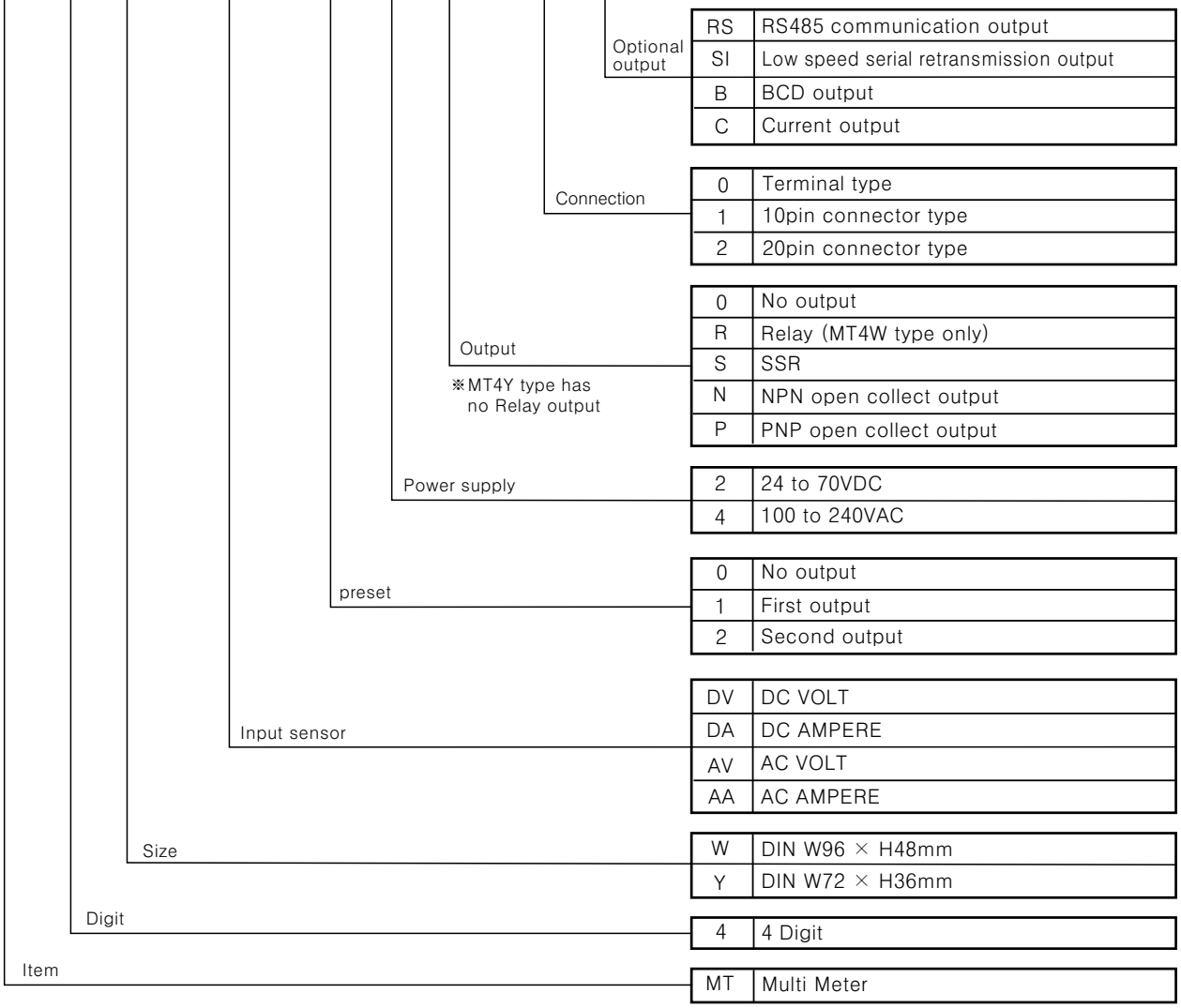
DIGITAL MULTI METER

▣Ordering information

MT 4 W - DV - 0 2 0 - 0 RS



Digital multi meter

▣Features

- Free scale setting for input range.
- Diverse output: PLC interface by low speed serial signal, BCD output, 4 to 20mA.
- RS485 communication.
- Setting output of High-Limit & Low-Limit.
- Changeable display cycle, Error indication.
- Memory function for Max. & Min. measuring value.
- Data monitoring function.
- Revise for the deviation.
- Selectable RMS or average for measuring value.

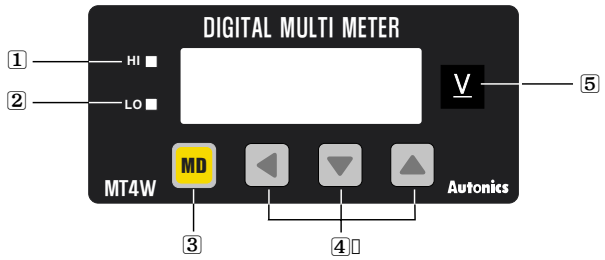
▣ Specification

Model		MT4W / MT4Y
Power supply		AC100-240V 50/60Hz, DC24-70V(90 to 110% of rated voltage)
Power consumption		5VA
Display method		7Segment LED DISPLAY(Red color)
Indicating accuracy		DC type F · S ±0.1%, AC type F · S ±0.2%(rdg ± 1digit)
Input sensor		DC voltage/Ampere, AC voltage/Ampere
Operating method		Dual slope A/D conversion
Sampling time		100mS(division 1/12000)
Max. indication		-999 to 9999(4digit)
Free scale function		· Set by front Key(-999 to 9999), · Changeable Dot position
Deviation revise		Deviation revise of Hi & Lo
PRESET		●Output function Relay output(2output 3A 250VAC, 3A 30VDC) (※MT4W only) SSR output(DC12V ±2V Max. 30mA) NPN/PNP open collect output(DC 12-24V Max. 50mA) } Selectable ●Hysterisis set(1 to 99)□
Monitoring function		· Indication as checking Max. value/ Min. value at run status · Set of monitoring delay time from 0 to 30sec
Sampling time		Selectable 0.5 or 1, 2, 3, 4, 5sec at run statas
Option output		· RS485 communication output · Low speed serial output · BCD output · 4-20mA Analog output□
Selectable RMS/AVG		Selectable RMS or AVG at AC type
HOLD function		Outer hold function
Insulation resistance		Max. 100MΩ(at 500VDC Mega) between terminals and case
Dielectric stength		2000VAC for 1minute (between terminals and case)
Noise		±2KV R phase or S phase pulse width 1㎲
Vibration	Mechanical durability	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1hour
	Malfunction durability	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10minutes
Shock	Mechanical durability	100m/S² (10G) in X, Y, Z directions for 3 times
	Malfunction durability	300m/S² (30G) in X, Y, Z directions for 3 times
Ambient operating temperature		-10 to 50℃(at non-freezing status)
Ambient storage temperature		-20 to 60℃(at non-freezing status)
Ambient humidity		35 to 85%RH
Weight		MT4W:About 211g, MT4Y:About 120g

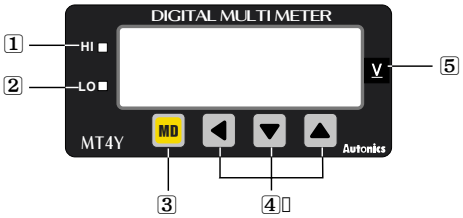
※The weight of above chart is net weight.

▣ Part name

●MT4W



●MT4Y

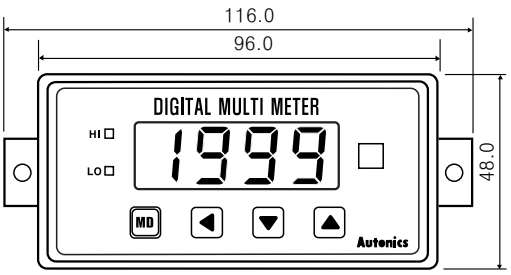


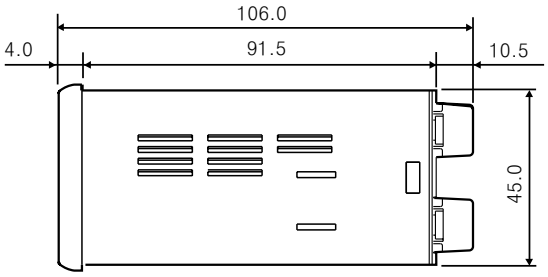
1 HI : High output indicator
2 LO : Low output indicator
3 MD Key : Mode Key
4 ◀ ▲ ▼ : Shift key
5 Sticker of measuring unit

▣ Dimension

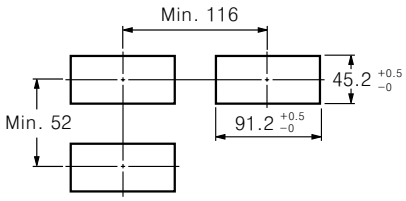
Unit:mm

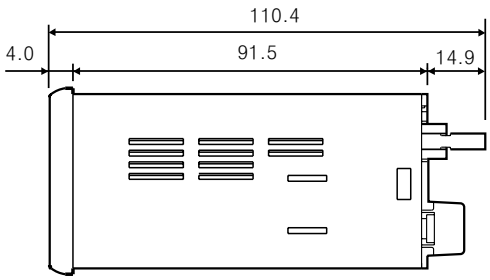
●MT4W



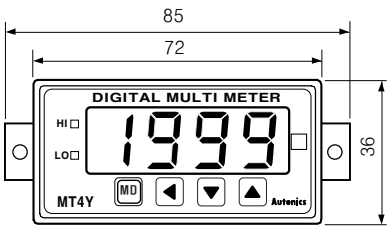


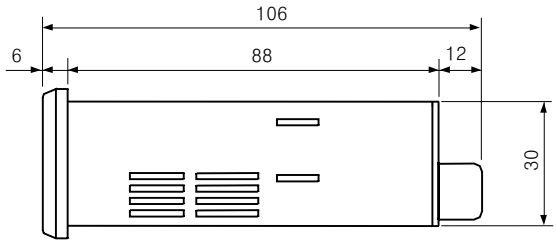
●Panel cut-out



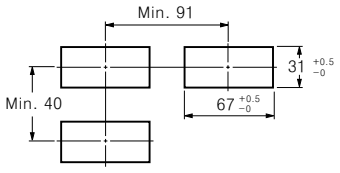


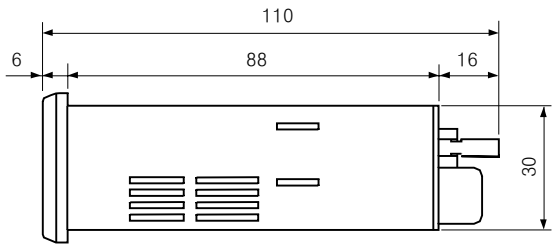
●MT4Y





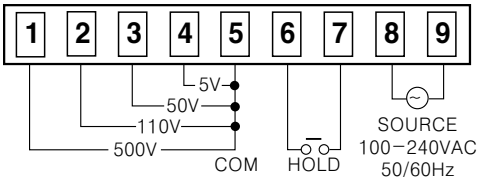
●Panel cut-out



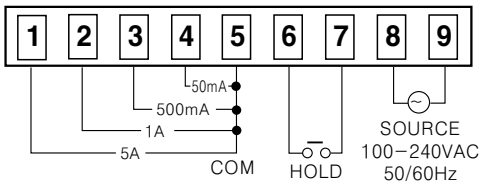


▣ Connection(MT4W series)

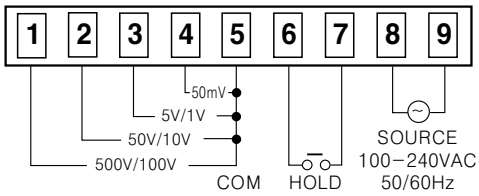
●MT4W−AV



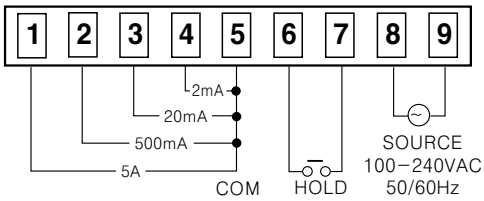
●MT4W−AA



●MT4W−DV

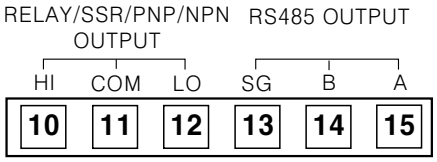


●MT4W−DA

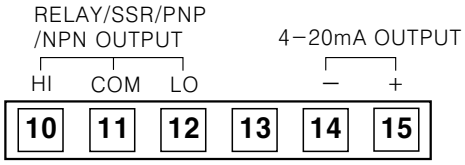


●Option output

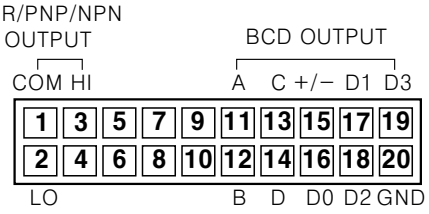
□ - **RS**



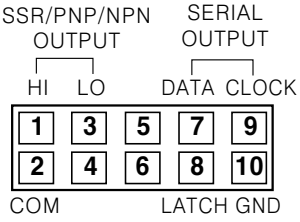
□ - **C**



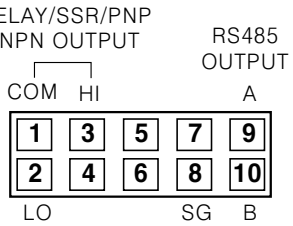
□ - **B**



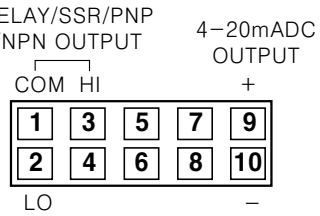
□ - **SI**



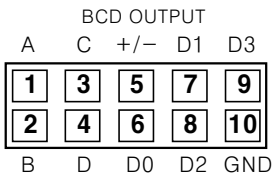
□ - **RS**



□ - **C**

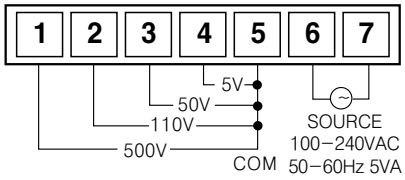


□ - **B**

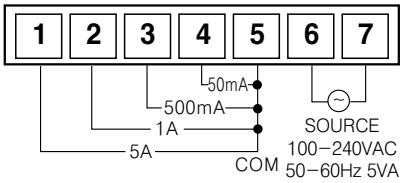


▣ Connection (MT4Y series)

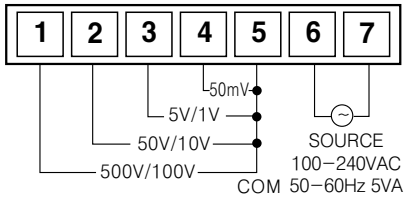
●MT4Y−AV



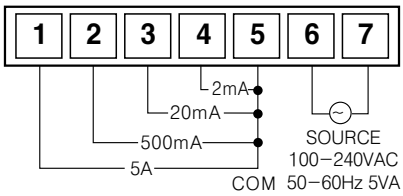
●MT4Y−AA



●MT4Y−DV

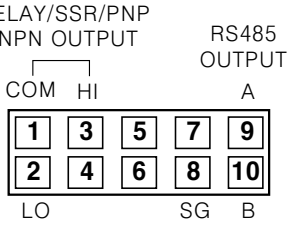


●MT4Y−DA

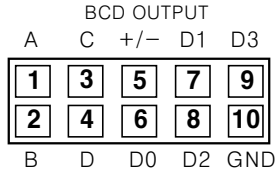


●Option output

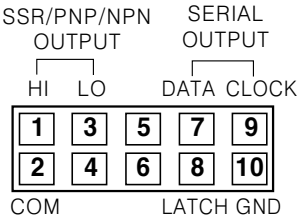
□ **- RS**



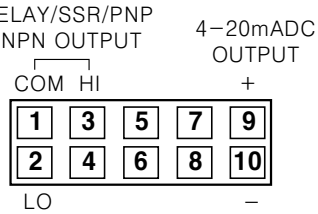
□ **- B**



□ **- SI**



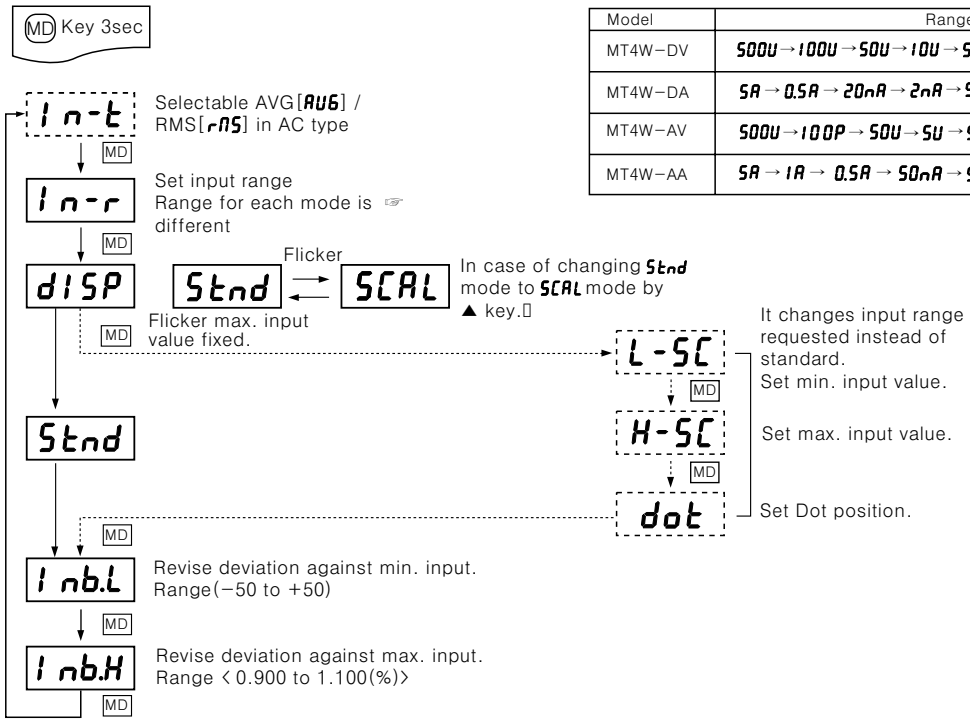
□ **- C**



▣ Parameter

Parameter	DISPLAY	Function	Note
Parameter1	In-t	Selectable RMS/AVG in AC type	Indication for AC type only
	In-r	Selection of input range	
	diSP	Selection of display type	Selectable Stnd or SCAL
	Stnd	Standard scale status	Max. value at Stnd
	SCAL	Scale status	These mode indicates at SCAL It sets max. display Dot and min. display Dot(−999 to 9999)
	L-SC	Set Low scale value	
	H-SC	Set High scale value	
	dot	Set Dot position	
	In.bL	Revise Low value of display	Set range −50 to +50
	In.bH	Revise High value(%) of display	Set range 0.900 to 1.100
Parameter2	PrSt	Selection of preset function	Selectable of oFF/L.St/H.St/LH.St/HH.St/Ld.St
	HIS	Set hysterisis value	Set range 01 to 99
	PEr.t	Set monitoring delay time	Set range 01 to 30
	diS.t	Selectable sampling time	Selectable of 0.5/1.0/2.0/3.0/4.0/5.0
	AdrS	Set communication address	Set range 01 to 99
	bPS	Selectable baudrate	Selectable of 1200/2400/4800/9600
	LoCK	Selectable lock function	Selectable of Lock1/Lock2/Lock3
Parameter3	L.PEr	Min. value by data monitoring	⬅ Return to initial status as ◀ key
	H.PEr	Max. value by data monitoring	
	H.SEt	Set Low setting value	Setting range −999 to 9999
	L.SEt	Set High setting value	

▣ Parameter 1



Model	Range
MT4W−DV	500U→100U→50U→10U→5U→1U→0.05U→500U
MT4W−DA	5A→0.5A→20mA→2mA→5A
MT4W−AV	500U→100P→50U→5U→500U
MT4W−AA	5A→1A→ 0.5A→50mA→5A

※Each mode is changed by ◀ key and it sets by MD key.
※Setting value is changed by ▲ ▼ key at L-SC / H-SC / In.bL / In.bH
※The other mode is changed by ◀ key.

▣ Parameter 2

MD +▲ Key 3sec

PrSt — Set preset mode among 6 mode as follow;
oFF → L.St → H.St → LH.St → HH.St
→ Ld.St → oFF

HIS — Indication at preset mode only.
Set hysterisis of preset.
Setting range is 01 to 99.

PEt.t — Set monitoring delay time.
Setting range is 00 to 30sec.

dIS.t — Set sampling time.
Setting range is
0.5 → 1.0 → 2.0 →3.0 → 4.0 → 5.0sec

AdrS — Indication at RS485 output only.
Set address of RS485 output,
setting range is 01 to 99.

bPS — Set baudrate of RS485 output.
Setting range is
1200 → 2400 → 4800 → 9600 → 1200

LoC — These are 4 kinds of lock function.
Setting range is
oFF → LoC1 → LoC2 → LoC3 → oFF.

oFF	No lock function	LoC2	Parameter1, 2 lock
LoC1	Parameter1 lock	LoC3	Parameter1, 2, 3 lock

※Each mode is changed by ◀ key and it sets by MD key.
※Setting value is changed by ▲ ▼ key at HIS/PEt.t/AdrS
※The other mode is changed by ◀ key.

▣ Parameter 3

MD Key Touch

L.PEt — It indicates min. value at Run status.
It return initial status by ◀ Key.

H.PEt — It indicates max. value at Run status.
It return initial status by ◀ Key.

H.SEt — This mode indicates in case of setting preset mode.
Set within setting scale range.

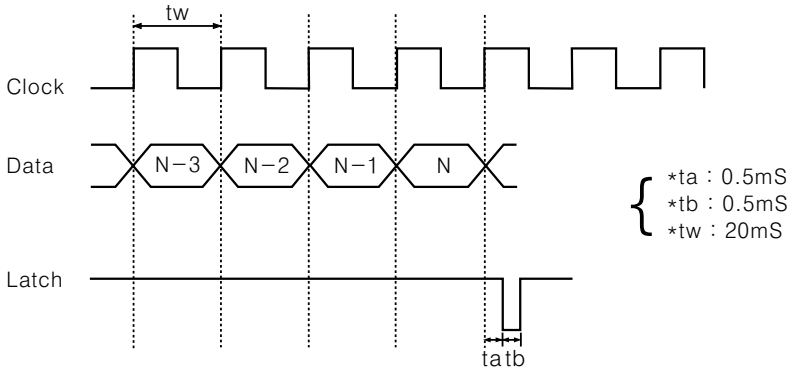
L.SEt — Set within setting scale range.
It can not exceed H.Set value.

RUN

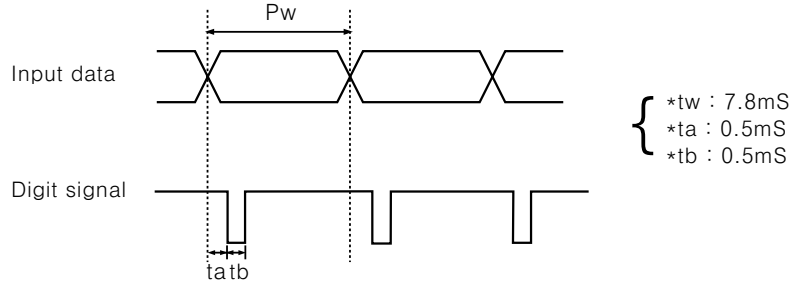
※Each mode is changed by ◀ key and it sets by MD key.
※Setting value is changed by ▲ ▼ key.

▣ Timing chart of serial output BCD output

◎ Serial input(Positive logic)



◎ BCD OUT(Positive logic)



▣ Input range for the sensor

● Initial specification each input type

Type	Input[Display]	Standard mode		Scale mode[SCAL]		
		Max.	Range	Min. [L-SC]	Max. [H-SC]	Range
DC VOLT	0 to 500V [500U]	500.0	0 to 500.0(Fixed)	0.0	500.0	−999 to 9999(Variable)
	0 to 100V [100U]	100.0	0 to 100.0(Fixed)	0.0	100.0	−999 to 9999(Variable)
	0 to 50V [50U]	50.00	0 to 50.00(Fixed)	0.00	50.00	−999 to 9999(Variable)
	0 to 10V [10U]	10.00	0 to 10.00(Fixed)	0.00	10.00	−999 to 9999(Variable)
	0 to 5V [5U]	5.000	0 to 5.000(Fixed)	0.0	5.000	−999 to 9999(Variable)
	0 to 1V [1U]	1.000	0 to 1.000(Fixed)	0.0	1.000	−999 to 9999(Variable)
	0 to 50mV [0.05U]	50.00	0 to 50.00(Fixed)	0.00	50.00	−999 to 9999(Variable)
DC AMPERE	0 to 5A [5A]	5.000	0 to 5.000(Fixed)	0.000	5.000	−999 to 9999(Variable)
	0 to 500mA[0.5A]	500.0	0 to 500.0(Fixed)	0.0	500.0	−999 to 9999(Variable)
	0 to 20mA [20nA]	20.00	0 to 20.00(Fixed)	0.00	20.00	−999 to 9999(Variable)
	0 to 2mA [2nA]	2.000	0 to 2.000(Fixed)	0.000	2.000	−999 to 9999(Variable)
AC VOLT	0 to 500V [500U]	500.0	0 to 500.0(Fixed)	0.0	500.0	−999 to 9999(Variable)
	0 to 110V [110P]	440.0	0 to 440.0(Fixed)	0.0	440.0	−999 to 9999(Variable)
	0 to 50V [50U]	50.00	0 to 50.00(Fixed)	0.00	50.00	−999 to 9999(Variable)
	0 to 5V [5U]	5.000	0 to 5.000(Fixed)	0.000	5.000	−999 to 9999(Variable)
AC AMPERE	0 to 5A [5A]	5.000	0 to 5.000(Fixed)	0.000	5.000	−999 to 9999(Variable)
	0 to 1A [1A]	1.000	0 to 1.000(Fixed)	0.000	1.000	−999 to 9999(Variable)
	0 to 500mA[0.5A]	500.0	0 to 500.0(Fixed)	0.0	500.0	−999 to 9999(Variable)
	0 to 50mA [50nA]	50.00	0 to 50.00(Fixed)	0.00	50.00	−999 to 9999(Variable)

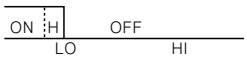
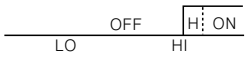
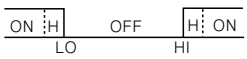
● In ex−factory status all products are set as follow

MODE	MT4W−DV	MT4W−DA	MT4W−AV	MT4W−AA
In-t	—	—	AU6	AU6
In-r	500U	5A	500U	5A
diSP	Stnd	Stnd	Stnd	Stnd
Stnd	500.0	500.0	500.0	5.000
Inb.L	0000	0000	0000	0000
Inb.H	1.000	1.000	1.000	1.000
PrSt	oFF	oFF	oFF	oFF
HIS	—	—	—	—
PEt.t	00	00	00	00
diS.t	0.5S	0.5S	0.5S	0.5S
AdrS	01	01	01	01
bPS	9600	9600	9600	9600
LoCt	oFF	oFF	oFF	oFF
L.PEt	0	0	0	0
H.PEt	0	0	0	0
H.SEt	—	—	—	—
L.SEt	—	—	—	—

※ In-t, HIS, AdrS, bPS, H.SEt, L.SEt are not indicated according to model.

▣ Preset function

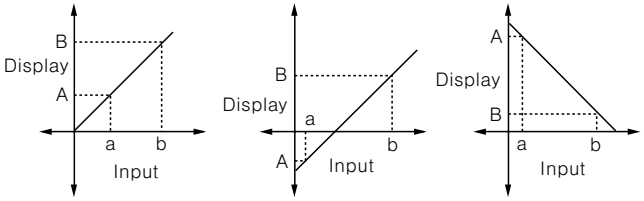
●Operation chart for each mode

OFF		No output
L.St		When PV is smaller than Low set value or same as it, output turns on.
H.St		When PV is larger than High set value or same as it, output turns on.
LH.St		When PV is smaller than Low set value or same as it and larger than High set value or same as it, output turns on.
HH.St		When PV is larger than Low set value or same as it and larger than High set value or same as it, output turns on.
Ld.St		This mode is same as operation of L.st mode but output do not operates at first Low set value and operates at next Low set value.

※"H" means hysterisis and it can set from 1 to 99 at HIS mode.

▣ Free scale function

This function is to display it as setting (−999 to 9999) its High/Low value to display a certain High/Low input value.
EX)A certain input = a, b / A certain display value = A, B
It indicates as a=A, b=B in a straight line.



▣ Sampling time

Sampling time can set as 0.5S / 1.0S / 2.0S / 3.0S / 4.0S/ 5.0S.
In case of setting 5.0S, average value for input value for 5sec is indicated each 5sec.

▣ Option output (Retransmission output)

① RS485 communication output
This function can selet 32 chennels within 01 to 99 address.
This output can select an baudrate among 1200, 2400, 4800, 9600 bPS.

② Low speed serial retransmission output
This output(50Hz) is to retransmit display value to PLC, etc, which Low speed input is reequested.

③ Current(4 to 20mA) output
This output is 4 to 20mA analogue output for setting range between High and Low.

④ BCD output

※ These outputs must be selected one output only.

▣ Monitoring function

Data which is monitoring Max. / Min. value according to a change of input value is indicated as Max. value [H.PEU] and Min. value [L.PEU]
To monitor initial over voltage or over current when power turn on, this function can set monitoring delay time from 0 to 30sec at PEU.t mode and after setting time.

Data is reset by pressing " ◀ " key at Data indication mode of parameter3.

※When power turns on reset is applied at [L.PEU].

▣ Deviation revise

This function is to adjust deviation of display value for High/Low set value by scale mode.
I nb.L :±50 [To deviation of Low display value],
I nb.H :1.100 to 0.900[Adjust of slope(%) of High display value]
EX)Input : 0 to 500V
Display value : 0 to 500.0 ┘ Set condition
When Low display value indicates □ □1.2 at 0V input under above set condition, offset of Low display value can be adjusted as 0.0
setting −12(value of deviation revise) at I nb.L mode.
High display value changed according to adjustment of offset.
If High display value indicates 500.5, slope of High display value is adjusted by appling 0.999(500 500.5) at I nb.H mode.
※Deviation of I nb.L is adjusted within 50 for D^{-0},D^{-1} regardless of dot.