MP3-4□H, MP6-4□H
Digital frequency meter

- Exclusive frequency meter
- Frequency measurement by the AC voltage input signal
- Wide displayable range, 4 digits (-1999~9999)

Suffix code

Model		Code				Information
MP	□	□	□	□		Digital frequency meter
Dimension	3					Dimension 96×48 ㎜
	6					Dimension 72×36 ㎜
Displayable digit	4					4 digits (9999)
Output (Optional)			N			Only for display
			0			Relay output(HI, GO, LO) + Current output (4-20 ㎃)
			1			Relay output(HI, GO, LO)
			2			NPN TR output(HI, GO, LO) + Current output (4-20 ㎃)
			3			PNP TR output(HI, GO, LO) + Current output (4-20 ㎃)
Measurement input signal				H		AC input frequency measurement

Specification

Input

Input signal	AC voltage
Measurement method	Calculation method
Response speed	Approx. 2sec (max range)
Max displayable digit	4 digits (-1999~9999)
Displaying unit	7 segments LED

Performance

| Accuracy	AC : Below ±5 Digit
Insulation resistance	100 MΩ min(500 V DC)
Dielectric strength	1500 V AC for 1 min (power terminal − input terminal)

Function

Input range	AC voltage (5 V AC, 50 V AC, 500 V AC)
Input compensation	Display by compensating the measured value
Updating cycle	It is hard to measure the precise value when measured value varies too much. In this case, it is possible to change the updating cycle and average the value.
Position of decimal point	Select the position of decimal point
Hold function	Memorize the minimum input value or maximum input value or hold (stop) by the external signal
Lock function	Limits the setting function of each parameter
Max value display	Display the max value among the measured values
Min value display	Display the min value among the measured values
High setting	Set the high set value (HSET) of high output (HI)
Low setting	Set the low set value (LSET) of low output (LO)
Output action (PSOT) selectable	Among the output actions (OFF, HH, LH, HL, LL, IL), selecting "OFF" will not limits any operations but selecting other outputs will let only selected functions to be operated
Hysteresis setting	When measured value fluctuates minutely around the set value, it sets the hysteresis in order to prevent the frequent output action

● Scale setting

Scale function which can display the input signal as certain numerical value is built in. It can freely adjust the increment, decrement, +~− indication.
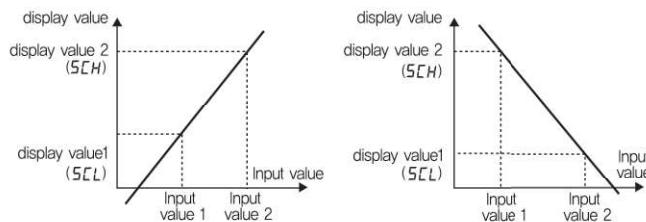
Output

Current output (Retransmission)	Yields 4 – 20mA DC output regarding current indicated value. (Resolving power : 12000)
Transistor output	PNP/NPN open collector output (12 – 24 V DC 50 mA max)
Relay output	1 a X 3 contacts (HI, GO, LO), (220 V AC 5 A)

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General specification

Model	MP3–□H	MP6–□H
Power supply voltage	100 – 240 V AC, 50 – 60 Hz (dual usage)	
Allowable voltage fluctuation range	85 – 264 V AC	
Power consumption	Approx. 5 VA	Approx. 5 VA
Weight(g)	Approx. 180	
Ambient temperature	0 ~ 50 ℃	
Ambient humidity	35 ~ 85 % RH	
Storage temperature	−10 ~ 70 ℃	
Vibration resistance	10 – 55 Hz peak amplitude X, Y, Z each direction for 2 hours	
Shock resistance	300 m/s², X, Y, Z 6 directions each 3 times	

Measurement input and range

● AC Voltage

Input signal	Input terminal	Display range	Input impedance
	5 V		100 KΩ
AC voltage	50 V	0.1 ~ 9999	1 MΩ
	500 V		10 MΩ

MP3-4☐H, MP6-4☐H

Default setting

● Setting group 1

Mode	Mode name	MP3-H	MP6-H
l.ir5	Input range	999.9	
2.HdP	Factor	1.000	
3.LdP	Input compensation	0	
4.Adt	Updating cycle	0.2	
5.5CH	High scale	0	
6.5CL	Low scale	0	
7.dPP	Position of decimal point	000.0	
8.PdH	Hold function	oFF	
9.LoC	Lock function	oFF	

● Setting group 2

Mode	Mode name	MP3-H	MP6-H
HHPʮ	Max value display	–	
LLPʮ	Min value display	–	
HSEt	Max set value	5000	
LSEt	Min set value	2000	
PSot	Output action selectable	oFF	
HYSt	Hysteresis	01	

Comparative output mode (*PSot*)

| Operation mode	Output Operation	Explanation
	HSEt *LSEt*	H : Hysteresis
oFF		no output operation
LLot	GO LO H	Current indication value ≤ *LSEt* value, LO output becomes ON. Current indication value ≥ *LSEt* value, GO output becomes ON.
HHot	HI H GO	Current indication value ≥ *HSEt* value, HI output becomes ON. Current indication value ≤ *HSEt* value, GO output becomes ON.
LHot	HI H GO LO H	Current indication value ≤ *LSEt* value, LO output becomes ON. Current indication value ≥ *HSEt* value, HI output becomes ON. Current indication value < *HSEt*, GO output becomes ON.
HLot	HI H GO LO H	Current indication value ≥ *LSEt* value, LO output becomes ON. Current indication value ≥ *HSEt* value, HI output becomes ON. Current indication value < *HSEt* and *LSEt*, GO output becomes ON.
ILot	GO LO H	Same as the *LLot* operation but LO output will not operate under the initial setup value of *LSEt*. It starts to operate from the next value of *LSEt*.
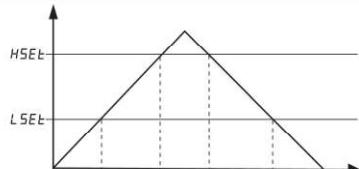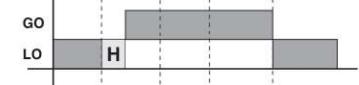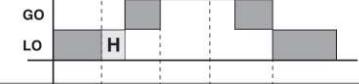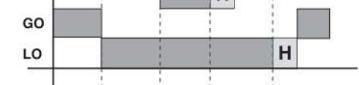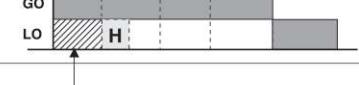
It does not operate under the initial LSET

## Parameter composition and setting method

● Parameter 1 (✳ Key – more than 2 sec)
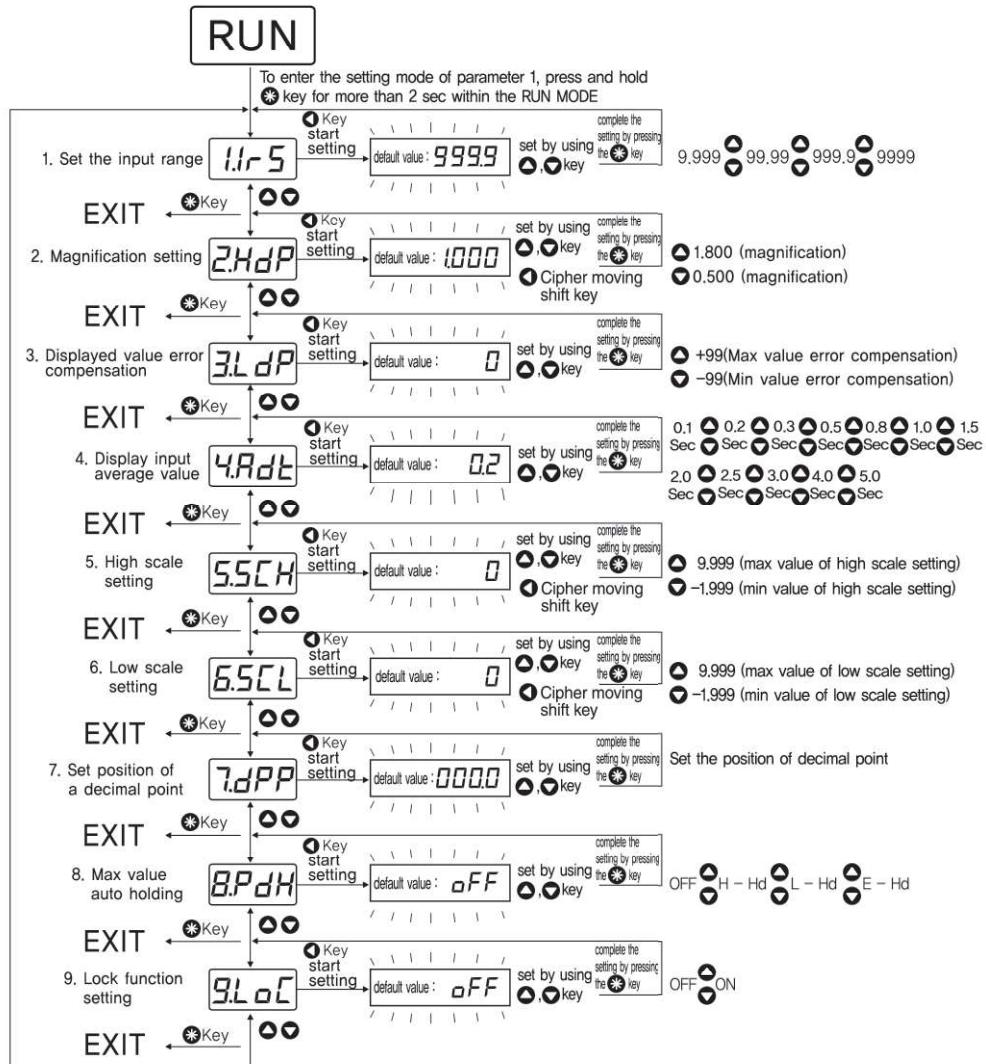
● Parameter 2 (✱ Key – more than 2 sec)


```
RUN
```
To enter the setting mode of parameter 2,
press and hold ✱ key for less than 2 seconds in RUN MODE.

| Max input value display fonction | HHPH | ◀ Key → | Max. value of Input Display | ▼ max. value default | To finish the setting then press ✱ key |
| EXIT ← ✱ Key | | ▲▼ | | | |

| Min. of the Input Display | LLPH | ◀ Key → | Min. value of Input Display | ▼ min. value default | To finish the setting then press ✱ key |
| EXIT ← ✱ Key | | ▲▼ | | | |

| Comparative Output High Selection | HSEH | To begin the setting then press ◀ key | High Limit value of Comparative Output | Select other values by pressing ▲▼ key. To move the position of the number then press ◀ key. | To finish the setting then press ✱ key | ▲ 9.999 (Max. of High Limit of Comparative Output) ▼ -1.999 (Min. of High Limit of Comparative Output) |
| EXIT ← ✱ Key | | ▲▼ | | | |

| Comparative Output Low Selection | LSEH | To begin the setting then press ◀ key | Low Limit value of Comparative Output | Select other values by pressing ▲▼ key. To move the position of the number then press ◀ key. | To finish the setting then press ✱ key | ▲ 9.999 (Max. of Low Limit of Comparative Output) ▼ -1.999 (Min. of Low Limit of Comparative Output) |
| EXIT ← ✱ Key | | ▲▼ | | | |

| Comparative output mode setting | PSoE | To begin the setting then press ◀ key | Comparative Output Mode Selection | Select other values by pressing ▲▼ key | To finish the setting then press ✱ key | LL.ot HH.ot LH.ot HL.ot IL.ot |
| EXIT ← ✱ Key | | ▲▼ | | | |

| Hysteresis Selection | HYSE | To begin the setting then press ◀ key | Default : 01 | Select other values by pressing ▲▼ key. To move the position of the number then press ◀ key. | To finish the setting then press ✱ key | ▲99(max. value) ▼00(min. value) |

● Lock key (◀ Key – more than 2 sec)

```
RUN
```
To enter the setting mode of LOCK,
press and hold ◀ key for more than 2 seconds in RUN MODE

| EXIT ← ✱ Key | LoC | To begin the setting then press ◀ key | Default : oFF | Select other values by pressing ▲▼ key | To finish the setting then press ✱ key | OFF ▲▼ ON |
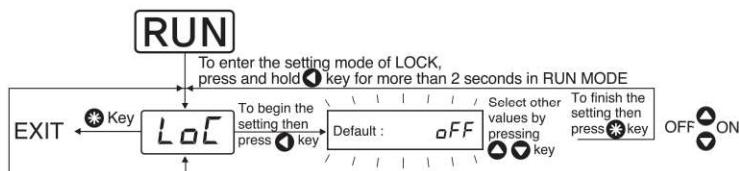
※ When LoCH function is ON, it is impossible to set any of parameters.

● How to change the setting value of parameter

1. Pressing ✳ key more than 2 sec within the RUN MODE will enter into the Parameter 1 and pressing ✳ key less than 2 sec will enter into the parameter 2.
2. Able to select the parameter by pressing ◒, ◒ key and within the selected parameter, parameter and set value repeatedly flickers in the display unit.
3. Able to change the set value by pressing the ◁ key and at this moment, set value flickers in the display unit.

When changing the setting of constant value, able to perform the position shifting by using ◁ key.

Example)

HdP ←→ Default value: 1000 — To begin the setting then press ◁ key → Default: 1000 Select other values by pressing ◒ ◒ key
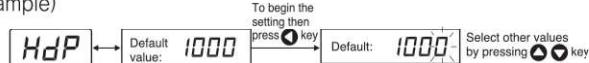
When set value is constant, only 0th digit of the constant value will flicker in the display unit.
In order to change the value of 100th digit, press the ◁ key 3 times. Each time when users press the ◁ key, position of the digit will shift to the left and selected digit will flicker in the display unit.
When setting is completed, return to the parameter mode by pressing the ✳ key. At this moment, please flickers the parameter and set value repeatedly once again. Able to return to the RUN mode by pressing the ✳ key again.

● Slope setting method

When users want to display 3600 (min −1999~9999) within the 1000Hz input, setting the parameter is as follows.

1. Enter into the parameter 1 by pressing the ✳ key for 2 sec
2. Set 3600 in the SCH (slop high value) parameter by using shift, up and down key
3. Set 0 in the SCL (slope low value) parameter by using shift, up and down key.

Finish the setting just like above and return to the RUN mode by pressing the menu key.

	Parameter1	
Parameter	SCH	SCL
set values	3600	0

display value

3600 - - - - -
1800 - - -
0   500 1000 Hz
input value
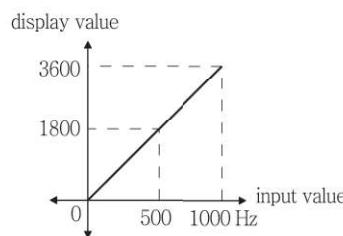
● Defaulting set values

While pressing the ◒ button, $tESt$ will be displayed if pressing the ✳ -> ◁ -> ◒ buttons in sequence order. Here, releasing ◒ button and pressing it again will reset all set value, (Resetting the set value impossible when $LoCH$ is being set)

● Error display code

" $OHEr$ " : This will be displayed when a measured input value exceeded max display range
(9999 4digits) or when negative valve is indicated with in normal mode.
Normal mode : SCH 0 or SCL 0

" $HLEr$ " : Error message will be displayed when a setting value of High Comparative Output is less than that of Low Comparative Output

" $----$ " : When input is less than min measurement range 0.1Hz

## ⚙ Dimension and panel cutout (unit : ㎜)

MP3-H
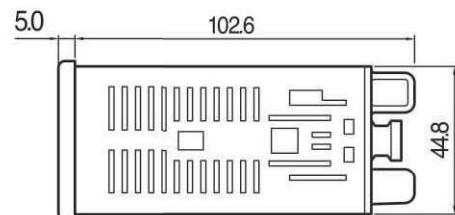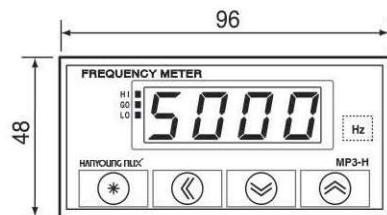
● Dimension

● panel cutout
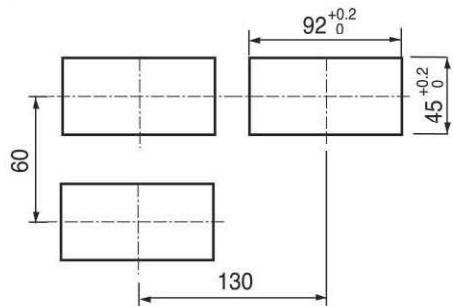
MP6-H

● Dimension
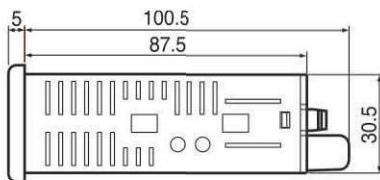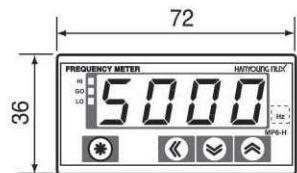
● panel cutout
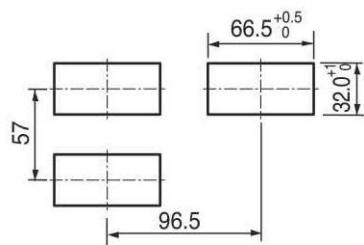
⠶ Connection diagram

### ■ MP3-4-NH
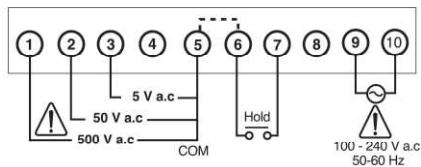
■ MP6-4-NH
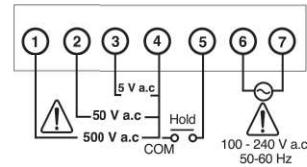
■ MP3-4-OH
(Relay output, 4-20 ㎃ Current output)
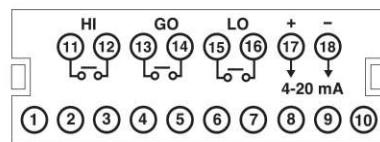
### ■ MP3-4-1H
(Relay output)
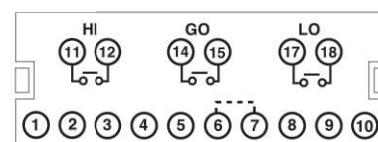
■ MP6-4-OH
(Relay output, 4-20 ㎃ Current output)
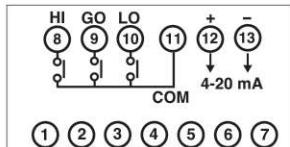
■ MP6-4-1H
(Relay output)
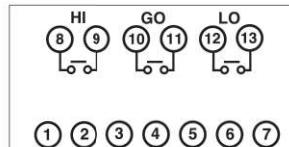
■ MP6-4-2H
(NPN TR, 4-20 ㎃ Current output)
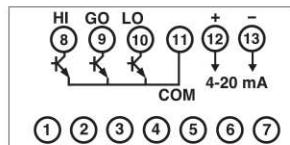
### ■ MP6-4-3H
(PNP TR, 4-20 ㎃ Current output)
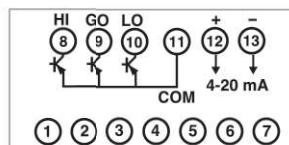
■ MP6-4-4H
(NPN TR, RS485 Output)
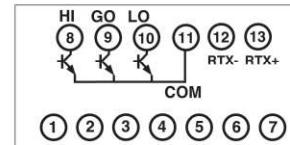
■ MP6-4-5H
(PNP TR, RS485 Output)