watanabe

New Product

Graphical Panel Meter

WPMZ

Product Introduction

66

Dustproof &
Water Resistant Structure
IP66 Front bezel

CE

WPMZ-1 DC Voltage / Current input meter

WPMZ-3 Strain gauge input meter

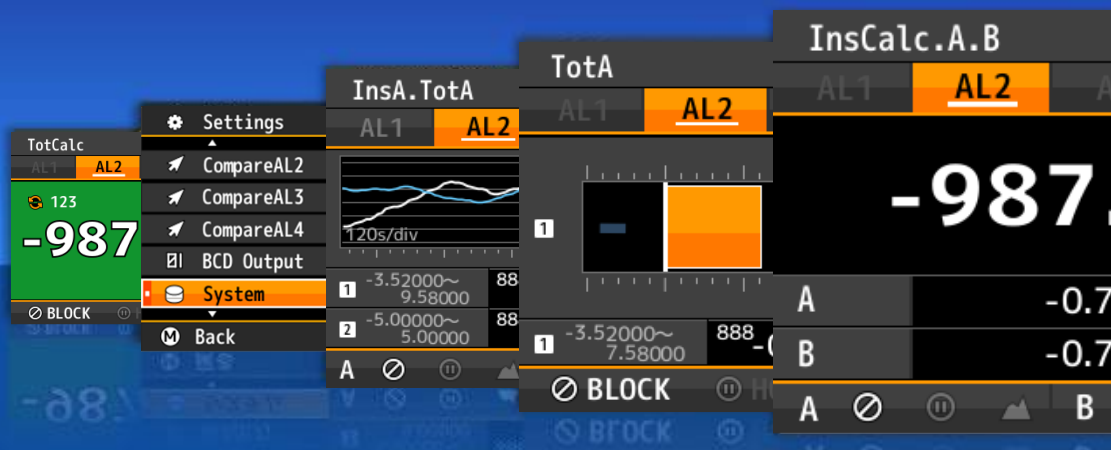
Ver.3

Document No 3

Watanabe Electric Industry Co., Ltd.

Contents

1. Series Overview



LCD display
Graphical Panel Meter

WPMZ Series

2.4 inch Full-color LCD

- ★ 2.4 inch Full color LCD display
- ★ User friendly cross key setting
- ★ Display select
  - Value, Bar graph, Trend graph switchable
  - Display direction (Horizontal / Vertical)
  - 62 Unit selectable & custom unit available
- ★ 2 input & calculation
- ★ IP66 Front panel, Dustproof & water resistant
- ★ CE approved

WPMZ-1

DC Voltage / Current input meter

2. Ordering Code

WPMZ - 1 - ☐☐☐ - ☐☐ - ☐☐0

Series	Power Supply	Input Ach	Input Bch	Option (Output)	Comparative output	Test report	Default language	Decsription	
1								Series	Process signal measurement
	1							Power supply	100 to 240VAC
	3								12VDC
	4								24 to 48VDC
		1						Input A	±99.999mV DC
		2							±999.99mV DC
		3							±9.9999V DC
		5							±99.999μA DC
		6							±999.99μA DC
		7							±9.9999mA DC
		B							Process signal input (4~20mA, 1~5V etc.)
			X					Input B	None
			1						±99.999mV DC
			2						±999.99mV DC
			3						±9.9999V DC
			5						±99.999μA DC
			6						±999.99μA DC
			7						±9.9999mA DC
			B						Process signal input (4~20mA, 1~5V etc.)
				X				Output	Display only (With External control)
				1					Analog output
				2					BCD output (NPN open collector)
				3					BCD output (PNP open collector)
				4					RS-232C output
				5					RS-485 (Modbus RTU) output
					E			Comparative output (AL~AL4)	Open collector output (NPN) (AL1 ~ AL4)
					F				Open collector output (PNP) (AL1 ~ AL4)
					R				Relay output (Normal open) (AL1 ~ AL4)
						X		Test report	Without Test report
						T			With Test report
							00	Default language	Japanese default setting
							E0		English default setting

Features

★ **High-speed sampling rate**
1ch model : Max. 4000 times/sec
2ch model : Max. 2000 times/sec

★ **Alarm log function**
Save trend state before and after alarm occurrence in internal memory.

★ **2 input model available**
10 kinds of calculation between 2 input.
Excitation supply for each input.

★ **2.4 inch Full color LCD display**
Value, Bar graph, Trend graph display.
Horizontal / Vertical display and able to display any unit.

3. Specifications -1

1) Input Specifications

• DC Voltage Input

Code	Measurement range	Impedance	Max. allowable input	Accuracy (23±5°C 35 to 85%RH)
1	±99.999mV DC	Approx. 1MΩ	±10V	±(0.05% of FS +1 digit)
2	±999.99mV DC		±100V	
3	±9.9999V DC			

• DC Current Input

Code	Measurement range	Impedance	Max. allowable input	Accuracy (23±5°C 35 to 85%RH)
5	±99.999μA DC	Approx. 1kΩ	±1mA	±(0.01% of FS +1 digit)
6	±999.99μA DC	Approx. 100Ω	±10mA	
7	±9.9999mA DC	Approx. 10Ω	±50mA	

• Process Signal Input

Code	Measurement range	Impedance	Max. allowable input	Accuracy (23±5°C 35 to 85%RH)
B	±5V	Approx. 1MΩ	±100V	±(0.05% of FS +1 digit)
	0 to 5V			
	1 to 5V			
	±10V			
	0 to 10V			
	±20mA	Approx. 10Ω	±50mA	
	0 to 20mA			
	4 to 20mA			

Sampling rate	1ch input model : Max. 4000 times/sec 2ch input model : Max. 2000 times/sec
Sensor power supply (Excitation supply)	Output capacity : 12VDC ±10% 100mA max. 24VDC ±10% 50mA max. *When 2ch input model, allowable current is as above in total of Ach, Bch *When using combination of 12VDC & 24VDC, total 1.2W max.

2) Common Specifications

Power supply	Select by model code 1) 100 to 240VAC ±10% 2) 12VDC ±10% 3) 24 to 48VDC ±10%)
External control	Can resistor from 11 functions for 5 each terminals
Shortcut	Can resistor from 11 functions for 4 front panel cross keys operation

Function	Action	External control	Shortcut
CompareReset	Function to turn off all comparison result and its output.	✔	✔
Display Hold	Function to hold display value of current value.	✔	✔
Maximum Hold	Function to hold the maximum value of display. (Peak hold)	✔	✔
Minimum Hold	Function to hold the minimum value of display. (Bottom hold)	✔	✔
Amplitude Hold	Function to hold difference between max. nd min. (Peak-to-peak hold)	✔	✔
Deviation Hold	Function to hold a display value most distant from an arbitrary reference value.	✔	✔
Average Hold	Function to stabilize the display by performing additional moving average for the specified number of times.	✔	✔
Hold Reset	Function to reset holding state.	✔	✔
Digital Zero	Function to zero display value.	✔	✔
Display Change	Function to switch measurement display (same as Disp key).	✔	✔
Trend Log	Function to start trend logging, invalid if logging is already in progress.	✔	✔
Pattern Change	Function to change active pattern (up to 3 terminals used).	✔	✔

3) Output Specifications

• Comparative output

Open collector output	NPN: sink current 50mA MAX. PNP: source current 50mA MAX. Number of outputs 4 transistor outputs
Relay output	Contact rating : 250VAC 2A, 30VDC 2A Number of outputs : Normal open x4 outputs *Common terminal AL1&2, AL3&4
Comparison condition	Select from 3 judgement mode 1) Level judgement mode Alarm is ON when value exceeds judgement value (over alarm) Alarm is ON when value is under judgement value (under alarm) 2) Zone judgement mode Alarm is ON when value is between judgement range (inside zone alarm) Alarm is ON when value is out of judgement range (outside zone alarm) 3) Variation judgement mode Alarm is ON when (Max. value - Min. value) of certain period of time exceeds variation judgement value. *Time interval if Variation judgement value is 0.1 to 99.99s selectable
Comparison setting memory	8 pattern memory
Output mode	Normal / Latch / One shot (5/10/20/50/100/500/1000/2000ms)

• Analog output

Analog output	Load resistance	Resolution	Accuracy	Ripple
0 to 10V	2Ω or more	10mV	±(0.1% of FS)	±50mVp-p
±10V				
1 to 5V		1mV		
0 to 20mA	550Ω or less	10μA		±25mVp-p
4 to 20mA				*When 250Ω load, 20mA output

Response time	300μs or less (0 to 90%)

• BCD output

Output type	Open collector output, NPN/PNP type
Measurement data	Negative logic; Transistor ON when logic is "1"
Polarity signal	Transistor ON when negative display
Print command signal	Transistor ON for fixed period when data conversion
Transistor capacity	Voltage 30V max., current 10mA max.
Enable	Output transistor turns OFF when enable terminal is shorted with D.COM

• RS-232C output

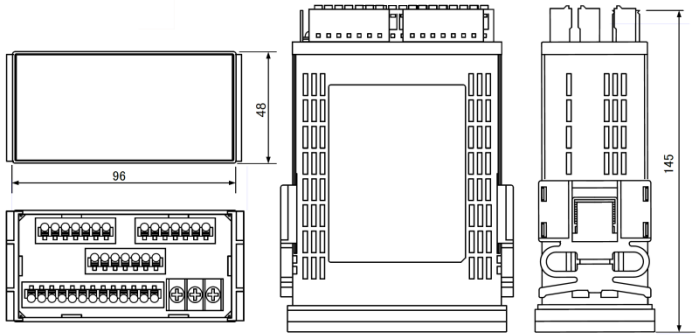
Communication protocol	Modbus RTU (Original command, original output)
Synchronous system	Asynchronous mode
Communication method	Full duplex
Communication speed	9600bps, 19200bps, 38400bps
Data Length	7bit, 8bit
Stop bit	1bit, 2bit
Parity bit	None, Odd, Even
Delimiter	CR, CR+LF
Chracter code	ASCII
Transmission procedure	Non-procedure
Signal name	TXD, RXD,SGI
No. of connectable units	1 unit
Line length	15m

• RS-485 output

Communication protocol	Modbus RTU
Synchronous system	Asynchronous mode
Communication method	2-wire half duplex
Communication speed	9600bps, 19200bps, 38400bps
Data Length	8bit
Stop bit	1bit, 2bit
Parity bit	N/A, odd number, even number
Signal name	Non inverting (+), inverting (-)
No. of connectable units	31 units
Line length	1.2km max. (Total)

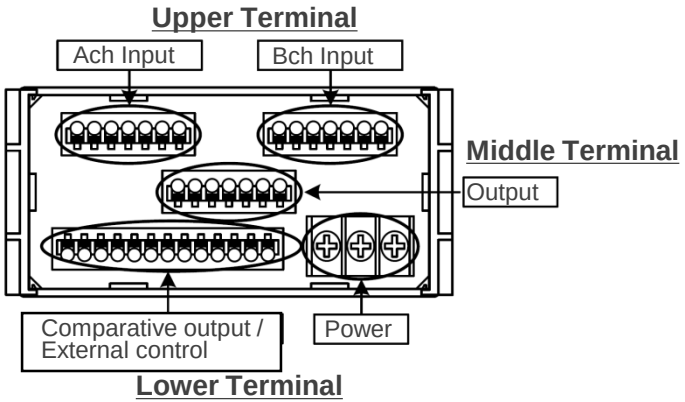
4. Dimensions & Terminal Connections

1) Dimensions



(1/8 DIN size)
Unit : mm

2) Terminal Layout

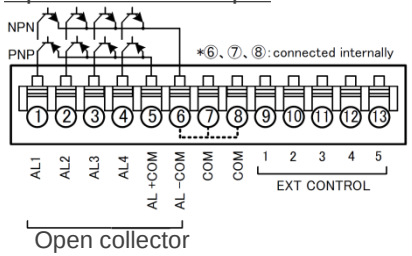


3) Terminal Connections

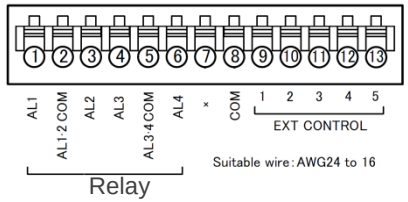
• Lower terminal

1) Screwless terminal (Comparative output and External control)

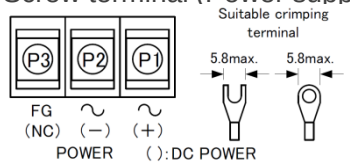
Open collector output



Relay output

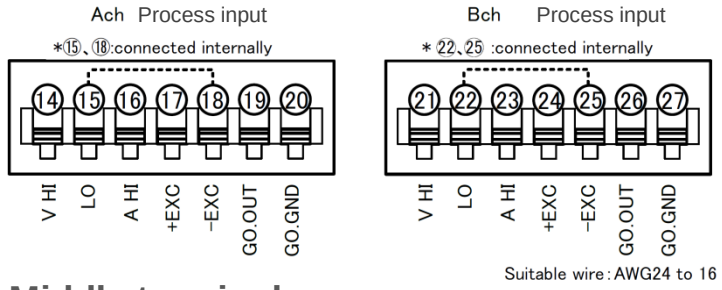


2) Screw terminal (Power supply)



• Upper terminal

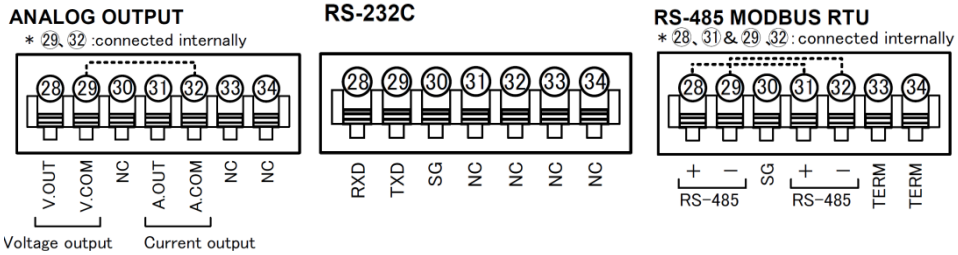
1) Screwless terminal (Input)



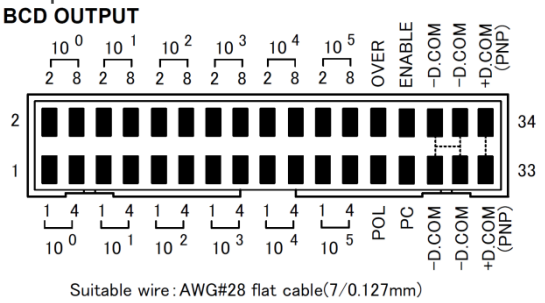
Suitable wire : AWG24 to 16

• Middle terminal

1) Screwless terminal (Output)



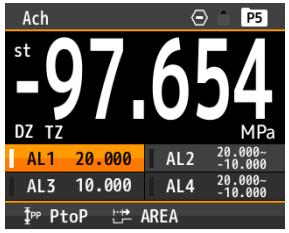
2) Crimp connector



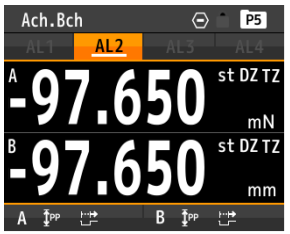
Suitable wire : AWG#28 flat cable(7/0.127mm)

5. Main Display & Functions

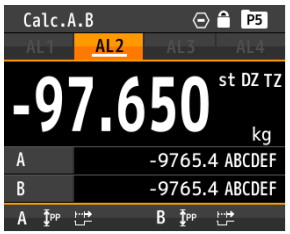
1) Measurement Display



◆1 element display



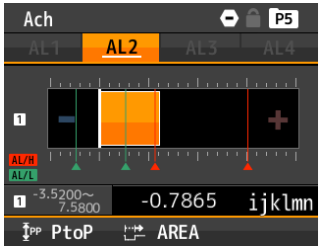
◆2 element display



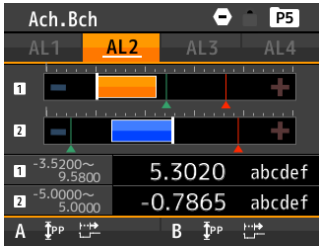
◆3 element display

Measurement display can accurately check current numerical value.
Able to display each channel's value and calculation result in 1 display.

2) Bar Graph Display



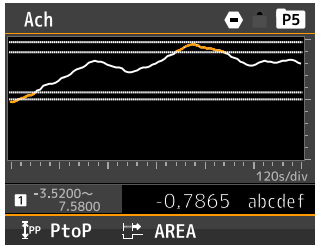
◆1 element display



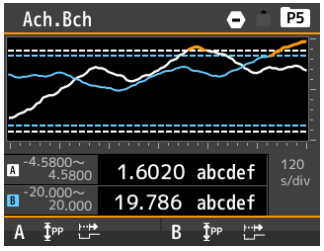
◆2 element display

Bar graph display can check current value by number and bar graph.

3) Trend Display



◆1 element display



◆2 element display

Trend display can check past value easily by line graph.
Time axis can be selected from 1/2/5/10/30/60/120s.

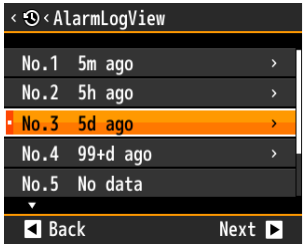
4) Calculation function

2 input calculation : Select arithmetic expression between Ach & Bch .

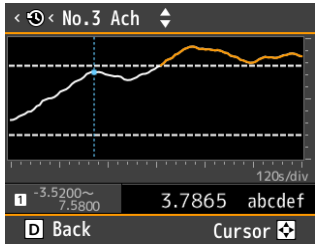
Function	Arithmetic expression
Addition	{ (A + B) + C } x K
Subtraction	{ (B – A) + C } x K
Multiplication	{ (A x B) + C } x K
Division	{ (B / A) + C } x K
Average	{ [(A + B) / 2] + C } x K
High Select	{ (Larger of A and B) + C } x K
Low Select	{ (Smaller of A and B) + C } x K
Difference	{ (Abs of (B - A)) + C } x K
Relatice Error	{ (A / B) - 1 } x K
Density	{ B / (A + B) } x K

5) Alarm log function

This function is to save the log of trend data when comparative alarm was ON, up to 8 alarm data maximum.



◆Log data select



◆Saved Trend graph

3 pattern setting of logging.
1) Before alarm log : Before alarm=80%, After alarm=20%
2) Before and after alarm log : Before alarm=50%, After alarm=50%
3) After alarm log : Before alarm=20%, After alarm=80%

Storage description

Log data	Description
Number of log data	150 points per display. (110 points when vertical display)
Store element (Ch)	1 input : Ach, 2 input : Ach, Bch, Calculation value
Max. number of save display	1 input : 8 display, 2 input : 3 elements x 8 display
Time stamp	Time from data saving

Storage duration

Setting value		Storage duration (Displaying time per display)
Time axis	**1s/div**	Horizontal disp. : 30s, Vertical disp. : 22s
	2s/div	Horizontal disp. : 60s, Vertical disp. : 44s
	5s/div	Horizontal disp. : 150s, Vertical disp. : 110s
	10s/div	Horizontal disp. : 300s, Vertical disp. : 220s
	30s/div	Horizontal disp. : 15min, Vertical disp. : 11min
	60s/div	Horizontal disp. : 30min, Vertical disp. : 22min
	120s/div	Horizontal disp. : 60min, Vertical disp. : 44min

WPMZ-3

Strain gauge meter

2. Ordering Code

WPMZ - 3 - □□□ - □□ - □□0

Series	Power Supply	Input Ach	Input Bch	Option (Output)	Comparative output	Test report	Default language	Decsription	
3								Series	Strain gauge measurement
	1							Power supply	100 to 240VAC
	3								12VDC
	4								24 to 48VDC
		S						Input A	Strain gauge (Loadcell) input
		B							Process signal input
			X					Input B	None
			S						Strain gauge (Loadcell) input
			B						Process signal input
				X				Output	Display only (With External control)
				1					Analog output
				2					BCD output (NPN open collector)
				3					BCD output (PNP open collector)
				4					RS-232C output
				5					RS-485 (Modbus RTU) output
					E			Comparative output (AL~AL4)	Open collector output (NPN) (AL1 ~ AL4)
					F				Open collector output (PNP) (AL1 ~ AL4)
					R				Relay output (Normal open) (AL1 ~ AL4)
						X		Test report	Without Test report
						T			With Test report
							00	Default language	Japanese default setting
							E0		English default setting

Features

★ **High-speed sampling rate**
1ch model : Max. 4000 times/sec
2ch model : Max. 2000 times/sec

★ **Waveform comparison function**
Used for quality determining method of press fitting process.

★ **Multi hold function**
Judgment of each specified section, such as caulking process.

★ **2 input model available**
10 kinds of calculation between 2 input.
Excitation supply for each input.

3. Specifications -1

1) Input Specifications

• Strain gauge input

Sensor power supply (Excitaion supply)	Gain adjustment range	Measurement range	Calibration accuracy	Nonlinearity
5V	1mV/V to 3.5mV/V	-3.5mV/V to 3.5mV/V	±199.99mV	±199.99mV
10V				
2.5V				

Bridge voltage	5VDC ±10% 60mA *Up to four 350Ω load cells can be connected 10VDC ±10% 30mA 2.5VDC ±10% 30mA *Note : Up to 1.2W total in the case of combination with process input
Sampling rate	1ch input model : Max. 4000 times/sec 2ch input model : Max. 2000 times/sec

• Process signal input

Measurement range	Impedance	Max. allowable input	Accuracy (23±5°C 35 to 85%RH)
±5V	Approx. 1MΩ	±100V	±(0.05% of FS +1 digit)
0 to 5V			
1 to 5V			
±10V			
0 to 10V			
±20mA	Approx. 10Ω	±50mA	
0 to 20mA			
4 to 20mA			

Sampling rate	1ch input model : Max. 4000 times/sec 2ch input model : Max. 2000 times/sec
Sensor power supply (Excitation supply)	Output capacity : 12VDC ±10% 100mA max. 24VDC ±10% 50mA max. *When 2ch input model, allowable current is as above in total of Ach, Bch *When using combination of 12VDC & 24VDC, total 1.2W max. *When combination with strain gauge input, total 1.2W max.

2) Common Specifications

Power supply	Select by model code 1) 100 to 240VAC ±10% 2) 12VDC ±10% 3) 24 to 48VDC ±10%)
External control	Can resistor from 13 functions for 5 each terminals
Shortcut	Can resistor from 15 functions for 4 front panel cross keys operation

Function	Action	External control	Shortcut
CompareReset	Function to turn off all comparison result and its output.	✔	✔
Display Hold	Function to hold display value of current value.	✔	✔
Maximum Hold	Function to hold the maximum value of display. (Peak hold)	✔	✔
Minimum Hold	Function to hold the minimum value of display. (Bottom hold)	✔	✔
Amplitude Hold	Function to hold difference between max. nd min. (Peak-to-peak hold)	✔	✔
Deviation Hold	Function to hold a display value most distant from an arbitrary reference value.	✔	✔
Average Hold	Function to stabilize the display by performing additional moving average for the specified number of times.	✔	✔
Hold Reset	Function to reset holding state.	✔	✔
Digital Zero	Function to zero display value.	✔	✔
Display Change	Function to switch measurement display (same as Disp key).	✔	✔
Trend Log	Function to start trend logging, invalid if logging is already in progress.	✔	✔
Pattern Change	Function to change active pattern (up to 3 terminals used).	✔	✔
Wave Comparison	Instruction to start / stop waveform comparison operation.	✔	✔
Multi Hold	Perform multi-hold section control.	✔	✔
Manual Adjust	Open calibration screen for actual load calibration.		✔
Auto Adjust	Open calibration screen for equivalent load calibration.		✔

3) Output Specifications

• Comparative output

Open collector output	NPN: sink current 50mA MAX. PNP: source current 50mA MAX. Number of outputs 4 transistor outputs
Relay output	Contact rating : 250VAC 2A, 30VDC 2A Number of outputs : Normal open x4 outputs *Common terminal AL1&2, AL3&4
Comparison condition	Select from 3 judgement mode 1) Level judgement mode Alarm is ON when value exceeds judgement value (over alarm) Alarm is ON when value is under judgement value (under alarm) 2) Zone judgement mode Alarm is ON when value is between judgement range (inside zone alarm) Alarm is ON when value is out of judgement range (outside zone alarm) 3) Variation judgement mode Alarm is ON when (Max. value - Min. value) of certain period of time exceeds variation judgement value. *Time interval if Variation judgement value is 0.1 to 99.99s selectable
Comparison setting memory	8 pattern memory
Output mode	Normal / Latch / One shot (5/10/20/50/100/500/1000/2000ms)

• Analog output

Analog output	Load resistance	Resolution	Accuracy	Ripple
0 to 10V	2Ω or more	10mV	±(0.1% of FS)	±50mVp-p
±10V				
1 to 5V		1mV		
0 to 20mA	550Ω or less	10μA		±25mVp-p
4 to 20mA				*When 250Ω load, 20mA output

Response time	300μs or less (0 to 90%)

• BCD output

Output type	Open collector output, NPN/PNP type
Measurement data	Negative logic; Transistor ON when logic is "1"
Polarity signal	Transistor ON when negative display
Print command signal	Transistor ON for fixed period when data conversion
Transistor capacity	Voltage 30V max., current 10mA max.
Enable	Output transistor turns OFF when enable terminal is shorted with D.COM

• RS-232C output

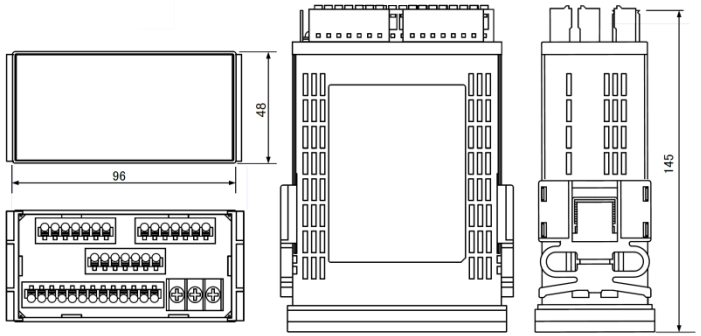
Communication protocol	Modbus RTU (Original command, original output)
Synchronous system	Asynchronous mode
Communication method	Full duplex
Communication speed	9600bps, 19200bps, 38400bps
Data Length	7bit, 8bit
Stop bit	1bit, 2bit
Parity bit	None, Odd, Even
Delimiter	CR, CR+LF
Chracter code	ASCII
Transmission procedure	Non-procedure
Signal name	TXD, RXD,SGI
No. of connectable units	1 unit
Line length	15m

• RS-485 output

Communication protocol	Modbus RTU
Synchronous system	Asynchronous mode
Communication method	2-wire half duplex
Communication speed	9600bps, 19200bps, 38400bps
Data Length	8bit
Stop bit	1bit, 2bit
Parity bit	N/A, odd number, even number
Signal name	Non inverting (+), inverting (-)
No. of connectable units	31 units
Line length	1.2km max. (Total)

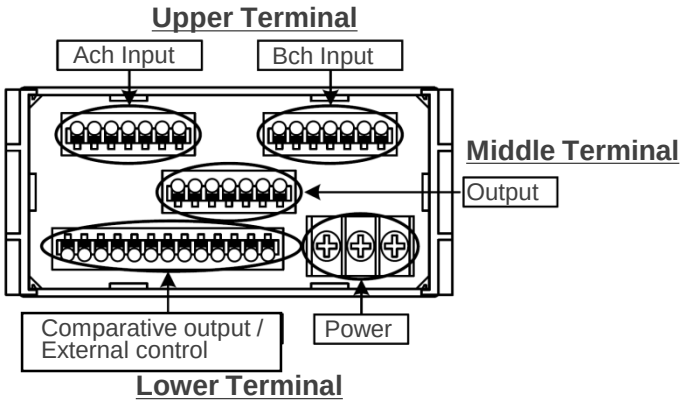
4. Dimensions & Terminal Connections

1) Dimensions



(1/8 DIN size)
Unit : mm

2) Terminal Layout

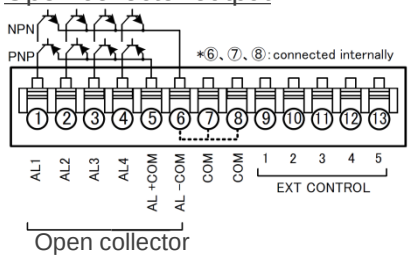


3) Terminal Connections

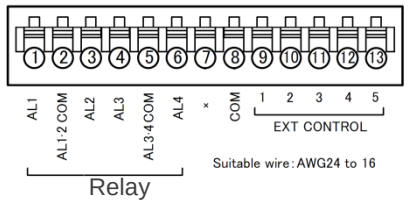
• Lower terminal

1) Screwless terminal (Comparative output and External control)

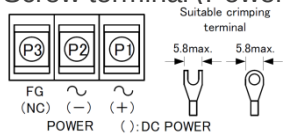
Open collector output



Relay output

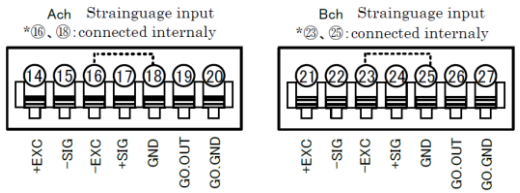


2) Screw terminal (Power supply)

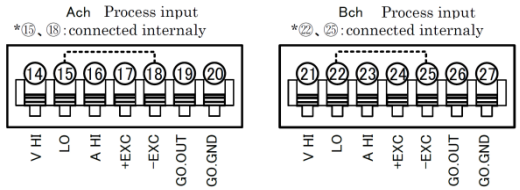


• Upper terminal

1) Screwless terminal (Input)

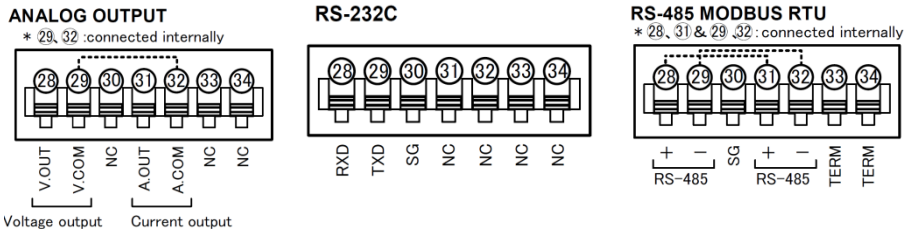


Suitable wire : AWG24 to 16

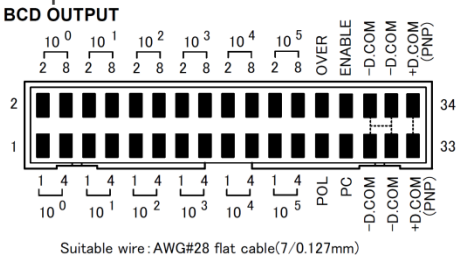


• Middle terminal

1) Screwless terminal (Output)

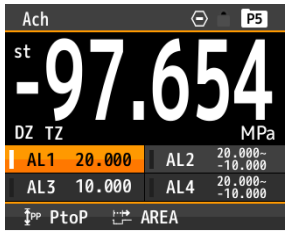


2) Crimp connector

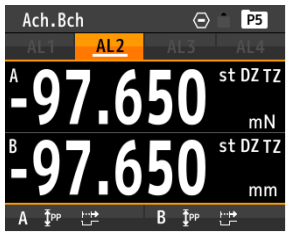


5. Main Display & Functions

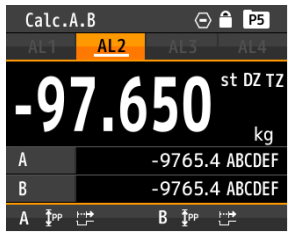
1) Measurement Display



◆1 element display



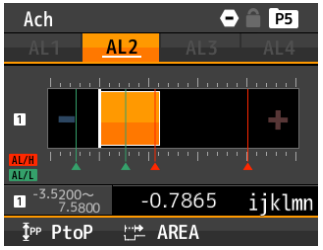
◆2 element display



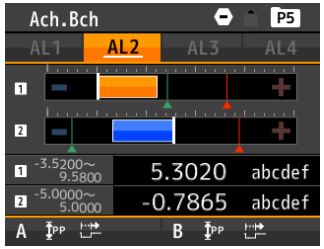
◆3 element display

Measurement display can accurately check current numerical value.
Able to display each channel's value and calculation result in 1 display.

2) Bar Graph Display



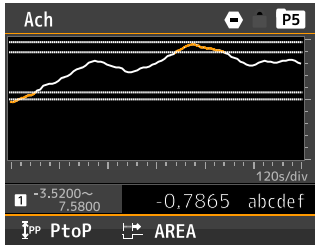
◆1 element display



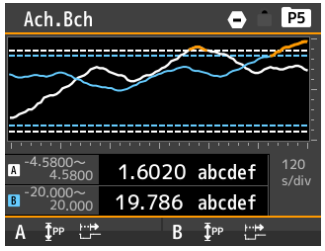
◆2 element display

Bar graph display can check current value by number and bar graph.

3) Trend Display



◆1 element display



◆2 element display

Trend display can check past value easily by line graph.
Time axis can be selected from 1/2/5/10/30/60/120s.

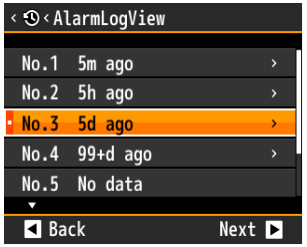
4) Calculation Function

2 input calculation : Select arithmetic expression between Ach & Bch .

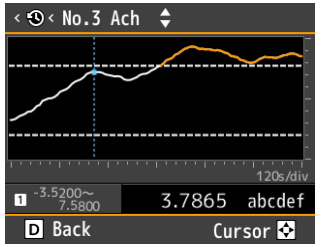
Function	Arithmetic expression
Addition	{ (A + B) + C } x K
Subtraction	{ (B – A) + C } x K
Multiplication	{ (A x B) + C } x K
Division	{ (B / A) + C } x K
Average	{ [(A + B) / 2] + C } x K
High Select	{ (Larger of A and B) + C } x K
Low Select	{ (Smaller of A and B) + C } x K
Difference	{ (Abs of (B - A)) + C } x K
Relatice Error	{ (A / B) - 1 } x K
Density	{ B / (A + B) } x K

5) Alarm Log Function

This function is to save the log of trend data when comparative alarm was ON, up to 8 alarm data maximum.



◆Log data select



◆Saved Trend graph

3 pattern setting of logging.

1) Before alarm log : Before alarm=80%, After alarm=20%
2) Before and after alarm log : Before alarm=50%, After alarm=50%
3) After alarm log : Before alarm=20%, After alarm=80%

Storage description

Log data	Description
Number of log data	150 points per display. (110 points when vertical display)
Store element (Ch)	1 input : Ach, 2 input : Ach, Bch, Calculation value
Max. number of save display	1 input : 8 display, 2 input : 3 elements x 8 display
Time stamp	Time from data saving

Storage duration

Setting value		Storage duration (Displaying time per display)
Time axis	**1s/div**	Horizontal disp. : 30s, Vertical disp. : 22s
	2s/div	Horizontal disp. : 60s, Vertical disp. : 44s
	5s/div	Horizontal disp. : 150s, Vertical disp. : 110s
	10s/div	Horizontal disp. : 300s, Vertical disp. : 220s
	30s/div	Horizontal disp. : 15min, Vertical disp. : 11min
	60s/div	Horizontal disp. : 30min, Vertical disp. : 22min
	120s/div	Horizontal disp. : 60min, Vertical disp. : 44min

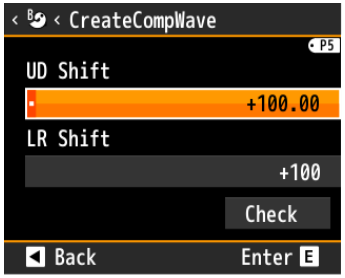
6. Waveform Compare Mode

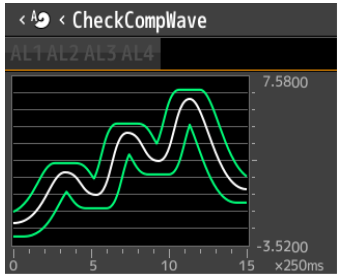
Waveform compare mode is to display alarm output and wave log compared to ‘Measurement wave’ and ‘Judgement wave’

Main Function

• Judgement waveform function

This function creates a judgement waveform necessary for comparison by easy setting.
Measure the reference waveform few times to acquire the average waveform, and set shift value in the vertical direction (input value) and the horizontal direction (time axis) to create.

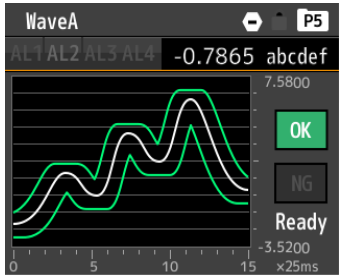




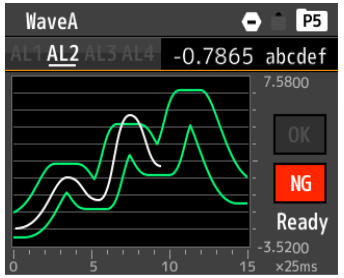
◆Judgement waveform creation display

• Alarm output function

This function is to output alarm as ‘NG’ judgement if there is more than 1 measured point which is out of judgement waveform.
‘OK’ is judged at the end of measurement.
‘NG‘ is judged when measurement waveform is detected outside.



◆Example of ‘OK’ waveform



◆Example of ’NG’ waveform

• Waveform log function

This function is to store log of measurement data of waveform compare.
Able to store up to 4 ‘OK judgement’ and 4 ‘NG judgement’.

• Measurement time

Number of measuring points is fixed to 1500 sampling from start of measurement.
So measurement time depends on the sampling rate.

Setting value		Coefficient of time axis	Total measurement time
Sampling rate	**4000 times / s**	x25ms	0.375s
	2000 times / s	x50ms	0.75s
	1000 times / s	x100ms	1.5s
	500 times / s	x200ms	3s
	200 times / s	x500ms	7.5s
	100 times / s	x1s	15s
	50 times / s	x2s	30s
	20 times / s	x5s	1min 15s
	10 times / s	x10s	2min 30s
	5 times / s	x20s	5min
	2 times / s	x50s	12min 30s
	1 times / s	x100s	25min
	1 times / 2s	x200s	50min
	5 times / 2s	x500s	125min
	10 times / 2s	x1000s	250min

7. Multi Hold Mode

Multi hold mode is to compare and output by judgement value of hold value of each sections.

Basic Settings

• Switching method of sections

Divide to 1 to 4 sections.
Switching method setting of sections are as below 4 method.

Switching method	Operation
Level method	Section switches by ON/OFF of external control. Holds when ON, interval when OFF
Edge method	Section switches when ON of external control. Because only rising edge detection, section switches continuously without interval
Edge timer method	Section starts when ON of external control, and finishes by the set operation time automatically. By ON of external control again, next section starts.
Auto timer method	Section starts when ON of external control, and finishes by the set operation time automatically. Next section starts when section finishes until 4 section finishes.

• Hold method

Set hold method in each section.
Hold methods are set from the following 8 types.

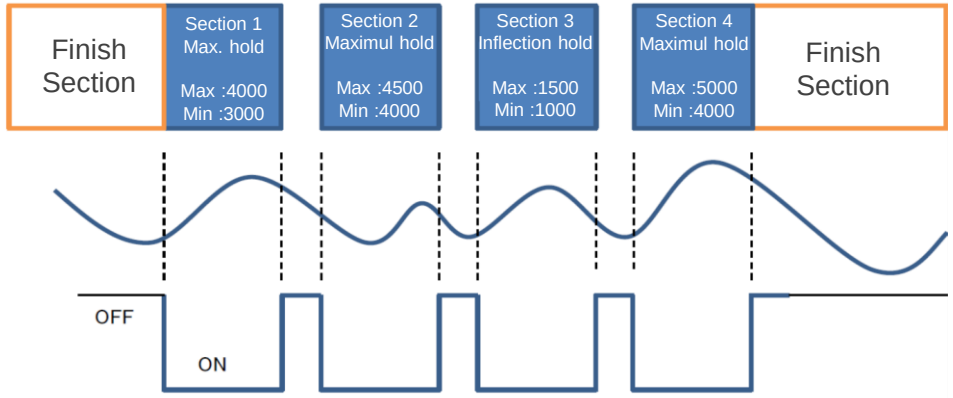
Function	Operation
Maximum Hold	Hold the maximum value of display. (Peak hold)
Minimum Hold	Hold the minimum value of display. (Bottom hold)
Amplitude Hold	Hold difference between max. nd min. (Peak-to-peak hold)
Deviation Hold	Hold a display value most distant from an arbitrary reference value.
Maximul value	Hold the maximul value of display.
Minimul value	Hold the mimimul value of display.
Extreme difference	Hold the difference of maximul and minimul value
Inflection point	Hold the maximum variation point of display value as inflection point

• Hold start conditions

Set hold start conditions in section.
Hold start conditions are set from the following 3 types.

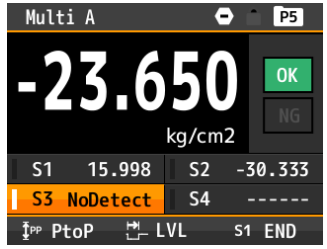
Start conditions	Operation
Normal	Hold starts when section starts.
Threshold	After section started, holds starts when exceeds threshold
Delay time	After section started, holds starts after set delay time

• Image of section operation (Example : Level method)

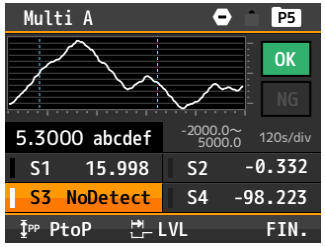


• Display Example

Displays the hold value in each section with the current measurement value.
Icons will appear according to the hold detail section switching method.



◆Multi hold measurement display



◆Multi hold graph display