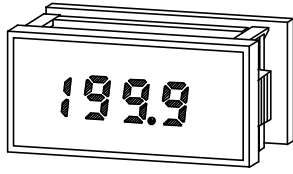


DIGITAL PANEL METER MODEL AL-203 Series INSTRUCTION MANUAL



Caution

- (1) The application of voltage or current exceeding its maximum allowable value to the input terminals may result in instrument damage.
- (2) The supply of power out of its allowable range may cause fire, electric shock or instrument failure.
- (3) The content of this manual may subject to change without prior notice for product improvement.
- (4) This manual is carefully prepared. However, if any question arises, or any mistake, omission or suggestion is found in the content of this manual, contact your nearest our sales agent.

1. Outline

Digital Panel Meter AL-203 is a 3 1/2 digits-LCD process monitoring meter. As it is operated by current signals for instrumentation (4-20mA), no power supply is required.

With the maximum display of 1999 through use of LCD (letter height of 7.4mm), it is provided with a scaling function which can display input signals in a form of physical or chemical volume. The display units are available in %, °C and °F.

As the external control, HOLD function is provided. The private front panel assures easy installation.

2. Specifications

Model	Measuring Range	Display	Maximum Allowable Input voltage
AL-203	4 to 20mA	Offset ± 200 Full-scale 100 to 1999	$\pm 50\text{mA}$

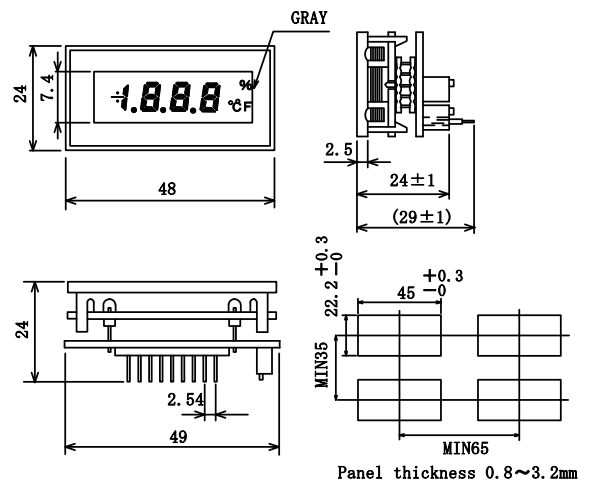
Accuracy: $\pm (0.2\% \text{ of FS } + 2\text{digit})$ (at $23^\circ\text{C} \pm 5^\circ\text{C}$ 35 to 85%RH)

3. General Specifications

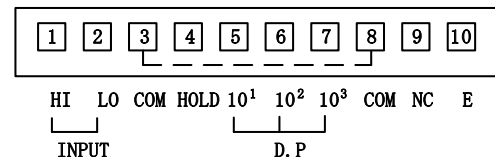
Measurement function	: Instrumentation input measurement (DC current)
Operation System	: Double integral system
Sampling speed	: 2.5 times/sec.
Noise eliminating ratio	: NMR 40dB (TYP)
Temperature Characteristic	: Offset display value $\pm 0.3\text{digit}/^\circ\text{C}$ (Max.) Full scale display value $\pm 0.3\text{digit}/^\circ\text{C}$ (Max.)
Overrange Warning	: "+1" displayed to an input signal more than max. displayed value.
Full-Scale Variable Span	: 100 to 1999 *Note) On shipment, a figure around 1000 is displayed.
Offset Variable Span	: ± 200 *Note) On shipment, a figure around 0 is displayed.
Span Range	: 2000 counts
Voltage Drop	: 2.4V (at 20mA (TYP.)) 2.1V (at 4mA (TYP.))
Display	: LCD (crystal liquid) display element, letter height 7.4mm

Polarity Display	: With negative operation results, "-1" is automatically displayed.
External control	: • Hold With 0V negative signals or contact signals, display is held. • Decimal Point With 0V negative signals or contact signals, free setting is available.
Unit Display	: %, °C, °F display (Internal solder jumper swithing)
Operating temperature/humidity	: 0 to 50°C / 35 to 85%RH (Nodew-Condense)
Power supply	: Operated by input current (4 to 20mA)
Withstand Voltage	: Between input terminal (L0) and earth terminal (E) DC500V
Dimensions	: 48mm (W) $\times$ 24mm (H) $\times$ 24mm (D)
Weight	: Approx. 20g
Accessories	: Instruction manual, connector (10p)

4. External Dimentions, Panel Cut Dimensions



5. Connection Diagram of Connector (rear view)

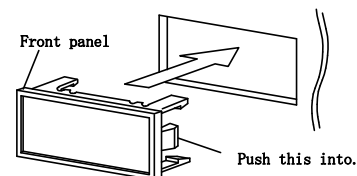


6. Handling

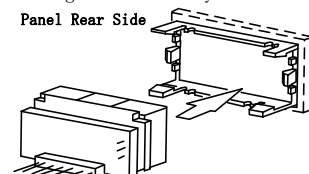
6-1 Preparation before Operation and General Precautions

- 1) Use this meter at ambient temperature from 0 to 50°C and with humidity below 85%. Pay attention to due condensation state.
- 2) Use the meter in a place free of dust, any chemicals detrimental to electric appliances, and gases.
- 3) Do not expose to vibration or shock.

6-2 Mounting of Front panel on Panel Surface



6-2 Mounting to Main Body



Push the main body into on the rear side until click sound is heard.

6-4 Connecting Connections

Attach the attached connectors to the rear side of the panel meter.

Although numbers are not provided on the connectors, they are counted from left to right with the right-most connector counted as No. 10.

1) Input Connection

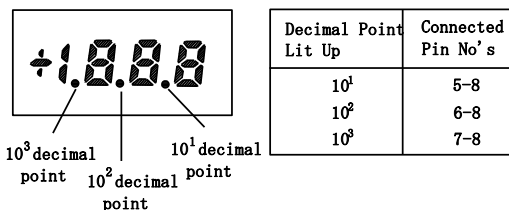
Connect input signal (DC current) between No. 1 and 2 pins.

Use two-core shield cable for connection.

Connect shielding wire to input L0 side at the signal source at one point. With much induced noise, provide earthing terminal (E).

2) Setting Decimal point

A decimal point can be freely set with the following terminals of connector being connected.



3) Hold/ External Start

With Hold terminal (No. 4) and Common terminal (No. 3) being shorted (level "0"), the displayed details immediately following is retained.

With it opened (level "1") at necessary timing, measurement is started [+5V positive pulse or contact signal (open) which is above 0V to 1ms.] Min. time needed for one measurement is about 400ms.

Level "1" : 3.5 to 5V, Level "0" : 0 to 1.5V,

Input current: -0.5mA

Since this device has not been isolated/insulated in direct current between input terminal (LO) and COM terminal, perform, whenever available, controlling using mechanical contact signal such as a relay switch. Controlling with T.T.L or a transistor is also available. When input is floating, however, provide externally the circuit of Fig. 3 for insulation.

Input current -30 μ A ON voltage +0.5V or less

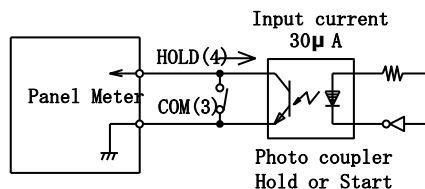


Fig. 3

7. Maintenance and Inspection

7-1 Precautions for Maintenance

Store this at temperature between -10°C and +60°C and humidity below 60%.

7-2 Calibration Procedure

◎Periodic calibration is recommended for the initial exactitude to be maintained over a long period of time.

The standard device with exactitude above 0.01% is needed for calibration of this meter.

◎Take the following calibration procedures.

(1) Carry out adjustment after connecting power supply and performing running for more than 10 minutes.

(2) Zero adjustment

Connect a voltmeter and adjust VR1 so that voltmeter indication shows 0V (0.1mV or less) when 4mA is input between input pins HI and LO.

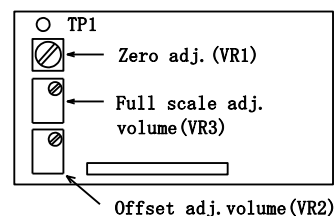
(3) Offset Display Adjustment

Adjust, using the offset adjustment volume (VR2), to a proper offset display value when 4mA is input between input pins HI and LO.

(4) Full-Scale Display Adjustment

Adjust, with the full scale adjustment volume (VR3), to a proper full scale display value when 20mA is input between input pins HI and LO.

*NOTE) Do not reverse the order of (2) and (3).



8. WARRANTY

This meter is warranted for a period of one year from date of delivery. Any defect which occurs in this period and is undoubtedly caused by Watanabe Electric Industry faults will be remedied free of charge.

This warranty does not apply to the meter showing abuse or damage which has been altered or repaired by others except as authorized by Watanabe Electric Industry.

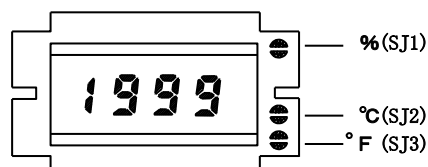
9. AFTER-SALE SERVICE

This meter is delivered after being manufactured, tested inspected under strict quality control.

However, if any problem does occur, contact your nearest Watanabe Electric Industry sales agent or Watanabe Electric Industry directly giving as much information on problem as possible.

4) Unit Display

A unit is displayed when the corresponding solder jumper is shorted.



watanabe

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