

THIN TYPE DISTRIBUTOR

MODEL TH-1L

INSTRUCTION MANUAL



Warning

This marking indicates that the erroneous operation of this distributor may result in death or serious injury.



Precautions

- (1) If voltage or current exceeding the input allowable voltage or current is applied to the input terminals, the distributor may be damaged.
- (2) Apply power within the applicable range of the distributor. Otherwise fire, electric shock or distributor damage may result.
- (3) The contents of this instruction manual are subject to change without prior notice.
- (4) This instruction manual is carefully prepared. However, if any mistake or omission is found, contact your nearest Watanabe Electric industry sales agent or Watanabe Electric Industry directly.
- (5) Make this manual available easily anytime.

■Outline

This is a receiver with a built-in power supply unit for driving a 2-wire system transmitter. It supplies power to the 2-wire system transmitter, receives a current of 4 to 20mA DC from the transmitter through a built-in precision resistor, and then converts the current to various voltages or currents through an isolator transformer, thereby achieving highly reliable and precise conversion.

As it uses a thin case, it can be mounted on DIN rails in one touch.

For its input and output connections, detachable connectors are used.

■Model No. Configuration

Each code and the standard specifications of this transducer are as follows. First check whether or not your desired specifications are correct by comparing them to the following specifications.

(Example) TH-1L-A0

TH-1L -□□

Output code 0 0 to 5V DC
 1 1 to 5V DC
 2 0 to 10V DC
 3 -10 to 10V DC
 A 4 to 20mA DC
 Y Special

Input code A 4 to 20mA DC

■Input Specification

Code No.	Input Signal	Input Resistance
A	4 to 20mA DC	50Ω

*Input maximum and allowance values : 28mA

■Output Specification

Code No.	Output Signal	Allowable Load Resistance
0	0 to 5V DC	More than 2kΩ
1	1 to 5V DC	
2	0 to 10V DC	More than 4kΩ
3	-10 to 10V DC	
A	4 to 20mA DC	Less than 550Ω
Y	Other than the above	

For Code No. Y Limit of specifications

Current output : Less than +20mA DC

Minimum span : 1mA DC

Voltage output : Less than ± 10 V DC

Minimum span : 1V DC

■General Specifications

Base Accuracy : ±0.25%F.S(At 25±2°C)

Temperature characteristic : ±0.02%F.S/°C

Response time : Less than 50msec (0→90%)

Insulation resistance : Between input and output/power supply;
 More than 100MΩ at 500V DC

Dielectric strength : Between input and output/power supply;
 For 1 min. at 1500V AC

Power supply voltage : 24V DC±10%

Consuming current : Less than 140mA (At 24V DC Voltage output)

Operating ambient temperature : -5 to +50°C

Operating ambient humidity : Less than 90 %RH (No-condensing)

Storage temperature : -10 to +70°C

Storage humidity: Less than 60%RH (No-condensing)

Case material : Black PC 94V-2

Weight : Approx. 80g

Front adjustments : ±5% for zero and span.

Storage humidity : Less than 60%RH (No-condensing)

Zero adjustment range : -5 to 5% of total resistance

(Can be adjusted from the front)

Span adjustable range : 70 to 105% of total resistance

(Can be adjusted from the front)

Applicable Standards: EN61326-1

EMI: Class A

EMS: Industrial locations

Only in the case of lines < 30m.

The above standards do not apply to the transducer with "Y" specifications.

EN IEC 63000

■Specifications of power supply for 2-wire transmitter

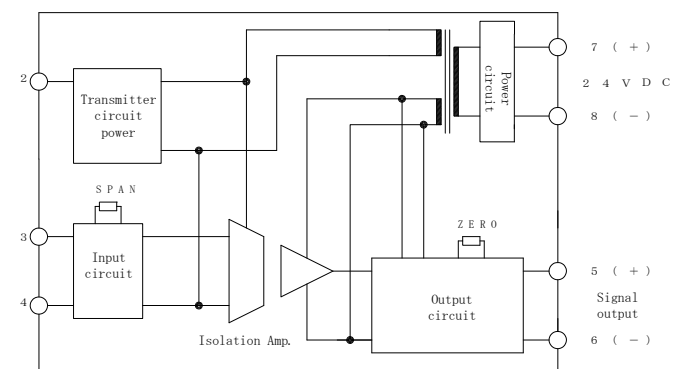
Output voltage range : 24V to 32V DC (At no load)

Current capacity : Less than 22mA DC

Transmitter circuit shorting current : Less than 30mA DC

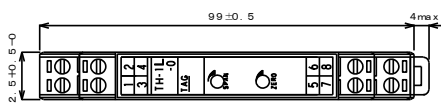
Short circuit duration : Indefinite

■Block diagram

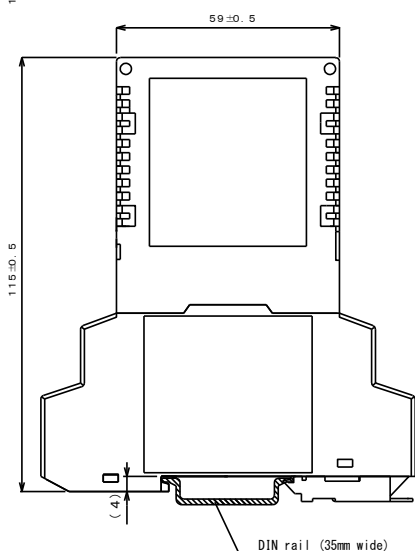


■Dimensions

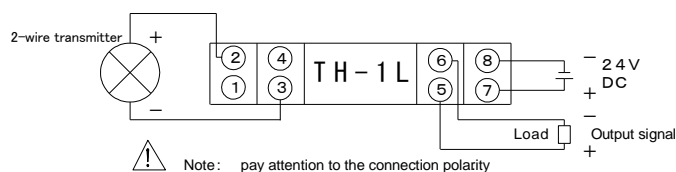
Front view



side view



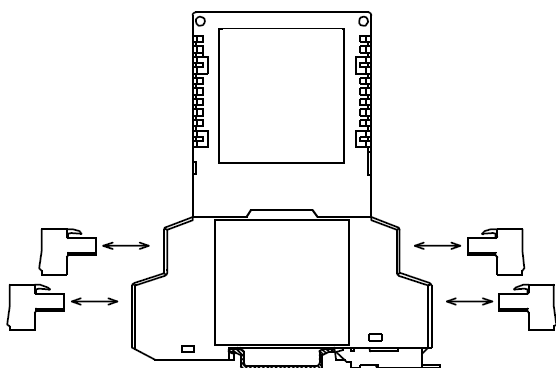
■Input/Output connection diagram



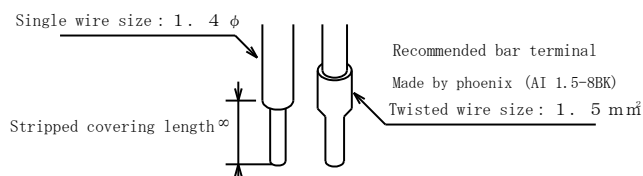
■How to disconnect detachable connector type terminal board

This converter uses detachable connector type terminal board.

Detach each connector in the direction as shown in the following Fig.



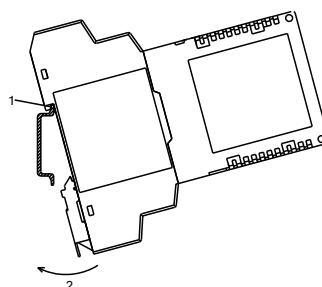
■Recommended treatment of wires connected to connector type terminal board



■Mounting/dismounting

Mounting

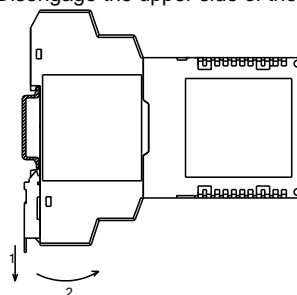
- 1) Engage the upper side of the distributor with the rail.
- 2) Push the lower side of the distributor into the rail.



*If the converter is dislocated after being mounted, it is recommended that a clamp be used. (Such as E/NS35N made by Phoenix/Contact, etc.).

Dismounting

- 1) Push down the slider with a screwdriver.
Pull the converter toward you, then disengage the lower side of the distributor from the rail.
- 2) Disengage the upper side of the distributor from the rail.



■Caution

- a) Store the distributor at a storage temperature of -10 to +70°C and a humidity of less than 60%RH.
- b) Use the distributor at a location where there are no chemicals or gases harmful to electrical parts or there is no dust.
- c) Do not apply any vibration or impact to the distributor.
- d) In order to lessen the effect of noise, etc., do not bundle the input/output/communication wires with the power supply wires, nor put these wires in the same duct.
- e) The unit is designed to function as soon as power is supplied, however, a warm up for 30 minutes is required for satisfying complete performance described in the data sheet.

■Warranty

This distributor 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 distributor showing abuse or damage which has been altered or repaired by others except as authorized by Watanabe Electric Industry.

■After-sale service

This distributor is delivered after being manufactured, tested and 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.

■Accessory

- Power cable connection clamps: 2pcs.
Use them when two or more meters are connected.



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