

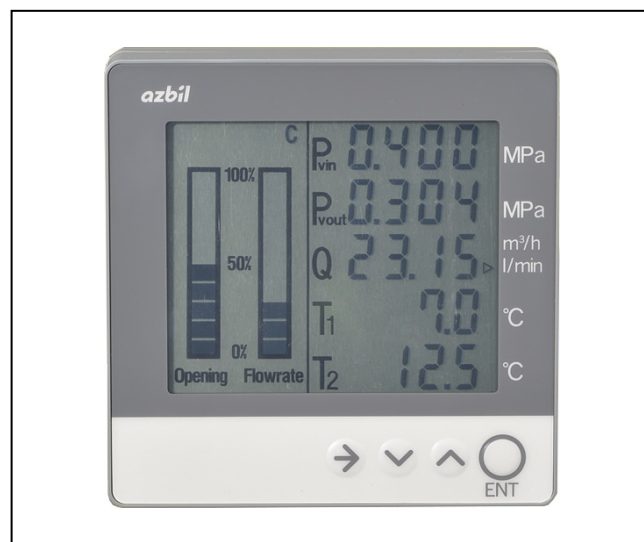
# Display Panel for ACTIVAL+™

## Modbus™ Protocol / Standalone Model

### General

Display Panel Model QY5010S1000 is the data indicator for ACTIVAL+™. Display Panel displays data measured by Model FVY513\_J/ FVY514\_J/FVY515\_J (flow pressure, flow temperature, flow) and valve position.

Besides, the setting buttons on the Display Panel allow you to set and change various data.



### Features

- Multiple data in a single display:  
You can check flow temperature of AHU inlet/outlet, flow pressure of valve inlet/outlet, and flow measured by Model FVY513\_J/FVY514\_J/FVY515\_J and the valve position at one time.
- Installable 50 m away from Model FVY513\_J/FVY514\_J/ FVY515\_J:  
Display panel is connected to Model FVY513\_J/ FVY514\_J/FVY515\_J with JIS\* VCTF cable (0.3 mm<sup>2</sup> × 4 cores), and max. cable length is 50 m.
- \* JIS: Japanese Industrial Standards
- Continuous display:  
Display Panel displays data all the time. You can thus check flow conditions and valve position at any time.
- Compact and lightweight:  
Small and light body facilitates installation on an AHU panel or inside a control panel cabinet.
- Easy wiring:  
Since Display Panel main unit is connected to the base plate with the connector inside, wiring to Display Panel is complete only by connecting the wires to the base plate.
- Parameter setting and error code check available:  
Display Panel allows you to set parameters and check error codes of Model FVY513\_J/FVY514\_J/FVY515\_J.



**Safety Instructions**

Please read instructions carefully and use the product as specified in this manual. Be sure to keep this manual nearby for quick 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 I 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 Q 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 d graphically indicates the actual action to be carried out. (For example, the sign on the left indicates general instructions.)

 **WARNING**

	Before wiring or maintenance, be sure to turn off the power to the product. Failure to do so might cause electric shock or device failure.
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 **CAUTION**

	Install and use the product under the operating conditions requirement (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.
	All wiring must comply with applicable codes and ordinances.
	Take anti-lightening measures based on regional and building characteristics. Lightening might cause fire or critical damage to the products without the anti-lightening measures.
	If more than the rated power voltage is applied to the product, replace the product with new one for your safety. Failure to do so might cause device failure or overheating.
	Do not disassemble the product. Doing so might cause device failure.
	Dispose of the product as industrial waste in accordance with your local regulations. Do not reuse all or part of this product.

## Model Number

Model number	Description
QY5010	Base model number of Display Panel for Model FVY513_J/FVY514_J/FVY515_J
S1000	Power supplied from Model FVY513_J/FVY514_J/FVY515_J

## Specifications

Item		Specification	
Power supply		12 V DC $\pm$ 1 V (supplied from Model FVY513_J/FVY514_J/FVY515_J)	
Power consumption		Max. 0.1 VA	
Cable		JIS VCTF (0.3 mm <sup>2</sup> $\times$ 4 cores) cable	
Environmental conditions	Rated operating condition* <sup>1</sup>	Ambient temperature	0 °C to 50 °C
		Ambient humidity	10 %RH to 85 %RH (non-condensing)
		Vibration	5.9 m/s <sup>2</sup> (10 Hz to 150 Hz)
	Transport/storage conditions	Ambient temperature	-20 °C to 70 °C
		Ambient humidity	10 %RH to 85 %RH (non-condensing)
		Vibration (storage)	5.9 m/s <sup>2</sup> (10 Hz to 150 Hz)
Enclosure rating		IEC IP40 (dustproof)	
Display* <sup>2</sup>	Device	Liquid Crystal Display (LCD)	
	Items to display	Pvin	Valve inlet pressure (MPa or kPa)
		Pvout	Valve outlet pressure (MPa or kPa)
		Q	Actual flow (m <sup>3</sup> /h or l/min)
		T1	Coil inlet temperature (°C)
		T2	Coil outlet temperature (°C)
		HC	Heat/Cool
		E	Error
		Opening	Actual valve position (% in bar graph)
		Flowrate	Actual flow rate (% in bar graph)
Communication	Transmission system	AP-bus (RS-485 communication)	
	Transmission speed	4800 bps	
	Transmission distance	Max. 50 m	
	Number of Display Panel connectable	One per single Model FVY513_J/FVY514_J/FVY515_J	
Materials	Case	Modified polyphenylene ether (PPE)	
	Base plate	Modified polyphenylene ether (PPE)	
	Face plate	Polyester (PET)	
Accessory		- Two tapping screws (M4) for mounting - Two 'kPa' unit stickers	
Weight		150 g	

Notes:

\*1 LCD service life may shorten if Display Panel is used in an environment with high temperature and humidity.

\*2 For display accuracy, refer to specification data of Model FVY513\_J/FVY514\_J/FVY515\_J.

## Recommended Wire Specifications

Cable type	Wiring length
Flexible cable (Cabtire cable), 0.3 mm <sup>2</sup> $\times$ 4-core, dia. 4.5 mm to dia. 6.0 mm / JIS* <sup>3</sup> VCTF cable, 0.3 mm <sup>2</sup> $\times$ 4-core, dia. 4.5 mm to dia. 6.0 mm. (Cable is not supplied with Display Panel.)	50 m

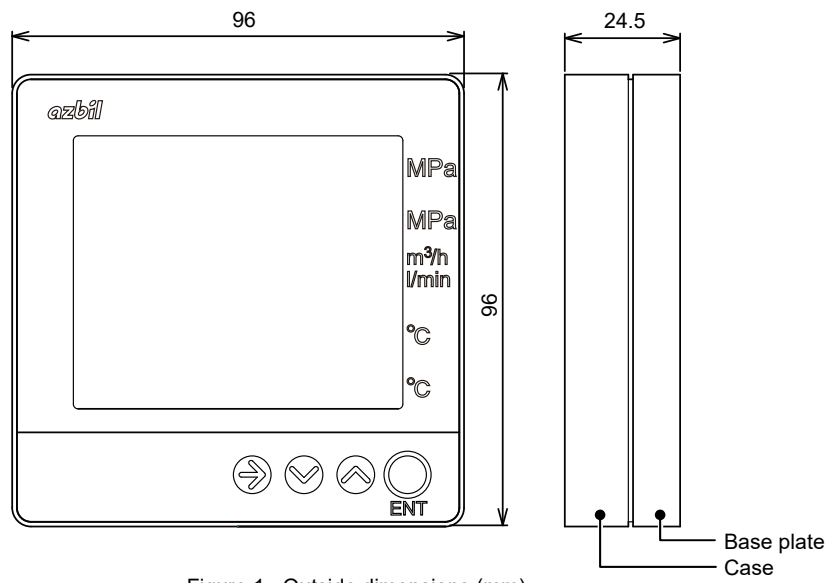
\*3 JIS: Japanese Industrial Standards

## Option

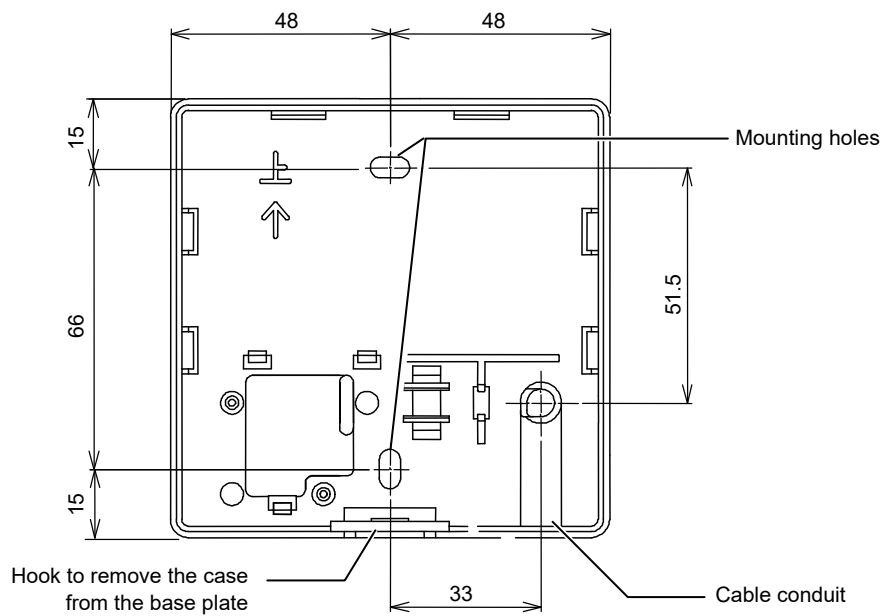
Item	Note
Waterproof box	Part No. 83170324-001 Required when Display Panel is installed outdoors.

**Dimensions**

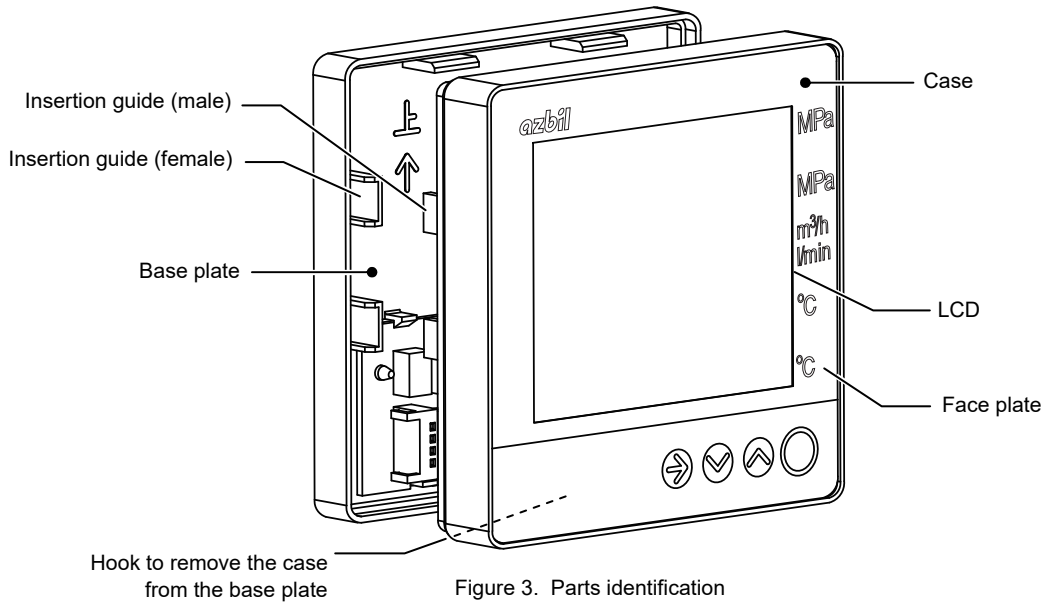
**Outside dimensions**



**Mounting dimensions of the base plate**



### Parts Identification



**Items to be displayed on LCD**

Analog values such as pressure, flow, and temperature are displayed on the LCD. Setting buttons set/change various parameters and display error description (when an error occurs). Be sure to enable the parameter setting (Parameter 60) before changing any parameters. For details, see **AB-7044 Instruction Manual of ACTIVAL +™ Modbus™ Protocol / Standalone Model**.

● **Analog values display screen**

Analog values display screen appears on the LCD when you turn on the Display Panel.

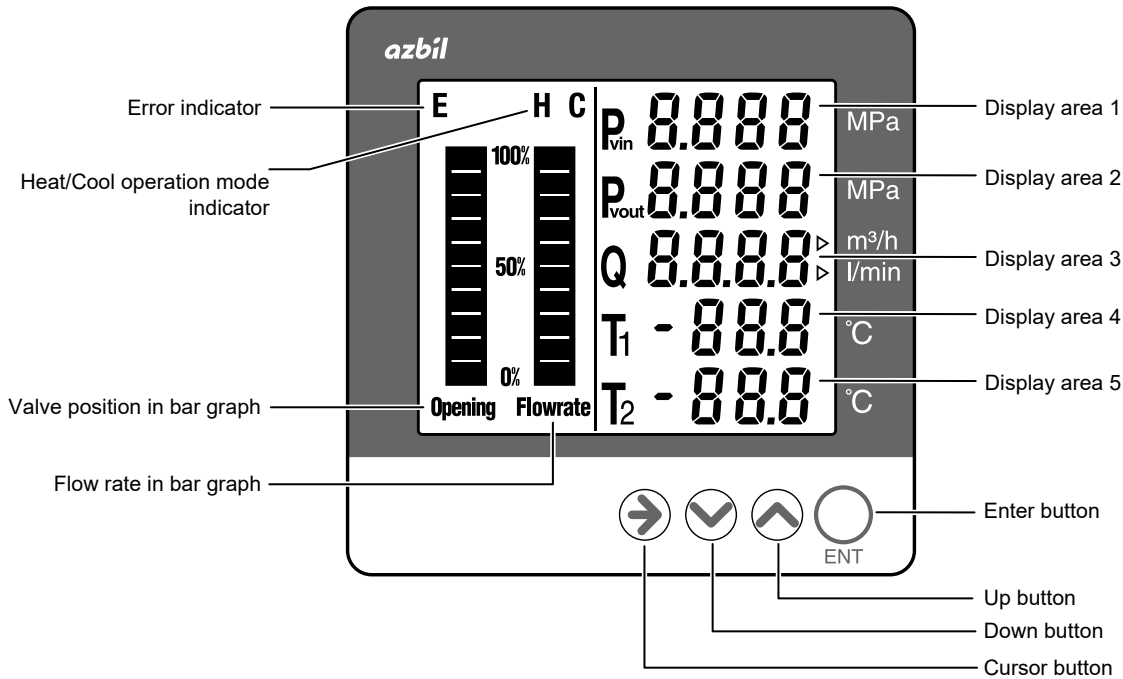


Figure 4. Analog values display screen

Display area	Item	Description	Display range		Unit
			Display Panel connected to:	Range	
1	Pvin	Valve inlet pressure	Model FVY5130/FVY5140/FVY5150	0.000 to 1.100 0 to 1100	MPa kPa *1
			Model FVY5137/FVY5147/FVY5157	0.000 to 1.800 0 to 1800	MPa kPa *1
			Model FVY513E/FVY514E	0.000 to 2.200 0 to 2200	MPa kPa *1
2	Pvout	Valve outlet pressure	Model FVY5130/FVY5140/FVY5150	0.000 to 1.100 0 to 1100	MPa kPa *1
			Model FVY5137/FVY5147/FVY5157	0.000 to 1.800 0 to 1800	MPa kPa *1
			Model FVY513E/FVY514E	0.000 to 2.200 0 to 2200	MPa kPa *1
3	Q	Actual flow	0 to 9999		m <sup>3</sup> /h or l/min *2
4	T <sub>1</sub>	Coil inlet temperature	-10.0 to 99.9		°C
5	T <sub>2</sub>	Coil outlet temperature	-10.0 to 99.9		°C
	Opening	Valve position indicated in a bar graph	0 to 100 (with every 10 % increment)		%
	Flowrate	Flow indicated in a bar graph	0 to 100 (with every 10 % increment)		%
	E	Error occurred ([E] flashes.)	—		—
	H C	AHU operation mode ([H]: Heat / [C]: Cool)	—		—

Notes:

\*1 The unit of the valve inlet and outlet pressure is selectable between 'MPa' and 'kPa' by setting on the Display Panel (Model QY5010S). If you select 'kPa,' put the 'kPa' unit stickers supplied with the Display Panel.

\*2 The unit of the actual flow is selectable between 'm<sup>3</sup>/h' and 'l/min' by setting on the Display Panel (Model QY5010S). The selected unit is indicated with [▷] mark on the display.

Setting buttons	Function
[→] Cursor button	Not used in the analog values display screen.
[v] Down button	Press this button to switch to the error display screen when the error indicator [E] flashes.
[^] Up button	Press this button to switch to the error display screen when the error indicator [E] flashes.
[ENT] Enter button	Press and hold this button to switch to the parameter setting screen.

● **Parameter setting screen**

Press and hold the [ENT] button to switch to the parameter setting screen from the analog values display screen.

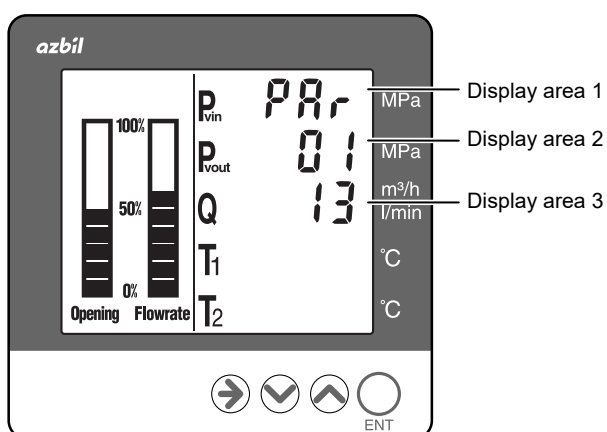


Figure 5. Parameter setting screen

Display area	Display item
1	PAR indicating the parameter setting screen
2	Parameter number
3	Current setpoint set for the parameter shown in the display area 2.
4	No item displayed
5	No item displayed

Setting buttons	Function
[→] Cursor button	Press this button to select the digit of the parameter number and of the setpoint. The selected digit flashes.
[∨] Down button	Press this button to change the selected digit.
[∧] Up button	Press this button to change the selected digit.
[ENT] Enter button	Press this button to finally set the changed parameter. Press and hold this button to go back to the analog values display screen.

Note:

No button operation for continuous 10 minutes on the parameter setting screen will automatically switch from the parameter setting screen to the analog values display screen.

● **Error display screen**

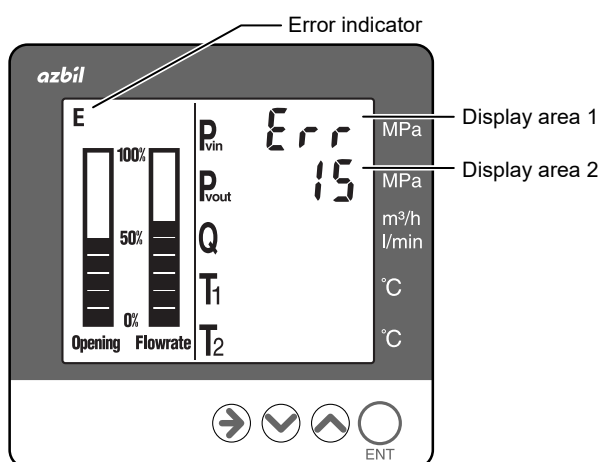


Figure 6. Error display screen



Display area	Display item
[E]	Error occurred
1	Err indicating the error display screen
2	Error code
3	No item displayed
4	No item displayed
5	No item displayed

Setting buttons	Function
[→] Cursor button	Not used in the error display screen.
[∨] Down button	Press this button to go back to the analog values display screen.
[∧] Up button	Press this button to go back to the analog values display screen.
[ENT] Enter button	Not used in the error display screen.

Note:

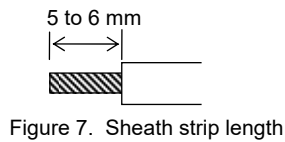
For details of the error codes, refer to **AB-7044 Instruction Manual of ACTIVAL +™ Modbus™ Protocol / Standalone Model**.

**Wiring and Installation**

 <b>WARNING</b>	
	Before wiring or maintenance, be sure to turn off the power to the product. Failure to do so might cause electric shock or device failure.

**Wiring**

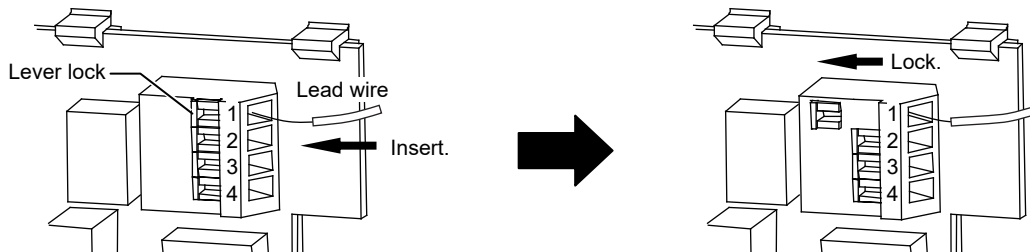
- 1) Press the hook on the bottom of the base plate and detach the case.
- 2) Use  $\Phi 5.5$  to  $\Phi 6.0$  mm cable (JIS VCTF ( $0.3 \text{ mm}^2 \times 4$  cores) cable recommended) for connection. Strip 5 to 6 mm sheath of each lead wire. (See Fig. 7.)
- 3) Refer to the wiring label (attached to the base plate) and insert stripped lead wires to each terminal.



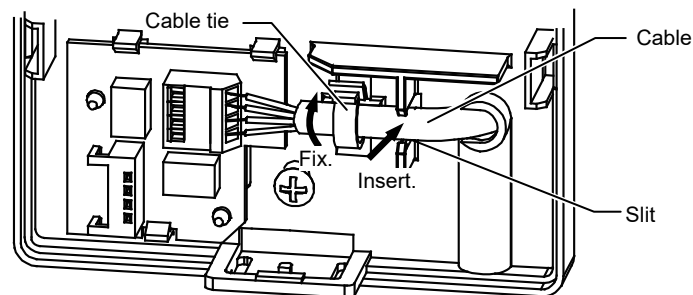
Terminals arrangement		
Terminal number	Type	Lead wire color*
1	12 V DC (+)	Red (RED)
2	0 V	Black (BLK)
3	AP-bus (+)	White (WHT)
4	AP-bus (-)	Green (GRN)

\* Note: Lead wire color shown in the above table is the wire colors of the recommended cable.

- 4) Lock each lead wire with lever lock provided on each terminal. Use a tool such as slotted screwdriver to slide the lever lock.



- 5) Insert the cable into the slit and fix the cable on the base plate with a cable tie.





**Installation**

**IMPORTANT:**

- Do not install this product in an atmosphere containing corrosive gas or explosive gas.
- Do not install this product in a location exposed to direct sunlight. Direct sunlight accelerates LCD degradation.
- Waterproof box (optional) is required for the product to be installed outdoors. Ask our sales personnel for the waterproof box.

**Procedure**

- 1) Make two holes for two M4 tapping screws (one for upper and the other for lower sides) on a mounting location, such as an AHU side plate or a panel cabinet. Distance between the centers of upper and lower M4 screws is  $66 \pm 2$  mm.
- 2) Lead the cable (connected to the base plate terminals) out of the base plate through the base plate conduit (on the bottom right), and mount the base plate on the mounting location with the two M4 tapping screws (accessory of Display Panel).

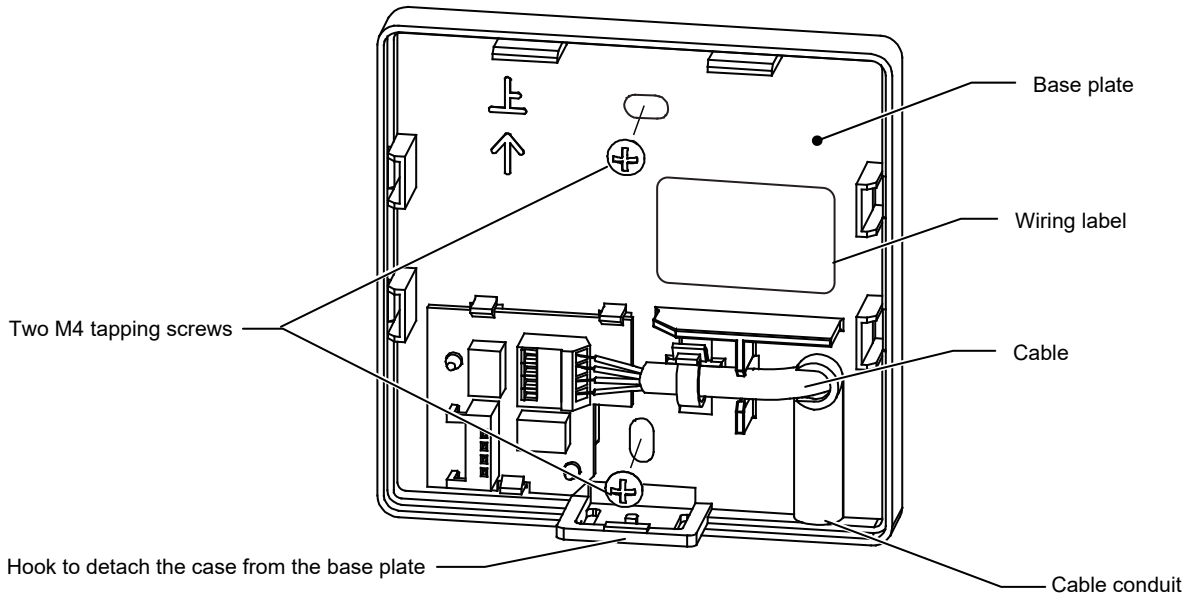


Figure 10. Mounting of the base plate with two M4 tapping screws

- 3) Assemble the case with the base plate by inserting the male insertion guide of the case into the female insertion guide of the base plate. Four insertion guides are provided on the right and left sides (Two on each side). Press the case well so that the case is completely assembled with the base plate. The case is connected to the base plate with the internal connector.

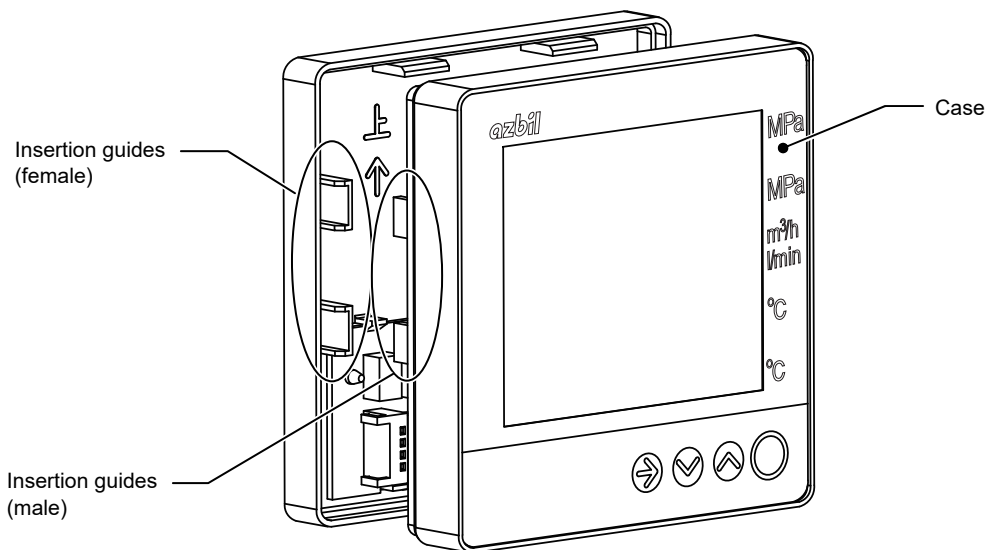


Figure 11. Case assembly with the base plate

4) Arrange the cable connected to Display Panel.

Cautions for arranging the cable:

- Do not pull the cable.
- To prevent water from flowing down to Display Panel through the cable, let the cable sag, as Fig. 12 shows.
- When installing Display Panel on an AHU side plate, seal the wiring hole on the AHU side plate, as Fig. 12 shows. Damp or dew condensation may damage the Display Panel, otherwise.

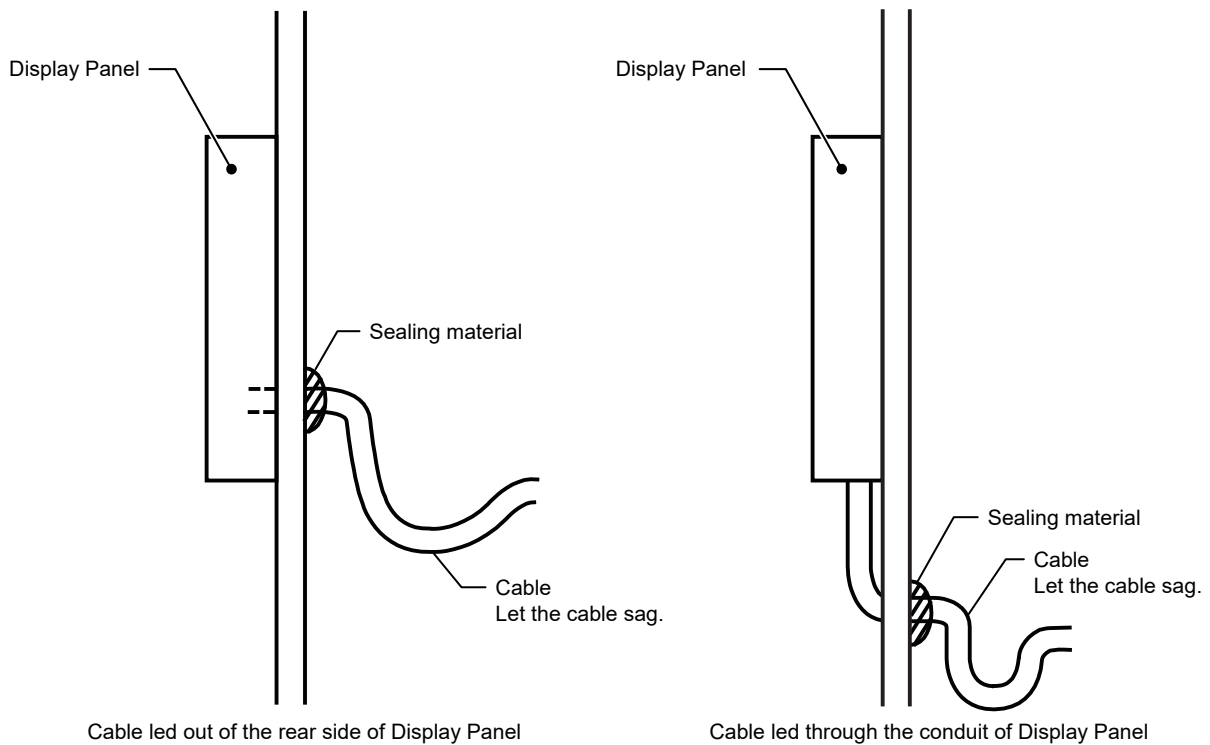


Figure 12. Cable arrangement

5) Film is attached to the front surface (face plate) of Display Panel for protection before shipment. Remove the film before activating Display Panel.

6) Display Panel is generally installed on a visible position such as on a wall in a machine room or on a control panel cabinet. However, it may possibly be installed outdoors or in a ceiling. In such a case, install the Display Panel as shown in Figs. 13 and 14. Consider the conditions and requirements of your Display Panel installation and decide the location.

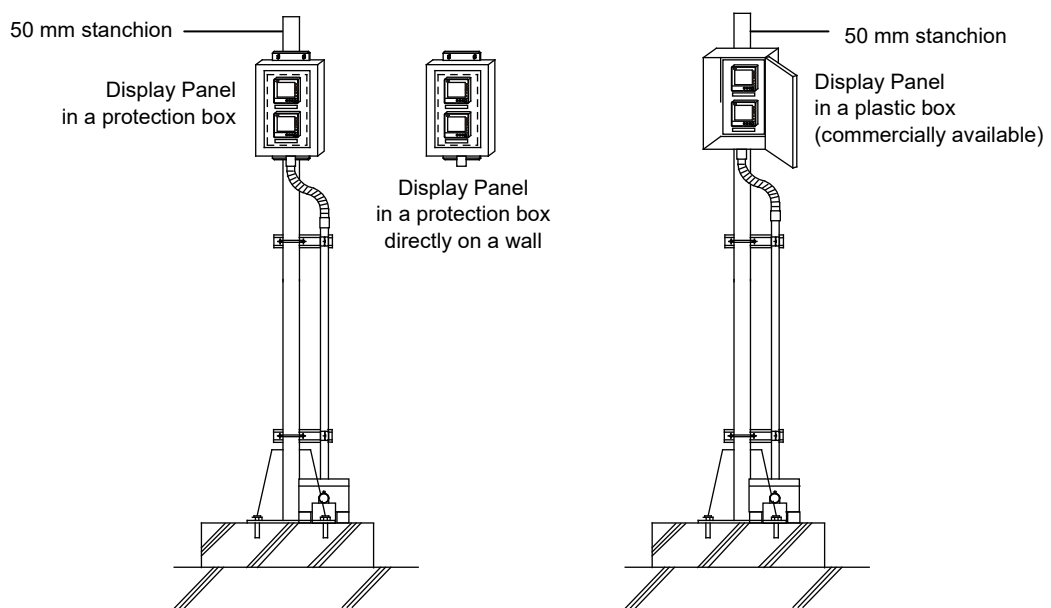


Figure 13. Display Panel installed outdoors (in a rainproof box)

If Display Panel needs to be installed in a ceiling, install it near the ceiling access panel. Mount Display Panel in a dustproof box to install in a dusty area in a ceiling.

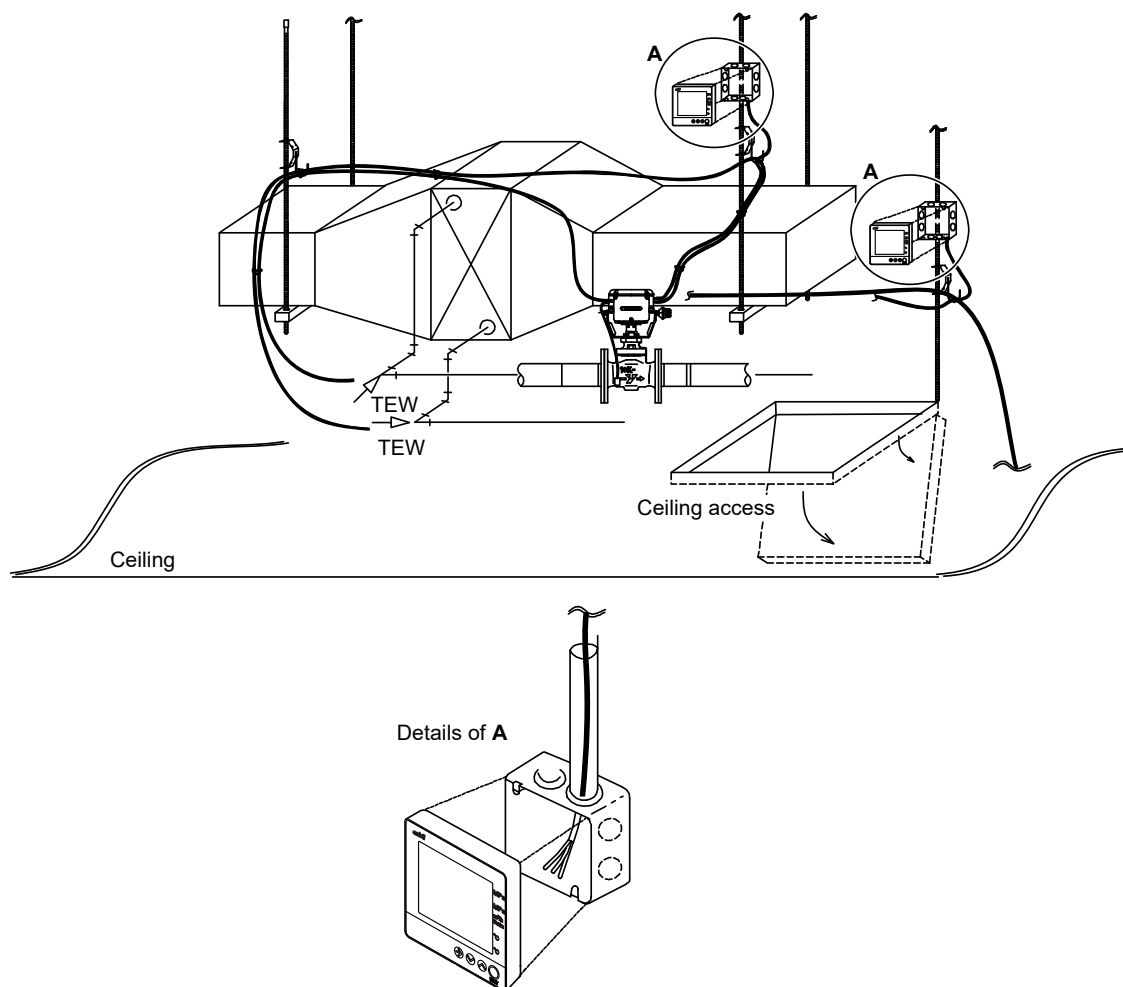


Figure 14. Display Panel installed in a ceiling

#### Wiring to Model FVY513\_J/FVY514\_J/FVY515\_J

**IMPORTANT:**

Do not pull the cable connected from the terminals of Display Panel to the terminals of Model FVY513\_J/FVY514\_J/FVY515\_J.

Display Panel is used in combination with Model FVY513\_J/FVY514\_J/FVY515\_J. To connect the cable to Model FVY513\_J/FVY514\_J/FVY515\_J, refer to Specification/Installation of Model FVY513\_J/FVY514\_J/FVY515\_J.

- AB-7408: ACTIVAL +™ Modbus™ Protocol Model (PN16/EN-GJL-200)
- AB-7042: ACTIVAL +™ Standalone Model (JIS 10K/FC200)
- AB-7131: ACTIVAL +™ Standalone Model (JIS 20K/SCPH2)

#### Maintenance

For replacement of Display Panel, whole unit must be replaced. Display Panel cannot be partially replaced.

#### Care for the face plate

Clean the face plate with dry soft cloth. Never use detergent or organic solvent to clean the screen. Otherwise, LCD screen will get scratched, discolored, or deformed.



This product complies with the following harmonised standards of the Electromagnetic Compatibility Directive (EMCD) and the Restriction of Hazardous Substances Directive (RoHSD).

EMCD: EN 61326-1 Class A, Table 2 (for use in an industrial electromagnetic environment)

RoHSD: EN 50581

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The Azbil logo, featuring the word 'azbil' in a bold, lowercase, sans-serif font.

*Specifications are subject to change without notice.*

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