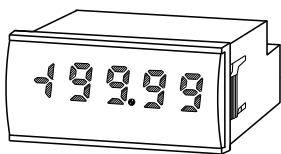


Digital Panel Meter

Model A2200 Series Operation Manual



CAUTIONS

- (1) Using the product in ways other than specified may result in a failure of the protection provided for the product.
- (2) Please note that the information contained in this manual is subject to change without notice due to product improvements.
- (3) Every effort has been made to ensure accuracy in the presentation of this manual. Should any errors or omissions come to your attention, or should you have any questions, however, please contact your sales representative or our sales office directly.
- (4) After reading this manual, keep it nearby so that you can refer to it as needed.
- (5) In order to prevent damage by static electricity, before changing the decimal point position, touch a metal existing around you with the hand to discharge static electricity charged on your body.

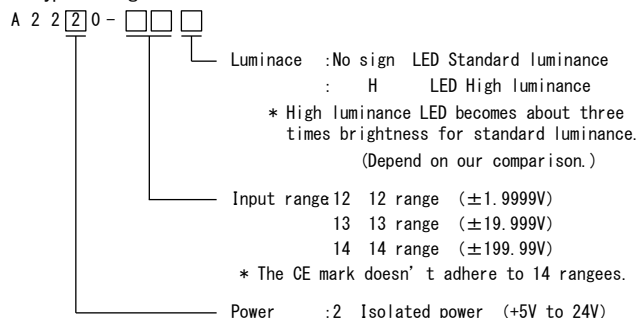
1 Check before Use

Thank you for purchasing our A2200 series. When you receive the product, make sure that you have all the parts and that none have been damaged during transportation. If any part is damaged or missing, contact your sales representative or our sales office directly.

2 Overview

The A2200 series digital power meter is a compact 4 1/2-digit indicating meter that meets DIN standards for external dimensions. Power is +5 V to 24 V DC type. The maximum indication is a 19999.

2.1 Type Configuration



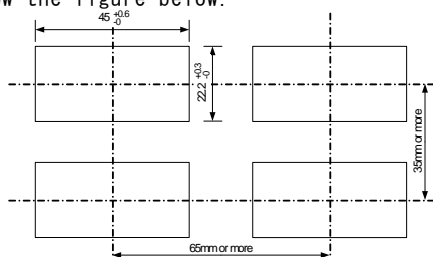
2.2 Checking the Accessories

The A2200 series comes with an Operation Manual (1 copy). Should you have any questions about the manual, please contact your sales representative or our sales office directly.

2.3 Mounting Method

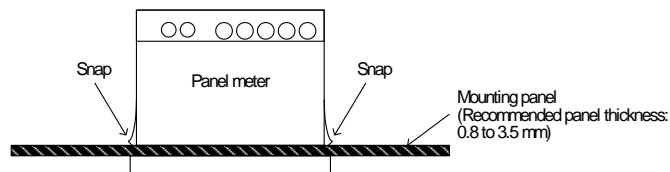
2.3.1 Panel Cutout Dimensions

For the panel cutout when mounting the A2200 series panel meter, follow the figure below.



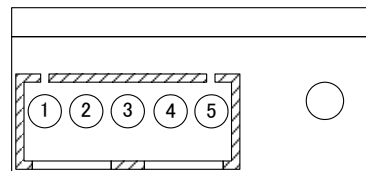
2.3.2 Panel Mounting Method

To mount the A2200 series panel meter onto a panel, press the snaps on the sides of the case and fit the meter onto the panel from the front (see figure below).



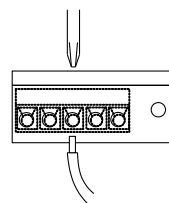
2.4 Description of Terminals

2.4.1 Terminal Connection Diagram



Terminal No.	Name	Description
1	HI	+ side of input signal
2	LO	- side of input signal
3	HOLD	External control terminal
4	OV	- side of power terminal
5	+V	+ side of power terminal

2.4.2 Connection Method

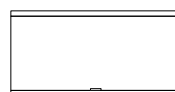


The connection terminal of the A2200 series panel meter's terminals is located inside the case.

When connecting a wire, insert it into the case from the rear of the meter and fasten it with a screw using a Phillips screwdriver from the top of the rear of the case.

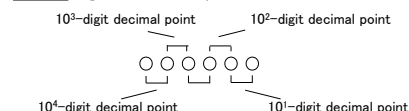
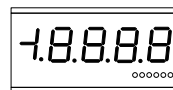
Appropriate leads: 16 to 22 AWG
Recommended covering stripping size: 6 to 7 mm

3 Decimal-point Setting Method



Insert a flat-blade screwdriver or the like into the small hole in the lower part of the front panel acrylic section and pry the front panel out. When putting the front panel back into the instrument, fit in the lugs in the upper part of the acrylic section first.

The stud pin at the lower right is a decimal-point switch. Short the short-circuit sockets concerned to light the decimal point.



* CAUTION

Be sure to turn off the panelmeter before changing the decimal point position.

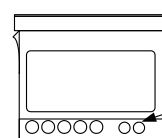
4 Calibration Method

To calibrate this panel meter, a voltage/current generator with an accuracy of $\pm 0.01\%$ or higher is required. Calibrate it using the following procedure under ambient conditions of $23^\circ\text{C} \pm 5^\circ\text{C}$ and 35 to 85% R.H.

(1) Connect power to the meter and run it for more than 20 minutes.

(2) Conduct a full-scale adjustment

Apply a voltage or current equivalent to a full scale of 19900 to the input section and turn the full-scale volume knob (figure below) so that the reading shows "19900." Then apply voltage or current of the negative polarity to check that the reading shows " $-19900 \pm (0.1\% \text{ of FS})$."



Full-scale volume knob

5 Specifications

5.1 Input Specifications

DC voltage measurement

Range	Measurement Range	Maximum Resolution	Input Impedance	Maximum Allowable Input
12	$\pm 1.9999\text{V}$	$100\ \mu\text{V}$	$100\ \text{M}\Omega$ or more	$\pm 50\text{V}$
13	$\pm 19.999\text{V}$	1mV	Approx. $1\ \text{M}\Omega$	$\pm 120\text{V}$
14	$\pm 199.99\text{V}$	10mV	Approx. $1\ \text{M}\Omega$	$\pm 250\text{V}$

Accuracy: $\pm(0.1\%$ of FS) (at $23^\circ\text{C}\pm 5^\circ\text{C}$, 35 to 85% R.H)

5.2 Power Specifications

● Isolated type

Supply voltage: 4.75 to 26.4 V DC

Current consumption: 5V: Approx. 80 mA

12V: Approx. 50 mA

24V: Approx. 30 mA

5.3 General Specifications

Measuring function : DC voltage measurement

Operation method : Double integration method

Input circuit : Single-ended type

Sampling rate : Approx. 2.5 times/second

Maximum display : 19999

Overrange warning : Flashing of "0000" or "-0000" if an input signal exceeding the measurement range is input.

Indication : Red 7-segment LED indication Character height Approx. 10 mm

Polarity indication : If the calculation result is a negative value, the "-" symbol is automatically indicated.

Decimal point : Settable at any position using front-panel short-circuit SW or sockets.

External control : Hold (shorted with the input L0 terminal)

Operating temperature: 0 to 50°C , 35 to 85% R.H (no condensation) and humidity ranges

Storage temperature : -10 to $+70^\circ\text{C}$, 60% R.H or less (no condensation) and humidity ranges

External dimensions : 48 mm (W) \times 24 mm (H) \times 40.0 mm (D)

Weight : Approx. 40 g

Withstand voltage : Power to input terminals 500VDC for 1minute
Case to each terminal 1500VAC for 1minute

Insulation resistance: Power to input terminals 500VDC at $1\ \text{M}\Omega$ or more

Compliance standard : EN61326-1

(*14 range is outside application)

/EMI : Class A

/EMS : Controlled EM environments

EN IEC 63000

Rated altitude : Up to 2000m

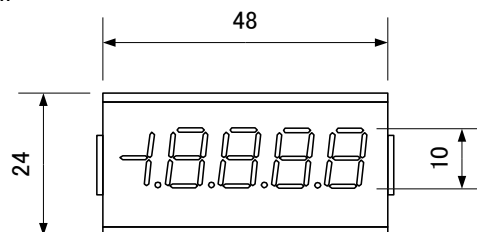
Degree of contamination : 2

Protective structure : IP40 or equivalent

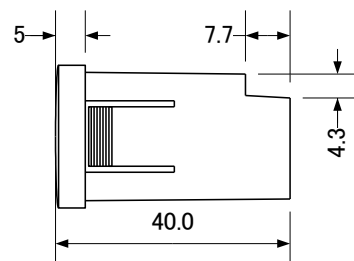
*When using this product in combination with other products, customers themselves need to ensure compliance with applicable standards, laws, and regulations.

6 External Dimensions

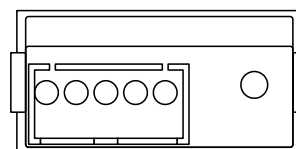
Front View



Side View



Rear View



7 Warranty and After-sales Service

7.1 Warranty

The warranty period of the product is one year from the date of delivery. If a failure occurs during this period that is clearly judged to be caused by a defect ascribable to Watanabe Electric Industry, we will repair the failure or replace any defective parts free of charge.

7.2 After-sales Service

The product has been manufactured, tested, and inspected with strict quality control management before shipment. Should the product break down, contact (send it to) your sales representative or our sales office directly. (In this case, write a detailed description of the problem and enclose it with the product.)

Before use, ensure the safety of equipment and devices. When using this product under conditions of in an environment not mentioned in this document, or when considering using this product for applications that may have great impact on human life properties, therefore, requiring special safety, for example, nuclear energy control, railway, aviation, vehicles, fuel systems, medical equipment, entertainment equipment, and safety equipment, ensure that the product is used well below its rated parameters and performance limit, and give consideration to fail-safe and other safety measures.

watanabe

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