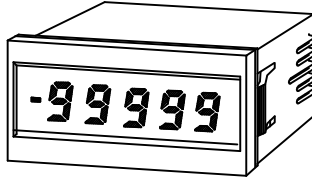


# BCD INPUT PANEL INDICATOR MODEL AI-105A SERIES INSTRUCTION MANUAL



## 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.
- (5) After read this manual, please keep it as anytime can see.

Thank you for purchasing the Model AI-105A series BCD input indicator. Prior to operation, please check that the indicator has not been damaged during transportation. Make this manual available to the operator of this indicator.

## 1. Prior to operation

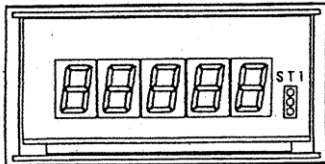
For the AI-105A, both positive and negative logics are available. Therefore, set the indicator to the desired logic by referring to the following figure.

### [Setting method]

Negative logic : ST1 shorting socket → To the N side

Positive logic : ST1 Shorting socket → To the P side

(Prior to factory shipment, the indicator is usually set to the positive logic.)

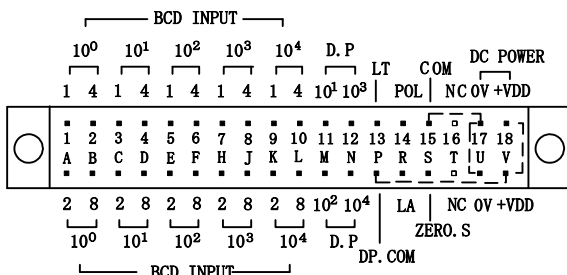


**N: Negative logic**  
**P: Positive logic**

## 1-1 Terminal connection

Connect the input connector attached to the rear side of the indicator. As the connector is provided with a misconnection prevention key, do not turn upside down. After connecting the connector, fix its both sides with the screws attached.

## ■ Connector connection diagram



## Precautions

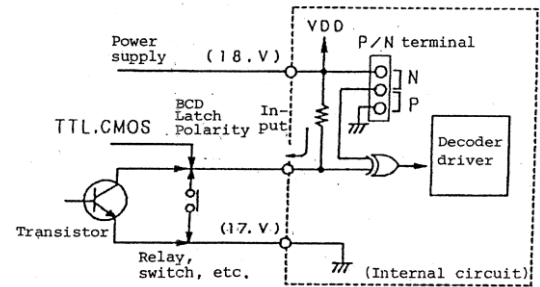
NCs are vacant terminals, but do not use them as junction terminals.

## ● Input connection (Input signal)

Connect the input signal (BCD parallel signal) to the respective digits shown in the above figure.

Shorten the connection cable as much as possible. If induction noise may affect the indicator, use twisted-pair wires.

[Input circuit]



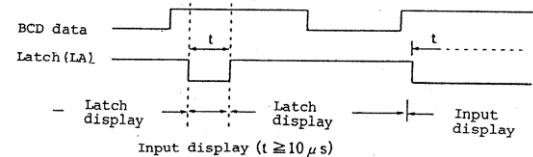
Each input terminal (BCD 10<sup>0</sup> to 10<sup>4</sup> digit, latch and polarity) is internally pulled-up.

## ● LA terminal(R)

Input signal to latch and then to display data.

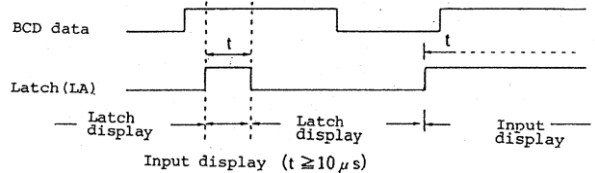
### ◎Positive logic:

BCD input data is latched and then is displayed with the LA terminal(R) opened, or set to logical level "1".



### ◎Negative logic:

BCD input data is latched and then is displayed with the LA terminal(R) shorted with the 0V (17, U) or COM (15) terminal, or set to logical level "0".



## ● (Polarity) POL terminal(14)

Input terminal to display the "-" (minus) polarity.

### ◎Positive logic:

LED for displaying a minus sign lights with the POL terminal (14) opened or set to logical level "1".

### ◎Negative logic:

LED for displaying a minus sign lights with the POL terminal (14) shorted with the 0V (17, U) or COM (15) terminal, or set to logical level "0".

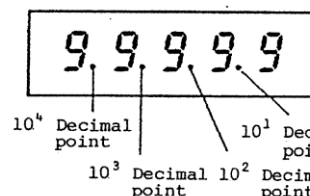
## ● LT terminal(13)

All segments in the 6-segment LED display unit light with the LT terminal (13) connected to the COM terminal (15).

## ● Decimal point setting

The decimal point can be set to any position by connecting the following terminals on the connector. As these terminals are not connected prior to indicator factory shipment, set the decimal point to your desired position at the site.

In addition, as this indicator is provided with the zero-suppression function, "0" in any digit exceeding the digit with the decimal point is not displayed.



Decimal point to be lit	Connector terminal Nos. to be connected
10 <sup>1</sup>	11-P
10 <sup>2</sup>	M -P
10 <sup>3</sup>	12-P
10 <sup>4</sup>	N -P

For integer display zero-suppression, only "0" in the least significant digit is displayed with the ZERO'S terminal (5) connected to the DP.COM terminal (P), but "0s" in the 2<sup>nd</sup> to 5<sup>th</sup> digits are not displayed.

### ●COM Terminal (15)

COM terminal for segment check, and connected to the "0V" terminal (17,U).

### ●DP, COM terminal (P)

COM terminal for lighting the decimal point,

### ●Power terminals(18, V) (17, U)

Connect the plus (+) side to the (18 or V) terminal, and the 0V side to the (17 or U) terminal of the connector. Connect a power supply voltage of 5V DC $\pm$ 10% to Models AI-105-11 and AI-105-12, or a power supply voltage of 12V DC $\pm$ 10% to Model AI-105-22. Always supply the appropriate power supply voltage to the indicator purchased.

As this indicator is not provided with a power supply switch, the indicator is ready to operate immediately when the main power is turned on.

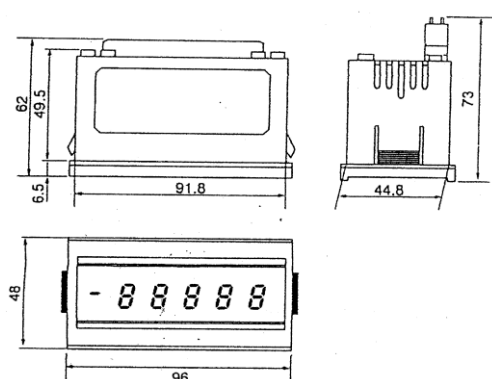
Notes: If only the power is applied to the power terminals, the indicator operates as follows.

When positive logic is selected: Only "polarity" is displayed.

When negative logic is selected: "00000" is displayed.

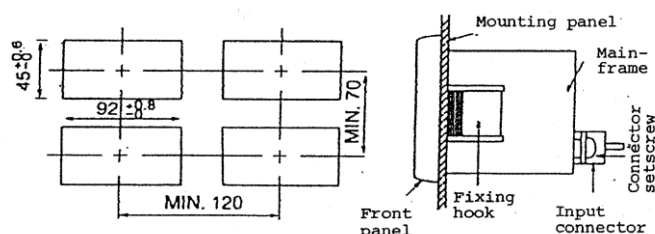
## 2. Dimensions and mounting

### ■Dimensions



### ■Mounting

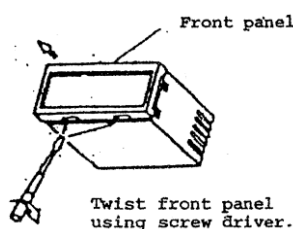
Make the panel cutout as shown in the panel cutout drawing, then insert the indicator case into the panel from the panel front.



- Recommended panel thickness: 0.8 to 5mm.
- Do not mount the indicator where: it is exposed to the direct sunshine, the ambient temperature and humidity are not between 0 and 50°C, and 35 and 85%, respectively, dew condensation occurs due to rapid temperature changes, there are chemicals or corrosive gases harmful to electric parts, there is dust, or much impact or shock is applied to the indicator.
- If the indicator is mounted on equipment, radiate heat so that the temperature in the indicator does not exceed 50°C.

### ■Removing the internal board from the mainframe

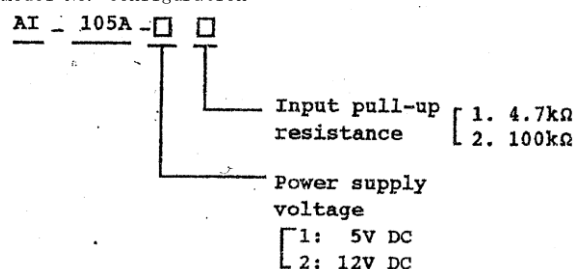
Lightly twist the case with a screwdriver inserted in each of the two holes at the lower side of the mainframe to remove the indicator front panel. Next, push the printed circuit board from the rear while slightly expanding the case front.



## 3. Specifications

Model No.	Input level	Input pull-up resistance	Power supply
AI-105A-11	3.5V $\leq$ H $\leq$ 5.0V	4.7k $\Omega$	DC5V
AI-105A-12	0.0V $\leq$ L $\leq$ 1.5V	100k $\Omega$	DC5V
AI-105A-22	10.0V $\leq$ H $\leq$ 12.0V 0.0V $\leq$ L $\leq$ 2.0V	100k $\Omega$	DC12V

### ■Model No. configuration



### ■General specifications

Maximum display	: -99999
Display	: LED(Light Emitting Diode)Numeric elements Height 14.2mm (red)
Polarity display	: (-) display in the most significant digit Positive logic: POL terminal (14) opened or set to level "1" Negative logic: POL terminal (14) shorted with COM terminal (15) or set to level "0"
Zero display	: Leading zero-suppression
Decimal-point position	: Can be set to any position.
Operating temperature	: 0 to 50°C, 35 to 85%RH(Non-condensing)
Power supply	: 5V DC $\pm$ 10% 33mA/digit (TYP) 12V DC $\pm$ 10% 33mA/digit (TYP)
Dimensions	: 96(W) $\times$ 48(H) $\times$ 73(D) mm
Weight	: Approx. 100g(Main frame)
Accessories	: Connector, connector setscrews, instruction manual

## 4. Warranty and After-Sales Service

### 1) Warranty

The warranty lasts for one year from the date of delivery. If this product fails during this period and the reason is considered to be clearly.

The manufacturer warrants to the original retail customer its indicator to be free of defects in material and workmanship for use under normal care and will repair or replace any

### 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

Homepage <http://www.watanabe-electric.co.jp/en/>