

# HOT WATER HEAT PUMP UNIT Installation Manual

## Accessory Q-1SCK

### Package content

This kit contains a thermistor, a flow sensor, and associated parts for use on the secondary side of Industrial Eco Cute units. Make sure the following parts are included.

#### External water temperature sensor TW-TH16-E

\* The size and length noted are approximate.

Parts	Shape	Specification	Quantity
① Thermistor		A: 157 mm B: 42 mm C: 54 mm D: 48 mm	1 pc

#### Flow sensor kit

Parts	Shape	Specification	Quantity
① Flow sensor		A: 71.5 mm * 129 mm including the coupler B: $\phi 30$ mm Wiring length: 1.9 m	1 pc
② O-ring		A: 15.8 mm B: 2.4 mm C: 20.6 mm	2 pcs
③ Quick fastener		A: 38.6 mm B: 15 mm C: 14 mm	2 pcs
④ Coupler 1 (IN-side)		Thread: R3/4 Hex 30 A: 36 mm	1 pc
⑤ Coupler 2 (OUT-side)		Thread: R3/4 Hex 30 A: 43.2 mm	1 pc
⑥ Cable tie (2 types)		Long cable tie A: 380 mm B: 4.7 mm	2 pcs +
		Short cable tie A: 100 mm B: 2.5 mm	1 pc +

## External water temperature sensor TW-TH16

### 1. Parts that are required to install an external water temperature sensor

- (1) External water temperature sensor
- (2) Wiring to connect the sensor and the unit\*
- (3) Wiring terminals to connect the wiring to the sensor and the terminal block on the unit

(Four for M4 screws)\*

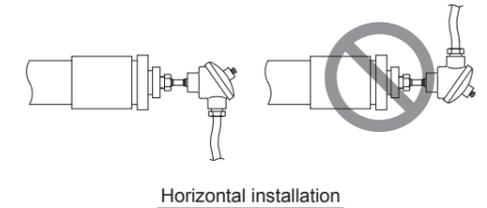
\* Items (2) and (3) are not supplied.

#### Wiring specifications

Size	2-core cable (Min. 1.25 mm <sup>2</sup> )
Type	CVVS or CPEVS
Maximum length	20 m

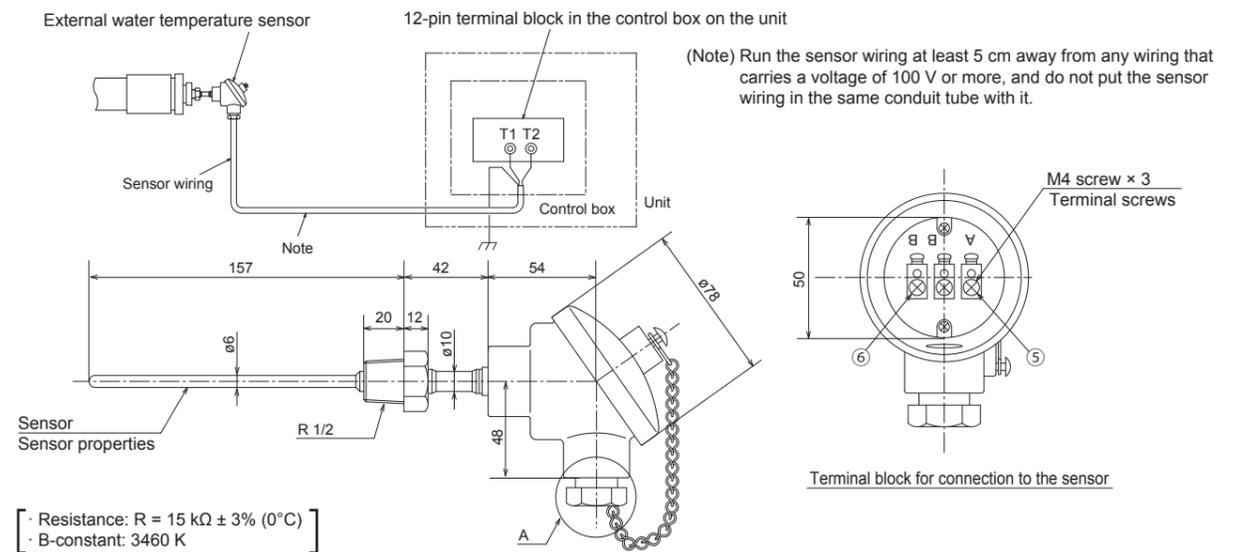
### 2. Installing the external water temperature sensor

- Install the external water temperature sensor where the water pipes merge or on the load-side tank as shown in the figure at right.
- Install horizontally or vertically on top of the pipe.
- When installing horizontally, make sure the wiring faces down.



### 3. Wiring the external water temperature sensor

Connect the external water temperature sensor wiring to the terminal block in the control box on the unit as shown in the figure below.



## Flow sensor kit

### 1. Tools and materials needed for an installation of the flow sensor

Have the following tools and materials ready before starting.

	Materials	Quantity
①	Flow sensor	1
②	O-ring	2
③	Quick fastener	2
④	Coupler 1 (IN-side)	1
⑤	Coupler 2 (OUT-side)	1
⑥	Cable tie (short)	1
⑦	Cable tie (long)	1 to 2

	Tools and locally procured materials
①	Screwdriver
②	Torque wrench (spanner) *1
③	Grease *2
④	Extension wiring *3
⑤	Terminal block *4

\*1 Size: HEX 30

Tightening torque: 50 N·m ± 10%

\*2 Only use silicon grease.

\*3 Select the following type of extension wiring.

Wiring diameter	0.812 mm or larger
Type	CVVS or CPEVS
Maximum length	20 m

\*4 Select the type of terminal block that meets the following.

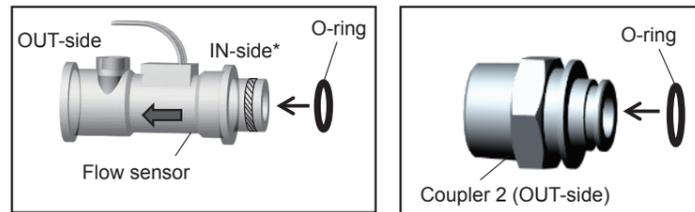
- Water-proof
- Usable at or above 15 V
- Terminal screw diameter of M3.5 or M4

### 2. Flow sensor installation

Install the flow sensor on the pipe by following steps (1) through (3) below.

Install the flow sensor between the secondary-side pump and the heat exchanger. Refer to the Installation/Operation Manual of QAHV-N560YA-HPB for details.

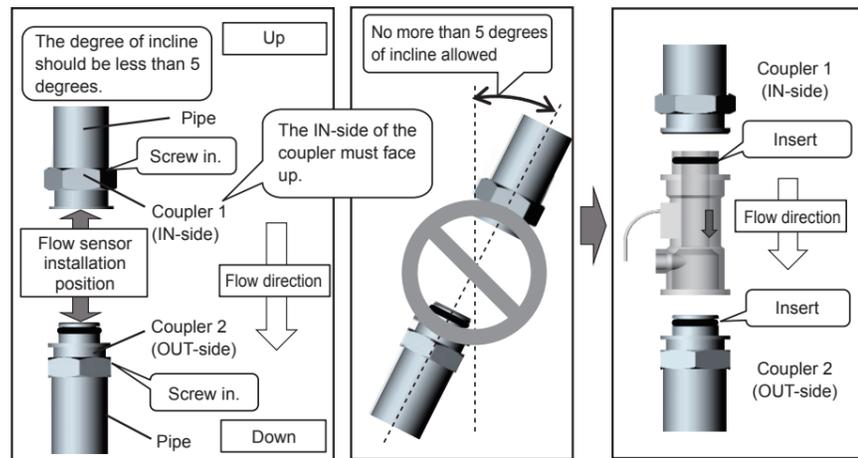
#### (1) Install an O-ring on the flow sensor and coupler 2 (OUT-side).



Both of the parts shown at left have a groove on the smaller end. Apply grease to the O-rings, and then fit them into the groove.

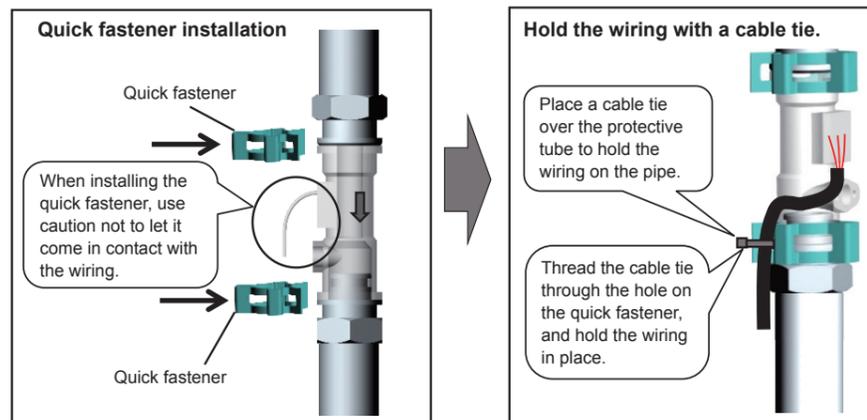
\* The end with a smaller bore is the IN-side. Be sure to install them in the correct orientation.

#### (2) Connect a coupler to the pipe, and connect the flow sensor.



Attach the coupler to the pipe so that **the IN-side of the coupler faces up and the OUT-side of the coupler faces down. (Water flows from top to bottom.) The incline of the pipe should not exceed 5 degrees. The flow sensor is 71.5 mm long. Keep an appropriate distance between the couplers.** Fit the flow sensor to the coupler.

#### (3) Install the quick fastener on the pipe.



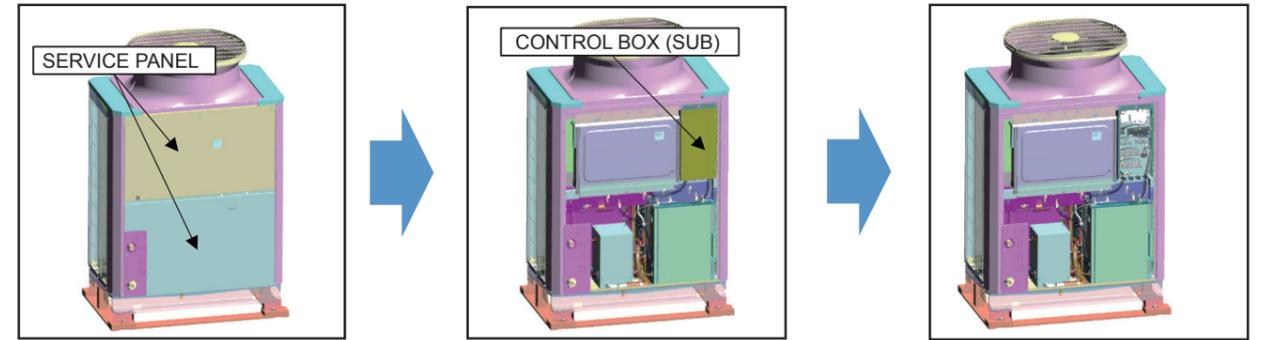
Insert the flow sensor into the couplers, and then fit the quick fasteners where the flow sensor and the couplers are connected to each other. Keep the quick fasteners out of contact with the wiring so as not to damage the wiring. Hold the wiring to the quick fastener with a (short) cable tie as shown in the figure to keep the wiring from being damaged. Extend the length of the wiring as necessary, using a terminal block. Keep the wiring and the terminal block dry.

### 3. Flow sensor wiring connection

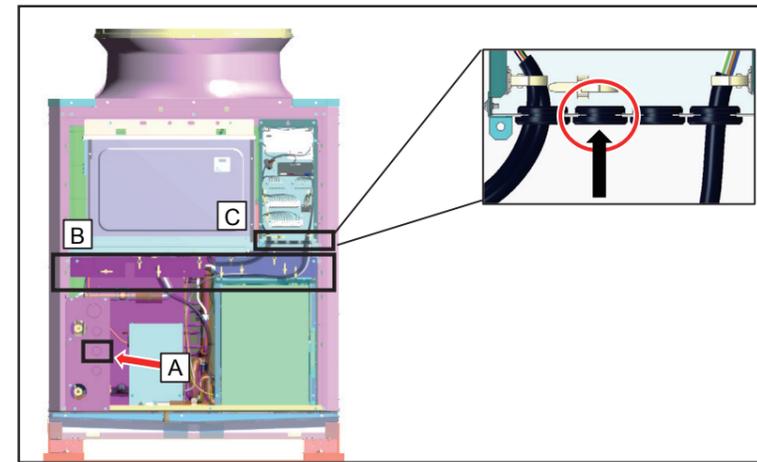
Connect the wiring by following steps (1) through (4) below.

#### (1) Open the panel.

Using a screwdriver, remove the SERVICE PANEL and the CONTROL BOX (SUB) cover.



#### (2) Thread the wiring into the unit.

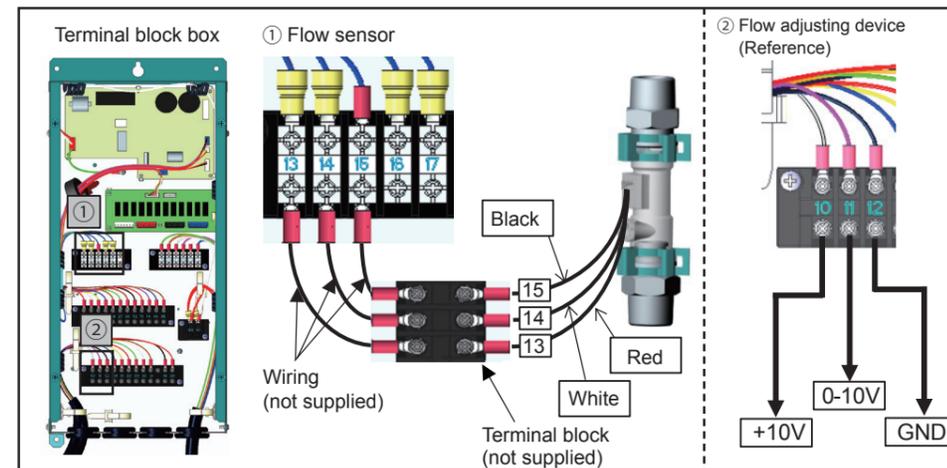


- ① Thread the flow sensor wiring through A in the figure.
- ② Hold the wiring with the cable strap inside the unit indicated as B in the figure to keep it out of contact with the pipes and other components.
- ③ Thread the wiring through the rubber bush indicated as C in the figure (second one from the left).

\* Refer to the Installation/Operation Manual of QAHV-N560YA-HPB for the detailed explanation on how to open the part indicated as A and how to route the wiring indicated as B in the figure.

\* Perform wiring work for the flow output adjustment device and the thermistor at the same time.

#### (3) Connect the wiring.



Connect the flow sensor wiring to the terminal block inside the BOX. The numbers on the wirings correspond to the numbers on the terminal block. Connect each wiring to the correct terminal. When done, hold the excess wiring with the supplied cable tie (long). Also, hold the wirings in place with a cable tie (long) where indicated as B in the figure to keep them out of contact with the pipes and other components.

#### (4) Close the panel.

Using a screwdriver, re-place the SERVICE PANEL and the CONTROL BOX (SUB) cover.

### 4. Cautionary notes

Note the following when performing wiring work.

- Turn off the power before performing wiring work to avoid electrocution.
- Watch for sharp edges of sheet metal.
- Keep external wiring at least 5 cm away from wiring that carries 100 V or higher.
- Do not bundle the wiring together with strong current wiring.
- Connect wiring in a way that minimizes electrical noise interference. Shield the wiring to minimize external effects.
- Install the flow sensor indoors, and insulate it as necessary to keep it from being exposed to subzero temperatures.
- Keep the wiring and the terminal block dry.