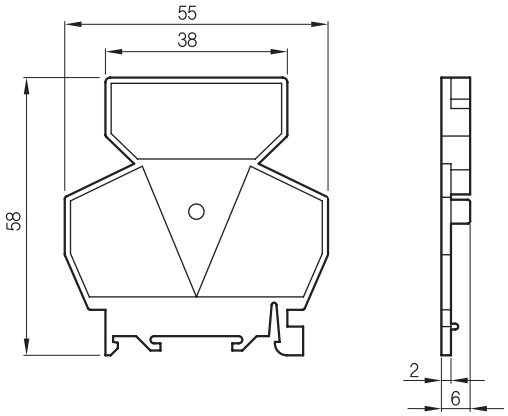
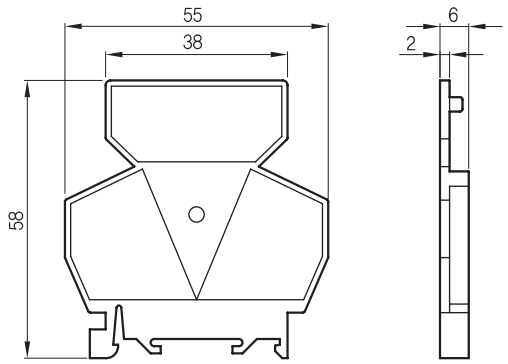
■ Aluminum rail (DIN Rail)

Appearance	Dimension
 HYBT-CH10 (10 A)	
 HYBT-01 (15 A ~ 100 A)	
 HYBT-01A (15 A ~ 100 A for slant purpose)	

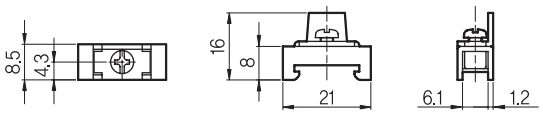
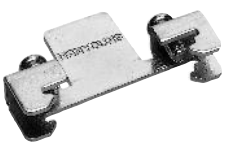
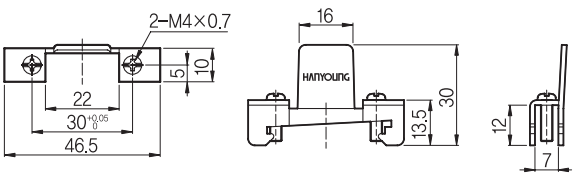
■ Separator

Model	Appearance	Dimension
HYBT-SP10 (10 A)		
HYBT-02 (15 A)		
HYBT-03 (25 A)		
HYBT-04 (35 A)		
HYBT-05 (60 A)		
HYBT-06 (100 A)		

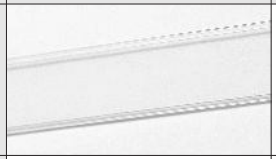
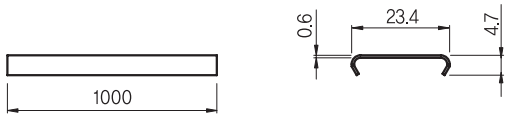
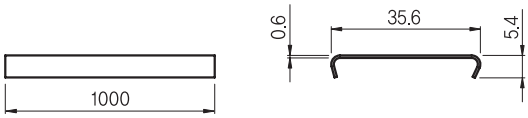
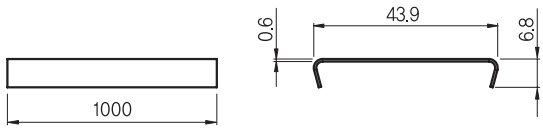
■ Separator

Model	Appearance	Dimension
HYBT-12 (HYBT-15A2-A)		
HYBT-12 (HYBT-15A2-B)		

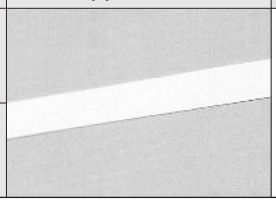
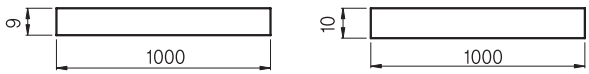
■ Stopper

Model	Appearance	Dimension
HYBT-ST10		
HYBT07		

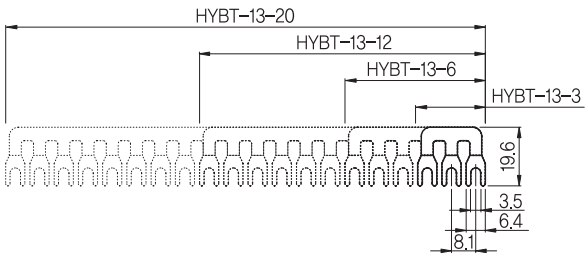
■ Terminal cover

Model	Appearance	Dimension
HYBT-CV10		
HYBT-08		
HYBT-09		

■ Number plate (Seal)

Model	Appearance	Dimension
HYBT10 (9 ㎜ width)		
HYBT11 (10 ㎜ width)		

■ Short Bar

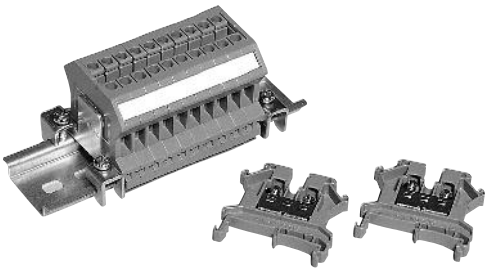
Appearance	Dimension
HYBT-13-3	
HYBT-13-6	
HYBT-13-12	
HYBT-13-20	

※ Short bar HYBT-13-3~13-20 are only for the HYBT-15A

HY-NBT15

N type assembling terminal block

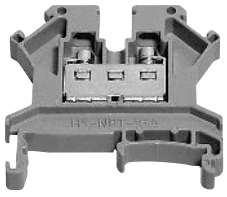
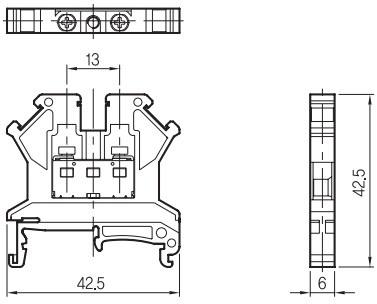
- Structure that can perform direct wiring without terminal
- Sealed structure so it will not be mixed with the foreign matter and electric shock will not be occurred.



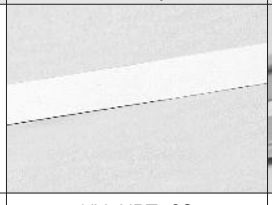
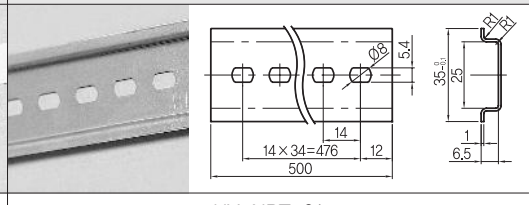
Electrical characteristic

Rated insulation voltage	600 V a.c
Rated current	15 A
Insulated resistance	100 MΩ
Dielectric strength	2,500 V a.c endure for 1min (between the non recharging part)

Dimension (unit : ㎜)

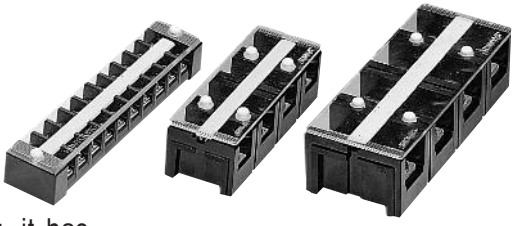
Model	Appearance	Dimension
HY-NBT-15A		

OPTION

Separator	Number plate	Channel
		
HY-NBT-02	HY-NBT-03	HY-NBT-01

HYT series

Fixing type terminal block



- Various polarities for each current capacity so easy selection
- Body of Phenolic resin (60 – 500 A) and ABS flame retardancy resin (10 – 30 A)
- Because the bolt and plate are made as heat treatment and rust-proof treatment, it has excellent electrical and mechanical characteristic
- Standard product of rated current
- Simple installation

Suffix code

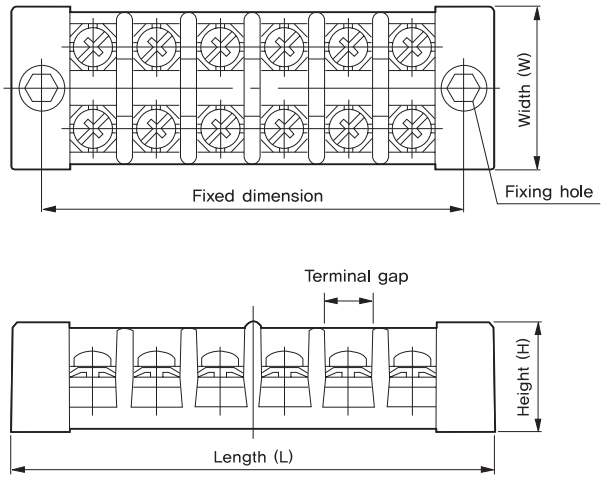
Model	Code	Description
HYT-	□□	Fixing type terminal block (Han Young Terminal Block)
Rated current	10	10 : 10 A, 20 : 20 A, 30 : 30 A, 60 : 60 A, 100 : 100 A 150 : 150 A, 200 : 200 A, 300 : 300 A, 400 : 400 A 500 : 500 A
	20	
	30	
Number of polarity(P)	3	Different polarities for each rated current (Please refer to the specification of each rated current)
	4	
	6	
	10	

Specification

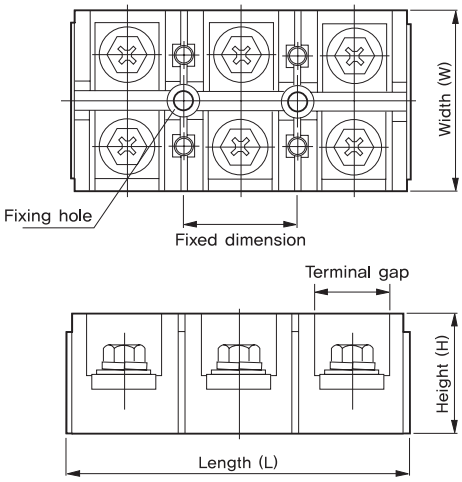
Model	HYT-10□	HYT-20□	HYT-30□	HYT-60□	HYT-100□	HYT-150□	HYT-200□	HYT-300□	HYT-400□	HYT-500□
Rated current	10 A	20 A	30 A	60 A	100 A	150 A	200 A	300 A	400 A	500 A
Terminal block screw	M3	M4		M6	M7	M9		M10		M12
Fixing hole	Ø3.7	Ø5	Ø5.2	Ø5	Ø5.5	Ø7		Ø8.5		
Rated insulation voltage	600 V									
Insulation resistance	min 100 MΩ									
Dielectric strength	2500 V a.c for 1 min (between the recharging part and non recharging part)									
Ambient temperature	-20 ~ 55 ℃									
Ambient humidity	45 – 85 % R.H.									

Dimension (unit : ㎜)

■ HYT-10□
HYT-20□
HYT-30□



■ HYT- 60□
HYT-100□
HYT-150□
HYT-200□
HYT-300□
HYT-400□
HYT-500□



Specification of each rated current (unit : ㎜)

■ Rated current 10A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-1010		10A 10P	112	24	17	102.5

■ Rated current 20 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-203		20A 3P	56	30	20	44
HYT-204		20A 4P	68	30	20	56
HYT-206		20A 6P	89	30	20	78
HYT-2010		20A 10P	137	30	20	126
HYT-2012		20A 12P	163	30	20	150.5
HYT-2015		20A 15P	199	30	20	187
HYT-2020		20A 20P	257	30	20	245

■ Rated current 30 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-303		30A 3P	67	5	24	54.5
HYT-304		30A 4P	83	35	24	70
HYT-306		30A 6P	113	35	24	100.5
HYT-3010		30A 10P	153	35	24	143

■ Rated current 60 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-603		60A 3P	84.5	40	31	28
HYT-604		60A 4P	113.5	40	31	57

■ Rated current 100 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-1003		100A 3P	104.5	55.5	36.5	35
HYT-1004		100A 4P	140	55.5	36.5	70

■ Rated current 150 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-1503		150A 3P	115.5	67.5	41	39
HYT-1504		150A 4P	153	67.5	41	77

■ Rated current 200 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-2003		200A 3P	134	72.5	44.5	45
HYT-2004		200A 4P	180	72.5	44.5	90

■ Rated current 300 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-3003		300A 3P	155.5	83.5	49.5	51.8
HYT-3004		300A 4P	207.5	83.5	49.5	103.6

■ Rated current 400 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-4003		400A 3P	155.5	83.5	49.5	51.8
HYT-4004		400A 4P	207.5	83.5	49.5	103.6

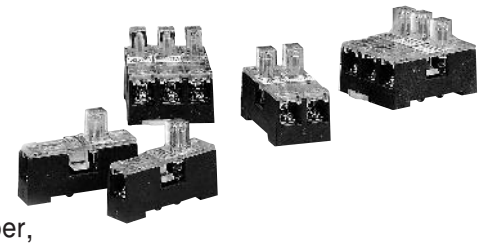
■ Rated current 500 A

Model	Appearance	Rating	Length	Width	Height	Fixed dimension
HYT-5003		500A 3P	204	94	59.5	68
HYT-5004		500A 4P	270	93	59.5	136

HY-F15 series

Fuse holder

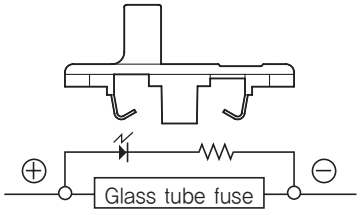
- LED light flashed when fuse is disconnected
- Safety cover installation structure
- DIN rail and bolt fixing installation structure
- Individual products (1P, 2P, 3P) so simple installation
- Material for holder body is nylon glass fiber, excellent insulation and heat resistant



Specification

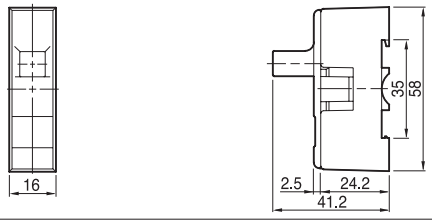
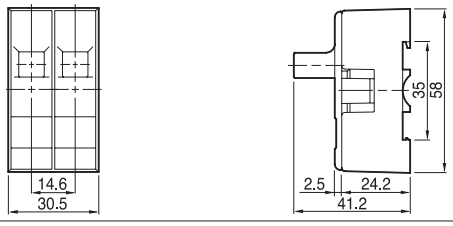
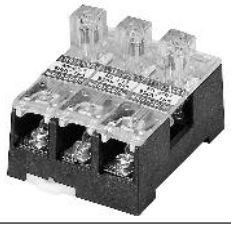
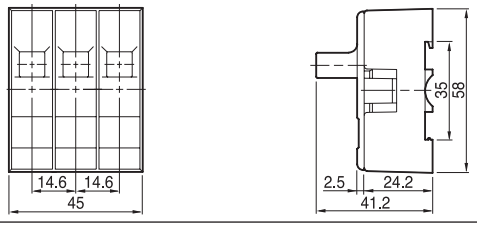
Model	Rated current	Reference
HY-F15-A	15 A 250 V a.c	a.c 110 - 220 V a.c
HY-F15-D	10 A 24 V d.c	d.c 12 - 24 V d.c

Internal circuit



※ Fuse rating:
Ø6 x 30mm glass tube fuse

Dimension (unit : ㎜)

Model	Appearance	Dimension
HY-F15-1A HY-F15-1D		
HY-F15-2A HY-F15-2D		
HY-F15-3A HY-F15-3D		

HY-F30 series

Fuse holder

- Material of body has combined NYLON66 with the glass fiber so it has an excellent electrical insulation and has a strong durability from heat and shock
- Simple operation and no possibility of damaging the product
- Excellent safety matter because when replacing the fuse, removing the old fuse is simple (it just follows out).
- Using the DIN rail shorten the work time and make attachment / detachment easy.

Type classification

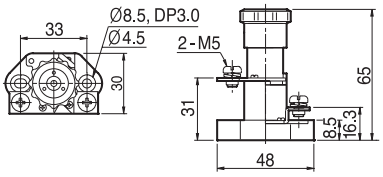
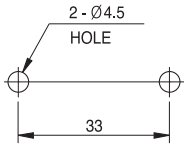
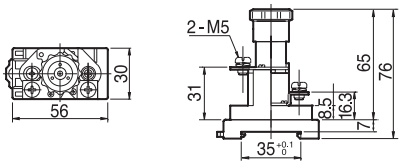
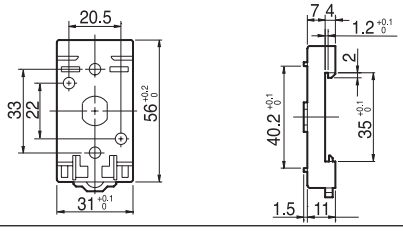
Model	Voltage	Description
HY-F30	30 A 250 V a.c	Screw fixing type
HY-F30C		DIN rail fixing type

※ Fuse rating : Ø12 × 50 ㎜

Usage

Switchboard, injection mold machine and machine tool

Dimension and panel cutout (unit : ㎜)

Model	Appearance	Dimension	Panel cutout
HY-F30 (Screw fixing)			Screw fixing 
HY-F30C (DIN rail fixing)			DIN rail fixing
HY-FCH			

G Control box Cable connector

Rolled iron control box (HY-25/30 series) ---------- 302
Plastic control box (CB25/CB30) ---------- 303
Cable connector (HYC-M1/HYC-M2) ---------- 305

HY-25/30 series

Rolled iron control box

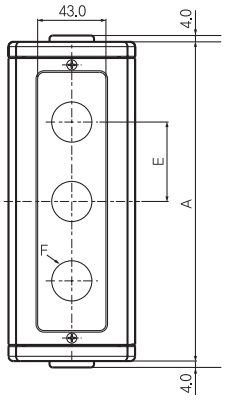
- Rolled iron and ivory color enamel painted
- Various operating switches are attached (Ø20 and Ø30)
- Various specification (1 ~ 6 holes)

Suffix code

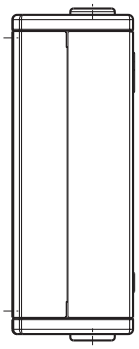
Model	Code		Description
HY-	□	□	Rolled iron controlling box
Installation hole	25		Ø25 Installation hole
	30		Ø30 Installation hole
Number of holes		01	1
		02	2 (03 : 3, 04 : 4, 05 : 5, 06 : 6)

Dimension (unit : ㎜)

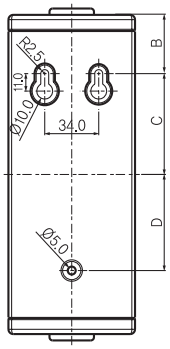
Front view



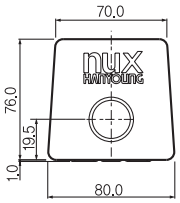
Side view



Back view



Under view



■ Ø25, Ø30 TYPE

Model	A	B	C	D	E	F
HY-2501/HY-3001	100	31.5	18.5	15.5		
HY-2502/HY-3002	150	34	41	38	50	HY-250□
HY-2503/HY-3003	200	36.5	63.5	60.5	50	Ø25.3 ±0.1
HY-2504/HY-3004	250	39	86	83	50	HY-300□
HY-2505/HY-3005	300	41.5	108.5	105.5	50	Ø30.3 ±0.1
HY-2506/HY-3006	350	44	131	128	50	

CB-25/CB-30

Plastic control box

- 1 hole assembling type so able to increase the size as necessary
- ABS heat resistance resin so light weight, solid and simple assembling
- Depending on the usage, able to combine Ø25 and Ø30 switch

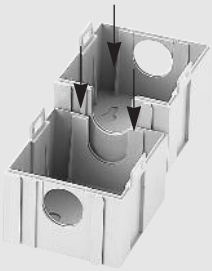
Suffix code

Model	Code	Description
CB-	□	Plastic controlling box (ABS heat resistance resin)
Installation hole	25	Ø25 Installation hole
	30	Ø30 Installation hole

Assembling method

Using a slotted screwdriver, disassemble one side and then disassemble the other side.

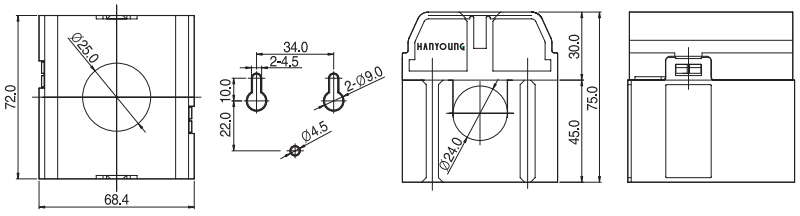
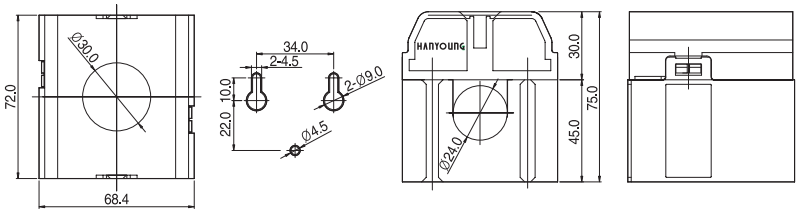
Pushing in the pin prevents the assembled box from falling apart.



Simple assembling

Cover assemble : • Press the dot part and assemble it
Cover disassemble : Do not apply too much force

Dimension (unit : ㎜)

Appearance	Dimension
CB-25	
CB-30	

HYC-M1, HYC-M2

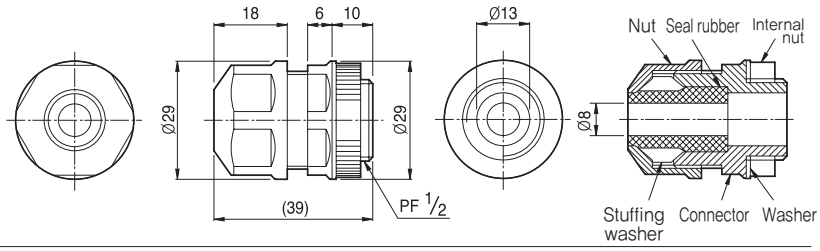
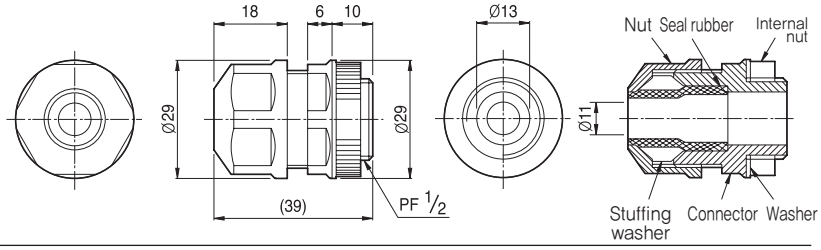
Cable gland

- Applied as the water-proof and spinning-proof when extending the cable from various machine tools.
- PF 1/2 cover fixing type nut
- Nut tightening structure by the seal rubber and stuffing washer

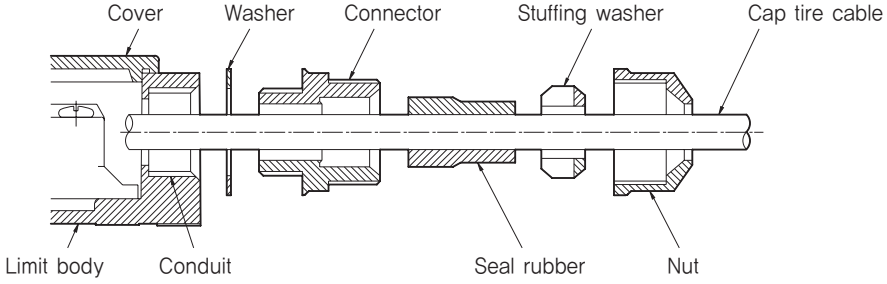
Specification

Model	Screw	Applying cable	Sealing rubber diameter	Applicable device
HYC-M1	PF 1/2	Cabtyre cable	Ø8	HY-M900, HY-LM900
HYC-M2			Ø11	HY-LS800
Material	Polycarbonate (PC)			

Dimension (unit : ㎜)

Appearance	Dimension
HYC-M1	
HYC-M2	

Example



H Discontinued products

Discontinued Products ----------308

Discontinued Products

■ Controlling switch

Classification	Stopped product	Recommended replacement	Stopped date
UR controlling switch	All products from UR series	QR series CR series	2008 / 12 / 20
PR controlling switch	All products from PR series (Ø25, Ø30)		
ARW water-proof switch	All products from ARW series (Ø25)	None	2007 / 10 / 28

■ Power push button switch

Classification	Stopped product	Recommended replacement	Stopped date
Power push button switch	BE215	HY-510	2012 / 03 / 20

■ Limit switch/Micro switch

Classification	Stopped product	Recommended replacement	Stopped date
Compact micro switch	HY-L607RB and 15 other types, all products	None	2008 / 10 / 10

■ Hoist switch/foot switch/Mono lever switch

Classification	Stopped product	Recommended replacement	Stopped date
Wireless hoist switch	HY-RH-2028	None	2007 / 2 / 29

■ Sign tower/Flashing light

Classification	Stopped product	Recommended replacement	Stopped date
LED tower indicator	HY-STB-TEB (Ø40)	STL040-F (Ø40)	2008 / 12 / 20
	HY-STC-TEB (Ø57)	STL060-F (Ø60)	
Turn light for automobile	RLB-KB01A	RLA-KB/KBB	2011 / 09 / 06
	RLB-KB02A	RLA-WX/WXB	
Sign tower	HY series (Ø52)	HY-TN series (Ø55)	2012 / 03 / 14

SECURITY
OR SAFETY
controllers & more

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