

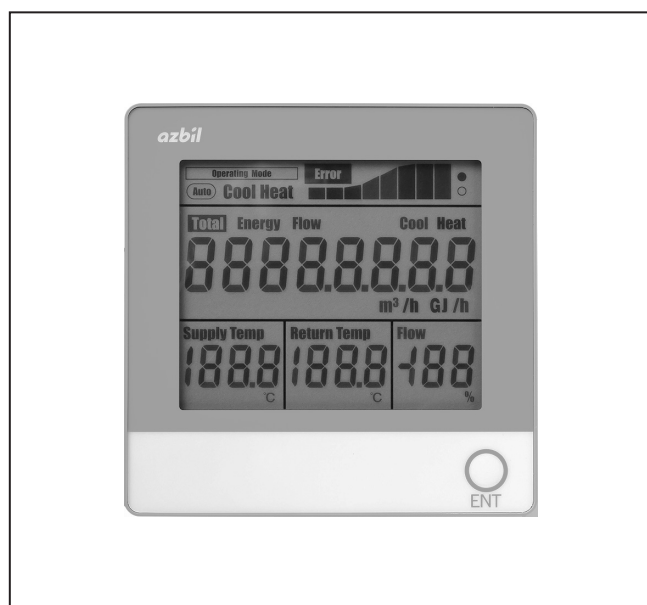
Display Unit of Heat Energy Calculator

■ Overview

This is the display panel specially designed for the heat energy calculator (Model WJ-1203W0000).

This product displays the total energy calculated in the heat energy calculator, supply water temperature, return water temperature, instantaneous flow rate, and operation mode.

You can also display other measurement values and information by pressing the button in the operation area.



■ Features

- This product allows you to check the total energy calculated in the heat energy calculator (Model WJ-1203W0000), supply water temperature, return water temperature, instantaneous flow rate, and operation mode (cooling/heating) on a single screen. Flashing indicates operations and the total flow rate fraction level is displayed in a bar chart. Error display shows the operation status. You can check the measurement values such as total energy, instantaneous energy, total flow rate, and temperature difference between the supply side and the return side for cooling and heating by operating the button.
- Connect the heat energy calculator (Model WJ-1203W0000) and the display panel with a cable (VCTF 0.3 mm² × 4). This product can be installed 3 m away from the heat energy calculator.
- The screen constantly displays information.
- This compact and lightweight panel can easily be attached to the side of the AHU or control panel.
- All you have to do is to connect the cable to the base plate attached to the side.
- You can view equipment information and error codes in the heat energy calculator (Model WJ-1203W0000).

Safety Precautions

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

Restrictions on Use

This product was developed, designed, and manufactured for general air conditioning use.

Do not use the product in a situation where human life may be at risk or for nuclear applications in radiation controlled areas. If you wish to use the product in a radiation controlled area, please contact Azbil Corporation.

Particularly when the product is used in the following applications where safety is required, implementation of fail-safe design, redundant design, regular maintenance, etc., should be considered in order to use the product safely and reliably.

- Safety devices for protecting the human body
- Start/stop control devices for transportation machines
- Aeronautical/aerospace machines

For system design, application design, instructions for use, or product applications, please contact Azbil Corporation.

Azbil Corporation bears no responsibility for any result, or lack of result, deriving from the customer's use of the product.

Recommended Design Life

It is recommended that this product be used within the recommended design life.

The recommended design life is the period during which you can use the product safely and reliably based on the design specifications.

If the product is used beyond this period, its failure ratio may increase due to time-related deterioration of parts, etc.



The recommended design life during which the product can operate reliably with the lowest failure ratio and least deterioration over time is estimated scientifically based on acceleration tests, endurance tests, etc., taking into consideration the operating environment, conditions, and frequency of use as basic parameters.

The recommended design life of this product is 6 years.
















The recommended design life assumes that maintenance, such as replacement of the limited life parts, is carried out properly.

Refer to the section on maintenance in this manual.

Warnings and Cautions

-  **WARNING** Alerts users that improper handling may cause death or serious injury.
-  **CAUTION** Alerts users that improper handling may cause minor injury or material loss.

Signs

	Alerts users to 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 means 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.)
 WARNING	
	Before wiring or maintenance, turn off the power to this product. Failure to do so may result in electric shock or device failure.
 CAUTION	
	Take anti-lightning surge measures based on regional and building characteristics. Lightning may cause fire or critical damage to this product if protective measures are not taken.
	Install, wire, and use this product under the conditions specified in this manual. Failure to do so may cause fire or device failure.
	Installation and wiring must be performed by personnel with special skills who are qualified for instrumentation work and electric work. Failure to abide by this may result in fire or electric shock.
	All wiring must comply with applicable codes and ordinances. Otherwise there is a danger of fire.
	If more than the rated power voltage is accidentally applied to this product, replace the product with a new one for your safety. Failure to do so may cause device failure or cause fire.
	Do not disassemble this product. Doing so may cause device failure.

■ Model Number

Basic model number	Power supply type	Description
QJ-1203	E0000	Power supply from Model WJ-1203W0000

Accessories

The following accessories are included with the display panel for the display unit of the heat energy calculator.

- Mounting screws (M4 tapping screws × 2)
- *Display Unit of Heat Energy Calculator Display Panel Model QJ-1203E0000 Specifications/Instructions* (this manual) × 1

■ Specifications

● Display

Item		Specifications		
Power voltage		12 V DC ±1 V (supply from Model WJ-1203W0000)		
Power consumption		0.1 VA or less		
Communication	RS-485	Transmission method	Dedicated serial communication	
		Transmission speed	4800 bps	
		Transmission distance	3 m or less	
		Number of connectable units	One panel can be connected to Model WJ-1203W0000.	
Display ^{*1}	Display device	LCD		
	Displayed measurement values	Total energy (cooling and heating) (GJ) Instantaneous energy (GJ/h) Total flow rate (m ³) Instantaneous flow rate (m ³ /h) Supply water temperature (°C) Return water temperature (°C) Temperature difference (°C) Energy conversion coefficient (in increments of 0.0001 MJ/m ³ ·°C) Operation mode (Cool/Heat) display Error display Total energy fraction level display (level chart) Operation display		
Materials	Case	Modified PPE resin		
	Base plate	Modified PPE resin		
	Surface sheet	Polyester (PET)		
	Rubber connector	Silicone rubber		
	Shield board	Kraft pulp, aluminum plyboard		
Weight		150 g		
Environmental conditions	Operating conditions ^{*2}	Ambient temperature	0–50 °C	
		Ambient humidity	10–85 % RH (without condensation)	
		Vibration	5.9 m/s ² max., 10–150 Hz	
	Transportation/storage conditions	Ambient temperature	–20–70 °C	
		Ambient humidity	10–85 % RH (without condensation)	
		Vibration (storage)	5.9 m/s ² max., 10–150 Hz	
		Vibration (transport)	9.8 m/s ² max., 10–150 Hz	
		Enclosure protection	IP40	
Installation location		Control panel		
Installation method		Mounted with screws		

*1 For the accuracy of displayed values, refer to the accuracy specifications of the product to be connected.

*2 The LCD lifetime is shorter in a hot, humid environment.

■ Specifications for Wiring

Item	Wire type	Cable length
Recommended cable	VCTF (0.3 mm ² × 4)	3 m or less

■ Dimensions

● Monitor Body

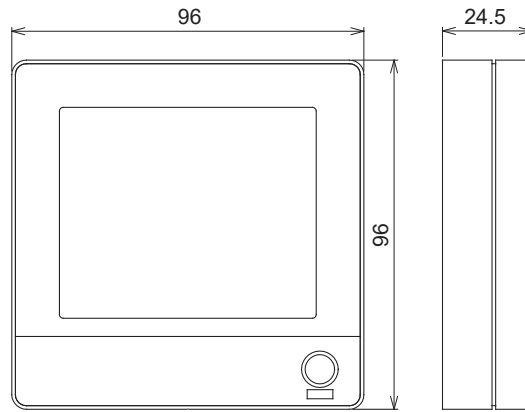


Figure 1 Dimensions (mm)

● Mounting Dimensions

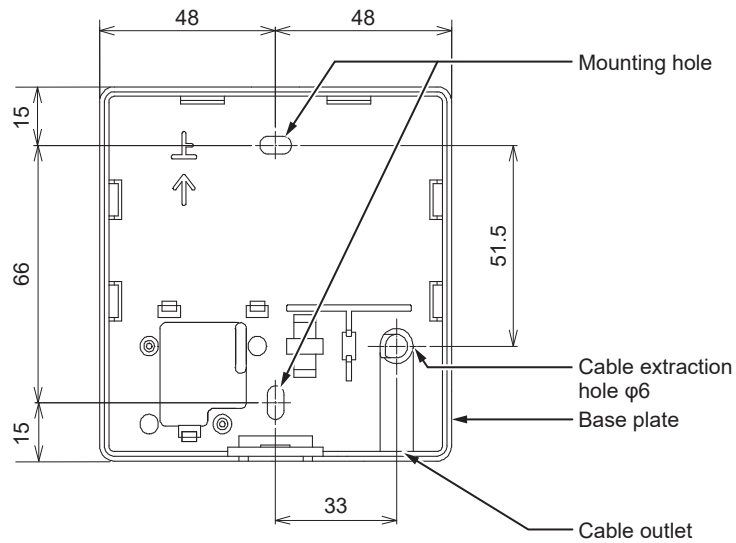


Figure 2 Mounting dimensions (mm)

■ Name of Each Section

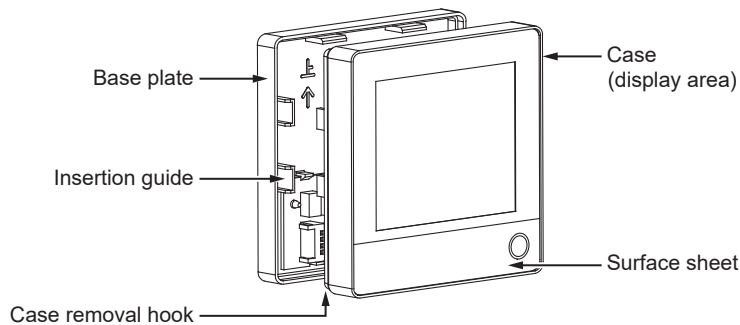


Figure 3 Name of each section

■ Details of Display Areas

The display areas show measurement values such as operation status, total energy, temperature, and flow rate. You can check the details of measurement values, equipment information, and the content of error logs saved in the event of an error by operating the [Enter] button. You can press the [Enter] button for 3 seconds or more (press and hold) or for less than 3 seconds (normal press). (Hereafter, press refers to a normal press.)

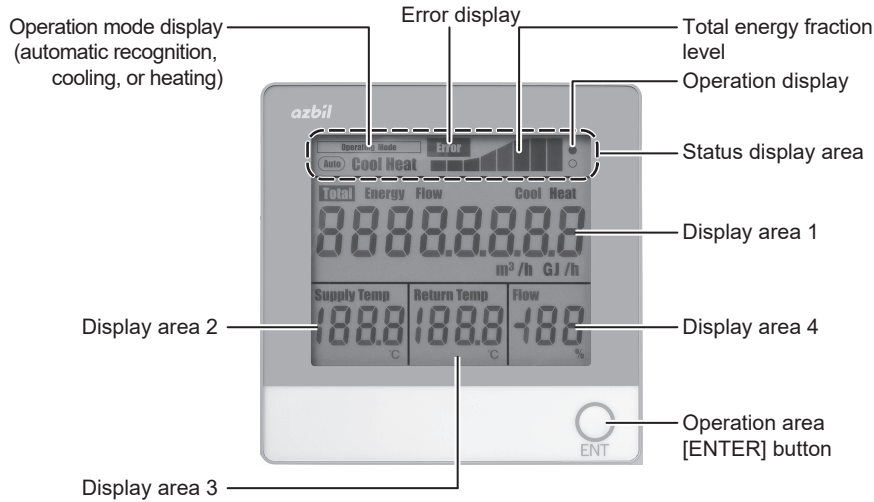


Figure 4 Names of display areas

As shown in the screen transition diagram in fig. 5, this product has a measurement value display mode, operation display mode, equipment information display mode, and error log display mode. Each mode has its own corresponding display items. The key operation changes mode and display items. The error display lights up in any mode if an error occurs.

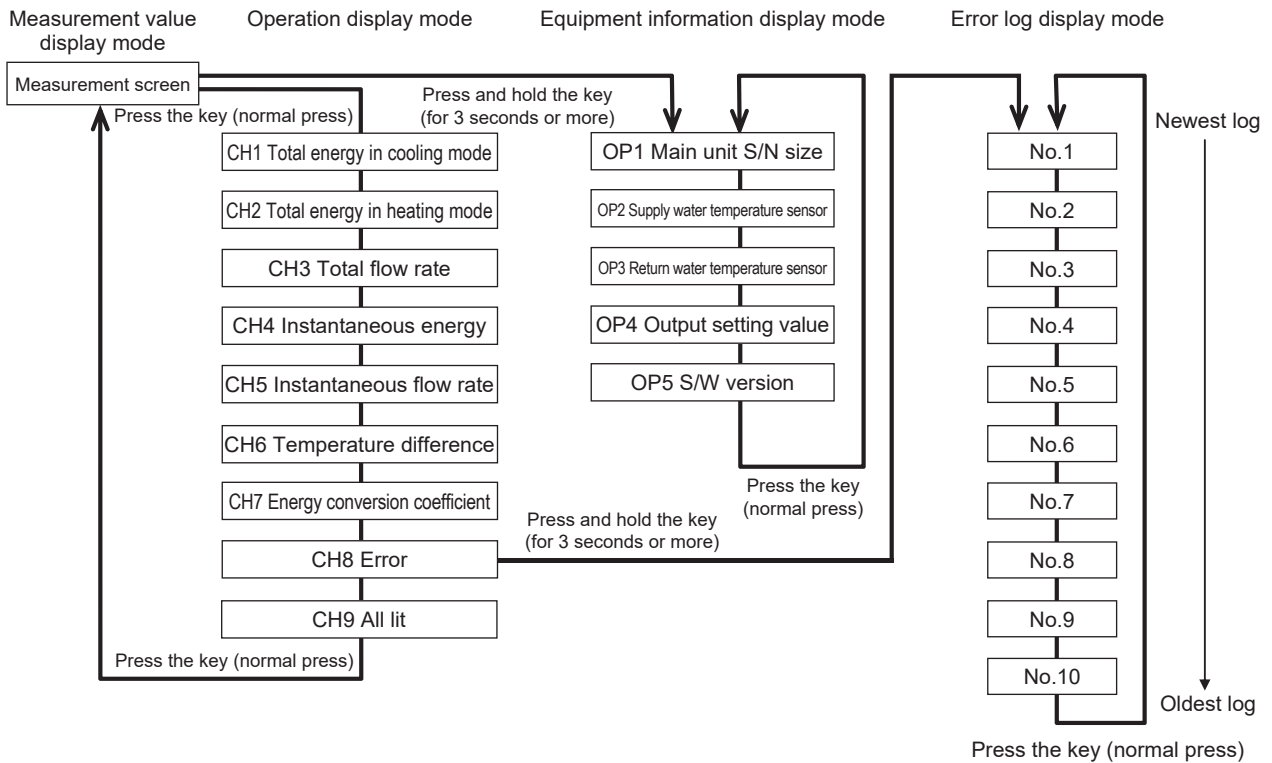


Figure 5 Screen transition

- If a data reception error (Err90 to Err99) occurs, the CH8 error screen appears.
- If no operations are performed for 10 minutes, all screens will return to the measurement screen unless a data reception error (Err90 to Err99) occurs on the CH8 error screen.
- Press and hold is disabled if a data reception error (Err90 to Err99) occurs while on the CH8 error screen.
- When you press and hold the key on a screen other than the measurement or CH8 screen, the measurement screen reappears.

● **Measurement Display Mode Screen**

When you turn on the power, the measurement display mode screen appears.

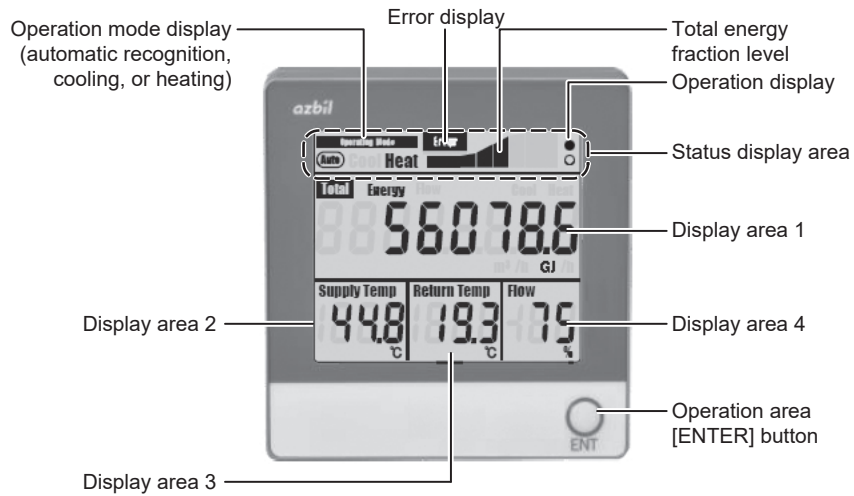


Figure 6 Example of the measurement value display mode screen

The status display area shows the status such as the operation mode.

Display item	Description of display	
	Display	Operation
Operation mode display	Operating Mode	Lit in measurement display mode.
	AUTO	Lit during automatic recognition (always on).
	Cool	Lit in cooling mode.
	Heat	Lit in heating mode.
Error display	Error	Lights up if an error occurs. (This lights up in any display mode if an error occurs.)
Total energy fraction level display	Bar chart	Displays the current accumulation status within one pulse.
Operation display	● ○	When the display panel is operating, ● and ○ alternately light up.

Display areas 1 to 4 show the total values and measurement values.

Display area 1 Description of display	Display area 2 Description of display	Display area 3 Description of display	Display area 4 Description of display
Total Energy Total energy (cooling/heating) (8 digits. The decimal point position depends on the setting.) GJ	Supply Temp Supply water temperature (4 digits, in increments of 0.1) °C	Return Temp Return water temperature (4 digits, in increments of 0.1) °C	Flow Instantaneous flow rate (3 digits, in increments of 1) %

● **Operation Display Mode Screen**

When you press the [Enter] button in measurement display mode, the display panel changes to operation display mode. Every time you press the [Enter] button, the mode No. changes to CH1, CH2, through CH9, and then to measurement display mode.

When you press and hold the [Enter] button on the screen of any mode No., the display panel returns to the measurement display mode.

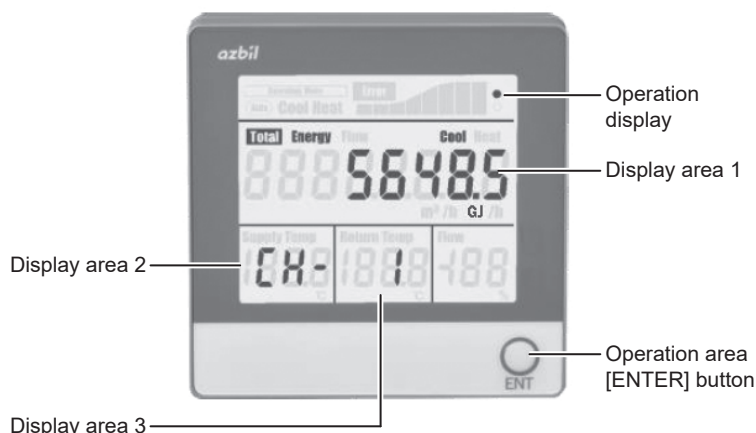


Figure 7 Example of the operation display mode screen

Mode No.	Status display area	Display area 1	Display area 2	Display area 3	Display area 4
CH1	Operation display	Total Energy Cool Total energy (cooling) (8 digits. The decimal point position depends on the setting.) GJ	CH-	1	
CH2	Operation display	Total Energy Heat Total energy (heating) (8 digits. The decimal point position depends on the setting.) GJ	CH-	2	
CH3	Operation display	Total Flow Total flow rate (8 digits. The decimal point position depends on the setting.) m ³	CH-	3	
CH4	Operation display	Energy Cool/Heat Instantaneous energy (cooling/heating) (The significant figures are 4 digits.) GJ/h	CH-	4	
CH5	Operation display	Flow Instantaneous flow rate (The significant figures are 4 digits.) m ³ /h	CH-	5	
CH6	Operation display	Cool/ Heat dt: Temperature difference (4 digits, in increments of 0.1) °C	CH-	6	
CH7	Operation display	Cool Heat k: Energy conversion coefficient (The significant figures are 4 digits.) (in increments of 0.0001 MJ/m ³ ·°C)	CH-	7	
CH8 ^{*1}	Operation display	(Maximum) error No. if Err has occurred ^{*2}	CH-	8	Number of errors (if there are errors)
CH9	All lit	All lit	All lit	All lit	All lit

*1 When you press and hold the [Enter] button on the screen where the mode No. of operation display mode is CH8, the display panel moves to error log display mode.

*2 Error Nos. 90 to 99 indicate errors in this display.
The display panel does not change to error log display mode even if you press and hold the [Enter] button.

● **Equipment Information Display Mode Screen**

When you press and hold the [Enter] button in measurement display mode, this display panel changes to equipment information display mode.

Every time you press the [Enter] button, the mode No. changes to OP1, OP2 through OP5, and back to OP1.

When you press and hold the [Enter] button on the screen of any mode No., the display panel returns to the measurement display mode.

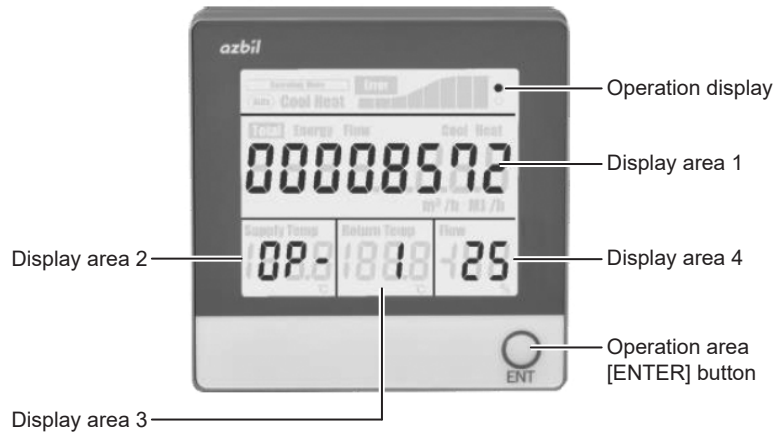


Figure 8 Example of the equipment information display mode screen

Mode No.	Status display area	Display area 1	Display area 2	Display area 3	Display area 4
OP1	Operation display	Serial number of the main unit of the calculation part (8 digits)	OP-	1	20 (fixed)
OP2	Operation display	Serial number of the supply water temperature sensor (8 digits)	Supply Temp OP-	2	
OP3	Operation display	Serial number of the return water temperature sensor (8 digits)	OP-	Return Temp 3	
OP4	Operation display	(Output for communication) Addr <i>address</i> (1 to 3 digits) (Output for pulse) PULSE <i>pulse exponent</i> (1 digit) * No pulse exponent is displayed if pulses are not output. * The address and the pulse exponent are alternately displayed every 2 seconds.	OP-	4	(Communication only) rS (Communication method) * Not displayed for pulse.
OP5	Operation display	Calculation part software version (2 digits + 2 digits + 2 digits)	OP-	5	Version auxiliary No. (2 digits)

● **Error Log Display Mode Screen**

When you press and hold the [Enter] button on the screen where the mode No. of operation display mode is CH8, this display panel changes to error log display mode. You can display the 10 most recent error logs. When you press and hold the [Enter] button, this display panel returns to measurement display mode regardless of the number.



Figure 9 Example of the error log display mode screen

Log No.	Status display area	Display area 1	Display area 2	Display area 3	Display area 4
1-10	Operation display	Cool/Heat (status in case of error) Total energy when the error log was recorded GJ	ErL (error log)	1-10 (log No.)	Error occurrence status display (error No.)


- The correspondence between the segment display in display area 4 in error log display mode and the description of the error is shown below.
- If multiple errors have occurred, each corresponding segment is displayed at the same time.
- When display area 4 does not show any information, the error log contains the status when errors were cleared.

Error No.	Error description	Error occurrence status display (segment display)
3	Total energy overflow	⋄ 0 0
4	Total flow rate overflow	⋄ 0 0
5	Flow rate input pulse overflow	⋄ 0 0
6	Pulse output value overflow	⋄ 0 0
7	Total energy output overflow	⋄ 0 0
8	Total flow rate output overflow	⋄ 0 0
9	Temperature gradient overflow	⋄ 0 0
10	Instantaneous [heat energy/flow rate] overflow	⋄ 0 0

Error No.	Error description	Error occurrence status display (segment display)
11	Temperature measurement circuit error	⋄ 0 0
12	Temperature measurement value range error	⋄ 0 0
13	Remote I/O communication error	⋄ 0 0
14	Remote I/O equipment error	⋄ 0 0
15	Remote I/O communication set error	⋄ 0 0
16		⋄ 0 0
17		⋄ 0 0


■ Installation and Wiring

⚠ WARNING




Before wiring, turn off the power to this product. Failure to do so may result in electric shock or device failure.

⚠ CAUTION



Installation and wiring must be performed by personnel with special skills who are qualified for instrumentation work and electric work. Failure to abide by this may result in fire or electric shock.



All wiring must comply with applicable codes and ordinances. Otherwise there is a danger of fire.

● Connection of Display Panel

- (1) Pull out the case, pressing the case removal hook on the base plate.
- (2) Use a cable with an outer diameter of $\phi 5.5$ to $\phi 6.0$. Strip 5–6 mm of the wire sheath. Insert wires into the terminal block according to the instructions on the wiring label affixed to the back of the base plate.

Table 1 Terminal layout

Terminal No.	Signal name	Color of lead wire sheath
1	DC+12V	Red (RED)
2	SG	Black (BLK)
3	DA	White (WHT)
4	DB	Green (GRN)

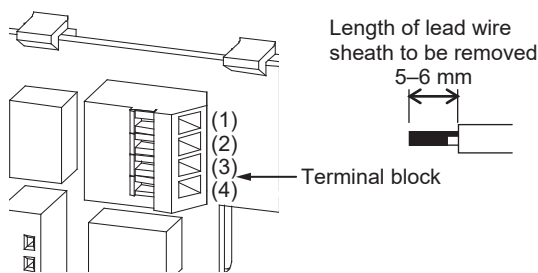


Figure 10 Lead wire connection

- (3) Pull the lock lever of each terminal to the left side with a flat-head screwdriver or other tool and secure it.

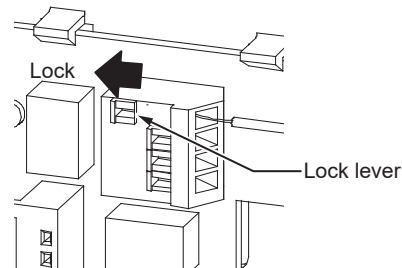


Figure 11 Locking in the terminal block

- (4) Insert the cable into the groove and secure it with a cable tie.

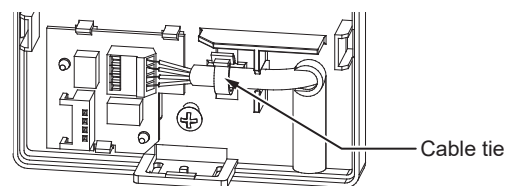


Figure 12 Securing the cable

● Installation of the Display Panel

IMPORTANT!!

- Do not install this product in a place with corrosive or explosive gases.
- Do not install this product in a place where it is exposed to direct sunlight. The LCD may degrade.
- Use a rainproof case (sold separately) when using this product outdoors.

- (1) Create holes for two M4 tapping screws (pitch between the upper and lower screws: 66 ± 2 mm) at the installation location on the AHU, panel, or other equipment.
- (2) Put the cable connected in the previous section through the cable outlet at the lower right of the base plate and attach it to the base plate with the two included M4 tapping screws.

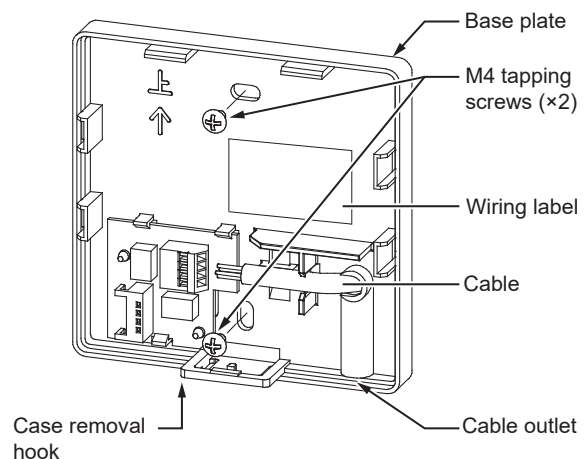


Figure 13 Installation of the base plate

- (3) Insert the case along the four insertion guides on the sides (two guides on each side) and securely press it into the case.
An internal connector connects the case and the base plate.

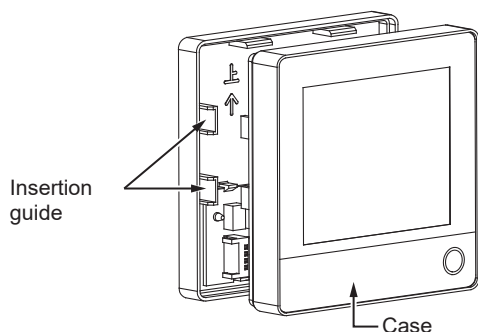


Figure 14 Case assembly

(4) Notes for wiring

- Do not pull the cable.
- Leave some slack as shown in fig. 15 to prevent water from entering.
- For example, when attaching the cable to the side board of the AHU, fill the gap of the cable outlet with sealing material so that the cable is not subject to humidity or condensation in the AHU.

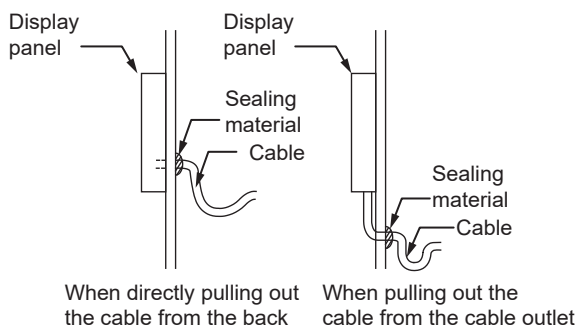


Figure 15 Wiring cable

- (5) The product is covered by a protective sheet at shipment.
Peel this sheet off before starting use.

● **Connection with the Heat Energy Calculator**

IMPORTANT!! • Do not pull connected cables.


This product is connected to the heat energy calculator (Model WJ-1203W0000).

For details on connection, refer to the following manual.

- AB-7474, *Heat Energy Calculator (Model WJ-1203W0000) Specifications/Instructions*

■ **Maintenance**

⚠ WARNING

 Before performing maintenance, turn off the power to this product.
Failure to do so may result in electric shock or device failure.

⚠ CAUTION

 Do not disassemble this product.
Doing so may cause device failure.

The whole display panel must be replaced.
Parts cannot be replaced.

● **Care**

If the monitor is dirty, lightly wipe off dirt with soft dry cloth, etc.
Do not use detergent, organic solvent, or other such substance.
Using such substances may cause damage, discoloration, or deformation.

■ **Disposal**

Dispose of the product as industrial waste in accordance with your local regulations.
Do not reuse all or part of this product.



Specifications are subject to change without notice

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*If there are any mistakes including misspelled words and incorrect descriptions in this manual,
please contact: ba.manual-feedback@azbil.com*