



# Neosensor

## Room Temperature Sensor

## Room Humidity Sensor

## Room Temperature/Humidity Sensor

### General

Neosensor is a series of electronic room sensors including temperature sensor (Models TY7043, TY7053), humidity sensor (Model HY7043), and temperature/humidity sensor (Model HTY7043). Neosensor is coordinated in terms of design and dimension with Neostat electronic room temperature/humidity controller.

Platinum resistance temperature detector for temperature sensing element and polymer capacitive detector (FP3™ developed by Azbil Corporation) for humidity sensing element enhance accuracy and reliability of Neosensor sensing. Neosensor is thus suitable for various applications such as commercial building air conditioning or other indoor uses.

Note:

\* The specification data of the two-wire 4-20mA output model of Neosensor is not included in this document. Refer to the following document.

**AB-7051 Specifications/Instructions:**

**Neosensor (Two-Wire 4-20 mA Output**

**Sensor)** Room Temperature Sensor (Model TY7043D), Room Humidity Sensor (Model HY7043D),

Room Humidity/Temperature Sensor (Model HTY7043D)



### Features

- Wide temperature and/or humidity sensing range with high accuracy.
- Excellent long-term stability.
- High environmental resistance.
- Quick response and high repeatability.
- Compact (thin) and lightweight.
- CE Marking certified product:  
The following models conform to all the applicable standards of CE Marking.
  - Model TY7043Z0P0X
  - Model TY7053Z0P00
  - Model HY7043 series
  - Model HTY7043 series



## Safety Instructions

Please read instructions carefully and use the product as specified in this manual. Be sure to keep this manual near by for ready reference.

## Usage Restrictions

This product is targeted for general air conditioning. Do not use this product in a situation where human life may be affected. If this product is used in a clean room or a place where reliability or control accuracy is particularly required, please contact our sales representative. Azbil Corporation will not bear any responsibility for the results produced by the operators.

## Warnings and Cautions

	<b>WARNING</b>	Alerts users that improper handling may cause death or serious injury.
	<b>CAUTION</b>	Alerts users that improper handling may cause minor injury or material loss.

## Signs

	Alerts users possible hazardous conditions caused by erroneous operation or erroneous use. The symbol inside indicates the specific type of danger. (For example, the sign on the left warns of the risk of electric shock.)
	Notifies users that specific actions are prohibited to prevent possible danger. The symbol inside graphically indicates the prohibited action. (For example, the sign on the left notifies that disassembly is prohibited.)
	Instructs users to carry out a specific obligatory action to prevent possible danger. The symbol inside graphically indicates the actual action to be carried out. (For example, the sign on the left indicates general instructions.)

### CAUTION

	Use the product under the operating conditions (temperature, humidity, power, vibration, shock, mounting direction, atmospheric condition, etc.) as listed in the specifications. Failure to do so might cause fire or device failure.
	Use the product within the rated operating ranges as listed in the specifications. Failure to do so might cause device failure.
	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
	All wiring must comply with applicable codes and ordinances.
	Before wiring, be sure to turn off the power to the product. Failure to do so might cause electric shock.
	Do not disassemble the product. Doing so might cause electric shock or device failure.
	Dispose of the product as industrial waste in accordance with your local regulations. Do not reuse all or part of this product.

### IMPORTANT:

- Measuring accuracy of this product is preset before shipment. Output of the product, used even in normal air, may be shifted depending on the operating conditions. Periodic inspection therefore is recommended.
- Corrosive gas or organic solvent may cause shift in output or damage the product. Before using the product (Models HY7043, HTY7043) in abnormal atmosphere, consult with our salesperson.



## Model Numbers

Base model number	Type	—	Power supply	Humidity output	Temperature output	—	Output wiring	Company logo	Description
HTY70									Room temperature/humidity sensor
TY70									Room temperature sensor
HY70									Room humidity sensor
	4								Neosensor
	5								Neosensor high sensitive type
		3							Fixed
			T						24 V DC / 24 V AC
			Z						No power required
				0					No humidity sensing
				1					1 V DC to 5 V DC
				6					0 V DC to 10 V DC
					0				No temperature sensing
					P				RTD (Pt100)
					K				RTD (Pt1000)
						0			Fixed
							0		Lead wire connection
							1		Modular connection (Modular jack is provided on the product.)
								blank	With company logo
								-1	Without company logo

RTD: Resistance temperature detector

Regarding the available model numbers, refer to the table below.

## Available model numbers

Model number	Type	Power	Humidity output	Temperature output	Signal output wire connection	Company logo
HTY7043T1P00	Neosensor	24 V DC/AC	1-5 VDC	RTD (Pt100)	Lead wire connection	Yes
HTY7043T1P00-1						No
HTY7043T6P00	Neosensor	24 V DC/AC	0-10 V DC	RTD (Pt100)	Lead wire connection	Yes
HTY7043T6P00-1						No
TY7043Z0P00	Neosensor	No power	N/A	RTD (Pt100)	Lead wire connection	Yes
TY7043Z0P00-1						No
TY7043Z0P01	Neosensor	No power	N/A	RTD (Pt100)	Modular connection	Yes
TY7043Z0P01-1						No
TY7043Z0K00	Neosensor	No power	N/A	RTD (Pt1000)	Lead wire connection	Yes
TY7043Z0K00-1						No
TY7053Z0P00	Neosensor high sensitive type	No power	N/A	RTD (Pt100)	Lead wire connection	Yes
TY7053Z0P00-1						No
HY7043T1000	Neosensor	24 V DC/AC	1-5 VDC	N/A	Lead wire connection	Yes
HY7043T1000-1						No
HY7043T6000	Neosensor	24 V DC/AC	0-10 V DC	N/A	Lead wire connection	Yes
HY7043T6000-1						No



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## Part Numbers of Optional Items

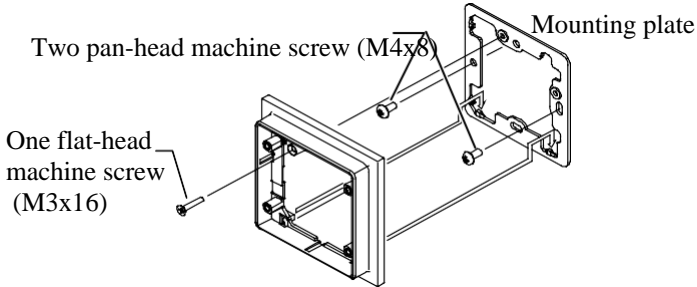
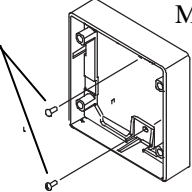
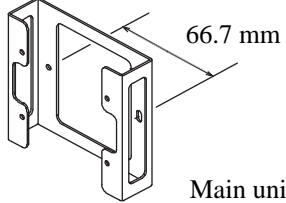
Mount Neosensor with the following optional items (sold separately). Order necessary items.

Item		Part number/Model number	
Dedicated mounting kit	Wall-direct mounting kit	Part No. 83165803-001	
	Thermoplate mounting kit	Part No. 83165803-011	
	Multi-Thermocase mounting kit	Part No. 83165803-021	
Auxiliary device	Thermoplate for individual room control	Models QY1100C and QY1100D (with rotary switch)	
	Thermoplate	Part No. DY2000A1022	For mounting one Neosensor, lengthwise
		Part No. DY2000A1023	For mounting one Neosensor, crosswise
		Part No. DY2000A2023	For mounting two Neosensor in 94mm (H) x 192mm (W) outlet box, crosswise
		Part No. DY2000A2024	For mounting two Neosensor in 106mm (H) x 198mm (W) outlet box, crosswise
		Part No. DY2000A3022	For mounting three Neosensor, crosswise
	Thermoplate for open wiring * Thermoplate for open wiring is used for open wiring installation.	Part No. DY2000A1021	For mounting one Neosensor, square
		Part No. DY2000A2021	For mounting two Neosensor, crosswise
		Part No. DY2000A3021	For mounting three Neosensor, crosswise
	Multi-Thermocase	Model TY1100Z	
LAN cable	Part No. DY7210	For modular connection type Neosensor * Use Part No. DY7210 or the cable that meets the following: TIA/EIA-568 Category 3 or over (ø0.5 x 4 pairs) * For the wiring length, refer to the Specifications/Instructions document of the controller in connection with Neosensor.	

TIA/EIA: Telecommunications Industry Association/Electronic Industries Association



## Dedicated mounting kits for each mounting method

Mounting method	Mounting kit	Contents
Mounting directly on a wall	Wall-direct mounting kit (Part No. 83165803-001)	<p>Two pan-head machine screw (M4x8)</p> <p>One flat-head machine screw (M3x16)</p>  <p>Mounting plate</p> <p>Main unit</p>
Mounting onto Thermoplate for open wiring		
Mounting onto Thermoplate	Thermoplate mounting kit (Part No. 83165803-011)	<p>Two tapping screws (M2.6 x 8)</p>  <p>Main unit</p>
Mounting in Multi-Thermocase	Multi-Thermocase mounting kit (Part No. 83165803-021)	<p>Mounting screws are supplied with the Multi-Thermocase (optional).</p>  <p>66.7 mm</p> <p>Main unit</p>



## Specifications

Item		Specification		
Measuring range	Temperature	0 °C to 60 °C		
	Humidity	0 %RH to 100 %RH (at 15 °C to 35 °C)		
Measuring accuracy	Temperature	RTD (Pt100)	0.3 °C (at 0 °C to 60 °C) * 1mA applied current, 0.15 m/s downflow for Models TY7043Z0P0X(-1), TY7053Z0P00(-1), and HTY7043 series	
		RTD (Pt1000)	0.5 °C (at 0 °C to 60 °C) * 0.1-0.3mA applied current, 0.15 m/s downflow for Model TY7043Z0K00(-1)	
	Humidity	3 %RH (within 30 %RH to 70 %RH range, at 25 °C), 5 %RH (within 20 %RH to 80 %RH range, at 15 °C to 35 °C) for Models HY7043 series and HTY7043 series		
Output signal	Temperature	100 Ω / 0 °C (RTD (Pt100) conforming to JIS C 1604 Class A) for Models TY7043Z0P0X(-1), TY7053 series, HTY7043 series 1000 Ω / 0 °C (RTD (Pt1000) equivalent to JIS C 1604 Class A) for Model TY7043Z0K00(-1)		
	Humidity	1 V DC to 5 V DC (linear to 0 %RH to 100 %RH) * Min. 50 kΩ input impedance of the controller in connection for Models HY7043T1000(-1), HTY7043T1P00(-1)		
0 V DC to 10 V DC (linear to 0 %RH to 100 %RH) * Min. 50 kΩ input impedance of the controller in connection for Models HY7043T6000(-1), HTY7043T6P00(-1)				
Time constant (at 0.15 m/s wind velocity)	Temperature	Max. 4.5 min. (at 0.15 m/s air velocity) for Models TY7043 series and HTY7043 series (Neosensor) Max. 2.5 min. (reference value) (at 0.15 m/s air velocity) for Model TY7053 series (Neosensor high sensitive type)		
	Humidity	Max. 40 sec. (at 0.15 m/s air velocity) for Models HY7043 series and HTY7043 series (Neosensor)		
Power supply		24 V AC +10/-15 % (50 Hz/60 Hz), 24 V DC ±10 % for Models HY7043 series, HTY7043 series		
Power consumption		0.15 VA (24 V AC power), 100 mW (24 V DC power) for Models HY7043TX000(-1), HTY7043TXP00(-1)		
Insulation resistance		Min. 500 V DC, 20 MΩ		
Withstand voltage		500 V AC applied for 1 min. with max. of 1 mA leakage current (between housing and terminals)		
Environmental conditions		Rated operating condition	Limit operating condition	Transport/storage condition
For temperature sensing	Ambient temperature	0 °C to 60 °C	-10 °C to 60 °C	-20 °C to 70 °C
	Ambient humidity	0 %RH to 100 %RH (non-condensing)	0 %RH to 100 %RH (non-condensing)	5 %RH to 95 %RH (non-condensing)
For humidity sensing	Ambient temperature	15 °C to 35 °C	-10 °C to 60 °C	-20 °C to 70 °C
	Ambient humidity	20 %RH to 80 %RH (non-condensing)	0 %RH to 100 %RH (non-condensing)	5 %RH to 95 %RH (non-condensing)
Vibration		1.96 m/s <sup>2</sup> (10 Hz to 150 Hz)	1.96 m/s <sup>2</sup> (10 Hz to 150 Hz)	9.8 m/s <sup>2</sup> (10 Hz to 150 Hz)
Color		Pale gray		
Materials	Cover	PC resin		
	Base	Modified PPE resin		
Weight		Approx. 80 g		
Installation		With the mounting kit (sold separately).		
Connection		Lead wire (0.75 mm <sup>2</sup> 300 mm long) connection Modular connection only for Model TY7043Z0P01(-1) * Modular jack is provided. LAN cable compliant with EIA/TIA-568 Category 3 or over (ø0.5 mm x 4 pairs) is required for modular connection.		
Accessory		Four main unit mounting screws (M3 x 16)		

JIS: Japanese Industrial Standards PPE:

Polyphenylene ether



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## CE Marking Conformity

Models TY70X3Z0P0X, HY7043 series and HTY7043 series comply with the following Electromagnetic Compatibility (EMC).

EMC: EN61326-1 Class B, Table 1 (For use in a basic electromagnetic environment)

(CISPR11: 2003, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11)

Note:

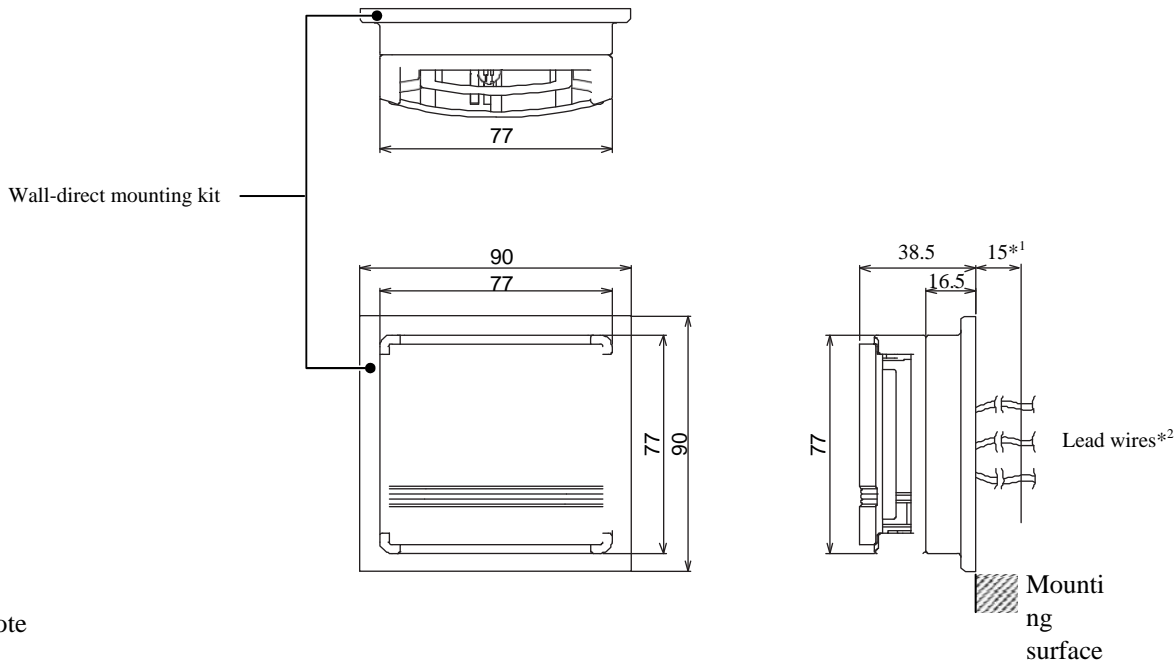
Models TY7043Z0K00 and TY7043Z0K00-1 (Pt1000 temperature sensor model of Neosensor) are "equipment which is inherently benign in terms of electromagnetic compatibility" and "is excluded from the scope of the EMC Directive."

*Guide*



## Dimensions: Neosensor with Wall-Direct Mounting Kit

### Neosensor



#### Note

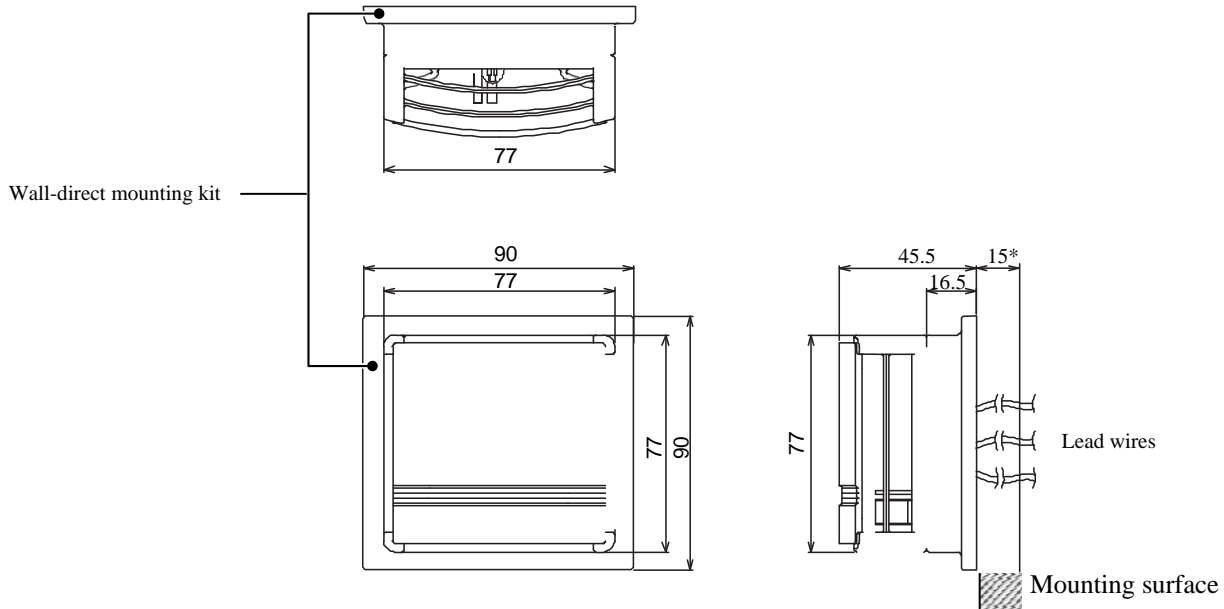
s:

\*1 For wiring, secure more than 15 mm clearance inside the mounting surface when installing Neosensor with Wall-direct mounting kit.

\*2 The number of lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))

Figure 1. Mounting dimensions (mm): Neosensor with Wall-direct mounting kit

### Neosensor high sensitive type



#### Note:

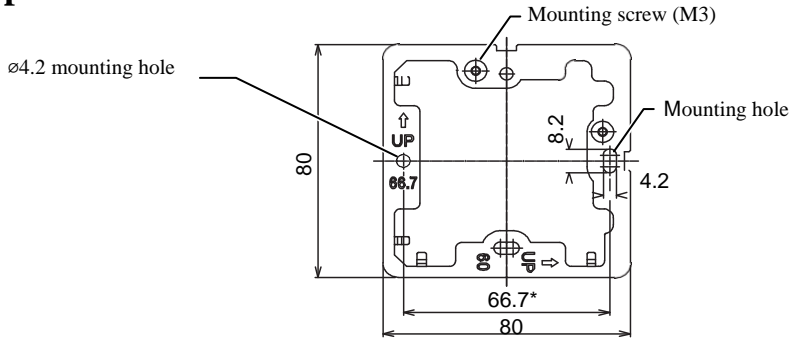
\* For wiring, secure more than 15 mm clearance inside the mounting surface when installing Neosensor high sensitive type with Wall-direct mounting kit.

Figure 2. Mounting dimensions (mm): Neosensor high sensitive type with Wall-direct mounting kit





### Mounting plate



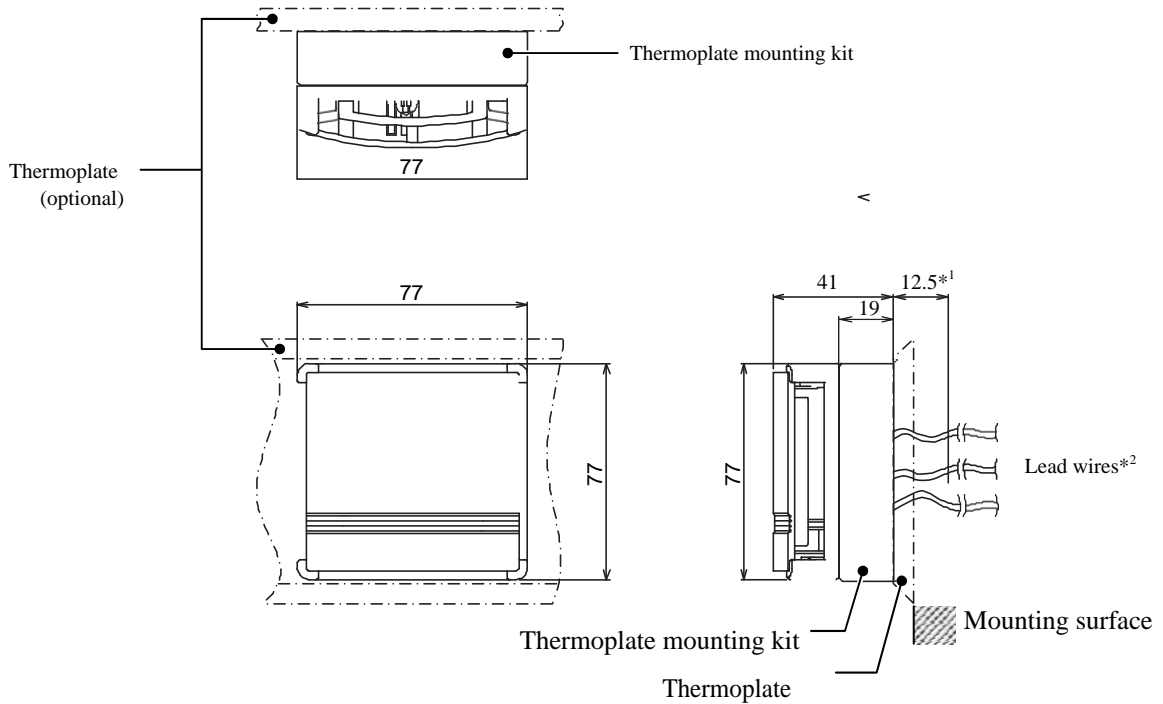
Note:

\* Use JIS outlet box/box cover (JIS C8340:1999) with 66.7 mm mounting dimension.

Figure 3. Dimensions (mm): Mounting plate of Wall-direct mounting kit

### Dimensions: Neosensor with Thermoplate Mounting Kit (on Thermoplate)

#### Neosensor



Note

s:

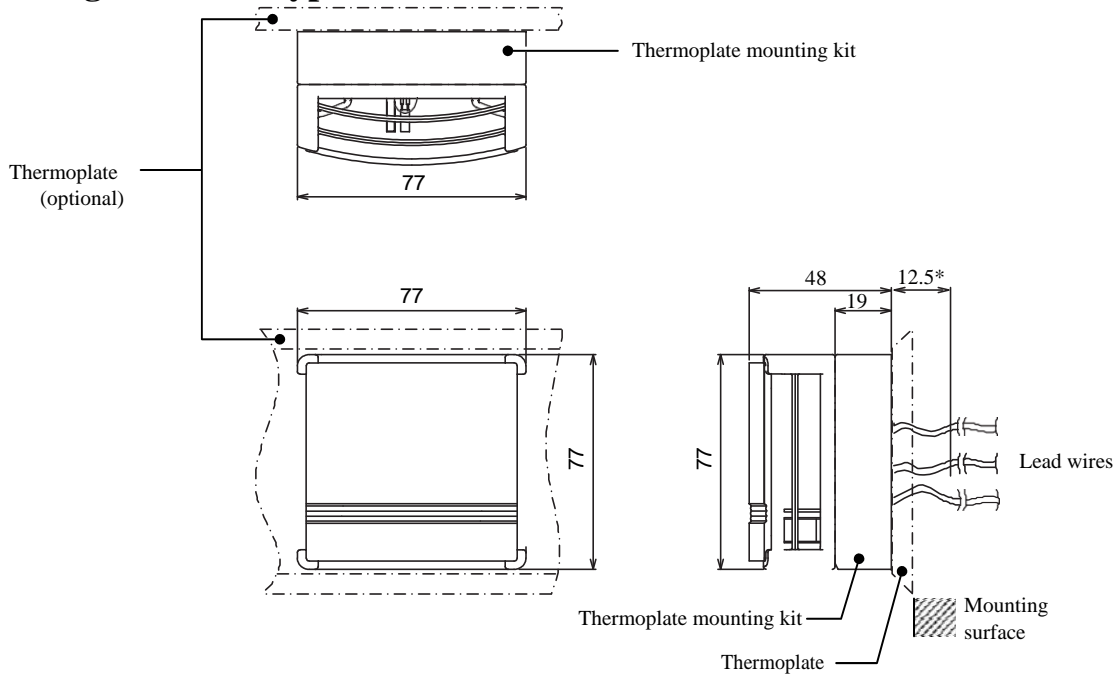
\*1 For wiring, secure more than 12.5 mm clearance from the Thermoplate surface to the inside of the mounting surface when installing Neosensor with Thermoplate mounting kit.

\*2 The number of lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))

Figure 4. Mounting dimensions (mm): Neosensor with Thermoplate mounting kit on Thermoplate



### Neosensor high sensitive type



Note:

\* For wiring, secure more than 12.5 mm clearance from the Thermoplate surface to the inside of the mounting surface when installing Neosensor with Thermoplate mounting kit.

Figure 5. Mounting dimensions (mm): Neosensor high sensitive type with Thermoplate mounting kit on Thermoplate

### Thermoplate mounting kit

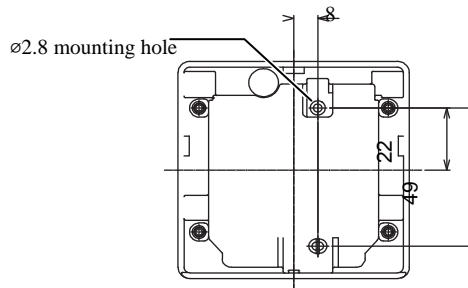


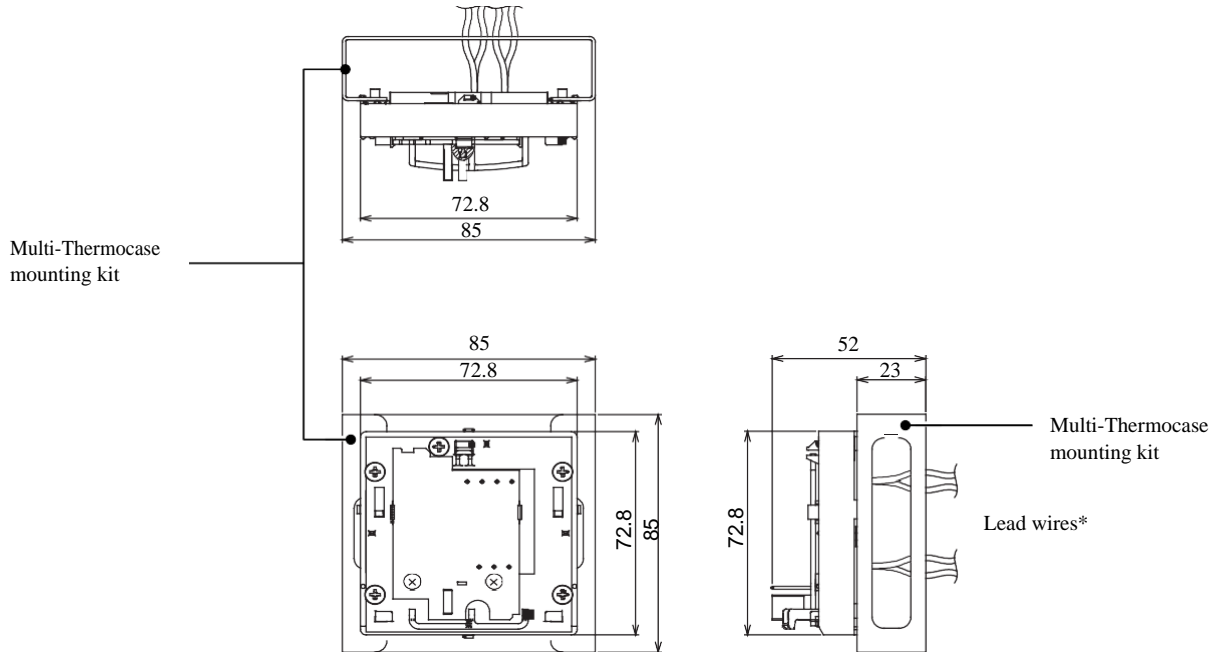
Figure 6. Dimensions (mm): Mounting plate of Thermoplate mounting kit



**Dimensions: Neosensor (without the Cover) with Multi-Thermocase Mounting Kit (in Multi-Thermocase)**

**Neosensor**

When installing Neosensor in the optional Multi-Thermocase, remove the cover of Neosensor.

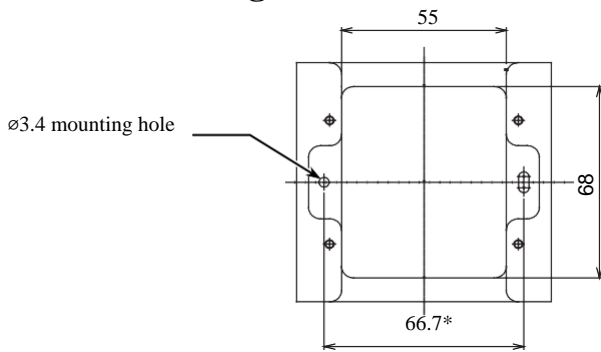


Note:

\* The number of lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))

Figure 7. Mounting dimensions (mm): Neosensor (not covered) with Multi-Thermocase mounting kit

**Multi-Thermocase mounting kit**



Note:

\* Assembling dimension with device mounting plate of Multi-Thermocase is 66.7 mm.

Figure 8. Mounting dimensions (mm): Multi-Thermocase mounting kit



## Installation

### CAUTION

Use the product under the operating conditions (temperature, humidity, power, vibration, shock, mounting direction, atmospheric condition, etc.) as listed in the specifications.  
Failure to do so might cause fire or device failure.

Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.

## Requirements for installation location

### IMPORTANT:

- Installation location of Neosensor largely affects temperature/humidity control. Carefully select the location.
- Chemical (organic solvent) atmosphere may shift the output values.
- Corrosive gas, organic solvent, and other chemicals contained in the atmosphere can cause measuring error of Neosensor, shorten the service life of Neosensor, or damage Neosensor.  
Ask our salesperson for use of Neosensor in a special application, as mentioned above.

Install Neosensor on an indoor wall where:

- Representative temperature and humidity (of the room/zone to control) are measured (approx. 1.5 m high above the floor).
- Ambient air velocity is 0.1 to 0.15 m/s.
- There is enough maintenance space left in front of Neosensor.

Do not install Neosensor on a wall where:

- Heat (generated by office device or equipment, for example) stays on.
- Air circulation is interfered (by furniture or door, for example).
- Temperature and/or humidity sensing is affected by draft, downdraft, and hot/cold air from water pipes/ducts.
- Temperature and/or humidity sensing is affected by weather conditions (including sunlight and outdoor air).
- There is vibration.
- Dew condensation occurs.
- Water drops.
- Corrosive gas, organic solvent, or other chemicals is contained in the atmosphere.

Do not install Neosensor outdoors or in a duct.

Do not horizontally install Neosensor directly on a ceiling surface.

## Precautions for installation

- Install Neosensor with a dedicated mounting kit (sold separately) suitable for your application.
- Do not allow any refuse such as an electric wire scrap to get inside Neosensor.
- Do not get a cable caught between the Neosensor main unit and the mounting surface.
- Carefully handle Neosensor when the cover is removed so that the element does not get damaged.
- Check that the ambient air velocity is sufficient in a location (not on a ceiling surface) where Neosensor will be horizontally installed.
- If air infiltrates to the rear side of the Neosensor from the inside of the installed wall through the outlet box, shut off the air by sealing the outlet box.
- After installation, leave Neosensor well so that it adapts to ambient conditions (atmospheric environment).



## Installation steps: Neosensor directly on a wall with Wall-direct mounting kit

- 1) Attach the mounting plate of the Wall-direct mounting kit to the outlet box cover (JIS C8340:1999 Boxes and box covers for rigid metal conduits (mounting dimension: 66.7 mm)) on the mounting surface.
- 2) Attach the main unit of the Wall-direct mounting kit to the mounting plate. (See Fig. 11.)
- 3) Connect the lead wires of Neosensor and the wires from the load. (See Figs. 20 and 21.)

Note:

The number of the lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))

- 4) Remove the cover of Neosensor as shown in Fig. 14.
- 5) Set the depth change levers on the bilateral sides of the Neosensor main unit to the upper position (indicated with "L" shown in Fig. 17).
- 6) Mount the main unit of Neosensor on the main unit of the Wall-direct mounting kit with four mounting screws (M3 16) supplied with Neosensor.
- 7) Attach the cover back to the Neosensor main unit and complete the installation. (See Fig. 14.)

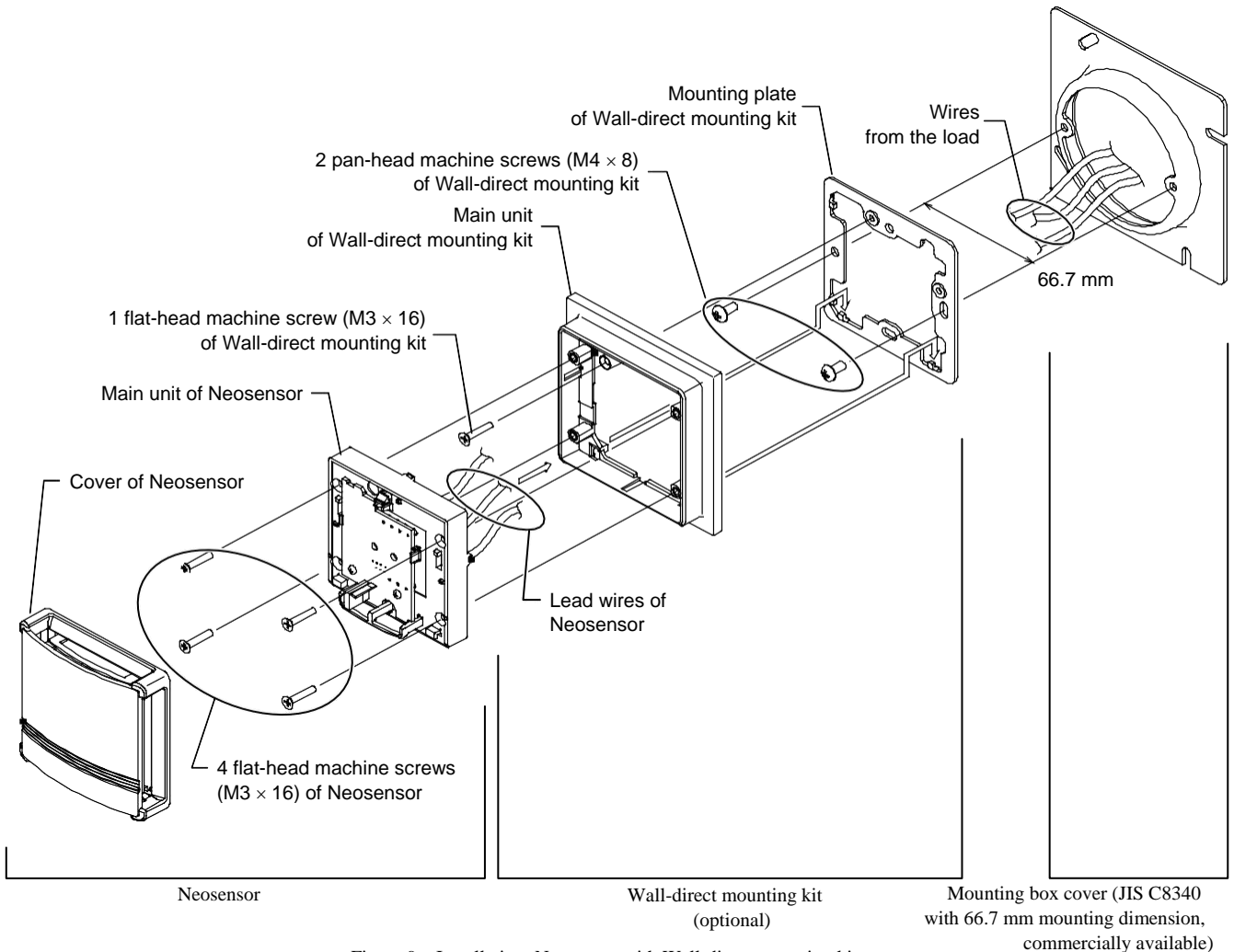


Figure 9. Installation: Neosensor with Wall-direct mounting kit



### Installation steps: Neosensor on the Thermoplate for open wiring with Wall-direct mounting kit

- 1) Attach the mounting plate of the Wall-direct mounting kit to the Thermoplate for open wiring on the mounting surface.
- 2) Attach the main unit of the Wall-direct mounting kit to the mounting plate. (See Fig. 11.)
- 3) Connect the lead wires of Neosensor to the wires from the load. (See Figs. 20 and 21.)  
 Note:  
 The number of the lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))
- 4) Remove the cover of Neosensor as shown in Fig. 14.
- 5) Set the depth change levers on the bilateral sides of the Neosensor main unit to the upper position (indicated with "L" shown in Fig. 17).
- 6) Mount the main unit of Neosensor on the main unit of the Wall-direct mounting kit with four mounting screws (M3 16) supplied with Neosensor.
- 7) Attach the cover back to the Neosensor main unit and complete the installation. (See Fig. 14.)

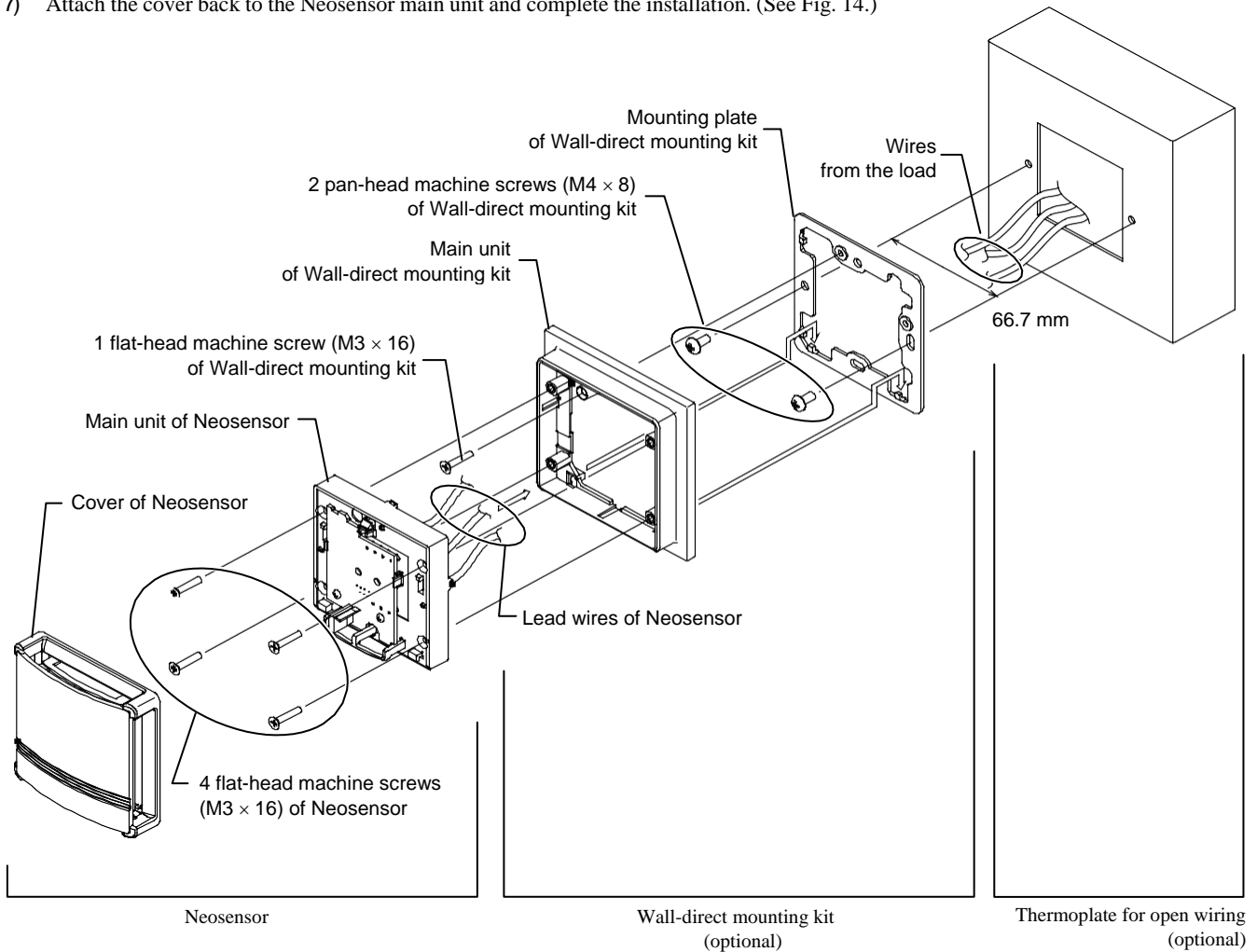


Figure 10. Installation: Neosensor with Wall-direct mounting kit (on Thermoplate for open wiring)

### Assembling the Wall-direct mounting kit (the main unit to the mounting plate)

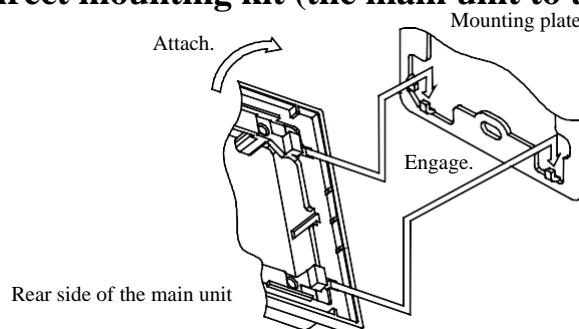


Figure 11. Assembling the Wall-direct mounting kit



## Installation steps: Neosensor on Thermoplate with Thermoplate mounting kit

- 1) Attach the mounting plate of Thermoplate to the outlet box cover (JIS C8340:1999 Boxes and box covers for rigid metal conduits (mounting dimension: 83.5 mm)) on the mounting surface.
- 2) Attach the main unit of Thermoplate to the mounting plate.
- 3) Attach the Thermoplate mounting kit to the Thermoplate.
- 4) Connect the lead wires of Neosensor to the wires from the load. (See Figs. 20 and 21.)

Note:

The number of the lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))

- 5) Remove the cover of Neosensor as shown in Fig. 14.
- 6) Set the depth change levers on the bilateral sides of the Neosensor main unit to the upper position (indicated with "L" shown in Fig. 17).
- 7) Mount the main unit of Neosensor on the main unit of the Thermoplate mounting kit with four mounting screws (M3 16) supplied with Neosensor.
- 8) Attach the cover back to the Neosensor main unit and complete the installation. (See Fig. 14.)

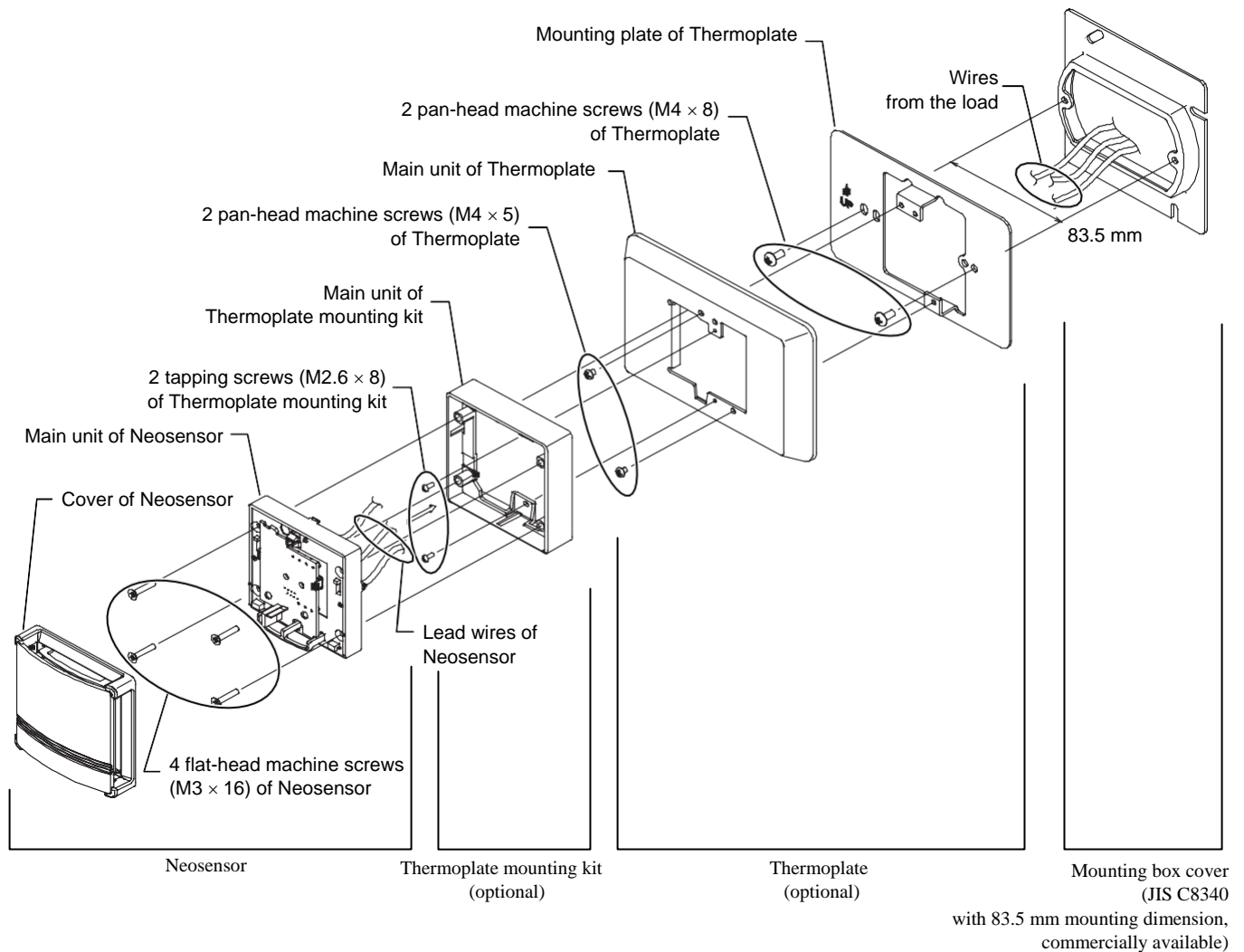


Figure 12. Installation: Neosensor with Thermoplate mounting kit (on Thermoplate)





### Installation steps: Neosensor in Multi-Thermocase with Multi-Thermocase mounting kit

- 1) Attach the main unit of the Multi-Thermocase mounting kit to the device mounting plate of Multi-Thermocase.
- 2) Connect the lead wires of Neosensor to the wires from the load.

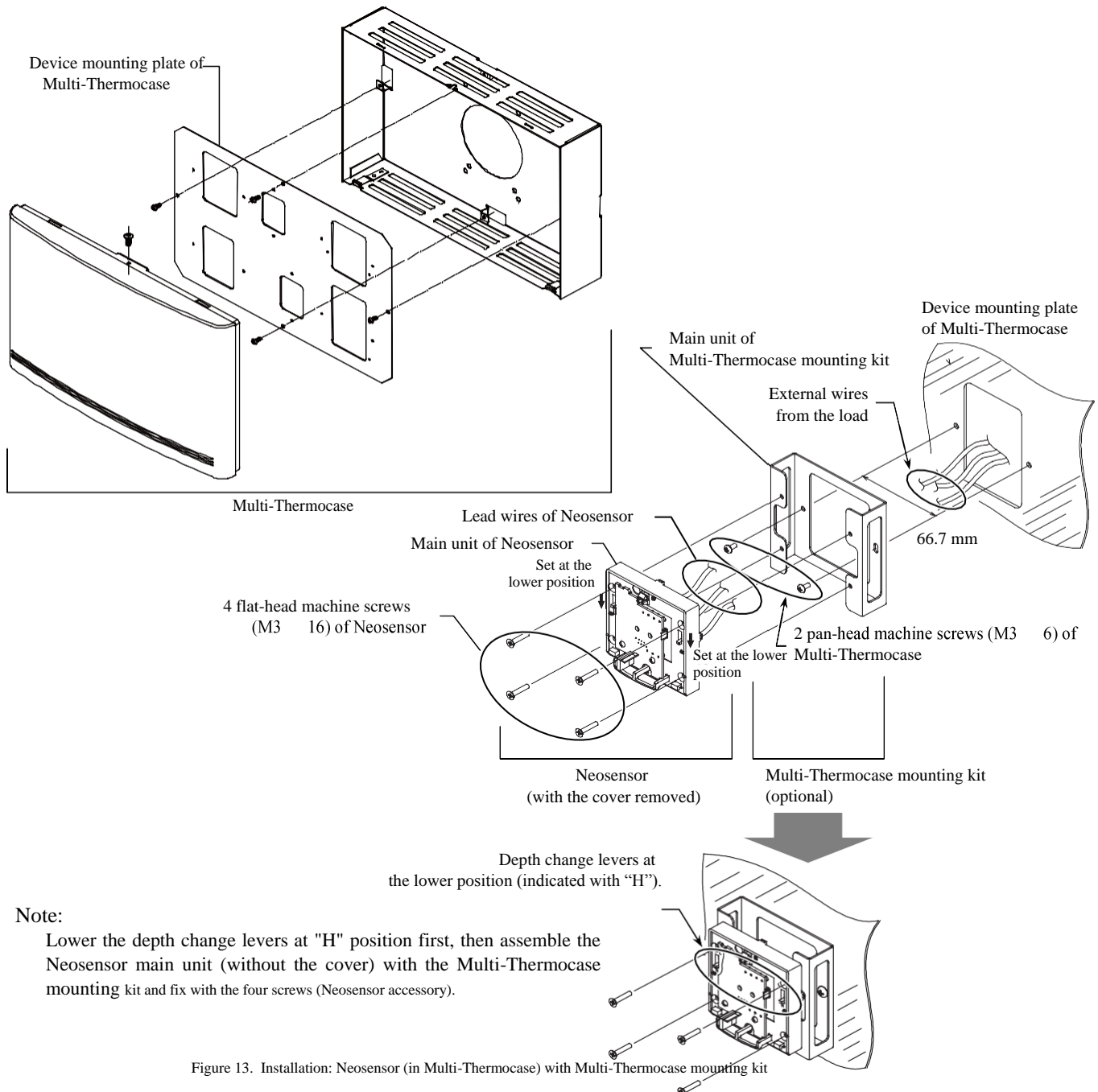
Note:

The number of the lead wires differs depending on the models. Note that the Pt100 temperature sensor model with modular connection has a modular jack instead of lead wires. (Model TY7043Z0P01(-1))

- 3) Remove the cover from the Neosensor main unit as shown in Fig. 14.
- 4) Set the depth change levers on the bilateral sides of the Neosensor main unit to the lower position (indicated with "H").
- 5) Mount the Neosensor main unit to the Multi-Thermocase mounting kit with four screws (M3 16) supplied with the Neosensor. In the Multi-Thermocase, Neosensor is installed with its cover removed.

**IMPORTANT:**

Before installing Neosensor in the Multi-Thermocase, be sure to set the depth change levers on the bilateral sides of the Neosensor main unit at the lower position (indicated with "H".)



Note:

Lower the depth change levers at "H" position first, then assemble the Neosensor main unit (without the cover) with the Multi-Thermocase mounting kit and fix with the four screws (Neosensor accessory).

Figure 13. Installation: Neosensor (in Multi-Thermocase) with Multi-Thermocase mounting kit





## Cover removal

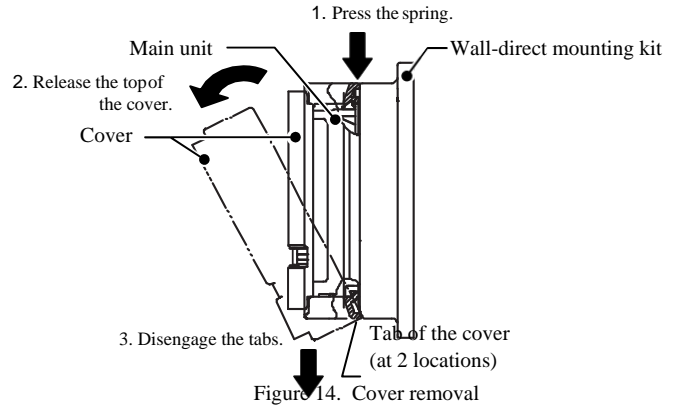
Do not bend the humidity sensing element attached to the PCB board assembly. Otherwise, measuring accuracy may drop.

To remove the cover:

Press the spring, located inside the top of the Neosensor main unit, using a thin object.

To attach the cover:

Engage the tabs located on the lower part of the cover with the slots on the lower part of the main unit. Then fix the cover with the spring, located on the top of the Neosensor main unit.



## Protection form heat radiation and conduction

To protect the measuring accuracy from disturbances (including heat radiation and conduction) caused by the mounting surface where Neosensor is mounted, the distance between the Neosensor sensing element and the mounting surface (depth of the Neosensor main unit) can be changed. See the following steps to change the depth.

1) Remove four mounting screws of Neosensor.

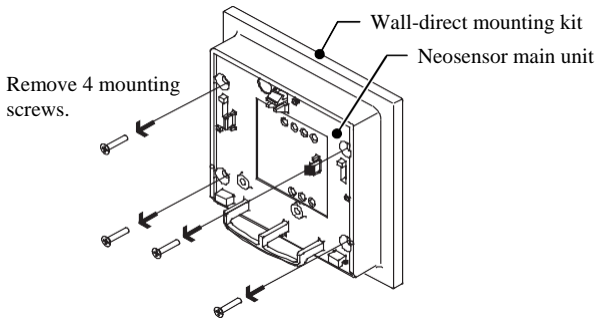


Figure 15. Depth change: removing the mounting screws

2) Raise the Neosensor main unit from the Wall-direct mounting kit. 9 mm max. can be raised.

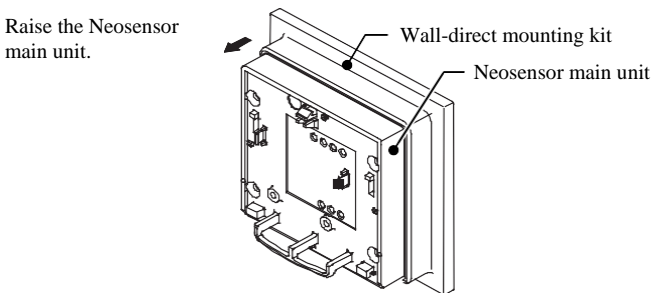


Figure 16. Depth change: Raising the Neosensor main unit

3) Set the depth change levers, located on the bilateral sides on the main unit front surface, at the lower position. (The levers are factory-set at the upper position.)

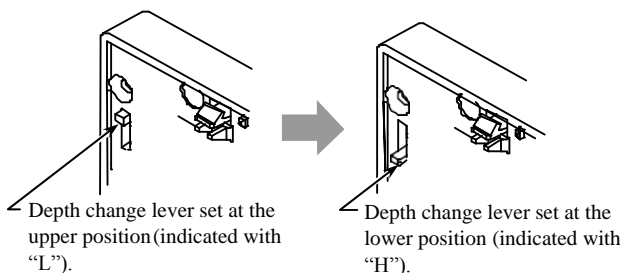


Figure 17. Depth change: Lowering the depth change lever

4) Fix the raised Neosensor main unit to the Wall-direct mounting kit with four mounting screws.

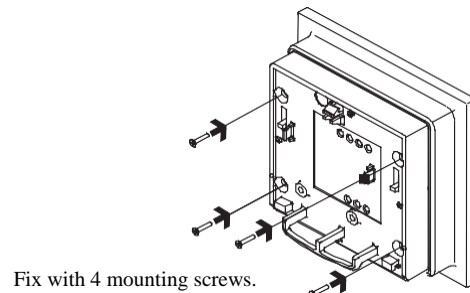


Figure 18. Depth change: Fixing the raised main unit

5) Check that the depth of the Neosensor is changed. Follow the same steps to change the depth of Neosensor installed on Thermoplate.

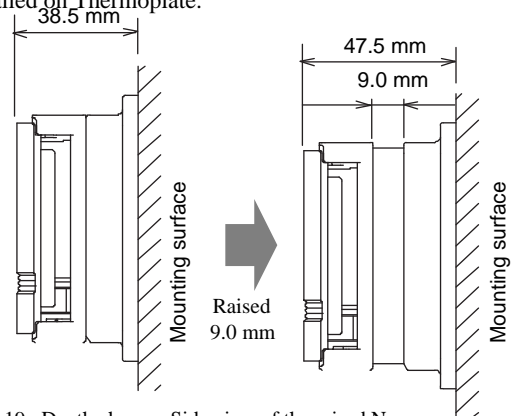


Figure 19. Depth change: Side view of the raised Neosensor

Note:  
Effect of raised Neosensor differs depending on its installation environment.



## Wiring

### Lead wire connection type

Models TY7043Z0P00(-1)  
and TY7053Z0P00(-1)

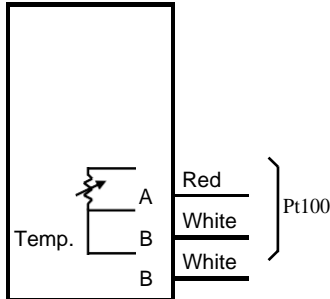


Figure 20. Terminal wiring:  
Temperature sensor with RTD (Pt100) output, no power

Model TY7043Z0K00(-1)

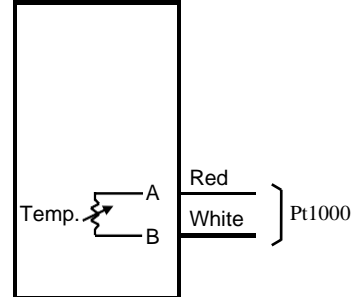
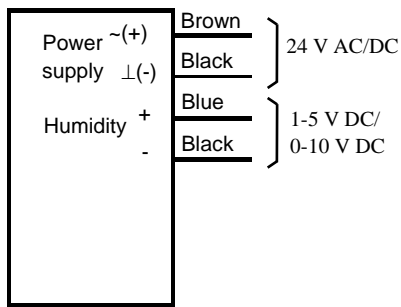


Figure 21. Terminal wiring:  
Temperature sensor with RTD (Pt1000) output, no power

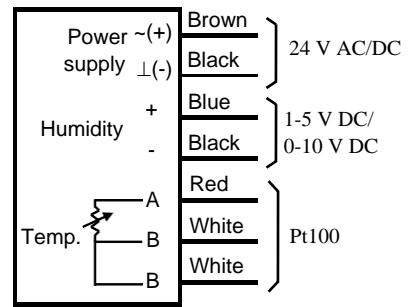
Models HY7043T1000(-1)  
and HY7043T6000(-1)



Note:  
Black wires for power supply and for humidity output are internally connected.

Figure 22. Terminal wiring:  
Humidity sensor with 1-5V/0-10V humidity output,  
24 V AC/DC power

Models HTY7043T1P00(-1)  
and HTY7043T6P00(-1),



Note:  
Black wires for power supply and for humidity output are internally connected.

Figure 23. Terminal wiring:  
Temperature/humidity sensor with RTD (Pt100) output and  
1-5V/0-10V humidity output, 24 V AC/DC power

### Modular connection type (No power type)

Model TY7043Z0P01(-1)

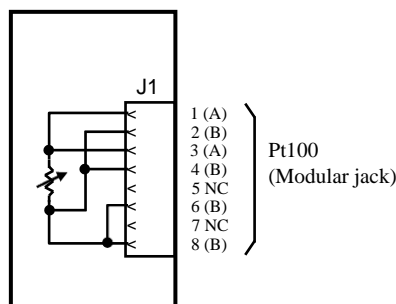
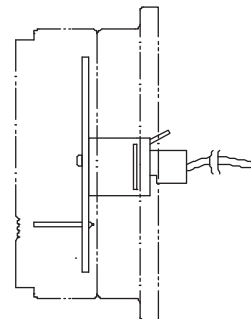


Figure 21. Terminal wiring: Temperature sensor with RTD (Pt100) output, no power





## Precautions for wiring

### IMPORTANT:

- Do not connect the lead wires for temperature output to the power supply line to prevent smoking or burnout. Make sure all the wires are correctly connected before supplying power.
- Single Neosensor must be powered by a single 24 V AC transformer. Do not connect the transformer to any other device in addition to Neosensor.

- For power supply wiring and temperature/humidity output wiring, 1.25 mm<sup>2</sup> or greater shielded multi-core cables (JIS CVV-S) are recommended. 1.25 mm<sup>2</sup> or greater JIS IV cable is also connectable. Be sure to ground the shielding on the controller side.  
The maximum cable length is 100 m.
- Because the temperature sensor model with RTD (Pt1000) output is two-wire, the wire resistance will cause measuring error. For instance, 1.25 mm<sup>2</sup> size wire causes approx. 0.1 °C measuring error every 10 m. Correct the measuring error by setting the controller in connection.

## Transformer for Neosensor (humidity sensor, temperature/humidity sensor models)

### IMPORTANT:

Use isolated transformer to supply 24 V AC power.

Single Neosensor must be powered by a single 24 V AC transformer. If the multiple Neosensor or a Neosensor and a device in connection are powered by a single 24 V AC transformer, the common wiring will form a loop, and Neosensor will get damaged.

### 24 V AC transformer: Two Neosensor powered by a single transformer

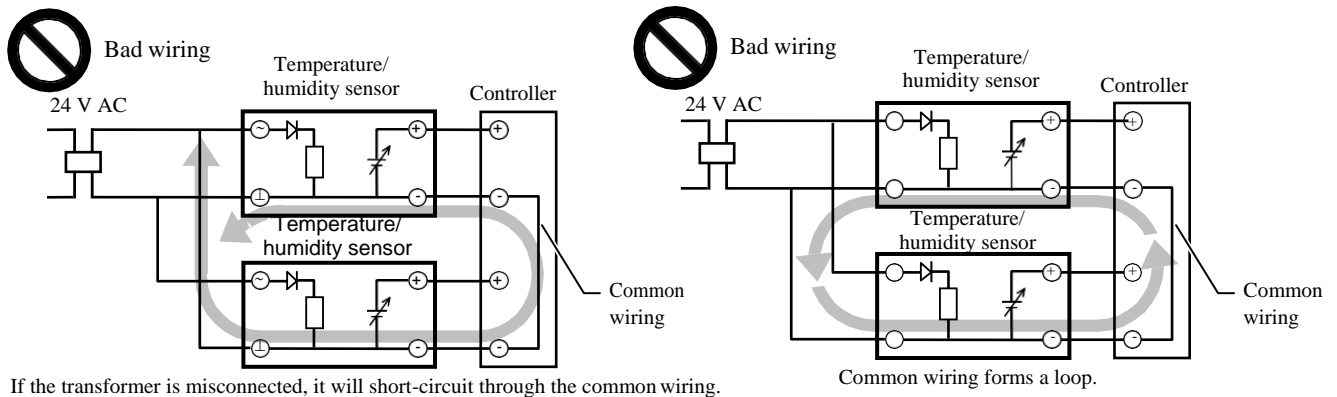


Figure 22. Bad wiring examples: Two Neosensor (temperature/humidity sensors) powered by a single 24 V AC transformer

### 24 V AC transformer: Two Neosensor separately powered by two transformers

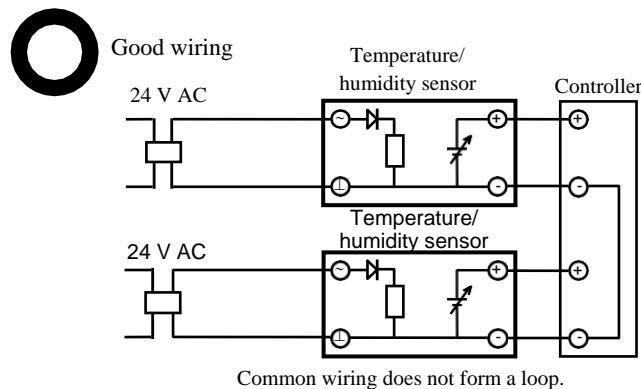
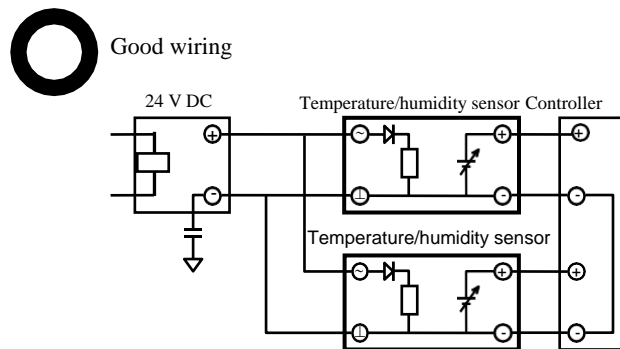


Figure 23. Good wiring example: Two Neosensor (temperature/humidity sensors) powered by separate 24 V AC transformers



24 V DC transformer: Multiple Neosensor powered by a single transformer (correct example)

Multiple Neosensor or a Neosensor and another device in connection can be powered by a single 24 V DC power.



Though common wiring forms a loop, common mode noise affects a little.

Figure 24. Good wiring example: Two Neosensor (temperature/humidity sensors) powered by a single 24 V DC transformer

## Notes for signal wiring

Induction current flowing from Neosensor (humidity sensor, temperature/humidity sensor models) to the controller input circuit and inadequate time constant of the controller might generate noise. To prevent noise, see the following.

- Use a controller with low pass filter (40 dB or higher removal ratio in normal mode) that receives signals from Neosensor.
- For insufficient removal ratio, provide an isolator on the controller input wiring.

Note:

No problem will occur for connecting Neosensor to our controller.

### IMPORTANT:

- When Neosensor is faulty, reduced output may cause over-humidification. Provide safety measure against over-humidification.
- Corrosive gas or organic solvent contained in the air may cause sensing error, shorten the service life, or damage the Neosensor. Before using Neosensor in abnormal atmosphere, consult with our salesperson.



## Inspection and Maintenance

Since Neosensor is factory-inspected and -calibrated for high accuracy, no field calibration is necessary when Neosensor is installed. For inspection and maintenance, follow the instructions below.

### Periodic inspection

Periodically inspect Neosensor for its measuring accuracy, and clean the cover. Set the period between inspections based on how much atmospheric dust and other contaminants are contained in the installation environment.

If Neosensor is installed in an animal holding room or a hospital operating room, cover Neosensor when the room is sterilized.

### Troubleshoot

If any problem occurs during operation, refer to the table below for appropriate solutions.

Troubleshooting

Problem s	Check points	Solution s
<ul style="list-style-type: none"> <li>No output</li> <li>Unstable output</li> </ul>	Loose wiring	Re-perform wiring.
	Disconnected wiring	
	Power supply voltage	
	Neosensor main unit damages	Replace the Neosensor.
Slow response to output	Moisture/condensation on Neosensor	<ol style="list-style-type: none"> <li>Remove the cover.</li> <li>Disconnect the power.</li> <li>Air-dry the Neosensor in a clean air.</li> </ol>
Error in output	Installation location	Refer to <b>Installation</b> section.
	Dust and contamination on the Neosensor main unit	Clean the cover.
		Calibrate.
		Replace the Neosensor.

### Calibration

Neosensor is factory-calibrated and does not require field calibration right after installation. However, field-calibrate Neosensor if a shift in the output due to aged deterioration is found.

For a humidity output error, calibrate the Neosensor with adjustment knobs on the board inside the main unit. Follow the below instructions for calibration.

- Two adjustment knobs (VR1 for fine adjustment and VR2 for rough adjustment) are provided. Turn clockwise to increase the output value and counterclockwise to decrease the output value. Note that the measuring accuracy specified hereinbefore will not be assured after field-calibration with the adjustment knobs.
- Carefully field-calibrate Neosensor so that the heat on your hands do not affect the Neosensor. Do not allow the heat generated from human body and/or appliances to affect Neosensor while calibrating.
- Use a reliable calibration instrument for field calibration.
- Carefully handle the product and check the appropriate environment for field-calibration.
- Calibrated digital multimeter is recommended to check output value.

Notes:

- \* Temperature output cannot be calibrated.
- \* Ask our salesperson if a shift in the output of new Neosensor is found.

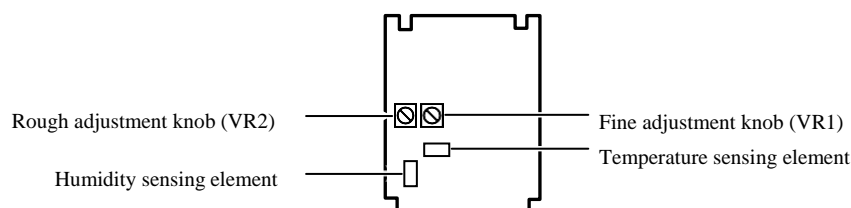


Figure 25. Location of the adjustment knobs VR1 and VR2 on the board: Models HTY7043T series and HY7043T series



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