

Seri-Para I/O Unit for each indoor unit (CZ-CAPBC2) Procedures for Installation (Electrical Work) and Test Operation

For Your Safety

Read the following instructions carefully, and carry out secure installation and electrical work.

The precautions given in this manual consist of specific "⚠Warning" and "⚠Caution". They provide important safety-related information. Be sure to strictly observe all safety procedures. The labels and their meanings are as described below.

⚠Warning This symbol refers to a hazard or unsafe procedure or practice that can result in severe personal injury or death.

⚠Caution This symbol refers to a hazard or unsafe procedure or practice that can result in personal injury or product or property damage.

After installation is completed, perform a test run to check for operating trouble. Explain operating procedures to the customer and request the customer to store the Procedures for Installation (Electrical Work) and Test Operation of Seri-Para I/O Unit for each indoor unit.

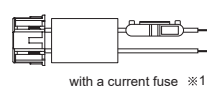

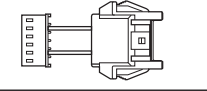


⚠Warning

- Be sure to arrange installation by the dealer where the system was purchased or by a professional installer. Electric shock or fire may result if an inexperienced person performs any installation or wiring procedures incorrectly.
- Be sure that this unit is securely installed in accordance with the Procedures for Installation (Electrical Work) and Test Operation of Seri-Para I/O Unit for each indoor unit. Electric shock or fire may result if any installation or wiring procedures are incorrectly performed.
- Only a qualified electrician should attempt to connect this system, in accordance with the instructions in this manual. Insufficient electrical circuit capacity or incorrect installation may cause electric shock and fire.
- Use the specified cables for the electrical connections, and connect the cables securely. Run and fasten the cables securely so that external forces or pressure placed on the cables will not be transmitted to the connection terminals. Overheating or fire may result if connections or attachments are not secure.
- This unit shall be installed in accordance with National Wiring Regulations.
- Choose an installation location that sufficiently supports the weight of the unit.

⚠Caution

- Depending on the installation conditions and location, an earth leakage breaker may be required. If an earth-leakage breaker is not installed, there is a danger of electric shock or fire.
- Ground yourself to discharge static electricity before performing any wiring.

Accessories

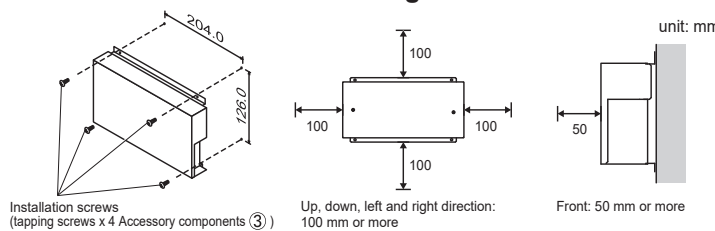
No.	Accessory	Quantity	No.	Accessory	Quantity
①	T10 cable (150mm) *1 	1	④	Wire joints 	2
②	T10 cable (100mm) *2 	1	⑤	Installation plan (this manual) 	1
③	Installation screws (tapping screws φ4x8mm) 	4			

*1 In the case of melting-down of fuse cables due to a short-circuit, wrong wiring or excessive current, change current to 125V/0.5A.

*1 Panasonic model or SANYO 4-series or newer type

*2 SANYO 3-series type

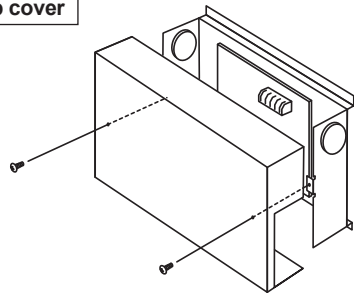
Installing



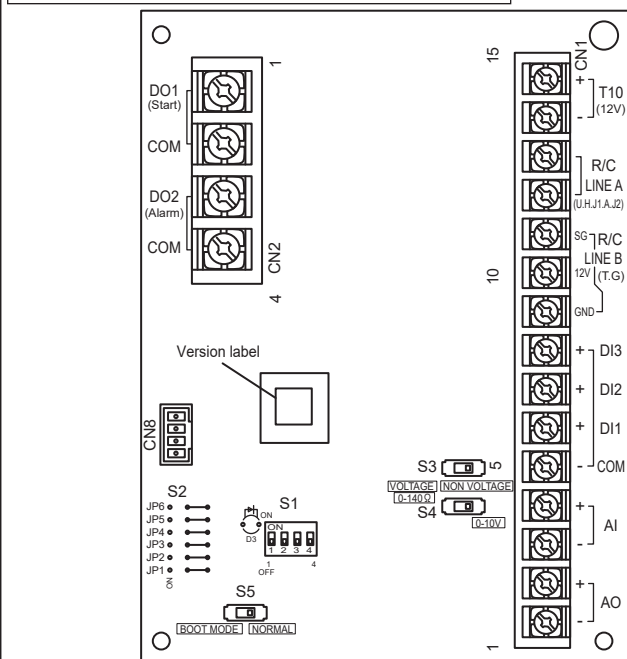
- Note:**
- Do not run the communication lines and power cables through the same conduit, or twist those cables together, or place the cables near one another. It can cause malfunction.
 - Install it away from any sources of electrical noise.
 - Avoid installing in any locations where the unit may come into contact with water, or in any extremely humid locations.
 - Avoid installing in any location that is subject to excessive vibration or physical impacts.

Wiring

Removing the top cover



Arrangement of the terminal block and switches



Terminal	Label	Description
15	+	T10(12V) 12 V power supply
14	-	T10(12V) 12 V power supply
13	-	R/C LINE A Remote control line A
12	-	R/C LINE A Remote control line A
11	SG	R/C LINE B Remote control line B
10	12V	R/C LINE B Remote control line B
9	GND	R/C LINE B Remote control line B
8	+	DI 3 Digital input
7	+	DI 2 Digital input
6	+	DI 1 Digital input
5	-	COM Digital input
4	+	AI Analog input (Change temperature setting / Peak cut setting)
3	-	AI Analog input (Change temperature setting / Peak cut setting)
2	+	AO Analog output (Room temperature monitor)
1	-	AO Analog output (Room temperature monitor)

Terminal	Label	Description
1	DO1	Digital output 1 (Start output)
2	COM	Digital output 1 (Start output)
3	DO2	Digital output 2 (Alarm output)
4	COM	Digital output 2 (Alarm output)

Switch	Label	Description
S1	Control type setting switch	
S2	Detail setting switch	
S3	Voltage present / absent switch	
S4	Voltage / resistance input setting switch	
S5	Not used	

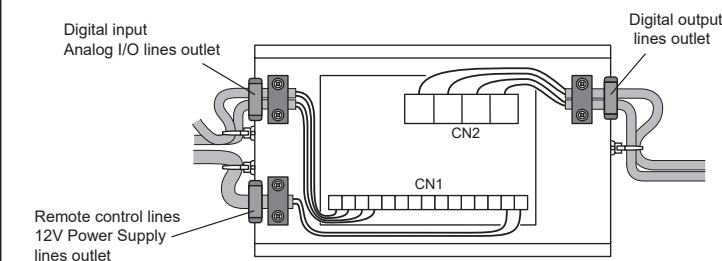
Terminal	Label	Description
CN8		Not used

Caution:

- Always use round connectors with insulator hold-down for wiring to the terminal block. (CN1 uses M3.0, CN2 uses M3.5)

Securing the wiring

Make sure to secure all wiring using the clip wires inside the unit, and the cable clamps outside the unit.



Caution:

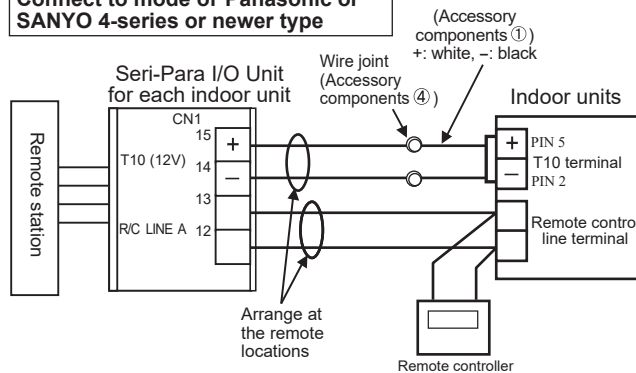
- If using high-voltage wiring such as AC power supply (Digital output), make sure that wiring does not contact any component on the circuit board, or any low-voltage (CN1) wiring.

(1) Connecting to indoor units

- Do not run the control lines and power cables in the same conduit, do not connect those lines and cables with the same wire, and do not place those lines and cables close together. (Maintain a minimum 30cm separation.)

- Wiring specifications
Type: vinyl insulated cord with sheath
Thickness: 0.5 to 2.0 mm²
Length: 100 m maximum

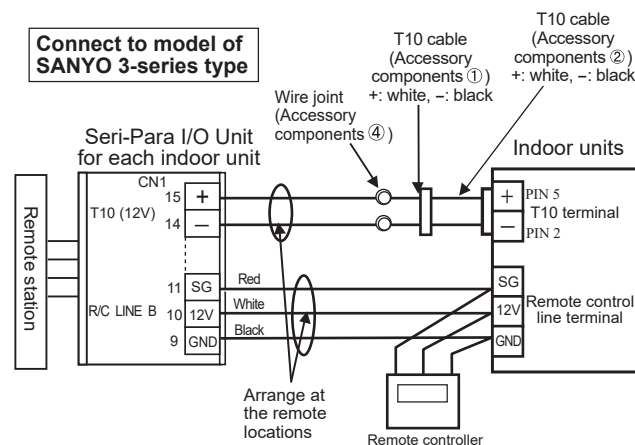
Connect to mode of Panasonic or SANYO 4-series or newer type



- Remote control line
Connect terminals 12 and 13 (Remote Control Line A) on the Seri-Para I/O Unit terminal block CN1 to the Remote Control terminals of the indoor unit.
There is no polarity for the signal wires.

- 12V power supply line
Connect terminals 14 and 15 (12V Power Supply Line) on the Seri-Para I/O Unit terminal block CN1 to the T10 terminal of the indoor unit. The polarity of the connection is important; make sure to connect the + and - terminals correctly.
Wrong polarity wiring may result in damage to the units.

Connect to model of SANYO 3-series type



- Remote control line
Connect terminals 9, 10, and 11 (Remote Control Line B) on the Seri-Para I/O Unit terminal block CN1 to the Remote Control terminals of the indoor unit. The polarity of the connection is important; make sure to connect the GND, 12V and SG correctly.
Wrong polarity wiring may result in damage to the units.

- 12V power supply line
Connect terminals 14 and 15 (12V Power Supply Line) on the Seri-Para I/O Unit terminal block CN1 to the T10 terminal of the indoor unit.
The polarity of the connection is important; make sure to connect the + and - terminals correctly.
Wrong polarity wiring may result in damage to the units.

Cautions

- In addition to the Seri-Para I/O Unit, be sure to install a remote control or centralized control device (system controller, etc.) in the indoor unit.
- Two or more Seri-Para I/O Units cannot be linked within a remote control line.
- The Seri-Para I/O Unit cannot be used with a control device which uses the T10 terminal of the indoor unit (example: indoor unit relay board, schedule timer, etc.)

(2) Connecting to the Remote Stations

- Do not run the control lines and power cables in the same conduit, do not connect those lines and cables with the same wire, and do not place those lines and cables close together. (Maintain a minimum 30cm separation.)

Name	Input/output item	Seri-Para I/O Unit side	Remote Station side
Digital input/output terminal	Digital input ※1	Input/output conditions: DI1 Input, DI2 Input, DI3 Input Voltage a-contact static or Voltage a-contact pulses Allowable contact voltage and current: DC 24 V, 10 mA Voltage present / absent switch: S3 Voltage absent: set to [NON VOLTAGE] Voltage present: set to [VOLTAGE]	Example Circuit: Digital input terminals CN1-8 (DI 3), CN1-7 (DI 2), CN1-6 (DI 1), CN1-5 (COM) connected to Remote Station terminals DI 3, DI 2, DI 1, and COM. Input/output conditions: Voltage present 12 to 24V or Voltage absent When pulse input: 200 ms minimum
	Digital output ※2	Start output, Alarm output No-voltage a-contact static Allowable contact voltage and current: AC 240 V, 3A, DC 24 V, 3A (Minimum load 10mA)	Example Circuit: Digital output terminals CN2-1 (DO 1), CN2-2 (COM), CN2-3 (DO 2), CN2-4 (COM) connected to Remote Station terminals DO 1, COM, DO 2, and COM.
Analog input/output terminal	Analog input ※3	For indoor temperature setting input: Input voltage: 0 to 10V or 0 to 140Ω Temperature setting range: Within the indoor units temperature setting range Temperature reading: In steps of 1°C For peak cut setting input: Input voltage: 0 to 10V, Setting range 40 to 115% and thermo off In steps of 5% Voltage / resistance input setting switch: S4 Voltage level input: Set to [0 to 10V] Resistance connection: Set to [0 to 140Ω]	Example Circuit: Analog input terminals CN1-4 (AI+), CN1-3 (AI-), and CN1-2 (COM) connected to Remote Station terminals AI+, AI-, and COM. For analog inputs, use within 0.1% of reference accuracy
	Analog output ※4	Indoor temperature monitor output Output current: 4 to 20 mA Temperature indication range: 5 to 36 °C, 0.5 °C step	Example Circuit: Analog output terminals CN1-2 (AO+), CN1-1 (AO-), and CN1-3 (COM) connected to Remote Station terminals AO+, AO-, and COM. Allowable load: 240 Ω maximum

※1 Digital input

● Select the control type using control type setting switch S1, according to the table below.

Control type	Input1 (DI 1)		Input2 (DI 2)		Input3 (DI 3)		Voltage a-contact static/pulses ※1
	(open)	(close)	(open)	(close)	(open)	(close)	
0	Start Fan low	Indoor units stop when all of Input 1, 2, 3 are open	Start Fan medium	Indoor units stop when all of Input 1, 2, 3 are open	Start Fan high	Indoor units stop when all of Input 1, 2, 3 are open	All input: static
1	Start Prohibit R/C Start/Stop	Stop Prohibit R/C Start/Stop	Start Accept R/C Start/Stop	Stop Prohibit R/C Start/Stop	Stop Prohibit R/C Start/Stop	-	Input 1, 2: static Input 3: pulse
2	Start Prohibit R/C Start/Stop	Stop Prohibit R/C Start/Stop	Start Accept R/C Start/Stop	Stop Prohibit R/C Start/Stop	Stop Prohibit R/C Start/Stop	-	Input 1, 2: static Input 3: pulse
3	Start <-> Stop Prohibit R/C Start/Stop	-	Start <-> Stop Accept R/C Start/Stop	-	Stop Prohibit R/C Start/Stop	-	-
4	Start Prohibit R/C Start/Stop	-	Start Accept R/C Start/Stop	-	Stop Prohibit R/C Start/Stop	-	-
5	Start Prohibit R/C Start/Stop	-	Start Accept R/C Start/Stop	-	Stop Prohibit R/C Start/Stop	-	All input: pulse
6	Start Accept R/C Start/Stop	-	Start Accept R/C Start/Stop	-	-	-	-
7	Start <-> Stop Prohibit R/C Start/Stop	-	Start <-> Stop Accept R/C Start/Stop	-	Set thermostat OFF	Release thermostat OFF	Input 1, 2: pulse Input 3: static
8	-	-	-	-	-	-	-
9	Heat	Cool	Fan	-	-	-	All input: pulse
10	Heat Start	Indoor units stop when all of Input 1, 2, 3 are open	Cool Start	Indoor units stop when all of Input 1, 2, 3 are open	Fan Start	Indoor units stop when all of Input 1, 2, 3 are open	All input: static
11	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-
15	Start	Stop	-	-	Set thermostat OFF	Release thermostat OFF	All input: static

※ R/C: Remote Controller

※1: When inputting pulses, set the pulse width to 200 ms.

● Wiring specifications

Type: vinyl insulated cord with sheath
Thickness: 0.5 to 2.0 mm²
Length: 100 m maximum

※2 Digital output

- D01 for start output signal.
D02 for alarm output signal.
- Maximum allowable contact voltage and current are AC 240 V and 3 A maximum or DC24 V and 3 A maximum.
- Wiring specifications are for digital input.

※3 Analog input

Select the analog input type from the following 2 types.
Refer to JP1 of "Detail setting switch S2".

- Temperature setting type (factory default) ■ Peak cut setting type

■ For the temperature setting type:

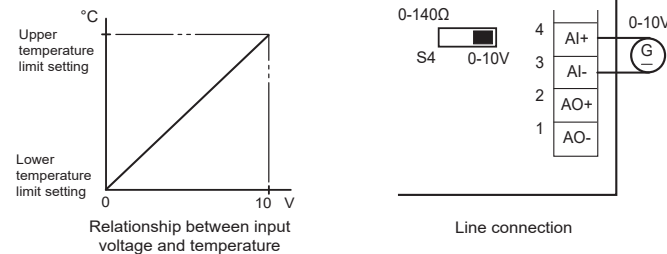
- Select the temperature setting control method from the following 3 types.
 - Input voltage ① (equally divided upper and lower setting temperature limits)
 - Input voltage ② (fixed voltage)
 - Input resistance

● For input voltage ① ②

- Set the Voltage / resistance input setting switch S4 to "0 to 10 V" (factory default)
- Wiring specifications
Type: vinyl insulated cord with sheath (shield line recommended)
Thickness: 1.25 to 2.00 mm²
Length: 70 m maximum

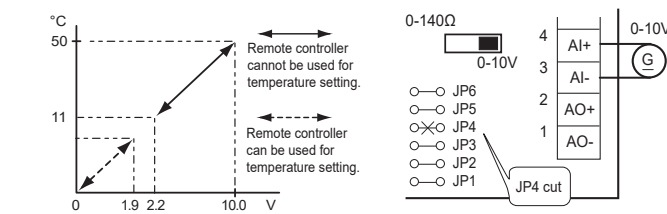
● Input voltage ① (equally divided upper and lower setting temperature limits)

- Performed in the input range of 0 to 10 V DC (lower setting temperature limit to upper setting temperature limit).
- Relationship between setting temperature and voltage is as the diagram below.
- Upper and lower temperature setting limits may vary according to the indoor units and operation mode.
- Refer to the relationship between setting temperature and voltage, described in (example) 3-1 "Operation mode of a typical model [lower limit to upper limit]".



● Input voltage ② (fixed voltage)

- Performed in the input range of 0 to 10 V DC.
- The effective range of the setting temperature is 2.2 V to 10 V (11 °C to 50 °C). Remote controller cannot be used for temperature in this range.
- When the input exceeds the upper or lower setting temperature limits, it is set to the upper or lower limits.
- For example, in the case of air-conditioning (cool) [18 °C to 30 °C], and if the voltage is below 3.5 V, the temperature is set to 18 °C, and if over 6.2 V, to 30 °C.
- To set the temperature using remote controller, set the input voltage below 1.9 V.



Mapping table of setting temperature and input voltage (input voltage ②)

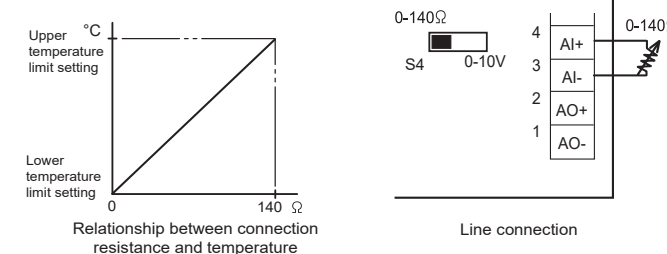
Temperature setting [°C]	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Input voltage [V]	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0

Note:

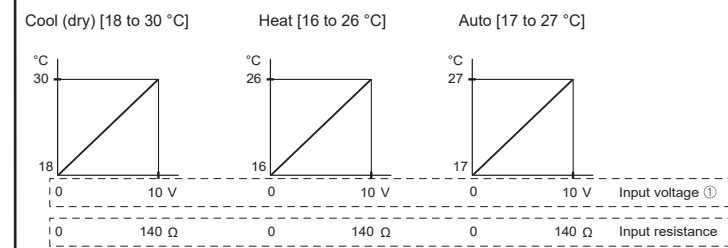
Enter the voltage after an indoor unit has been connected.
The maximum input voltage is 10 V. Over 10 V input voltage may cause malfunction.

● Input resistance

- Temperature setting (1 °C step) is performed in the range of 0 to 140 Ω.
- Relationship between setting temperature and resistance is as the diagram below.
- Upper and lower temperature setting may vary according to the indoor units and operation mode.
- Refer to the relationship between setting temperature and resistance, described in (example) 3-1 "Operation mode of a typical model [lower limit to upper limit]".
- Set the Voltage / resistance input setting switch S4 to "0 to 140 Ω".
- Wiring specifications
Type: vinyl insulated cord with sheath (shield line recommended)
Thickness: 1.25 to 2.00 mm²
Length: 70 m maximum



(example) 3-1: Operation mode of a typical model [lower limit to upper limit °C]



■ For the peak cut setting type:

- Set the Voltage / resistance input setting switch S4 to "0 to 10 V" (factory default)

Mapping table of setting peak cut (operation capacity%), start/stop and input voltage (DC)

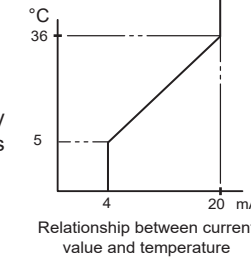
Input voltage [V]	0	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
Operation capacity [%]	No cut	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	No cut	thermo off
Indoor unit Start/stop	Stop	Start																	

Note:

The indoor unit will start operations if the input voltage is changed from 0V to 1V or higher, and will stop if changed from 1V or higher to 0V.
Enter the voltage after an indoor unit has been connected.
The maximum input voltage is 10V. Over 10V input voltage may cause malfunction.

※4 Analog output

- The indoor temperature monitor output is from 4 to 20 mA DC (5 to 36°C), and the temperature can be set in steps of 0.5°C.
- Take care of the measurement units used by the central monitor. The wiring specifications are for analog input.
- Keep the load resistance below 240 Ω.



Settings switch

Control type setting switch S1

Control type	S1				S1			
	1	2	3	4	1	2	3	4
0	-	-	-	-	8	-	-	-
1	●	-	-	-	9	●	-	-
2	-	●	-	-	10	-	●	-
3	●	●	-	-	11	●	●	-
4	-	-	●	-	12	-	-	●
5	●	-	●	-	13	●	-	●
6	-	●	●	-	14	-	●	●
7	●	●	●	-	15	●	●	●

○ : OFF ● : ON

Refer to digital input.

Detail setting switch S2

S2	JP6	Connection	N/C	(factory default)	
●	JP6	Connection	Cut	N/C	
●	JP5	Connection	With Remote controller or centralized control system	(factory default) ※4	
●	JP4	Connection	Cut	Without Remote controller or centralized control system	
●	JP3	Connection	Input voltage ①	(factory default) ※3	
●	JP2	Connection	Cut	Input voltage ②	
●	JP1	Connection	Output control temperature as room temperature	(factory default) ※2	
		Connection	Cut	Output intake temperature as room temperature	
		Connection	Cut	Set temperature push priority	(factory default) ※1
		Connection	Cut	Prohibit Remote controller temperature setting	
		Connection	Cut	Analog input: Temperature setting	(factory default)
		Connection	Cut	Analog input: Peak cut setting	

- ※1: Switches the local remote control temperature setting operation between push priority and operation prohibited.
- ※2: Switches the room temperature monitor output between the temperature used by the controller (when heating, the intake temperature with shift, or the remote control sensor) and the intake temperature.
- ※3: **Cut (fixed voltage) JP4, although no change the setting temperature with Seri-Para I/O Unit. Do not enter the voltages to No.3 and 4 (AI±) of CN1 at the time.**
- ※4: When using the Seri-Para I/O Unit, it is standardized to connect a remote controller or a centralized control system (i.e. System controller). To use the Seri-Para I/O Unit by itself (without a remote controller or a centralized control system), cut JP5. In this regard, however, the operational functions (such as operation mode, fan speed and wind direction) will be limited with only the Seri-Para I/O Unit.

Voltage present / absent switch S3

Voltage present / absent switch S3	Voltage / resistance input setting switch S4
(factory default)	(factory default)
For digital input, switches between voltage present and voltage absent.	For analog input, switches between input voltage and input resistance.

Boot Switch S5

Boot Switch S5
(factory default)
Always set the S5 switch to NORMAL.

LED (Green) display

LED (Green) display

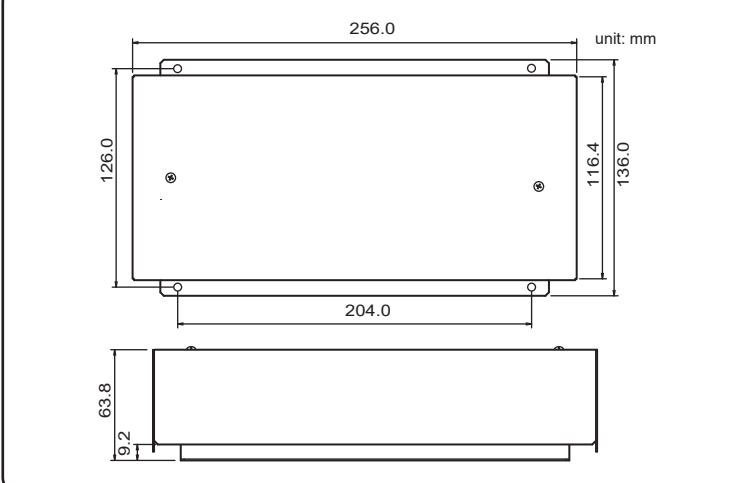
LED display	Meaning	Action to take
Off	Power Off	Check the remote control line connection
Blinking at 3 s intervals	12V (T10 terminal) power supply error	Check the power supply line connection Make sure that the fuse of the T10 cable (accessory components 1) does not meltdown
On/off out at 1 s intervals	Indoor unit alarm	Clear the indoor unit alarm
On/off out at 100 ms intervals	Initializing communications, communications error	Check the remote control line connection
On ※1	Normal operation	-

※1: When transmitting setting data to an indoor unit, the LED will be turned off for 200 ms.

Product specifications

Power	DC12V
Power consumption	1.2W, 0.1A
Operating environment conditions	Temperature: -10 to 50°C; Humidity: 20 to 80%; for indoor use only
External dimensions	256.0 mm (w) x 136.0 mm (d) x 63.8 mm (h)
Weight	0.9 kg

External dimensions



Disposal of Old Equipment

Only for European Union and countries with recycling systems

This symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products must not be mixed with general household waste.

For proper treatment, recovery and recycling of old products, please take them to applicable collection points in accordance with your national legislation.

By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment. For more information about collection and recycling, please contact your local municipality.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.