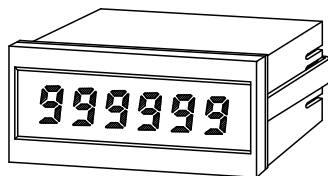


INSTRUCTION MANUAL

Panel Counter

MODEL AC-116B Series



⚠ 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.
- (5) Keep this manual available easily anytime.

1. OUTLINE

The AC-116B Series panel counter is a 6-digit total counter using large easy-to-read LEDs (14.2mm height) and whose dimensions conform to DIN Standard. Both 90 to 132V AC and 180V to 264V AC can be used, and even if power failure occurs, the counted value can be held. It is also provided with a latch function so that the current value can be displayed by applying an input to the latch input terminals.

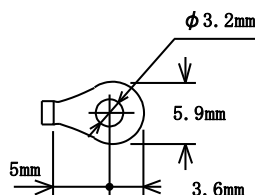
This counter has built-in sensor power so that it can connect to a proximity switch or photo-electric switch. Counting speeds of 10cps and 5kcps can be selected and it can also be connected to a relay or switch input, although this may cause chattering.

The counter also has a wide input voltage range of 4.5 to 30V DC to cope with the TTL level to 24V system. The input block employs screw terminals with can be removed from the mainframe to facilitate firm wiring.

2. SPECIFICATIONS

Count Input	Contact: Counted when contact is open (Use built-in external power supply) Voltage: "L" Counted at the rise to "H" "L" = 0 to 2V DC "H" = 4.5 to 30V DC
Maximum Counting Speed	10cps/5kcps (By input terminal selection)
Minimum Pulse Width	10cps: 50ms 5kcps: 0.1ms
Input Resistance	10cps: 6k Ω 5kcps: 12k Ω
Maximum Counting Value	999999
Display	LED (Light Emitting Diode) numeric element Height: 14.2mm red
Zero display	Zero suppression A decimal point is not operated with
Input/Output Connector	Screwed terminal board of TDT (Touch down terminal)
Stored Data Hold	Selected depending on types. Measure data is stored for 10 years by using EEPROM. (No. of write times: Assurance of 100,000 times)
Decimal Point	Can be set at desired position

Applicable crimp type
Terminal dimension

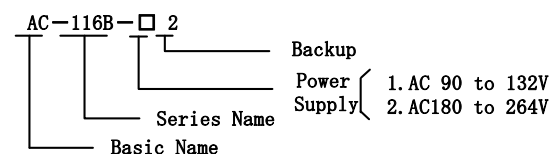


External Control

- Reset (When voltage is applied to reset terminals)
Contact: Reset when contact is open
(Use built-in external power supply)
Voltage: "L" Reset at rise to "H"
"L" = 0 to 2V DC
"H" = 4.5 to 30V DC
Minimum pulse width, more than 0.1ms
Input resistance 6k Ω
Response time ON/OFF: less than 0.1ms
- Latch (Latched when voltage is applied to latch terminals)
If latch input is applied during counting, a counted value during input rise is displayed without any modifications. However, since counting continues, the present counted value is displayed when latch input is released.
Contact: Latches when contact is open
(Use built-in external power supply)
Voltage: "L" Latched at the rise to "H"
"L" = 0 to 2V DC
"H" = 4.5 to 30V DC
Minimum pulse width, more than 20ms.
Input resistance 6k Ω

Built-in External	Output Power	External power supply for sensor DC +12V, 50mA (at 100/200V) Ripple: less than 5%
Operating Temperature	Power Supply	0 to 50°C, 35 to 85% RH AC90 to 132V AC180 to 264V Approx. 3.5VA (100/200V, external power of 50mA)
Dimensions	Weight	96mm (W) $\times$ 48mm (H) $\times$ 95mm (D) DIN size Approx. 350g
Dielectric Strength	Insulated Resistance	Between power supply terminal and earth (E) or Ground AC1500V/min. Between power supply terminal and earth (E) or Ground DC500V 100M Ω or more.

Model No. configuration



3. HANDLING

3-1 Preparation Prior to Operation and General Precautions

- 1) Use this meter only where ambient temperature is 0 to 50°C and humidity is less than 85%, and pay special attention to dew condensation.
- 2) Use the meter only in the absence of dust, chemicals and gases harmful to electronic parts.
- 3) Do not subject the meter to shock or vibration.
- 4) Noise
 - a) Power circuit
It is actually impossible to assemble a perfect noise prevention circuit in such a small meter. Therefore, use a surge absorption circuit such as an external line filter or baristor to prevent excess surge when the meter is used when magnetic switch is actuated in same line or at locations where frequent lightning occurs.
 - b) Shielding
If noise becomes a problem, connect terminal E to the earth or the device grounding terminal. Also, if space indication causes a problem, cover the molded meter case with a metal plate.

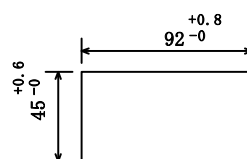
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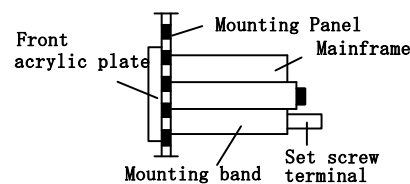
3-2 Mounting

1) Panel mounting

Make a panel cutout as shown in Fig. 1, then insert the meter into the panel from the front as shown in Fig. 2. Then, fasten the meter from rear side of the panel with an associated band.



[Fig. 1]



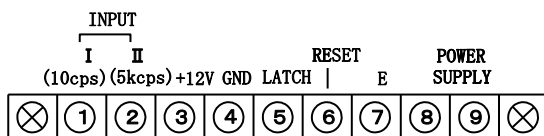
[Fig. 2] Side View

2) Removal of internal printed circuit-board

Insert a screwdriver into two holes in the bottom of the meter, then twist it to remove the front bezel. Next, pull the printed board out from the rear while expanding the front case.

3-3 Terminal Connection

The terminal connections are shown in Fig. 3.



[Fig. 3]

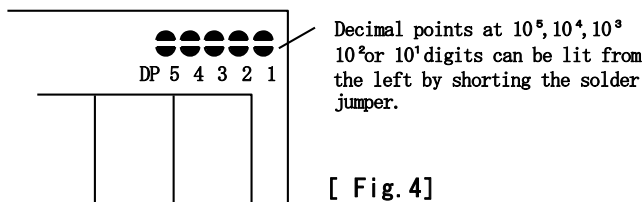
1) Power connection

Connect the power to power terminals. Use a supply voltage of model No. see.

(Since the meter is not provided with a power switch, it is ready to use as soon as power is connected.)

2) Decimal point setting

A decimal point can be lit at any location in which case, the acrylic plate on the front must first be removed in accordance with 3-2. 2), removal of internal printed board. The decimal point can also be lit at any location by shorting the soldered jumper with solder at the least significant digit.



[Fig. 4]

3) Input connection

Connect the input to input terminals I when the counter is used at low speed, and to input terminals II when the counter is used at high speed.

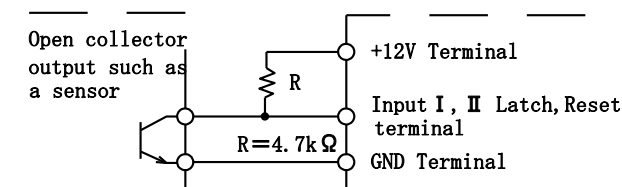
Because it is of the voltage input type, when using a wet contact input, connect the contact between external output power and input terminals.

For dry contact input (open-collector input), connect the load resistor as shown in Fig. 6, using a 2-core shielded cable as a connection cable. Keep the cable as short as possible and do not bundle it with power cables.

4) Latching input and reset input

The value counted during latching input rise can be displayed by applying the input during measurement. Counting continues internally so that releasing the latching input displays the current counted value. Because the application of reset input during latching input clears the internal counted value to zero, be careful when using the counter.

For latching input, connect the contact between the external output power and latching (reset) input terminals. Control by contact input is available only for low-speed counting input; for high-speed counting input, use a dry contact input for which counting input is also available for low-speed input (See Fig. 5)



However, when the transistor changes from ON to OFF counted (latching, resetting).

[Fig. 5]

5) External output power

If each input signal is fed from a sensor, +12V power (50mA max.) can be supplied to the sensor from these terminals. (When using two or more sensors, make sure that the total consuming current does not exceed 50mA).

6) E-terminal

The E terminal is connected to the GND terminal via a 2200pF capacitor (withstanding voltage, 500V).

When noise causes a problem, connect the E terminal to the earth or case, bearing in mind that large grounding resistance may induce noise.

Precautions

- 1) Select the input terminals in accordance with the input signal source. If input is applied by contact at input terminal II (5Kcps), counting errors may be caused by contact chattering, and there is no counting even when high-speed counting input is applied to input terminals I.
- 2) Gradual application of power supply via voltage regulator (Slidac), etc. may not actuate the power resetting or change the contents held for a counter with memory hold.
- 3) When using a counter with memory hold for the first time, counting errors may occur due to an unstable logic circuit. Therefore, always reset the counter once after power-ON.
- 4) For contact input, the current flowing through the contact is about 2mA, so use a small current gold plated contact.
- 5) Do not apply external voltage to the external output power it may damage the internal circuit.

4. MAINTENANCE AND INSPECTION

- 1) Store the counter where ambient temperature is between -10°C and +70°C, and humidity is less than 60%.
- 2) When using this meter at a location with dust. Occasionally remove the counter mainframe from the case to remove dust. (Temperature increase in the internal parts may shorten meter life.) Since the bezel is made of plastic, do not wipe stains off with volatile liquids such as thinners.

5. 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.

6. 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.

watanabe

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