Units for Measurement of Small DC and AC Currents



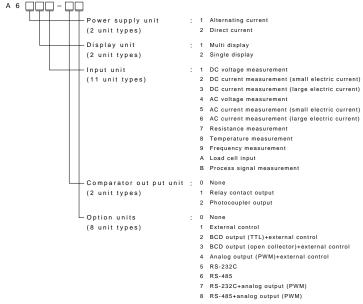
- Applying a voltage or current exceeding its maximum permissible value may cause the unit to
- Always use the unit within the specified voltage range; otherwise, it may cause a fire, electric shock or personal/equipment damage.
- For the purpose of functional improvement, the information written herein may be changed
- Information contained herein is considered accurate to the best of our knowledge. If you have any question or comment on the information, please contact us or our distributor

Before Using the Unit

Thank you for purchasing our quality designed and manufactured A6000 Series. Before unpacking the unit, check for damages during transportation. If you have noticed any damage, directly contact us or our distributor.

1.1 Type Identification

Each model number of the A6000 series has its general specifications, and the following describes each note and the meaning. Before using the unit, check that the model number and specifications of the delivered unit match those of the product you ordered. For optional units, see the separate instruction Manuals.



1.2 Accessories

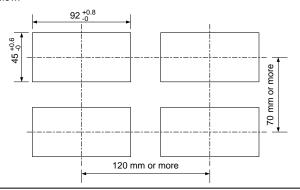
Accessory	Quantity	Remarks
6-p terminal cover	2 or 3 each	2 without a comparator output 3 with a comparator output
Mounting band	2 pieces	
Unit indication label	1 each	

Mounting Method

2.1 Panel Cut Size

Cut the panel to mount the A6000 series in accordance with the illustration

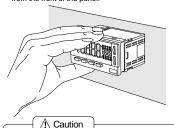
below:

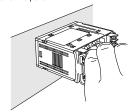


2.2 How to Mount the Unit on the Panel

Mount the A6000 series to the panel in accordance with the illustration

(1) Remove the mounting band and insert the case (2) Fix the case using the mounting band from the from the front of the panel. rear of the panel





- (1) The recommended panel thickness is 0.8 to 5mm.
- (2) Do not install the unit in locations where it is exposed to direct sunlight; where ambient emperature or humidity doesn't meet the requirements below; or where a drastic change in temperature may ause condensation.

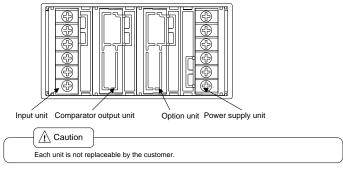
 Ambient temperature: 0 to 50°C

 Ambient humidity: 35 to 85%

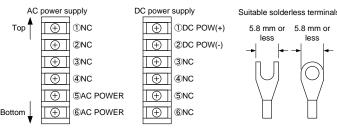
 (3) Do not install the unit where it is exposed to dust, particles, chemicals harmful to electric components, corrosive gases, etc.
- (4) When this unit is installed inside other equipment, pay attention to the heat radiation and keep the heat inside the equipment 50°C or below.
- (5) Do not install the unit where it is exposed to excessive vibration or shock.
- (6) Install the unit horizontally; otherwise, ventilation will be adversely affected and may result in deterioration.

Terminals and Connections

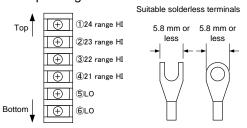
Illustration of the rear of the A6000



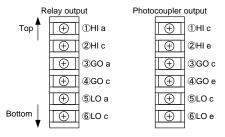
3.1 Power supply connections

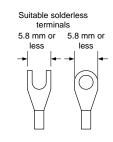


Input Signal Connections



Comparator Output Connections





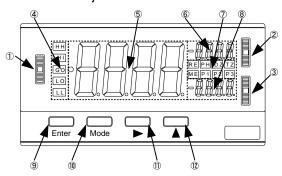
Option connections

For connections of the options, see separate optional function instruction Manuals.

4 Parameter Settings

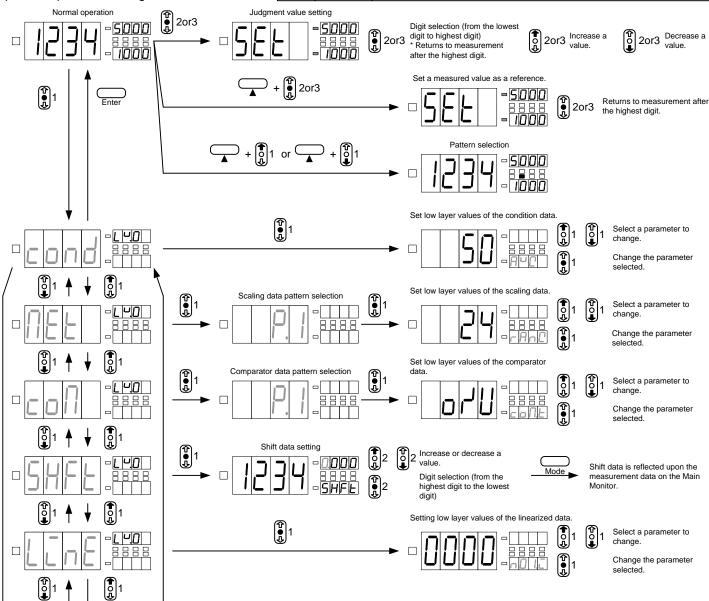
4.1 Multi Display Unit

Names and major functions

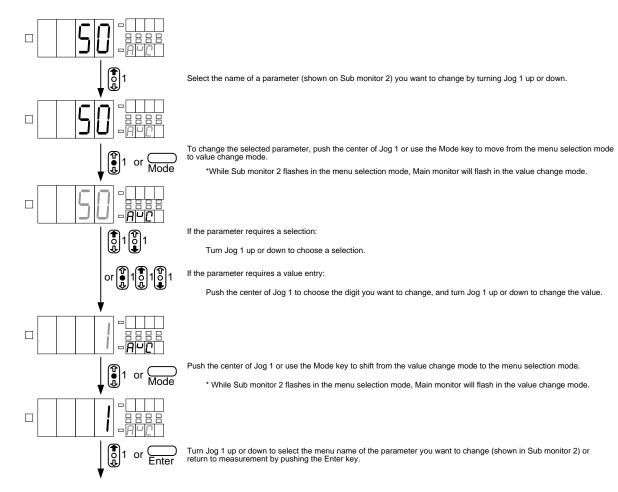


Location	Name					Majo	or function					
1	Jog 1	Increm	Menu and value selection at the time of parameter setting; pattern selection when used with Increment.									
2	Jog 2	Chang judgme	Changes judgment values when used with the meter relay; sets a current measurement value to a udgment value; switching maximum values, etc. when used without meter relay.									
3	Jog 3		Changes judgment values when used with the meter relay; sets a current measurement value to a judgment value; switching maximum values, etc. when used without meter relay.									
4	Judgment monitor	Displa	Displays results of judgment when used with meter relay.									
(5)	Main monitor	Displa	ys a mea	sured valu	e, menu na	ame or a va	alue at the	time of par	ameter set	ting.		
6	Sub monitor 1		isplays a judgment value when used with meter relay; displays a maximum value, ic. when used without meter relay.									
		RE	Illumina	tes when t	he unit is s	et to the re	mote mode	e via comm	unication f	unction.		
		PН	Illumina	tes when p	eak hold, v	/alley hold,	or peak-va	alley hold is	s turned on			
		D Z Illuminates when Digital Zero is turned on.										
		TZ Illuminates when Tracking Zero is turned on.										
(7)	Function	M E Illuminates when Digital Zero Backup is turned on.										
W.	monitor			Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Pattern 8	
		P1	P 2			OFF	ON	OFF	ON	OFF		
		P3		OFF		ON			OFF	ON	ON	
			Р3		OFF	OFF	OFF		ON			
8	Sub monitor 2			ment value without m	e when use eter relay.	d with met	er relay; di	splays a m	aximum va	lue,		
9	Enter	Switch	es to the	paramete	r setting mo	ode.						
10	Mode				ne of param hen this bu				mory mode	at the time	e of	
11)	Shift	Select (when	Selects digits at the time of parameter setting; DZ control at the time of normal measurements. when this button is pushed and held.)									
12)	Increment				ne of param					f normal		

Operation procedure diagram



How to set a low layer value (Condition data/scaling data/comparator data)

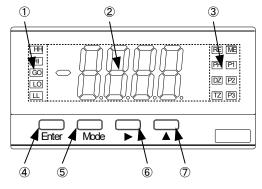


Remarks:

- **The multi display unit can also follow the operation procedure of the single display unit operation system.
- **Comparator judgment values can be set not only from Jog 2 and Jog 3 but also from the low layers of the comparator data.
- **For operation procedures in the memory mode (maximum value/minimum value/(maximum value-minimum value)), see the operation procedure diagram of the single display unit.

4.2 Single Display Unit

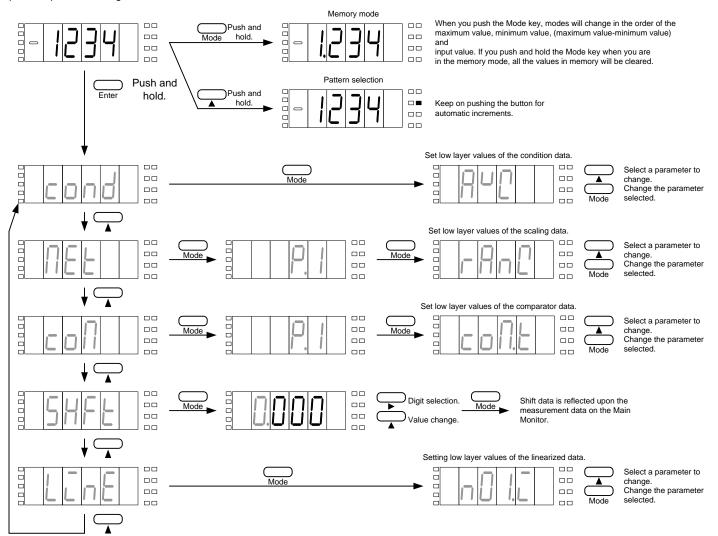
Names and major functions



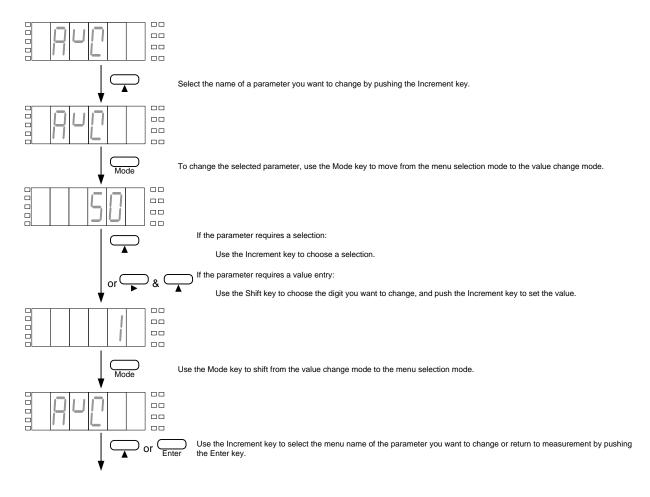
Location	Name		Major function								
1	Judgment monitor	Displa	Displays judgment results when used with meter relay.								
2	Main monitor	Displa	Displays a measured value as well as menu names and values at the time of parameter setting.								
		RE	RE Illuminates when the unit is set to the remote mode via communication function.								١.
		PH	P H Illuminates when peak hold, valley hold, or peak-valley hold is turned on.								
		DZ	Z Illuminates when Digital Zero is turned on.								
		TZ	Illur	ninates wh	en Trackin	g Zero is tu	ırned on.				
3	Function monitor	ME	M E Illuminates when Digital Zero Backup is turned on.								
				Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Pattern 8
		P1 P2	P1	OFF OFF	ON	OFF	ON	OFF	ON	OFF	ON
		P3	P2		OFF	ON			OFF	ON	
			Р3			OFF	OFF	ON	ON	ON	
4	Enter	Switch	nes to	the param	eter settin	g mode.					
5	Mode					arameter se s button is p			memory m	ode at the	time of
6	Shift	Select (when	Selects digits at the time of parameter setting; DZ control at the time of normal measurements. (when this button is pushed and held.)								
7	Increment	Chang (when	es val this b	ues at the ti utton is push	me of paran ned and held	neter setting: d); special o	; pattern sele perations	ection at the	time of nor	mal measure	ements

4/8

Operation procedure diagram



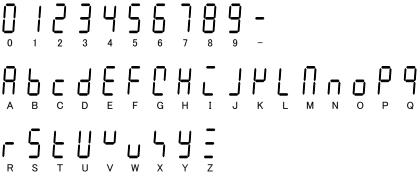
How to set a low layer value (Condition data/scaling data/comparator data)



Instruction Manual MODEL A6xx2 or A6xx5

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4.3 Numeric and Character Indications



4.4 Protection Levels

Each parameter of the A6000 has an individual protection level, and by setting the protection level of the condition data, you can set an access level. (For the protect level of each parameter, see the P.L. column of the tables in Section 4.5.)

The higher the protection level is, the less the number of settable parameters will be. If you set the protection level to the strictest LV3, you can change the protection level only, and all the other parameters may not be changed. (No comparator judgment value can be changed using the jog switches in this case.)

*The protection level set at the time of shipment is LV1. (Settings of display colors, scaling and judgment-related values only are available.)

4.5 List of the Parameters

The parameters for the process signal measurement unit can be roughly divided into three types: condition data which deal with basic functions including sampling time; scaling data which control measurement including input range; and comparator data (for meter relay only) which deal with comparator output.

4.5.1 Condition Data

Menu indication	Parameter name	Initial value	P.L.	Setting range or alternatives	Major setting purpose and remarks
AVG	Average times	50	0	1/2/4/8/10/20/50/100/200/ 400/800/1000/2000/5000	Selects Conversion rate (average times of internal sampling; sampling time: approx. 1 millisecond) *For the AC measurement unit, the max is 400 times on average (approx. 2.5 times/second).(Initial Value 400)
MAV	Average times of movements	1	0	1/2/4/8/16/32	Selects the average times of movements.Filtering effects: Small<1(OFF)-2-4-8-16-32>Big
S.WD	Step wide	1	0	1/2/5/10	Selects the range of display changes to maintain image display consistency. (If this parameter is set to 5, the lowest digit will display either 0 or 5 only).
CLR	Display color	RED	1	RED/GREEN	Selects display colors.*Only when without meter relay.
CLR.T	Display color type	AUTO	1	AUTO/MANU	Selects automatic (red in the HI or LO mode or green in the GO mode) or manual setting for display color type. *Only when with meter relay.
HI.CL	HI display color	RED	1	RED/GREEN	Selects red or green as display color at the time of HI judgment.*Only when CLR.T is MANU.
GO.CL	GO display color	GREN	1	RED/GREEN	Selects red or green as display color at the time of GO judgment.*Only when CLR.T is MANU.
LO.CL	LO display color	RED	1	RED/GREEN	Selects red or green as display color at the time of LO judgment.*Only when CLR.T is MANU.
BLNK	Display blank level	OFF	0	OFF/LV1/LV2/LV3/ON	Selects the display brightness.
J.SW	Jog SW	ON	0	ON/OFF	Selects whether the jog SW is used or not.*With the multi display unit only.
PVH	PH Selection	PH	0	PH/VH/PVH	Selects a type that operates when the PH function is turned on (peak hold/valley hold/peak-valley hold).
DZ.BU	DZ backup	OFF	0	OFF/ON	Selects whether the digital zero value is backed up or not at the time when the unit is turned off.
PS	P.SEL	1	0	1/2/4/8	Selects the number of patterns available for the pattern selection function.
LINE	Linearize	OFF	0	OFF/2/4/8/16	Selects whether the linearize function is enabled/disabled and sets the number of correction points.
TR.T	TZ time	000	0	000 to 999	Selects whether the tracking zero function is enabled/disabled and sets the correction time (setup value/conversion rate).
TR.W	TZ correction range	01	0	01 to 99	Sets the correction range of the tracking zero function.*Only when TR.T is set to a value other than 000.
P.ON	Power on delay time	0	0	0 to 9	Sets the time between the startup and actual start of measurements (setup value x 1 second).
PRO	Protection level	LV.1	3	Lv.0/LV.1/LV.2/LV.3	Selects the protection level to prevent operation mistakes.High< LV3-LV1-LV0 >Low
U-NO.	Unit number indication	OFF	0	OFF/ON	Selects whether the code of a unit mounted at the time of startup is displayed or not.
S/H.T	Start/hold type	Α	0	A/B	Selects an operation type of start/hold (A: free run; B: one shot).*Only with the external control.
S/H.D	S/H delay time	0	0	0 to 9999	Sets the delay time at the time of startup (setup value x 1 ms).*Only with the external control.
PVH.T	PH type	Α	0	A/B	Selects an operation type of peak hold (A: real-time display; B: results display).*Only with the external control.
DZ.C	DZ control	SW	0	SW/TERM	Selects a control method of Digital Zero (SW: front key; TERM: external control terminal).*Only with the external control.
PS.C	P.SEL control	SW	0	SW/TERM	Selects a control method of Pattern Selection (SW: front key; TERM: external control terminal).*Only with the external control.
BCD.L	BCD logic	N.LOG	0	N.LOG/P.LOG	Selects the BCD output logic (N: negative logic; P: positive logic).*Only when the BCD output is available.
BAUD	Baud rate	9600	1	2400/4800/9600/19200/38400	Sets a baud rate for communication.*Only when the communication function is available.
DATA	Data length	7	1	7/8	Selects the data length for communication.*Only when the communication function is available.
P.BIT	Parity bit	Е	1	E/O/N	Selects the parity bit for communication.*Only when the communication function is available.
STP.B	Stop bit	2	1	1/2	Selects the stop bit for communication.*Only when the communication function is available.
T-	Delimiter	CR.LF	1	CR.LF/CR	Selects a delimiter for communication.*Only when the communication function is available.
ADR	Equipment ID	01	1	01 to 99	Selects the equipment ID for the RS-485 function.*Only when the RS-485 function is available.

4.5.2 Scaling Data

Menu indication	Parameter name	Initial value	P.L.	Setting range or alternatives	Major setting purpose and remarks	
RANG	Input range	24	1	21/22/23/24	Selects an input range.*Note that input terminals vary depending on the actual input range.	
FSC	Full scale indication	9999	2	-9999 to +9999		
FIN	Full scale input	9999	2	-9999 to +9999	Sets the relationship between the input signal and its indication. * In the case of AC input, please use it by "+" setting by all means.	
OFS	Offset indication	0	2	-9999 to +9999	It is not displayed normally when I use it by "-" setting.	
OIN	Offset input	0	2	-9999 to +9999		
DLHI	Digital limiter HI	9999	0	-9999 to +9999	Sets the upper limit of the displayable range. (Any value equal to or exceeding the digital limiter HI setting will not be updated and kept at the setup value.	
DLLO	Digital limiter LO	-9999	0	-9999 to +9999	Sets the lower limit of the displayable range. (Any value equal to or below the digital limiter LO setting will not be updated and kept at the setup value.	
A.OUT	Analog output type	0-1	1	0-1/0-10/1-5/4-20	Selects an analog output range.*Only when the analog output is available.	
AOHI	Analog output HI	9999	1	-9999 to +9999		
AOLO	Analog output LO	0	1	-9999 to +9999	Sets the relationship between indications and analog outputs.*Only when the analog output is available.	
DP	Decimal point	None	2	Each digit can be set independently.	Sets the position of the decimal point.	

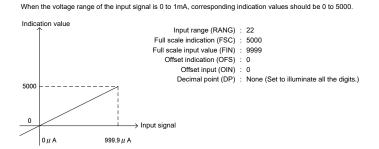
4.5.3 Comparator Data (for meter relay only)

Menu indication	Parameter name	Initial value	P.L.	Setting range or alternatives	Major setting purpose and remarks
COM.T	Comparator output type	O/U	1	O/U/ERR	Select either [above or below] or error comparator types.
HI-S	HI judgment value	1000	2	-9999 to +9999	Sets a HI judgment value.*Only when COM.T is O/U.
LOS	LO judgment value	500	2	-9999 to +9999	Sets a LO judgment value.*Only when COMT is O/U.
N.VAL	Nominal value	5000	2	-9999 to +9999	Sets a nominal value.*Only when COM.T is ERR.
ERR1	Error 1	5.00	2	0.00 to 99.99	Sets an error.*Only when COM.T is ERR.
HI-H	HI hysteresis	0	1	0 to +999	Sets a HI hysteresis value *Only when COM.T is O/U.
LO-H	LO hysteresis	0	1	0 to +999	Sets a LO hysteresis value *Only when COM.T is O/U.
ER1.H	Error 1 hysteresis	1	1	0 to +999	Sets an error hysteresis *Only when COMT is ERR
HI-L	HI logic	N.O	0	N.O/N.C	Sets a HI output logic (N.O.=normally open or N.C.=normally dosed)*Output when the power is OFF is always open (OFF).
GO-L	GO logic	N.O	0	N.O/N.C	Sets a GO output logic (N.O.=normally open or N.C.=normally closed)*Output when the power is OFF is always open (OFF).
LO-L	LO logic	N.O	0	N.O/N.C	Sets a LO output logic (N.O.=normally open or N.C.=normally closed)*Output when the power is OFF is always open (OFF).

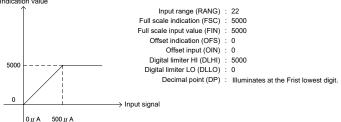
5 Setting Examples

Example 1

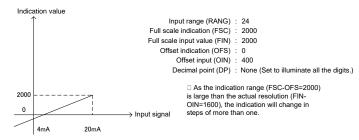
5.1 Scaling Data Setting Examples





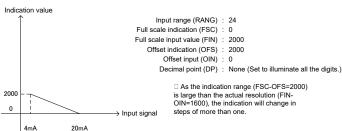


Example 3 When the voltage range of the input signal is 4 to 20mA, corresponding indication values should be 0 to 2000.



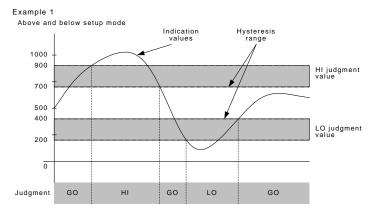
Example 4

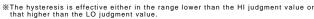
When the voltage range of the input signal is 4 to 20mA, corresponding indication values should be 2000 to 0.

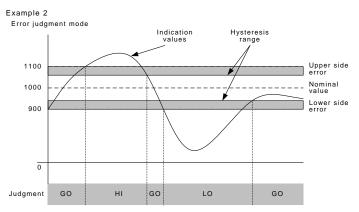


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5.2 Comparator Data Setting Examples (for meterrelay only)







- %Error is to be set as a percentage of the nominal value.
- **The hysteresis is to be set as xx digits of the indication value.
 **The hysteresis is effective either in the range lower than the upper side error or that higher than the lower side error.

Specifications and Measurements

Input Specifications

●DC current measurements (Small electric current)

Range	Measurement range	Indication	Error (23°C ±5°C; 35 to 85%)	Input impedance	Maximum permissible input	
21	±99.99 μ A			Approx. 1kΩ	±10mA	
22	±999.9 μ A	Offset: ±9999	±(0.1% of rdg + 2digit)	Approx. 100 Ω		
23	±9.999mA	Full scale: ±9999	ale: ±9999	Approx. 10 Ω	±50mA	
24	±99.99mA			Approx. 1Ω	±500mA	

Sampling rate : Maximum approx, 1,000 times/second

* The error is applied when the sampling rate is 20 times/second or less

AC current measurements (Small electric current)

Range	Measurement range	Indication	Error (23°C ±5°C; 35 to 85%)	Input impedance	Maximum permissible input	
21	99.99 μ A	Offset: ±9999 Full scale: ±9999		Approx. 1kΩ	10mA	
22	999.9 μ A		±(0.5% of rdg + 20digit)	Approx. 100 Ω		
23	9.999mA		±(0.5% of rag + 20algit)	Approx. 10Ω	50mA	
24	99.99mA			Approx. 1Ω	500mA	

Sampling rate Maximum approx. 2.5 times/second

Measurement method : True rms value calculation

50Hz or 60Hz (21,22range), 40Hz to 1kHz (23,24range) Frequency range

Approx. 1 second (10% to 90%) Response speed

> ⚠ Caution

Less than 0.5% of an FSC set point are dead zone, and, as for the AC measurement unit, indication always becomes 0.

6.2 General Specifications

: Multi display Display

Main display: Red/green 7-segment display (character height: approx. 20 mm) Sub display: Red 7-segment display (character height: approx. 6 mm)

Single display

Red/green 7-segment display (character height: approx. 20 mm)

Display range -9999 to 9999

Operational temperature : 0 to 50°C 35 to 85%RH

Storage temperature -10 to 70 °C; 60%RH or less

Power supply

AC 100 to 240V±10%

DC PS DC 12 to 48V±10%

Power consumption

Maximum load: Approx. 8 VA at 100 VAC

DC PS

Maximum load: Approx. 7 W at 24 VDC

External dimension 48 mm (H) x 96 mm (W) x 97.5 mm (with no DX option unit mounted)

Approx. 450g Weight

Withstand voltage AC PS

PS-input, output: 1,500 VAC, 1 minute (AC PS) Input-output: 500 VDC, 1 minute
Output-output: 500 VDC, 1 minute
Case-PS, input, output: 1,500 VAC, 1 minute

DC PS

PS-input, output: 500 VDC, 1 minute (DC PS) Input-output: 500 VDC, 1 minute (DC FS)
Input-output: 500 VDC, 1 minute
Output-output: 500 VDC, 1 minute
Case-PS, input, output: 1,500 VAC, 1 minute

Insulation resistance AC PS

Among the above terminals: 500 VDC 100 MΩ or more

DC PS

Among the above terminals: 500 VDC 100M Ω or more



The PS voltage must be applied or shut down at once (not gradually). Take at least a 10-second interval between a shutdown and startup.

Output for Comparison Specifications(for meter 6.3 relay only)

●Common specifications

Conditions for comparison	Judgment result
Indicated value □ Upper limit judgment value	HI
Lower limit judgment value Indicated value Upper limit judgment value	GO
Lower limit judgment value ☐ Indicated value	LO

Judgment value setup range :

Hysteresis Can be set in the range of 1 to 999 digits for each judgment value

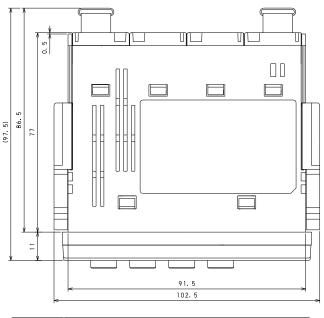
Operating speed Depends on the sampling rate

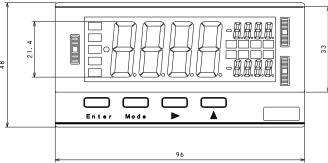
Relay contact output

■Photo coupler output

Contact quantity Relay contact ×3 Output quantity Photo coupler ×3 Contact rating 250V AC 2A. 30V DC 2A Output rating 30V DC 20mA

6.4 **External Dimensions**





Warranty and Service

Warranty

The manufacturer warrants to the original retail customer its A6000 series universal digital panel meter to be free of defects in material and workmanship for use under normal care and will repair or replace any meter at no charge to the customer during the one (1) year warranty period of the meter.

7.2 After Sales Service

Under strict quality control measures, this product was manufactured, tested, inspected and shipped. Should a defect in manufacture or workmanship be identified, please return the product to our distributor or directly to us. It would be highly appreciated if you could give a detailed account of the fault and enclose it with the product.

watanabe

WATANABE ELECTRIC INDUSTRY CO., LTD.

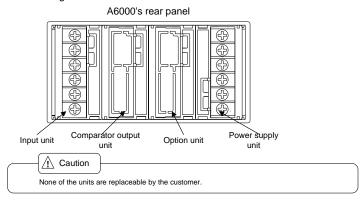
6-16-19, Jingumae, Shibuya-ku, Tokyo 150-0001, Japan

Phone: (81)3-3400-6141

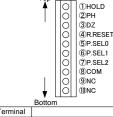
External Control Unit

1 Before Using the Unit

This instruction manual is for the external control unit of the A6000 series. Read this manual along with the main unit's instruction manual before using the unit.

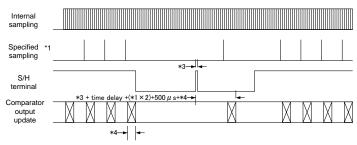


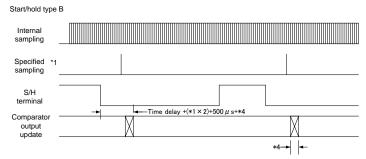
2 Terminals and Connections



				Fun	ction				
	"Start/hold" control terminal. The "hold" state is turned on when this terminal is at the same potential as the COM terminal or short-circuited.								
				function is	turned on v	vhen this te	rminal is at	the same p	otential as
as the CO	"Digital zero" control terminal. The digital zero function is turned on when this terminal is at the same potential as the COM terminal or short-circuited. This setting is valid only when the external control terminal is selected as the control method for digital zero using condition data.								
	"Relay reset control terminal. The relay reset function is turned on (only for the meter relay) when this terminal is at the same potential as the COM terminal or short-circuited.								
"Pattern selection" control terminals. Patterns can be selected by setting these terminals at the same potent as the COM terminal or short-circuiting them as shown in the table below. These settings are valid only whe the external control terminal is selected as the control method for pattern selection using condition data.									nly when
	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Pattern 8	
P.SEL0		Short-circuited	Open	Chart aircuited	Onne	Short-circuited	Open		
P.SEL1	Open	Onno	Short-circuited	Shore-circuited	Open	Open	Chart aircuited	Short-circuited	
P.SEL2		Open	Open	Open	Short-circuited	Short-circuited	Shorrenculled		
	"Peak hold the COM to "Digital ze as the CO as the con "Relay resis at the sa "Pattern s as the CO the extern." P.SEL0 P.SEL1 P.SEL2	COM terminal or sho "Peak hold" control to the COM terminal or "Digital zero" control as the COM terminal as the control method "Relay reset control is at the same potent "Pattern selection" o as the COM terminal the external control it P.SELD P.SELD P.SELD P.SEL1 P.SEL2	COM terminal or short-circuited. "Peak hold" control terminal. The COM terminal or short-circuit Digital zero" control terminal. Thas the COM terminal or short-circuit as the COM terminal or short-circuit as the control method for digital: "Relay reset control terminal. The sat the same potential as the Company of the control terminal is the Company of the control terminal is the COM terminal or short-circuit the external control terminal is set the COM te	COM terminal or short-circuited. "Peak hold" control terminal. The peak hold the COM terminal or short-circuited. Digital zero" control terminal. The digital zeros as the COM terminal or short-circuited. This as the control method for digital zero using the control terminal. The relay resis at the same potential as the COM terminal is at the COM terminal. "Pattern selection" control terminals. Patter as the COM terminal or short-circuiting them the external control terminal is selected as the composition of the control terminal is selected as the composition of the control terminal is selected as the composition of the control terminal is selected as the composition of the control terminal is selected as the control terminal is selected	"Start/hold" control terminal. The "hold" state is turned COM terminal or short-circuited. "Peak hold" control terminal. The peak hold function is the COM terminal or short-circuited. "Digital zero" control terminal. The digital zero function as the COM terminal or short-circuited. This setting is was the control method for digital zero using condition de "Relay reset control terminal. The relay reset function is at the same potential as the COM terminal or short-circuited as the COM terminal or short-circuiting them as shown the external control terminal is selected as the control the peach of	COM terminal or short-circuited. "Peak hold" control terminal. The peak hold function is turned on with the COM terminal or short-circuited. Digital zero" control terminal. The digital zero function is turned on as the COM terminal or short-circuited. This setting is valid only with as the control method for digital zero using condition data. "Relay reset control terminal. The relay reset function is turned on is at the same potential as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by as the COM terminal or short-circuiting them as shown in the table the external control terminal is selected as the control method for proceedings. Past of the control method f	"Start/hold" control terminal. The "hold" state is turned on when this terminal is COM terminal or short-circuited. "Peak hold" control terminal. The peak hold function is turned on when this terminal or short-circuited. "Digital zero" control terminal. The digital zero function is turned on when this as the COM terminal or short-circuited. This setting is valid only when the exte as the control method for digital zero using condition data. "Relay reset control terminal. The relay reset function is turned on (only for this at the same potential as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting thes as the COM terminal or short-circuited then set the control terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting them as the COM terminal or short-circuited. "Pattern selection" control terminals.	"Start/hold" control terminal. The "hold" state is turned on when this terminal is at the san COM terminal or short-circuited. "Peak hold" control terminal. The peak hold function is turned on when this terminal is at the COM terminal or short-circuited. "Digital zero" control terminal. The digital zero function is turned on when this terminal is as the COM terminal or short-circuited. This setting is valid only when the external control as the control method for digital zero using condition data. "Relay reset control terminal. The relay reset function is turned on (only for the meter relation at the same potential as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting these terminals as the COM terminal or short-circuited them as shown in the table below. These settings the external control terminal is selected as the control method for pattern selection using the external control terminal is selected as the control method for pattern selection using the setting setting the setting setting the setting setting setting the setting	"Start/hold" control terminal. The "hold" state is turned on when this terminal is at the same potential COM terminal or short-circuited. "Peak hold" control terminal. The peak hold function is turned on when this terminal is at the same potential completed by the COM terminal or short-circuited. "Digital zero" control terminal. The digital zero function is turned on when this terminal is at the same as the COM terminal or short-circuited. This setting is valid only when the external control terminal is as the control method for digital zero using condition data. "Relay reset control terminal. The relay reset function is turned on (only for the meter relay) when this at the same potential as the COM terminal or short-circuited. "Pattern selection" control terminals. Patterns can be selected by setting these terminals at the same as the COM terminal or short-circuiting them as shown in the table below. These settings are valid on the external control terminal is selected as the control method for pattern selection using condition do the external control terminal is selected as the control method for pattern selection using condition do the external control terminal is selected by setting them as Short-circuited Short-circuited Open Short-circuited Short-c

3 Timing Charts





The sampling speed is determined by the AVG parameter setting of condition data as shown in the table below.

AVG setting	Sampling speed	Sampling cycle	AVG setting	Sampling speed	Sampling cycle
1	1041.65 times/sec	Approx. 960 μs	100	10.4165 times/sec	Approx. 96 ms
2	520.825 times/sec	Approx. 1.92 ms	200	5.20825 times/sec	Approx. 192 ms
4	260.4125 times/sec	Approx. 3.84 ms	400	2.604125 times/sec	Approx. 384 ms
8	130.20625 times/sec	Approx. 7.68 ms	800	1.3020625 times/sec	Approx. 768 ms
10	104.165 times/sec	Approx. 9.6 ms	1000	1.04165 times/sec	Approx. 960 ms
20	52.0825 times/sec	Approx. 19.2 ms	2000	0.520825 times/sec	Approx. 1.92 sec
50	20.833 times/sec	Approx. 48 ms	5000	0.20833 times/sec	Approx. 4.8 sec

**Using a temperature measuring unit, the sampling speed is half of the value in the table above when the RTD is selected and quarter of it when the TC is selected.

※It is different, and a frequency measurement unit is indication update time with a range.
Please refer to input specifications (Clause 6.1) of an instruction manual for frequency measurement. *3 External start signal

The width of the external start signal must be from between 500 μs to a specified sampling cycle. A time delay can be set for the external start using the S/H delay time parameter of the condition data.

*4 Time delay for comparator output

Relay output: 10 ms max., photocoupler output: 200 µs max.

4 Specifications and External Dimensions

External control terminal

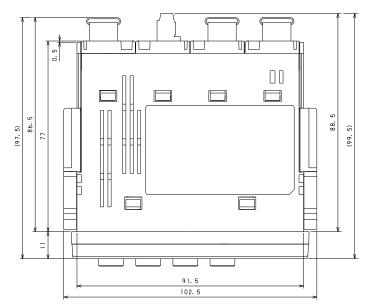
Internal circuit: Pulled up to approximately +5 V (through a 10 $k\Omega$ resistor).

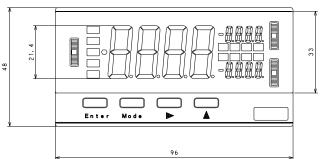
Control signal's HI level: 4.2 to 5 V relative to the COM terminal

Control signal's LO level: 0 to 0.4 V relative to the COM terminal



The external control circuit's COM terminals and the input circuit's LO or AG terminal are set at the same DC potential.





5 Warranty and Service

5.1 Warranty

The manufacturer grants a warranty to the original retail customer stating that its A6000 series universal digital panel meter is free of defects in material and workmanship for use under normal care, and will repair or replace the meter at no charge to the customer during the one (1) year warranty period.

5.2 After Sales Service

This product was manufactured, tested, inspected and shipped under strict quality control measures. Should a defect in manufacture or workmanship be identified, please return the product to our distributor or directly to us. It would be highly appreciated if you could give a detailed account of the problem and enclose it with the product.

watanabe

WATANABE ELECTRIC INDUSTRY CO., LTD.

6-16-19, Jingumae, Shibuya-ku, Tokyo 150-0001, Japan

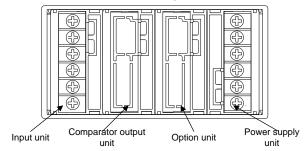
Phone: (81)3-3400-6141

BCD Output and External Control Unit

1 Before Using the Unit

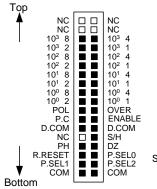
This instruction manual is for the BCD output and external control unit of the A6000 series. Read this manual along with the main unit's instruction manual before using the unit.

A6000's rear panel





2 Terminals and Connections

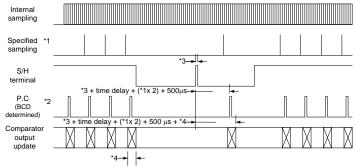


Suitable connector (receptacle): KEL Corporation's 8822E-035-171-F

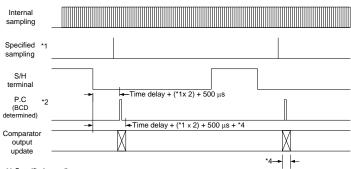
Terminal	Function						
10º1	Least significant bit output of least significant BCD digit. The output logic can be switched using condition data.						
10º2	econd least significant bit output of least significant BCD digit. The output logic can be switched using condition data.						
10º4	Second most significant bit output of least significant BCD digit. The output logic can be switched using condition data.						
10º8	Most significant bit output of least significant BCD digit. The output logic can be switched using condition data.						
- :	:						
10 ³ 1	Least significant bit output of most significant BCD digit. The output logic can be switched using condition data.						
10 ³ 2	Second least significant bit output of most significant BCD digit. The output logic can be switched using condition data.						
10 ³ 4	Second most significant bit output of most significant BCD digit. The output logic can be switched using condition data.						
10 ³ 8	Most significant bit output of most significant BCD digit. The output logic can be switched using condition data.						
POL	BCD polarity output. The output logic can be switched using condition data.						
OVER	BCD overflow output. The output logic can be switched using condition data.						
P.C	BCD print instruction output.						
ENABLE	"Enable BCD" control terminal. The BCD output is set to the high-impedance state or the transistor is turned off when this terminal is short-circuited or at the same potential as the D.COM terminal.						
D.COM	BCD output• fs common terminals						
S/H	"Start/hold" control terminal. The "hold" state is turned on when this terminal is at the same potential as the COM terminal or short-circuited.						
PH	"Peak hold" control terminal. The peak hold function is turned on when this terminal is at the same potential as the COM terminal or short-circuited.						
DZ	"Digital zero" control terminal. The digital zero function is turned on when this terminal is at the same potential as the COM terminal or short-circuled. This setting is valid only when the external control terminal is selected as the control method for digital zero using condition data.						
R.RESET	"Relay reset control terminal. The relay reset function is turned on (only for the meter relay) when this terminal is at the same potential as the COM terminal or short-circuited.						
P.SEL0 P.SEL1 P.SEL2	"Pattern selection" control terminals. Patterns can be selected by setting these terminals at the same potential as the COM terminal or short-circulting them as shown in the table below. These settings are valid only when the external control terminal is selected as the control method for pattern selection using condition data. Pattern 1 Pattern 2 Pattern 3 Pattern 4 Pattern 5 Pattern 6 Pattern 7 Pattern 8 Post consults (circulated Vene Open Short-Control terminal Short-Contro						
i COM	LExternal control is common terminals, which are at the same notential as the LΩ or ΔG terminal for the input circuit						

3 Timing Charts

Start/hold type A



Start/hold type B



*1 Specified sampling

The sampling speed is determined by the AVG parameter setting of condition data as shown in the table below

AVG setting	Sampling speed	Sampling cycle	AVG setting	Sampling speed	Sampling cycle
1	1041.65 times/sec	Approx. 960 μs	100	10.4165 times/sec	Approx. 96 ms
2	520.825 times/sec	Approx. 1.92 ms	200	5.20825 times/sec	Approx. 192 ms
4	260.4125 times/sec	Approx. 3.84 ms	400	2.604125 times/sec	Approx. 384 ms
8	130.20625 times/sec	Approx. 7.68 ms	800	1.3020625 times/sec	Approx. 768 ms
10	104.165 times/sec	Approx. 9.6 ms	1000	1.04165 times/sec	Approx. 960 ms
20	52.0825 times/sec	Approx. 19.2 ms	2000	0.520825 times/sec	Approx. 1.92 sec
50	20.833 times/sec	Approx. 48 ms	5000	0.20833 times/sec	Approx. 4.8 sec

*Using a temperature measuring unit, the sampling speed is half of the value in the table above when the RTD is selected and quarter of it when the TC is selected.

**It is different, and a frequency measurement unit is indication update time with a range.

Please refer to input specifications (Clause 6.1) of an instruction manual for frequency measurement

*2 P.C output signal width

mined by the specified sampling setting as shown in the table below

ine output of	griai wiatii is acto	iiiiiiiod by tii	c specifica samp
AVG	P.C	AVG	P.C
setting	output width	setting	output width
1	Approx. 220 μs	100	
2	Approx. 0.25 ms	200	
4	Approx. 1.15 ms	400	
8	Approx. 2.3 ms	800	Approx. 30 ms
10	Approx. 2.9 ms	1000	
20	Approx. 5.8 ms	2000	
50	Approx. 14.4 ms	5000	

*The output width is always 30 ms for the frequency measurement unit.

*3 External start signal

The width of the external start signal must be from between 500 µs to a specified sampling cycle. A time delay can be set for the external start using the S/H delay time parameter of the condition d

*4 Time delay for comparator output

Relay output: 10 ms max., photocoupler output: 200 µs max.

4 Specifications and External Dimensions

●BCD output

Output type open collector or TTL-compatible

Polarity : The applicable transistor (open collector) or polarity bit (TTL) turns on when

negative values are indicated.

Overflow : The applicable transistor (open collector) or bit (TTL) turns on when the overflow

state is indicated.

Output logic : Can be switched alternatively (the logic for the P.C bit cannot be changed).

Output rating: 30 V DC and 10 mA (open collector), or fan-out 2 (TTL)



The BCD output logic can be switched using the BCD logic parameter (BCD.L) of the condition data, which is positive when BCD.L is set to P.LOG and negative when BCD.L is set to N.LOG for an output type of Open collector. This logic is reversed if the output type is "TTL."

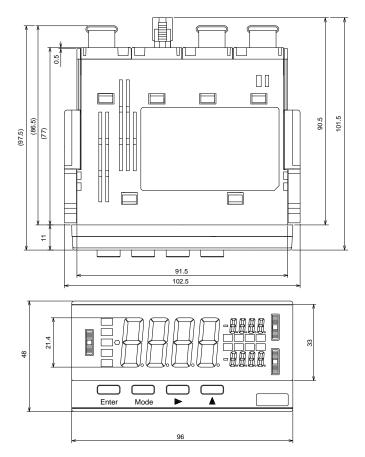
External control terminal

Internal circuit: Pulled up to approximately +5 V (through a 10 kΩ resistor).

Control signal's HI level: 4.2 to 5 V relative to the COM terminal

Control signal's LO level: 0 to 0.4 V relative to the COM terminal

- The BCD output circuit and the external control circuit are electrically isolated from each other (withstand voltage: 500 V DC for one minute).
 The external control circuit's COM terminals and the input circuit's LO or AG terminal are
- set at the same DC potential.



5 Warranty and Service

Warranty

The manufacturer grants a warranty to the original retail customer stating that its A6000 series universal digital panel meter is free of defects in material and workmanship for use under normal care, and will repair or replace the meter at no charge to the customer during the one (1) year warranty period.

5.2 After Sales Service

This product was manufactured, tested, inspected and shipped under strict quality control measures. Should a defect in manufacture or workmanship be identified, please return the product to our distributor or directly to us. It would be highly appreciated if you could give a detailed account of the problem and enclose it with the product.

watanabe

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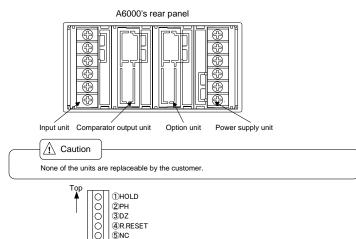
6-16-19, Jingumae, Shibuya-ku, Tokyo 150-0001, Japan Phone: (81)3-3400-6141

Analog Output and External Control Unit

1 Before Using the Unit

This instruction manual is for the analog output and external control unit of the A6000 series. Read this manual along with the main unit's instruction manual before using the unit.

2 Terminals and Connections



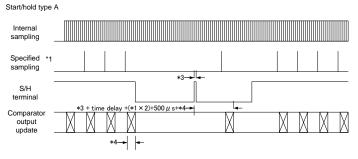
	Bottom
Terminal	Function
S/H	"Start/hold" control terminal. The "hold" state is turned on when this terminal is at the same potential as the COM terminal or short-circuited.
PH	"Peak hold" control terminal. The peak hold function is turned on when this terminal is at the same potential as the COM terminal or short-circuited.
DZ	"Digital zero" control terminal. The digital zero function is turned on when this terminal is at the same potential as the COM terminal or short-circuited. This setting is valid only when the external control terminal is selected as the control method for digital zero using condition data.
R.RESET	"Relay reset control terminal. The relay reset function is turned on (only for the meter relay) when this terminal is at the same potential as the COM terminal or short-circuited.
COM	External control's common terminals, which are at the same potential as the LO or AG terminal for the input circuit.
A OUT	

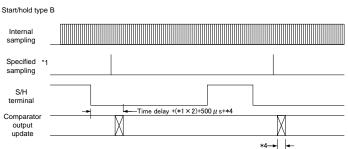
€NC

(7)COM

	the COM terminar of Short-circuited.
DZ	*Digital zero* control terminal. The digital zero function is turned on when this terminal is at the same potential as the COM terminal or short-circuited. This setting is valid only when the external control terminal is selected as the control method for digital zero using condition data.
R.RESET	*Relay reset control terminal. The relay reset function is turned on (only for the meter relay) when this terminal is at the same potential as the COM terminal or short-circuited.
COM	External control's common terminals, which are at the same potential as the LO or AG terminal for the input circuit.
A.OUT V(+)	Voltage output terminal of analog output.
A.OUT I(+)	Current output terminal of analog output.
A.OUT COM(-)	Common terminal of analog output. Insulated from input LO or AG terminal/external control COM terminal.

3 Timing Charts





*1 Specified sampling

The sampling speed is determined by the AVG parameter setting of condition data as shown in the table below

AVG setting	Sampling speed	Sampling cycle	AVG setting	Sampling speed	Sampling cycle
1	1041.65 times/sec	Approx. 960 μs	100	10.4165 times/sec	Approx. 96 ms
2	520.825 times/sec	Approx. 1.92 ms	200	5.20825 times/sec	Approx. 192 ms
4	260.4125 times/sec	Approx. 3.84 ms	400	2.604125 times/sec	Approx. 384 ms
8	130.20625 times/sec	Approx. 7.68 ms	800	1.3020625 times/sec	Approx. 768 ms
10	104.165 times/sec	Approx. 9.6 ms	1000	1.04165 times/sec	Approx. 960 ms
20	52.0825 times/sec	Approx. 19.2 ms	2000	0.520825 times/sec	Approx. 1.92 sec
50	20.833 times/sec	Approx. 48 ms	5000	0.20833 times/sec	Approx. 4.8 sec

**Using a temperature measuring unit, the sampling speed is half of the value in the table above when the RTD is selected and quarter of it when the TC is selected.

※It is different, and a frequency measurement unit is indication update time with a range.
Please refer to input specifications (Clause 6.1) of an instruction manual for frequency measurement.

*3 External start signal

The width of the external start signal must be from between 500 μs to a specified sampling cycle. A time delay can be set for the external start using the S/H delay time parameter of the condition data

*4 Time delay for alarm output

Relay output: 10 ms max., photocoupler output: 200 µs max.

4 Specifications and External Dimensions

Output type	Load resistance	Accuracy	Response speed	Ripple
0 to 1V				
0 to 10V	10kΩ or more	±(0.5% of FS)	Approx. 0.5 second	50mVp-p
1 to 5V		±(0.5% 01 F3)	Approx. 0.5 Second	
4 to 20mA	550Ω or less			25mVp-p

PWM conversion Resolution Equivalent to 14 bits Scaling Digital scaling

●External control terminal

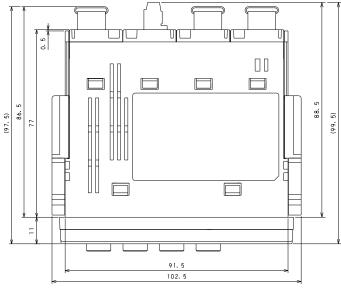
Pulled up to approximately +5V (through a $10k\Omega$ resistor).

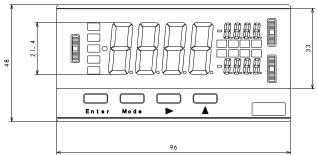
Internal circuit Control signal's HI level 4.2 to 5V relative to the COM terminal Control signal's LO level : 0 to 0.4V relative to the COM terminal



(1) Analog output circuits and external control circuits are insulated (withstand voltage 500V DC,

(2) COM terminals of external control circuits and LO terminals of input circuits have the same





5 Warranty and Service

5.1 Warranty

The manufacturer grants a warranty to the original retail customer stating that its A6000 series universal digital panel meter is free of defects in material and workmanship for use under normal care, and will repair or replace the meter at no charge to the customer during the one (1) year warranty period.

5.2 After Sales Service

This product was manufactured, tested, inspected and shipped under strict quality control measures. Should a defect in manufacture or workmanship be identified, please return the product to our distributor or directly to us. It would be highly appreciated if you could give a detailed account of the problem and enclose it with the product.

watanabe

WATANABE ELECTRIC INDUSTRY CO., LTD.

6-16-19, Jingumae, Shibuya-ku, Tokyo 150-0001, Japan Phone: (81)3-3400-6141

INSTRUCTION MANUAL MODEL A6xxx-x5/x6/x7/x8 1/12

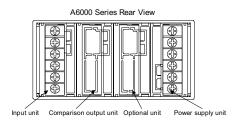
Instruction Manual for A6000 Series Universal Digital Panel Meter

~RS-232C/RS-485 and Analog Output Units~

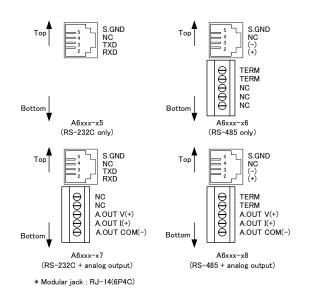
1 Before Using the Unit

This Operation Manual corresponds to the communication function + analog output optional units of the A6000 Series Universal Digital Panel Meters. When using the instrument, please read through this manual in combination with the Operation Manual of the main unit.

2 Terminals and Connections

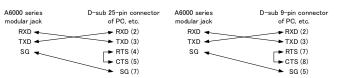




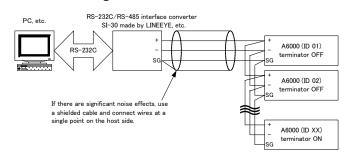


3 Examples of Connections and Use

3.1 Connecting the RS-232C Interface



3.2 Connecting the RS-485 Interface



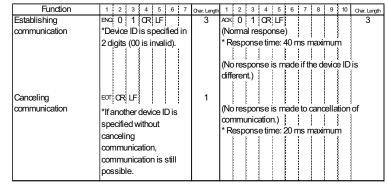
If cascade wiring is carried out with a RS-485 connection, use a commercially available Y-type split connector or the like.

*To turn ON an RS-485 I/O unit's terminator (200 Ω), short-circuit the two TERM terminals

3.3 Control Codes Used in RS-485 Interface

	Code	Hexadecimal	Name
	STX	02H	Start of Text
	ETX	03H	End of Text
	EOT	04H	End of Transmission
ĺ	ENQ	05H	Enquiry
	ACK	06H	Acknowledge

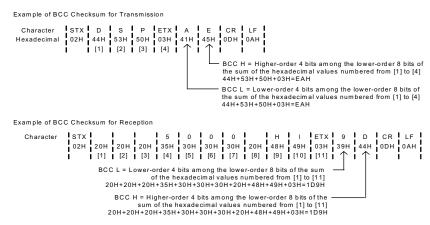
3.4 Establishing RS-485 Communication



3.5 RS-485 Communication formats

As a means of error detection, a block check character (BCC) checksum is added to the RS-485 communication function of the A6000 . See the following illustrations for details on the transmission and reception formats.

(RS-232C communication format is same as the command table which is mentioned in the next section.)



4 Communication Commands

Function	1	2	3		5	6	7	3 9	10 1	12	13 1	4 15	Char. Length	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Char.
Measured value and comparison result responses	D	S	P	CR	LF			-					3	("+" indication without decimal point)
								}						- 5 0 0 0 H I CR LF 1
														("+" indication without decimal point)
														("+" indication with a decimal point)
														<pre>< = 9 8 0 0 H I CR LF ("+" side excess indication without decimal point) 1</pre>
														<pre>< = - 9 8 0 . 0 H I CR LF 1</pre>
								}						("-" side excess indication with a decimal point)
														P H 5 0 0 0 H I CR LF 1 (Peak hold indication without decimal point)
														5 0 0 0 A L 1 CR LF 1 ("+" indication without decimal point)
														- 5 0 0 0 A L 2 CR LF 1
														("-" indication without decimal point)
														("+" indication with a decimal point)
Measured value response	M	E	S	CR	LF	Н	+	+			+	+	3	0 CR LF 1
A measurement condition such as peak hold, etc. or compression decision														("0" indication without decimal point)
is not responded.														("0.01" indication with a decimal point)
														- 1 CR LF 1 ("-1" indication without decimal point)
														- 0 0 0 5 CR LF 1
														("-0'.00\$" indication with a decimal point)
								}						(Excess indication with a decimal point)
														< = - 9 8 0 . 5
								-						* All responses have a fixed length of 12 characters.
Judgment result response	╀-	G	5 NA	CB	LF		_	-		1 1		_	3	H I CR LF 1
* A measurement condition is not	١	16	1	CR	1								٥	H I
responded.														G O CR LF 1
														(Response of a state in which the judgment result is GO) L O CR LF 1
														(Response of a state in which the judgment result is LO)
														OFFF CR LF 1 CR LF 1 (Response of a state in which the judgment results are all OFF)
														N O ? CR LF 5
														(Response made if the relevant optional unit is not installed) * All responses have a fixed length of 15 characters with the
	<u>L</u>	<u>L.</u>	<u> </u>		<u> </u>									exception of an error.
Unit num ber response	١٠	N	1	CR	LF								3	1 1 1 ,
								-						unit number, comparison output unit number, and optional unit
														If the unit concerned is not installed, "NO" is returned.)
Response of the maximum value,	М	Α	Х	CR	LF		1	1		11	1	Ť	3	M A X 5 0 0 . 0 CR LF 1
minimum value, or maximum and minimum values														(Response of maximum value)
				9				}						(Response of minimum value)
														M - M 6 0 0 . 0 CR LF
														* These values are simultaneously responded by dividing them
Clear of the maximum value,	М	С	L		М	А	CR L	F {					6	with a delimiter.
minimum value, or maximum and minimum values							alue. CR L						6	Y E S CR LF 5
minimum values	(CI	ears	the	mi	n im ı	im v	aluė.)	- }					_	
							CR L		ım valı	es.)			6	Y E S CR LF 5
Key operation inhibition response	Ľ			}	LF		+	1		\perp	_	-	3	O F F CR LF
Rey operation minibilion response	"	-	'	1	-									(Response of a state in w hich the key operation inhibition function is OFF)
														O N CR LF 2 (Response of a state in which the key operation inhibition function is ON)
	l	_						_ }						
Key operation inhibition setting	K (De		Y ivate				F C eratio		ibition	functio	n.)		7	Y E S CR LF 5
	K	E	Υ	š	0	N	CR L	F {		1 1			6	Y E S CR LF 5
				1			llion i	}	ion fun					
Response of remote-controlled hold	S	Т	Н	CR	LF								3	S T A R T CR LF 5 (Response of a state in which hold is deactivated by remote control)
							1	1						H O L D CR LF 4
								}						(Response of a state in which hold is activated by remote control)
														(Response of a state in which hold is not remote controlled)
Hold remote control	s	Т	Н		s	CR	LF						5	Y E S CR LF 5
	(De	act	iva te	s th	e ho	ld fu	nctio	n .)						
						CR func	LF tion.)						5	Y E S CR LF 5
	ľ	1	1	3			1							
Talana and tana and	1 1	CR	1 LF	ş	1	: 1		į					1	5 0 0 . 0 H I CR LF
Trigger input	Ι΄.			3			5	- 4		y =		- 1		("+" indication with a decimal point)
Trigger input				-										*The response formatis the same as the DSP command.
Trigger input Cancellation of hold remote control		s	М	CR	LF								3	

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Function Response of remote-controlled	_	_		l CI	R LF	6	{ '	8	a	ıυ	17	12	13	14	15	Char. Length	_	-	_	C	_	_		-	_		_	+	U	11	12	- }	13	. 14	+ 1	ıο	5 TE	, <u>{</u>	17 }	ıŏ	Cha	ar. Leng	jth
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Response of remote-controlled pattern select		S	-	CR	LF												3	(Resp	RL		sta	te in	w h	ich t	he	patt	ern	use	d by	{ / re	mot	le c	! ontr	i ol is	"1")		1
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They will a setting B W D 1 5 5 5 7 8 5 1 1 5 5 5 5 5 6 5 5 5 5	Step wide response	S W D CR LF	(Response of a state in which step wide is "1")
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Separation is a witched with addaly a Pair Pelling 2 2 1 2 2 2 2 2 2 2	Step wide setting		5 Y E S CR LF 5
Supplay color response C R C L C L C C C C C C			
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Display color setting C L R R C color (Cas d Replay color) in red 1 C C L R R C color (Cas d Replay color) in red 1 C C L R R C color (Cas d Replay color) in red 1 C C L R C color (Cas d Replay color) in red 1 C C L R C color (Cas d Replay color) in red 1 C C L R C color (Cas d Replay color) in red 1 C C L R C color (Cas d Replay color) in red 1 C C L R C color (Cas d Replay color) in red 2 C C L R C color (Cas d Replay color) in red 2 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C L R C color (Cas d Replay color) in red 3 C C C C C C C C C C C C C C C C C C			N O ? CR LF 5
Column C			
C	Displaycolorsetting		5 Y E S CR LF 5
Comparison of the comparison output unit is not installed) September Sep			5 Y E S CR LF 5
C L T C			
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C L T A CR LF A CR LF LF	Display color type response		(Response of a state in which the display color type is Auto)
Display color type setting C L T A I CR LF			M A N U A L CR LF 6 (Response of a state in which the display color type is Manual)
C T A A A A A A A A A			N O ? CR LF 5
(Sals the display color type is Auto) C 1 R M CR L C S M M M M C M M CR L C M M M M M C M M M M M C M M M M C M M M M C M M M M C M M M M C M M M M C M M M M C M M M C M M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M M C M M C M M M C M M M C M M M C M M M C M M M C M M M C M M C M M M C M M M C M M C M M M C M M C M M C M M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M M C M C M M C M M C M C M M C M C M M C M M C M C M M C M C M M C M C M M C M C M C M M C			
C L R M CALLER (Sets the display color by set Manual) (Sets the display color by set Manual) (Sets the display color response) C H I CR LF (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the Hidsplay color is red) (Response of a state to which the display color is red) (C H I I C C LL) (Response of a state to which the display color is red) (C H I I C C LL) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is red) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a state to which the display color is green) (Response of a s	Display color type setting		5 Y E S CR LF 5
Hi display color response C H CR LF R cn		C L R M CR LF	
Hi display color response C H CB LF S R D CB LF S S S S S S S S S		(Sets the display color type to Manual.)	
Response of a state in which the Hisplay color is red)			(Response made if the comparison output unit is not installed)
G R E N CR LF	HI display color response	C H I CR LF	
Hi dis play color setting C H II R CR [LF] (Sab H) display color to green) A U T O CR [LF] (Sab H) display color to green) G O GR [LF] G O GR [L			
Hi display color setting C H I R R CR LF			(Response of a state in which the HI display color is green)
Hi display color setting C H I R CR LF			
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Cate H display color to rad.) 5 Y E S CR LF CR CR CR CR CR CR CR C			
C H I G CR LF S	HI display color setting		5 Y E S CR LF 5
A 1 U T T O CRLEF (Response of a state in which the display color type is Auto) (Response of the state of independent judgment specifications) 3 R E D CRLE (Response of a state in which the GO display color is red) (Response of a state in which the GO display color is red) (Response of a state in which the GO display color is red) (Response of a state in which the GO display color is red) (Response of a state in which the display color is green) A U T T O CRLEF (Response of a state in which the display color is state) (Response of a state in which the display color is state) (Response of a state in which the display color type is Auto) (Response of a state in which the display color type is Auto) (Response of a state in which the display color type is Auto) (Response of a state in which the display color type is Auto) (Response of a state in which the display color type is Auto) (Response of a state in which the display color type is Auto) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color is red) (Response of a state in which the display color		C H I G CR LF	
Response of a state in which the display color type is Auto) 5 N 0 7 CR LE		(Sets HI display color to green.)	
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N.O. ? CR.LF. St. CR.LF. St. CR.LF. Cr.L		, , , , , , , , , , , , , , , , , , , ,	A;U;T;O;CR;LF; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;
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(Sets LO display color to green.) * LO display color is switched immediately after setting. A . U . T . O . CR . LF	, . ,	(Sets LO display color to red.)	
A . U . T . O . CR . LF			* LO display color is switched immediately after setting.
N O ? CRLF 5 (Response made if the comparison output unit is not installed)			A U T O CR LF 4
(Response made if the comparison output unit is not installed) (Response of the state of independent judgment specifications)			N.O. ? CRILF 5
			(Response made if the comparison output unit is not installed) (Response of the state of independent judament specifications)
			i i i i i i i i i i i i i i i i i i i

Function	1	5 6 7 8 9 10 11 12 13 14 15 16 17 18 Char. Length
Display blank response	B L K CR LF 3 O F F CR	LF 3
	(Response of L V 1 CR	a state in which blank setting is OFF)
		a state in which blank setting is at LV1)
		SLF 3
	(Response of L V 3 CR	a state in which blank setting is at LV2)
	(Response of	a state in which blank setting is at LV3)
	O N CR LF	a state in which blank setting is ON)
Display blank setting	B L K O F F CR LF 7 Y E S (Deactivates blank setting.)	CR LF 5
	B L K L V 1 CR LF 7 Y E S	CR LF 5
	(Sets blank setting to LV1.) B L K L V 2 CR LF 7 Y E S	CR: LF 5
	(Sets blank setting to LV2.)	URILIF 5
	B L K L V 3 CR LF 7 Y E S	CR LF 5
	(Sets blank setting to LV3.) B L K O N CR LF 6 Y E S	CR LF 5
	(Activates blank setting.)	
Jog switch response	J S W CR LF 3 O N CR LF	2
3	(Response of	a state in which jog switch setting is ON)
	O F F CR	LF 3 fa state in which jog switch setting is OFF)
		CR LF 5
	(Response m	ade if the relevant unit is not installed)
Jog switch setting	JSWONCRLF 6 YES	CR LF 5
	(Activates jog switch setting.) J S W O F F CR LF 7 Y E S	CR: LF 5
	(Deactivates jog switch setting.)	ON LI
	NO ?	CR LF 5 hade if the relevant unit is not installed)
Digital zero backup response	B D Z CR LF 3 O N CR LF	a state in which digital zero backup is ON)
	O F F CR	
	(Response of	a state in which digital zero backup is OFF)
Digital zero backup control	B D Z O N CR LF 6 Y E S	CR LF 5
	(Activates digital zero backup) B D Z O F F CR LF 7 Y E S	CR: LF 5
	(Deactivates digital zero backup.)	CRI LF
Digital zara data agus cammand	S A V CRLF 3 Y E S	CR LF 5
Digital zero data save command	S A V CRLF 3 Y E S	CRILF 5
	N O ?	
	(Response in	nade if the relevant unit is not installed)
Response of the number of patterns	P S N CR LF 3 1 CR LF	1
for pattern select	(Response of a	state in which the number of patterns for pattern select is "1") 1
		state in which the number of patterns for pattern select is "8")
Control over the number of patterns	PSN 1 CRLF 5 YES	CR LF 5
for pattern select	(Sets the number of patterns for pattern select to "1.")	
	P S N 8 CR LF 5 Y E S (Sets the number of patterns for pattern select to "8.")	CR LF 5
Linearize function status response	L I N CR LF 3 O F F CR (Response of a	LF 3 state in which the linearize function is OFF)
	2 CR LF	
	(Response of a	a state in which the linearize correction point is "2")
		state in which the linearize correction point is "16")
Linearize function status setting	L I N O F F CR LF 7 Y E S	CR LF 5
	(Deactivates the linearize function.)	
	L I N 2 CR LF 5 Y E S (Sets linearize correction point to "2.")	CR LF 5
	L I N 1 6 CR LF 6 Y E S	CR LF 5
	(Sets linearize correction point to "16.")	
Tracking zero response		= 1 W = 1 CR LF 10
	(Response of a st	ate in which the tracking zero time is "1" and tracking zero width is "1") = 9 9
	(Response of	a state in which the tracking zero time is "99" and
	tracking zero v	
	O F F CR (Response of	a state in which the tracking zero function is OFF)
Tracking war		
Tracking zero setting	T R K T = 11 CR LF	CR LF 5
	T R K T = 9 9 CR LF 8 Y E S	CR LF 5
	(Sets tracking zero time to "99.") T R K W = 1 CR LF 7 Y E S	CR LF 5
	(Sets tracking zero width to 1 digit.)	
	T R K W = 9 9 CR LF 8 Y E S (Sets tracking zero width to 99 digits.)	CR LF 5
	T R K T = 0 CR LF 7 Y E S	CR LF 5
	(Deactivates the tracking zero function.) * In order to validate a tracking zero setup, please perform a number of times setup of	f an average continuously after carrying out a tracking zero setup.
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

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Function	1 2 3 4 5 6 7 8 9 10 11 12 13	3 14 15 Char Length 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Char Leng
Power-on delay time response	P O N CR LF	3 0 CR LF 1
		(Response of a state in which the power-on delay function is OFF)
		1 CR LF 1 (Response of a state in which the power-on delaytime is 1 second)
		9 ICR LF 1 1 1 1 1 1 1 1 1 1 1 1 1
		(Response of a state in which the power-on delay time is 9 seconds)
Power-on delay time setting	PON 1 CR LF	5 Y E S CR LF 5
	(Sets power-on delay time to 1 second.) PON 9 CR LF	5 Y E S CR LF 5
	(Sets power-on delay time to 9 seconds.)	
	PONOCRLE	5 Y E S CR LF 5
	(Deactivates the power-on delay function.)	
Protect level response	P R O CR LF	3 L V 0 CR LF 3
Protect level response	PROGNET	(Response of a state in which the protect level is at LV0)
		L V 1 CR LF 3
		(Response of a state in which the protect level is at LV1)
		L V 2 CR LF
		(Response of a state in which the protect level is at LV2) L V 3 CR LF 3
		(Response of a state in which the protect level is at LV3)
Protect level setting	PROLVOCRLF	7 Y E S CR LF 5
	(Sets protect level to LV0.) PROLV1 CR LF	7 Y E S CR LF 5
	(Sets protect level to LV1.)	
	PRO LV2CRLF	7 Y E S CR LF 5
	(Sets protect level to LV2.)	
	PROLV3CRLF	7 Y E S
	(Sets protect level to LV3.)	
Unit number indication response	U N O CR LF	3 O N CR LF 2
		(Response of a state in which the unit number indication is ON)
		O F F CR LF 3
		(Response of a state in which the unit number indication is OFF)
Unit number indication setting	U N O O N CR LF	6 Y E S CR LF 5
	(Activates unit number indication.)	
	UNOOFFCRLE	7 Y E S CR LF 5
	(Deactivates unit number indication.)	
Start hold type response	S T T CR LF	3 A CR LF 1
		(Response of a state in which the start hold type is A)
		B CR LF 1
		(Response of a state in which the start hold type is B)
Start hold type setting	S T T A CR LF	5 YES CRLF 5
	(Sets start hold type to A.)	
	S T T B CR LF	5 Y E S CR LF 5
	(Sets start hold type to B.)	
Peak hold type response	P V T CR LF	3 A CR LF 1
		(Response of a state in which the peak hold type is A)
		B CR LF 1 (Response of a state in which the peak hold type is B)
		(response of a state in which the peak notic type is b)
Peak hold type setting	P V T A CR LF	5 Y E S CR LF 5
	(Sets peak hold type to A.)	5 YES CRILF 5
	(Sets peak hold type to B.)	

Franckin-	[4[9]9[4]elalzialatalu(-)-	{	la.
Function Baud rate response	1 2 3 4 5 6 7 8 9 10 11 12 13 B A U CR LF	14 15 Char Length 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 3 2 4 0 0 CR LF	Char. Length
		(Response of a state in which the baud rate is 2400 bps)	
		4 8 0 0 CR LF (Response of a state in which the baud rate is 4800 bps)	4
		9 6 0 0 CR LF	4
		(Response of a state in which the baud rate is 9600 bps)	5
		(Response of a state in which the baud rate is 19200 bps)	_
		3 8 4 0 0 CR LF	5
	B A III a A a a celle		
	B A U 2 4 0 0 CR LF (Sets the baud rate to 2400 bps.)	8 Y E S CR LF	5
	B A U 4 8 0 0 CR LF	8 Y E S CR LF	5
	(Sets the baud rate to 4800 bps.) B A U 9 6 0 0 CR LF	8 Y E S CR LF	5
	(Sets the baud rate to 9600 bps.)	9 YES CRLF	_
	B A U 1 9 2 0 0 CR LF (Sets the baud rate to 19200 bps.)	9 Y E S OK LF	5
	B A U 3 8 4 0 0 CR LF	9 Y E S CR LF	5
	(Sets the baud rate to 38400 bps.)	* The baud rate is switched upon next power-up.	!
Data length response	D A T CR LF	3 7 CR LF (Response of a state in which the data length is 7 bits)	1
		(Response of a state in which the data length is 7 bits)	1
		(Response of a state in which the data length is 8 bits)	!
	D A T 7 CR LF	5 Y E S CR LF	5
	(Sets data length to 7 bits.)		
	D A T 8 CR LF (Sets data length to 8 bits.)	5 Y E S CR LF The data length is switched upon next power-up.	5
B 11 1 11			
Parity bit response	P B T CR LF	3 E V E N CR LF (Response of a state in which a parity bit is even parity)	4
		O D D CR LF	3
		(Response of a state in which a parity bit is odd parity) N O CR LF	2
		(Response of a state in which a parity bit is none)	!
	P B T E CR LF	5 Y E S CR LF	5
	(Sets a parity bit to even parity.)		_
	P B T O CR LF (Sets a parity bit to odd parity.)	5 Y E S CR LF	5
	P B T N CR LF	5 Y E S CR LF	5
	(Sets a parity bit to none.)	*A parity bit is switched upon next power-up.	!
Stop bit response	S B T CR LF	3 1 CR LF	1
		(Response of a state in which a stop bit is 1 bit) 2 CR LF	1
		(Response of a state in which a stop bit is 2 bits)	'
	S B T 1 CR LF	5 YES CRLF	5
	(Sets a stop bit to 1 bit.)		
	S B T 2 CR LF (Sets a stop bit to 2 bits.)	5 YES CRLF A stop bit is switched upon next power-up.	5
Delimiter response	D L M CR LF	3 C R + L F CR LF (Response of a state in which a delimiter is CR + LF)	5
		C R CR LF	2
		(Response of a state in which a delimiter is CR)	!
	D L M C L CR LF	6 YES CRLF	5
	(Sets a delimiter to CR + LF.) D L M C CR LF	5 YES CRLF	5
	(Sets a delimiter to CR.)	*A delimiter is switched upon next power-up.	
Device ID response	A D R CR LF	3 1 CR LF	1
		(Response of a state in which the device ID is "01")	
		9 9 CR LF (Response of a state in which the device ID is "99")	2
Device ID setting	A D R 1 CR LF (Sets device ID to "01".)	5 Y E S CR LF	5
	ADR 99CRLF	6 Y E S CR LF	5
	(Sets device ID to "99".)	* Device ID is switched upon next power-up.	
<u> </u>			ш

Function	1	2 {	3	4 5	6	7	8	9	10	11	12	13	14	15	Char. Length	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Char Le	Lenath
Condition data parameter response	Α	L	1 (R LI	_										3	A V G 1 CR LF 5	
		-														(Response of a state in which the number of averaging times is "1") M A V O F F CR LF 7	,
																(Response of a state in which the moving averaging function is OFF)	_
		-														S W D 1 CR LF 5 (Response of a state in which step wide is "1")	°
																C L R R E D CR LF 7	7
																(Response of a state in which the display color is red) C L T M A N U A L CR LF 10	ا ه
		-														(Response of a state in which the display color type is Manual)	_
		-														C H H R E D CR LF 7 (Response of a state in which the HH display color is red)	′
																C H I R E D CR LF 7	7
																(Response of a state in which the HI display color is red) C G O R E D CR LF 7	,
																(Response of a state in which the GO display color is red)	.
																C L O R E D CR LF 7 (Response of a state in which the LO display color is red)	′
		-														C L L R E D CR LF 7	7
																(Response of a state in which the LL display color is red) B L K O F F CR LF 7	7
																(Response of a state in which display blank is OFF)	,
		-														J S W O N CR LF 6 (Response of a state in which the jog switch is ON)	°
		-														P V H P H - 0 F F CR LF 10	0
		-														(Response of a state in which peak hold select is OFF at PH) B D Z O N CR LF 6	a
		-														(Response of a state in which digital zero backup is ON) PISIN 1 CR LF	_
		-														(Response of a state in which pattern select is "1")	
		-														L I N O F F CR LF 7 (Response of a state in which linearize is OFF)	7
		- 1														T R K O F F CR LF	7
																(Response of a state in which tracking zero is OFF) PON0CRLF 5	_
																(Response of a state in which the delay time is "0")	
		-														PROLLV0 CRLF 7 (Response of a state in which the protect level is at LV0)	7
																U N O O F F CR LF 7	7
																(Response of a state in which unit number indication is OFF) S T T A CR LF 5	5
																(Response of a state in which the start hold type is A)	
																S T D	
		-														(Response of a state in which the peak hold type is A)	
		-														B A U 9 6 0 0 CR LF 8 (Response of a state in which the baud rate is 9600 bps)	³
		-														D A T 7 CR LF 5	5
																(Response of a state in which the data length is 7 bits) P B T E V E N CR LF 8	в
																(Response of a state in which a parity bit is even parity) S B T 2 CR LF 5	.
																(Response of a state in which a stop bit is 2 bits)	,
		-														D L M C R + L F CR LF 9 (Response of a state in which a delimiter is CR + LF)	9
		-														A D R 1 CR LF 5	5
		3														(Response of a state in which the device ID is 01)	
Scaling data parameter response	Α	L	2 (CR LI	- {	1	Н	-	-			Н		H	3	P - 1 CR LF 3	3
		2000	į		-			ļ								(The pattern used previously is responded.) R A N G 2 A CR LF 7	7
		200	į		-			ļ								(Response of a state in which the measurement range is 2 A) ISSEL O CCRLF 8	, I
		-			-											(Response of a state in which the input type is open collector)	
		3														F { S C 9 9 9 CR LF 10 (Response of a state in w hich the full-scale indicated value is "9999")	0
		-														F I N 9 9 9 CR LF 10 (Response of a state in which the full-scale input value is "9999")	0
		-			2											O F S 0 CR LF 10	0
		-			-											(Response of a state in which the offset indicated value is "0") O { N 0 CR LF 3 10	0
		-			-											(Response of a state in which the offset input value is "0") P S 1 0 0 CR LF 7	,
		-			-											(Response of a state in which the pre-scale value is "1.00") P P R 1 CR LF 5	
		-			-			ĺ								(Response of a state in which the frequency division value is "1")	
		-			2000			į								D { L } H I 9 9 9 CR LF 3 4 10 (Response of a state in which the digital limiter HI value is "9999")	0
		-			-			ĺ								D { L } L ! O ! - ! 9 9 9 9 CR LF ! } } 10 (Response of a state in which the digital limiter LO value is "-9999")	0
		-			2000			į								A O U T 0 - 1 CR LF 8	8
		-			2											(Response of a state in which the analog output type is 0 to 1 V) A { 0 H I 9 9 9 CR LF 9 9 9 9 9 0 9 9 9 9	9
		-			5											(Response of a state in w hich the analog output HI indicated value is "9999") A O L L O 0 CR LF 6 6	6
		-			2											(Response of a state in w hich the analog output LO indicated value is "0")	
		4	- 1		2000			ĺ								(Response of a state in which the temperature indication unit is °C)	
		-			2											D E P OF F CRLF 7 (Response of a state in which there is no decimal point)	7
		- {			i i	1											

Function		2				6 7	8	9	10 1	11 12	13	14	15 Ch	nar. Length	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Char_Length
Comparator data parameter response *Case of the comparison output type is high-and low-limit setting	A	L	3	CR	LF									3	P - 1 CR LF 3 (The pattern used previously is responded.) C O M T O / U CR LF 8 (Response of a state in which the comparison output type is of high- and low-limit setting)
															H I - S
															H - H 0 CR LF 10 (Response of a state in which the HI hysteresis is "0") L O - H
															(Response of a state in which HI logic is normally open) 7 G O - L N O CR LF
*Case of the comparison output type is	Ā	L	3	CR	ĹF									3	Response of a state in which LO logic is normally open
the tolerance judgment															(The pattern used previously is responded.) C O M T E R CR LF
															(Response of a state in which the nominal value is "5000") 11 E R R 1
															(Response of a state in which the tolerance-1 hysteresis is "0") 7 (Response of a state in which HI logic is normally open) 7 (Response of a state in which HI logic is normally open) 7 (Response of a state in which GO logic is normally open) 7
Calibration data reasons			4	CB	ıE									2	Color Colo
Calibration data response	A	L	4	CR	LF									3	P - 1 CR LF
															(Response of a state in which the zero input value is "0.000") 6 Z E R O 0 0 CR LF 0 6 0 CR LF 0 6 (Response of a state in which the zero indicated value is "0") 10 S P I N 2 0 0 0 0 CR LF 1 10 10
															(Response of a state in which the span input value is "2.000") 9 S P A N 9 9 9 9 CR LF 9 9 9 9 9 9 9 9 9 9 9
Linearize data response	A	L	5	CR	LF									3	0 1
															0 2 = 1 0 0 CR LF
															(Response of a state in which the linearize data N-16 input value is "9000")
															output value is "9200") N O ? CR LF 5 (Response of a state in which the linearize function is OFF)
Common response															Y E S
															E R R O R A CR LF 7 (Response to data out of the setting range or data not meeting the setting conditions) (Response made if there is a communication parameter error) * There are ERROR B to ERROR F as an equivalent response command.
Response made if internal memory data is abnormal															* If there is a response of the ERROR X command, perform the same steps again. If this does not solve the problem, turn the meter supply OFF and then ON again. D A T A L O S T C O N D CR LF (Response made if condition data is abnormal)
*Generally, a response is made only once.															* Set condition data again. D A T A L O S T C O M CR LF 13 (Response made if comparator data is abnormal) * Set comparator data again.
															D A T A L O S T M E T CR LF 13 (Response made if scaling data is abnormal) * Set scaling data again.

Function Scaling data setting	M E T CR LF	Char. Lengtl	h 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Cha	ar. Length
	* Indication becomes "MET" at the instant the MET command has been received.		(The pattern used previously is responded.)	
	2 CR LF	1	P - 2 CR LF	3
	(Sets data-setting pattern to "2.")	2	R A N G 2 A CR LF	7
	1 V CR LF (Sets the measurement range to 1 V)	2	R A N G 1 V CR LF	7
	M CR LF	1	F S C 9 9 9 9 CR LF	8
	8 0 0 0 CR LF	4	F S C 8 0 0 0 CR LF	8
	(Sets the full-scale indicated value to "8000.") M CR LF	1	O F S 0 OR LF	5
	2 0 CR LF (Sets the offset indicated value to "20.")	2	O F S 2 0 CR LF	6
	E CR LF	1	Y E S OR LF	5
	* Setting necessary data and then sending the E command causes data acquired up to that point to be		N O ? OR LF	5
	return to measurement operation.		(Response made if a value out of the setting range is input)	
Comparator data setting *Case of the companson output type	C O M CR LF * The main unit's indication becomes "COM" at the	3	P - 1 CR LF (The pattern used previously is responded.)	3
is high-and low-limit setting.	instant the COM command has been received.			
Sets data-setting pattern to "2" and HI logic to "8000",set LO logic to "-5000",	2 CR LF (Sets data-setting pattern to "2.")	1	P - 2 CR LF	3
and sets HI &LO logic to normally closed.	M CR LF	1	C O M T O / U CR LF	8
dosed.	M CR LF	1	H I - S 1 0 0 0 CR LF	9
	8 0 0 0 CR LF	4	H I - S 8 0 0 0 0 R LF	9
	(Sets HI logic to "8000.") M CR LF	1	L O - S 5 0 0 CR LF	8
	- 5 0 0 0 CR LF	5	L O - S - 5 0 0 0 0 R LF	10
	(Sets LO logic to "-5000.") M CR LF	1	H I - H 0 CR LF	6
	M CR LF	1	L O - H 0 CR LF	6
	M CR LF	1	H I - L N O OR LF	7
	N C OR LF	2	H I - L N C OR LF	7
	(Sets HI logic to normally closed.) M CR LF	1	G O - L N O OR LF	7
	M CR LF	1	L O - L N O CR LF	7
	N C OR LF	2	L O - L N C OR LF	7
	(Sets LO logic to normally closed.)	1	Y E S CR LF	5
	* A return to measurement operation using the E command (If the N command is sent, a return to		ERROR OCRLF	7
	side judgment value is made.)		(Response made if a value not meeting the setting conditions is input) N O ? OR LF	5
*Case of the compason output type	C O M CR LF	3	(Response of a state in which the relevant input unit is not installed) P - 1 CR LF	3
is sets the nominal value to "8000", sets the tolerance 1 to "20.00".	* The main unit's indication becomes "COM" at the	1	(The pattern used previously is responded.) COMTON	8
	E R R CR LF	6	C O M T E R R CR LF	8
	(Sets the comparator output type to tolerance judgment.)	1		10
	8 0 0 0 CR LF (Sets the nominal value to "8000.")	4	N V A L 8 0 0 0 0 CR LF	10
	M CR LF	1	E R R 1 5 . 0 0 CR LF	11
	2 0 0 0 CR LF (Sets tolerance 1 to "20.00.")	5		11
	M CR LF	1		10
	E CR LF Areturn to measurement operation using the E	1	Y E S CR LF	5
	command (If the N command is sent, a return to		ERRORO CRLF	7
	side judgment value is made.)		(Response made if a value not meeting the setting conditions is input) NO ? CR LF	5
			(Response of a state in which the relevant input unit is not installed)	J

^{*} The same setting methods as those above are also used for setting of other data (such as linearize data).

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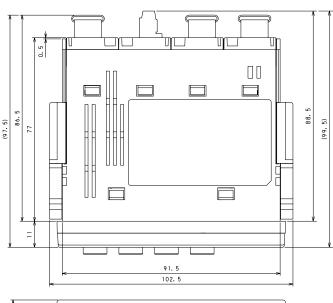
5 **Specifications and Dimensions**

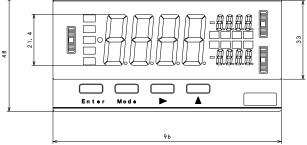
●RS-232C Baud rate 38400, 19200, 9600, 4800, or 2400 bps Baud rate 38400, 19200, 9600, 4800, or 2400 bps Start bit Start bit Data length 7 bits or 8 bits Data length 7 bits or 8 bits Parity even, odd, or none Parity even, odd, or none Stop bit Character code Stop bit Character code 1 bit or 2 bits 1 bit or 2 bits ASCII code ASCII code Delimiter CR or CR+LF Delimiter CR or CR+LF Error detection BCC checksum Number of instruments to be connected

●Analog Output (PWM)

Output	Load Resistance	Accuracy	Response Rate	Ripple		
0 to 1V						
0 to 10V	10kΩ or more	±(0.5% of FS)	About 0.5 sec.	50mVp-p		
1 to 5V		±(0.5% 01 F3)	About 0.5 sec.			
4 to 20mA	550Ω or less			25mVp-p		

PWM conversion system Resolution about 14 bits or equivalent Scaling digital scheduling





6 **Warranty and After-sales Services**

6.1 Warranty

The warranty period of this product is one year from the date of delivery. If a problem occurs during this warranty period and its cause is determined to be attributable to us, and will repair the product without charge.

6.2 After-sales Services

This product has been manufactured, tested, and inspected under strict quality control before shipment from the factory. If the product breaks down, contact your sales representative or our local office (or send it). In this case, write down the problem in detail and report it to your service representative (or enclose it with the product).

watanabe

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