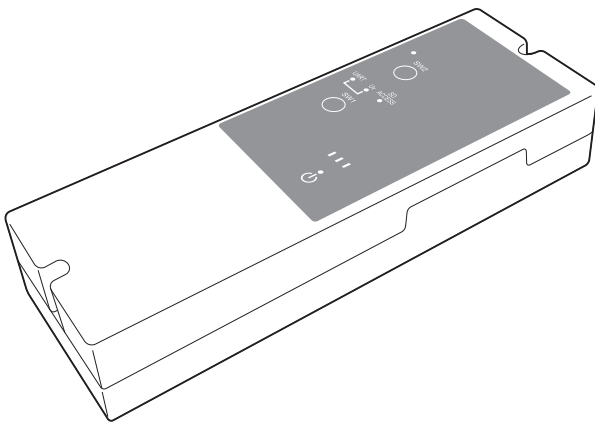


Link Adapter

Model Name

TCB-SS1UU-E



- This product is intended to be used in combination with a PC in which the service tool (air conditioner operation analysis software for servicing) is installed.

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1 Safety Precautions

- Read these "Safety Precautions" carefully before installation.
- The precautions described below include important items regarding safety.

Display Description	Symbol Description
 WARNING Indicates "Content that is expected to result in death or serious injury (*1) to the user in the case of incorrect handling".	 ⓧ indicates prohibited actions. Specifically prohibited contents are indicated with a picture and/or text in or near the symbol.
 CAUTION Indicates "Content that is expected to result in minor injury (*2) to the user or damage to property (*3) in the case of incorrect handling".	 ⓘ indicates instructions which must be followed. The actual contents of the instructions are indicated with a picture and/or text in or near the symbol.

*1: Serious injury refers to lasting after effects such as blindness, injury, burns (high temperature / low temperature), electric shock, bone fracture, or poisoning, etc. and injuries that require hospitalization/long-term outpatient treatment.

*2: Minor injury refers to injuries, burns, or electric shocks, etc. that do not require hospitalization or long-term outpatient treatment.

*3: Damage to property refers to extended damage related to houses, household goods, livestock, or pets, etc.

⚠ WARNING

 Prohibited	Do not modify the product. Doing so may cause fire or electric shock.	 Instructions	Ask an authorized dealer or qualified installation professional to install or reinstall this unit. Inappropriate installation may result in electric shock or fire.
 Instructions	Electrical work must be performed by a qualified electrician in accordance with this installation manual. The work must satisfy all local, national and international regulations. Inappropriate work may result in electric shock or fire.	 Instructions	Be sure to turn off all main power supply switches before starting any electrical work. Failure to do so may result in electric shock.
 Instructions	Do not swallow the coin cell battery. If swallowed, the coin cell battery initiates a chemical reaction that may damage your body.	 Instructions	This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interface.
 Prohibited	Do not use this device in locations where children may be present.		

⚠ CAUTION

 Prohibited	Do not install the product in a place where combustible gas may leak. Gas leaking and accumulating around the product may cause a fire.	 Instructions	In installation work, use wiring with the correct ampacity. Failure to do so may result in excessive heat or fire.
 Instructions	Use specified cables and connect them securely, and do not subject connecting terminals to external force. Doing so may result in cable disconnection, excessive heat or fire.	 Prohibited	The product does not have a waterproof/dustproof structure. Do not use it in a place where it may become wet, such as an outdoor location, or in a dusty place. Doing so may cause fire or electric shock.

2 Specifications and Bundled Items

Specifications

Power supply	AC220-240V / 50Hz, 60mA 5 VDC (input to USB connector), 1.3 A
Operating temperature and humidity ranges	-20 to 55 °C, 85% RH or less
Storage temperature range	-30 to 60 °C
Chassis material	ABS, UL94 5VA
Dimensions	W: 70 × H: 40 × D: 207mm
Mass	Approx. 350 g

Bundled items

No.	Part name	Quantity	Remark
1	Link Adapter	1	-
2	Power cable	1	For air conditioner board connection, 1 m
3	Air conditioner connection cable	1	6pin, 1 m
4	Uv line connection cable	1	2-pin, 1 m (single end) without connector
5	USB type-C cable	1	3 m
6	microSDHC™ card*	1	Capacity: 16 GB, SDHC, UHS-I, Class 10, FAT32 formatted
7	SD card conversion socket	1	-
8	Explanatory leaflet	1	-
9	Lithium button cell	1	CR2032, already attached to the main unit

* When replacing the microSDHC™ card, use a product of the following specifications.
Capacity: 8 to 32 GB, SDHC, UHS-I, Class 10, FAT32 formatted

3 Set-up Before Use

Before using the Link Adapter (hereinafter this unit or the unit), you need to set it up as described below.

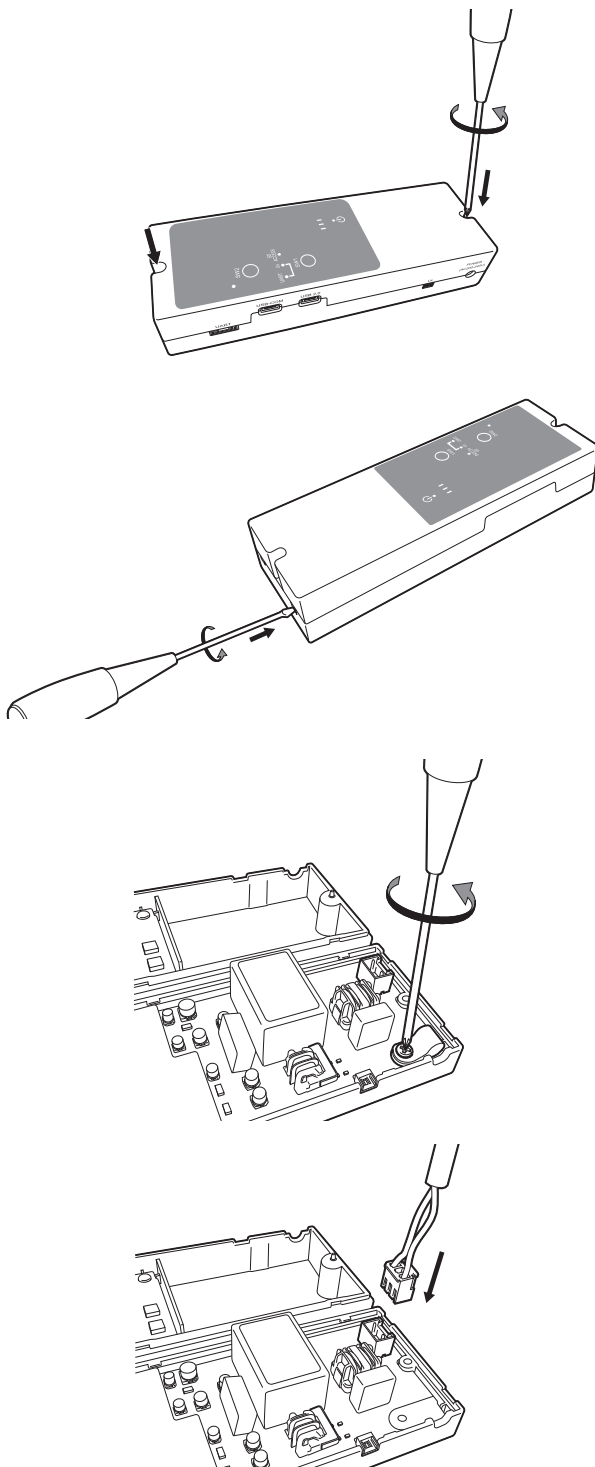
Set up this unit.

- Connect the power cable.
- Attach the microSDHC™ card.

Install the device driver to the personal computer (hereinafter the PC) to be connected.

Install the terminal software (PuTTY) to the PC to be connected.

3-1. Setting up this unit



(1) Loosen the two screws at the front and rear.

Note

- Use a Phillips-head screwdriver of the PH1 size.
- The screws do not come off completely.

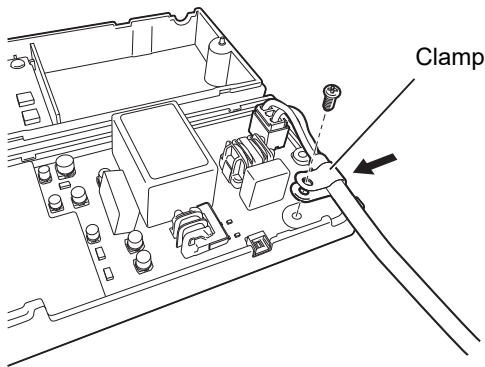
(2) Insert a flathead screwdriver or other appropriate tool into the groove, and open the unit.

Note

- Put tape or other appropriate material on the tip of the flathead screwdriver not to damage the unit.
- The recommended size of the flathead screwdriver is SL8.
- The parts at the top and bottom are connected with a cable. Do not pull it forcefully.

(3) Remove the screw of the clamp.

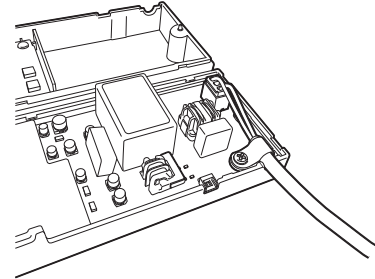
(4) Connect the power cable to the connector.



- (5) Attach the clamp to the power cable, and fasten it with the mounting screw.

● **Note**

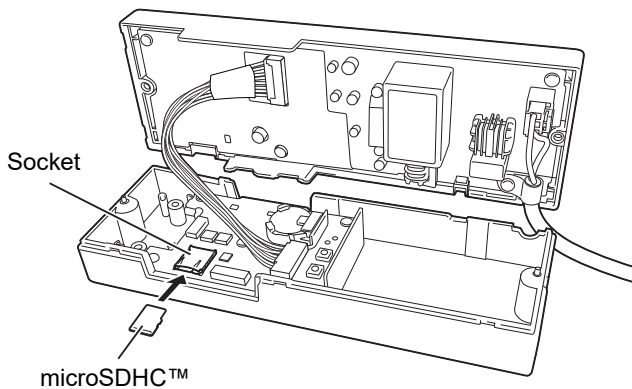
- Tighten the screw until it stops turning.
- Make sure that the cable is not straightened out.



- (6) Attach the microSDHC™ card.

● **Note**

Push the card until it clicks into place.



- (7) Close the unit, and tighten the two screws.

● **Note**

When closing the unit, be careful not to get the cable caught in the chassis.

3-2. Installing the device driver

To accomplish communication with this unit connected to a PC via the USB-COM connector, you need to install the device driver.

This unit uses CP2105 from Silicon Labs as the USB serial conversion IC.

Have a PC connected to the Internet, and download the device driver for your operating system from the URL shown below.

<CP210x USB to UART Bridge VCP Drivers>

<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>

3-3. Installing the terminal software (PuTTY)

To set up this unit, you need to install the PuTTY software.

Have a PC connected to the Internet, and download the software for your operating system from the URL shown below.

<Download PuTTY>

<https://www.chiark.greenend.org.uk/~sgtatham/putty/>

4 Functions of This Product

4-1. Models that can be connected

You can connect the product to any model that supports the service tool (PC software).

4-2. What this unit can do

The major features of this unit are as follows.

- Converts the communication data (UART or Uv line) output by the air conditioner into PC communication data.
- Saves the communication data (UART or Uv line) output by the air conditioner to the built-in microSDHC™ card.
- Lets you confirm whether this unit is receiving the signal output by the air conditioner, by checking the LED on the unit.
- Lets you collect the communication data of the air conditioner and set the air conditioner by using this unit in combination with the service tool (PC software).

If you connect the accompanying cables to the relevant USB connectors, the following functions are available from the PC.

No.	Function	Communication (COM) port	Connected USB connector
1	UART communication relay (using the air conditioner connection cable)	Standard COM Port	USB-COM
2	Uv line communication relay (using the Uv line connection cable)	Enhanced COM Port	
3	Date/time setting		
4	Operations on the files in the microSDHC™ card inserted in this unit and system formatting	—	USB 2.0

This unit can record the communication data of the air conditioner in the inserted microSDHC™ card without being connected to the PC. To use the unit, connect it to the default power supply. (P.19)

For logging, connect either the air conditioner connection cable or Uv line connection cable to the air conditioner.

If you perform logging with both cables connected, you may not be able to save the data correctly.

No.	Function	Setting			SD ACCESS indicator LED	
		Operation button	What to do	Operation	Before setting	After setting
5	UART/Uv line communication logging * Logging cannot be performed for the UART and Uv lines simultaneously.	SW1 [SD write operation switch]	Press down the button for 4 seconds or more.	Start of logging	Off	Blink at 0.5-second intervals
			Press down the button for 4 seconds or more while the SD ACCESS indicator LED is blinking.	Stop of logging	Blink	Off

•Note

If an error occurs during communication logging, the SD ACCESS indicator LED blinks at shorter intervals (0.2 seconds).

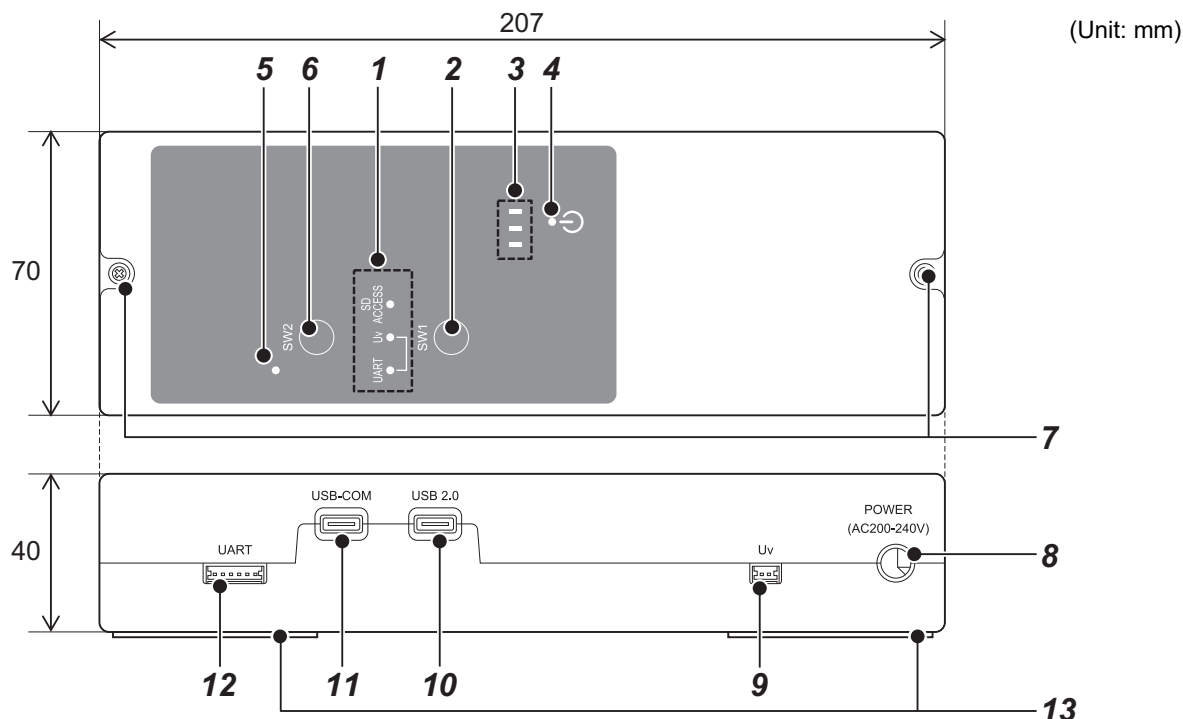
Error examples

- The microSDHC™ card is not inserted.
- The microSDHC™ card has no free space.
- The microSDHC™ card is damaged.
- The microSDHC™ card is not formatted.

If an error occurs, stop logging by holding down SW1 for 4 seconds and check the following.

- Whether the microSDHC™ card is inserted
- Whether the microSDHC™ card has sufficient free space
- Whether the microSDHC™ card is formatted in FAT32

4-3. Name and function of each part



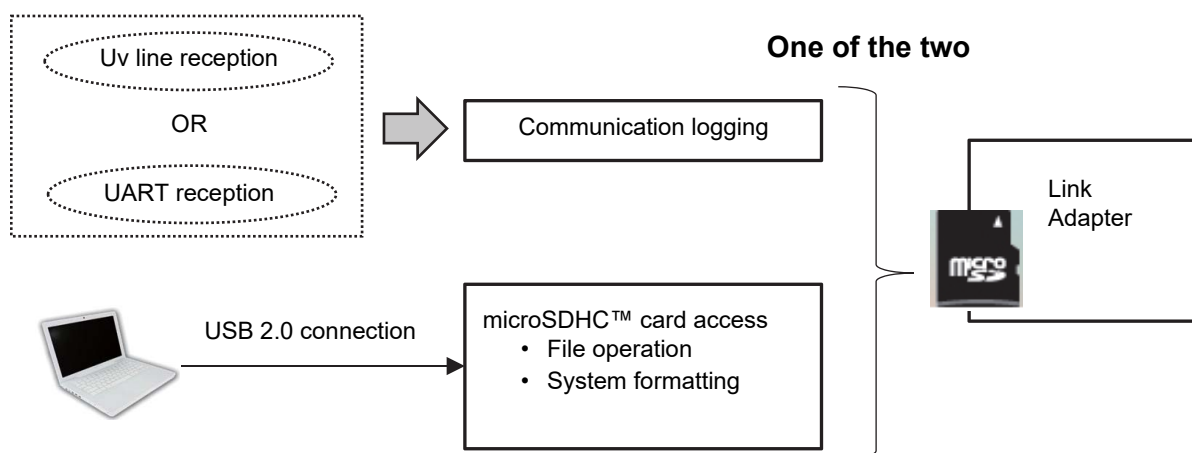
No.	Name		Function
1	Indicator LED	UART (green)	Indicates the status of the UART communication. This LED blinks when the unit receives a signal from the air conditioner via the air conditioner connection cable. At other times, it is off.
		Uv (orange)	Indicates the communication status of the Uv line. This LED blinks when the unit receives a signal from the air conditioner via the Uv line connection cable. At other times, it is off.
		SD ACCESS (red)	Indicates the status of access to the microSDHC™ card inserted in this unit. This LED is off when logging is stopped. It blinks at 0.5-second intervals when logging is in progress or at 0.2-second intervals when an error occurs.
2	SW1: SD write operation switch		Used to perform the operation of starting and stopping data writing to the microSDHC™ card inserted in this unit.
3	Indicator LED		- (Not used in this product.)
4	Power LED (green)		Turns on when power is supplied.
5	Indicator LED		- (Not used in this product.)
6	Operation switch		- (Not used in this product.) * Pressing this switch causes the indicator LED of 5 to blink. It does not affect the operation of the product.
7	Case fastening screws		Used to fasten the upper and lower cases. (A screw anti-drop mechanism is provided.)
8	Power cable port		A port through which to insert the accompanying power cable.
9	Uv line communication connector		Used to connect the accompanying Uv line communication cable, which is in turn connected to the indoor/outdoor communication terminal of the air conditioner.
10	USB type-C connector (USB 2.0)		Connected to the PC to access the microSDHC™ card inserted in this unit.
11	USB type-C connector (USB-COM)		Connected to the PC to read communication data from the Uv or UART line.
12	UART communication connector		Used to connect the accompanying air conditioner communication cable, which is in turn connected to the UART connector of the air conditioner.
13	Fixing magnets		Used to install the unit to an air conditioner.

5 Restrictions on Use

5-1. Functional restrictions

The operational restrictions regarding microSDHC™ card access are as follows.

- While communication logging is used, the microSDHC™ card cannot be accessed.
- If communication logging is started while the microSDHC™ card is being accessed, the microSDHC™ card access is interrupted. To resume the microSDHC™ card access, stop communication logging and then connect to the USB 2.0 connector again.



6 Usage Method of Each Function

6-1. Changing the date and time to be save in the microSDHC™ card

When communication data is saved in the microSDHC™ card, the date and time managed by this unit are also recorded. Therefore, check whether the date and time of this unit match those of your locality and set them as necessary. This unit is factory-set to the UTC (Coordinated Universal Time). If you change the date and time, the timer resumes counting from the changed value.

* To check and set the date and time of this unit, use the terminal software that you have downloaded and installed to your PC.

This unit has a built-in button cell to retain this information. Replace the cell before it runs out. If you start the unit after the cell has run out, the date and time are set to 2020/1/1 0:00.

The following table shows the commands that you can use with the terminal software when you have this unit connected to the PC via the USB-COM connector.

Command	Description	Usage example
date	Displays or sets the date.	>date date: 2020/01/01 → Displays the date.
		>date 20200313 → Sets 2020/03/13.
time	Displays or sets the time.	>time rtc: 00:08:33 rtos: 00:08:33.109 → Displays the time.
		>time 1433 → Sets 14:33.

The operation method for setting the time using PuTTY as the terminal software is described below.

1 Connect to the PC.

- (1) Start the PC.
- (2) Set up a USB connection between this unit and the PC using the USB-COM connector.

2 Check the COM port.

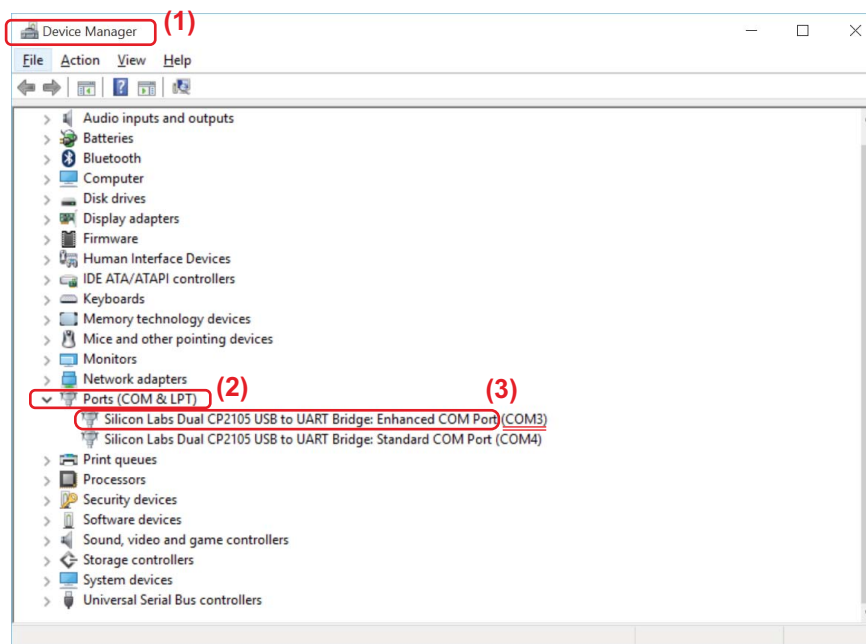
- (1) Open [Control Panel]-[Device Manager].

Note

For Windows 10

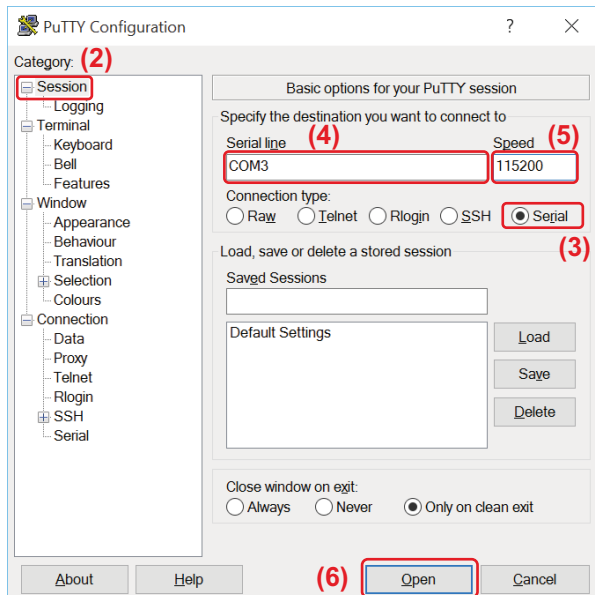
By right-clicking the Window button in the lower left of the PC screen, you can open [Device Manager].

- (2) Click [Ports (COM & LPT)].
- (3) Record the port number shown in [Enhanced COM Port].

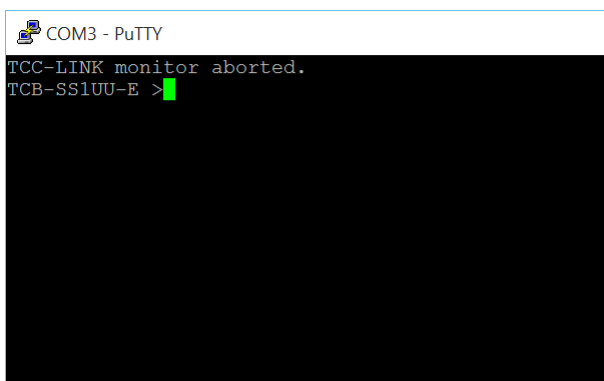


3 Set PuTTY.

- (1) Start the PuTTY.
- (2) Choose [Session].
- (3) In [Connection type], choose [Serial].
- (4) In [Serial line], enter the port number shown in [Enhanced COM Port].
- (5) In [Speed], set 115200.
- (6) Click [Open].



4 Check the settings.



- (1) Press the ESC key on the keyboard.
The command input window (>) appears.



- (2) Type [date], and press the ENTER key.
The current date set in this unit is displayed.
- (3) Type [time], and press the ENTER key.
The current time set in this unit is displayed.

5 Set the date and time.

Change the date and time when you switch to the summer time or a different time zone as you travel from one country to another.

```
COM3 - PuTTY
TCC-LINK monitor aborted.
TCB-SS1UU-E >date
date: 2020/04/27
TCB-SS1UU-E >time
rtc: 17:20:09
rtos: 17:20:09.128
TCB-SS1UU-E >date 20200428
date: 2020/04/28
TCB-SS1UU-E >
```

- (1) Type the date you want to set, and press the ENTER key.

Example: When setting 2020/04/28

>date 20200428

+

ENTER key on the keyboard

The entered value is registered as the current date.

```
COM3 - PuTTY
TCC-LINK monitor aborted.
TCB-SS1UU-E >date
date: 2020/04/27
TCB-SS1UU-E >time
rtc: 17:20:09
rtos: 17:20:09.128
TCB-SS1UU-E >date 20200428
date: 2020/04/28
TCB-SS1UU-E >date
date: 2020/04/28
TCB-SS1UU-E >time 1433
time: 14:33:01
TCB-SS1UU-E >
```

- (2) Type the time you want to set, and press the ENTER key.

Example: When setting 14:33

>time 1433

+

ENTER key on the keyboard

The entered value is registered as the current time.

Note

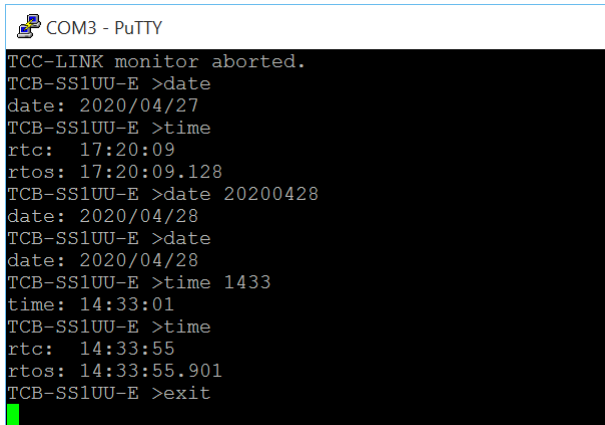
The time displayed for the data saved in the microSDHC™ card is recorded based on these settings.

6 Check the settings.

```
COM3 - PuTTY
TCC-LINK monitor aborted.
TCB-SS1UU-E >date
date: 2020/04/27
TCB-SS1UU-E >time
rtc: 17:20:09
rtos: 17:20:09.128
TCB-SS1UU-E >date 20200428
date: 2020/04/28
TCB-SS1UU-E >date
date: 2020/04/28
TCB-SS1UU-E >time 1433
time: 14:33:01
TCB-SS1UU-E >time
rtc: 14:33:55
rtos: 14:33:55.901
TCB-SS1UU-E >
```

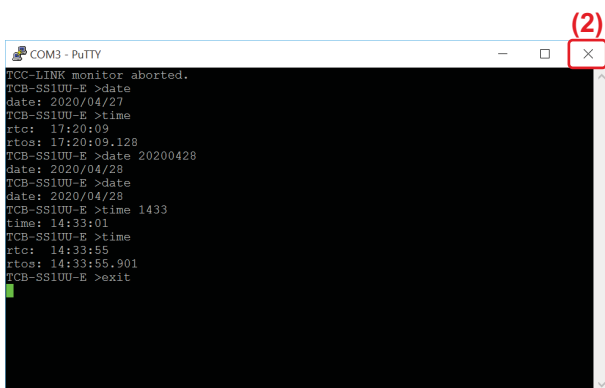
As in step 4, you can check the registered settings using the [date] and [time] commands (Refer to page 11.).

7 Finish the settings.



```
TCC-LINK monitor aborted.
TCB-SS1UU-E >date
date: 2020/04/27
TCB-SS1UU-E >time
rtc: 17:20:09
rtos: 17:20:09.128
TCB-SS1UU-E >date 20200428
date: 2020/04/28
TCB-SS1UU-E >date
date: 2020/04/28
TCB-SS1UU-E >time 1433
time: 14:33:01
TCB-SS1UU-E >time
rtc: 14:33:55
rtos: 14:33:55.901
TCB-SS1UU-E >exit
```

(1) Type [exit], and press the ENTER key.
Finish the settings.



(2) Click [X] to close PuTTY.

6-2. Relaying UART communication

Convert the UART communication of the air conditioner to USB serial communication.
To accomplish serial communication with this unit, configure the PC as follows.

Serial line (COM)	Refer to "Checking the COM port" (Refer to page 15.).
Speed (baud)	Baud rate of the UART communication of the connected destination
Data bits	8
Stop bits	1
Parity	None

6-3. Relaying Uv line communication

Convert the Uv line communication of the air conditioner to USB serial communication.
To accomplish serial communication with this unit, configure the PC as follows.

Serial line (COM)	Refer to "Checking the COM port" (Refer to page 15.).
Speed (baud)	115, 200
Data bits	8
Stop bits	1
Parity	None

6-4. Checking the COM port

1 Connect to the PC.

- (1) Start the PC.
- (2) Set up a USB connection between this unit and the PC using the USB-COM connector.

2 Check the COM port.

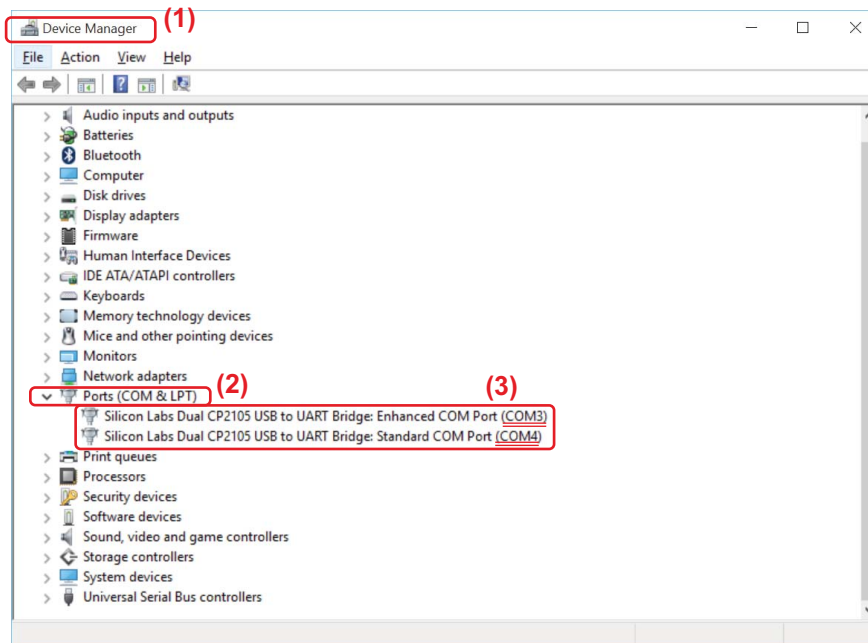
- (1) Open [Control Panel]-[Device Manager].

● Note

For Windows 10

By right-clicking the Window button in the lower left of the PC screen, you can open [Device Manager].

- (2) Click [Ports (COM & LPT)].
- (3) Record the port number.
 - UART communication: [Standard COM Port]
 - Uv line communication: [Enhanced COM Port]



6-5. Saving UART communication or Uv line communication data in the microSDHC™ card

By operating the SW1 button (Refer to page 6.), you can have this unit record the Uv line or UART communication data received from the air conditioner in its microSDHC™ card. The air conditioner-side communication destinations corresponding to this function and their baud rates are as follows.

Air conditioner-side communication destination	Speed (baud) [bps]
UART	38,400/115,200
Uv line	9,600/19,200

* The baud rate does not need to be set.

The standard number of days for logging is approx. 2 month in the case of an 16-GB microSDHC™ card.

Logging stops when the card runs out of free space.

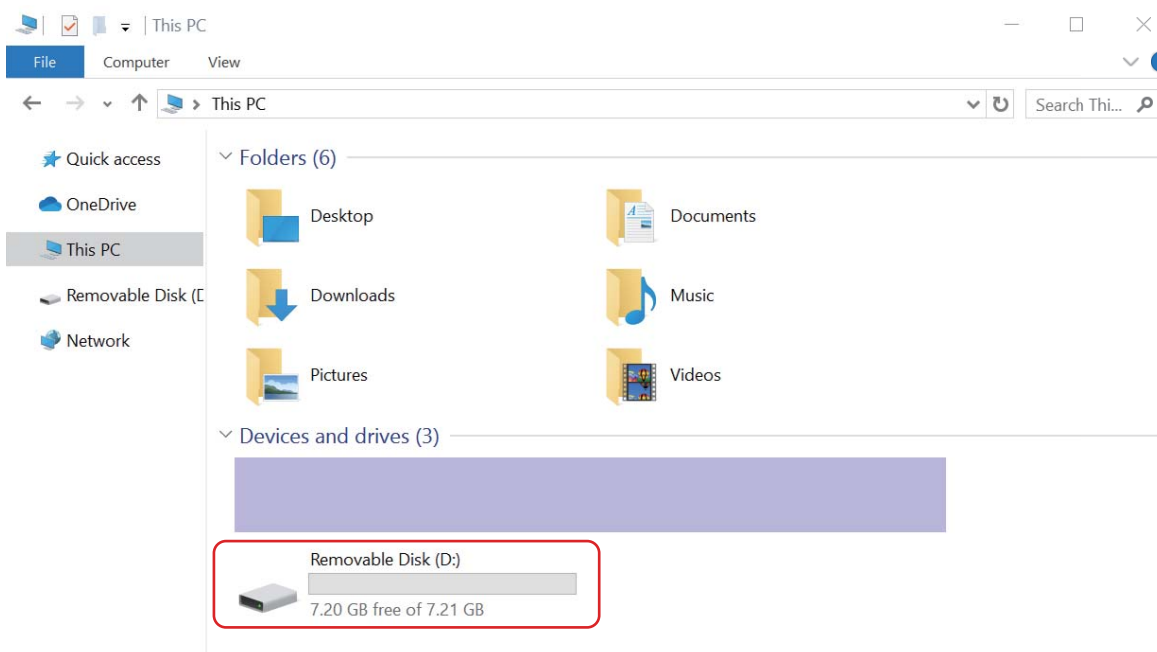
It is recommended to copy necessary recorded data to the PC before deleting data from the microSDHC™ card.

6-6. Working with files in the microSDHC™ card

Using a PC running on the supported operating system shown below, you can format the system of the microSDHC™ card inserted in this unit and read and write recorded data to and from the card.

Windows 10

If you connect this unit to the PC via the USB 2.0 connector, this function recognizes the unit as a USB drive. Using Explorer or some other tool, you can directly access the data in the microSDHC™ card of this unit.



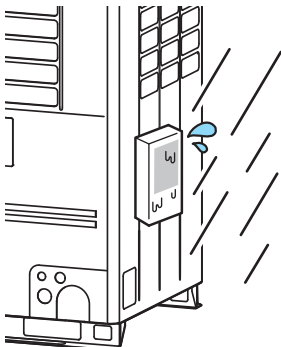
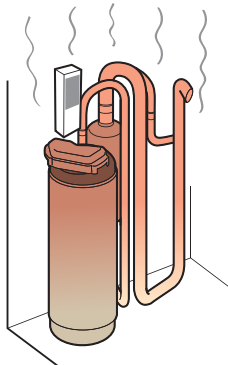
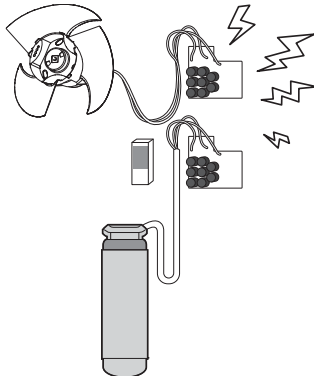
For system formatting, specify FAT32 as the file system.

The recorded data is not deleted. To delete the recorded data, use Explorer.

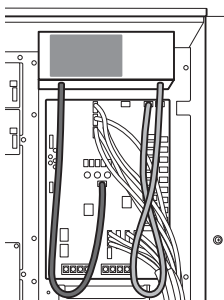
7 Installation and Wiring

⚠ Caution

Do not install this product in the places described below.

 Prohibition	Wet or dusty place This product does not have a waterproof or dustproof structure. Install it in a place where it does not get wet, such as inside the controller box or in an indoor location. 	 Prohibition	Place subject to high temperature Do not install the product in or near a place subject to high temperature. Otherwise, a failure may result. 
 Prohibition	Noise source Install the unit and cables as far away from a noise source as possible. 		

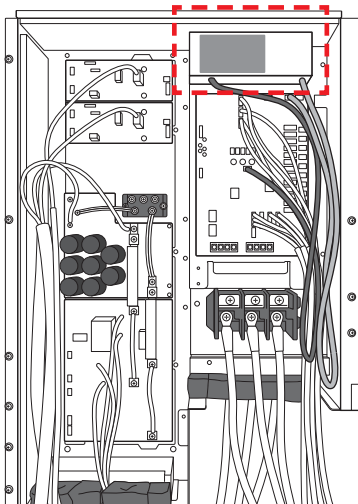
Avoid wiring as shown below. Otherwise, the Link Adapter or air conditioner may malfunction or fail.

 Prohibition	Noise source Avoid running the cable over the board if possible. 
--	---

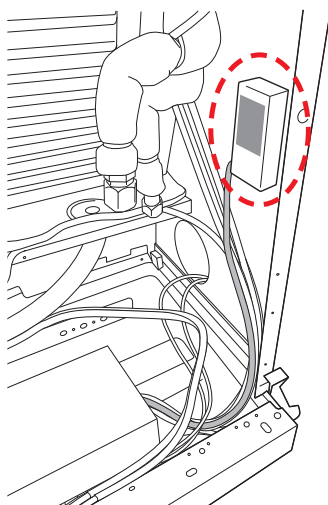
7-1. Installation

Install the unit to an air conditioner or other equipment using the magnets provided on its rear side.

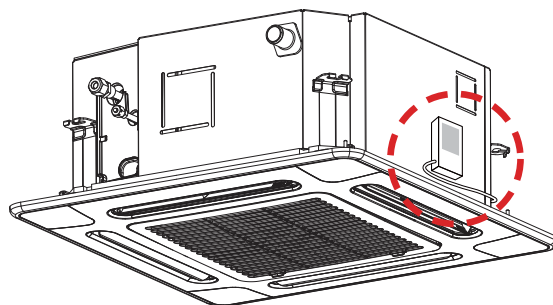
Example of installing the Link Adapter inside the controller box of the outdoor unit



Example of installing the Link Adapter inside the indoor unit



Example of installing the Link Adapter outside the indoor unit



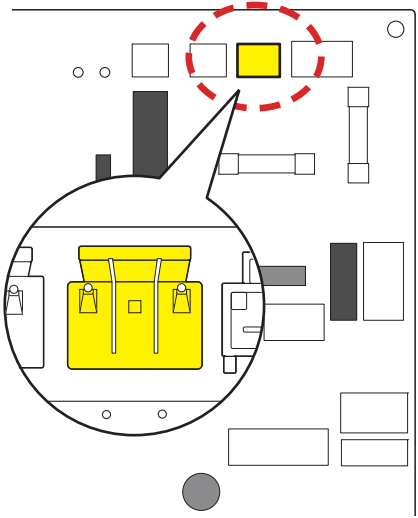
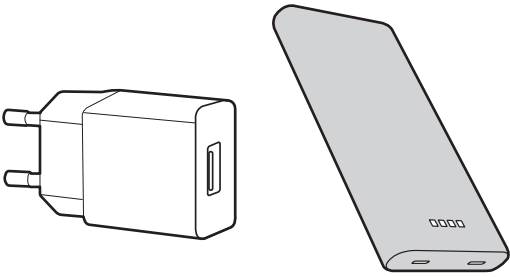
7-2. Wiring

Connecting the power cable

To take power from the air conditioner, connect the power cable to the dedicated connector (yellow).

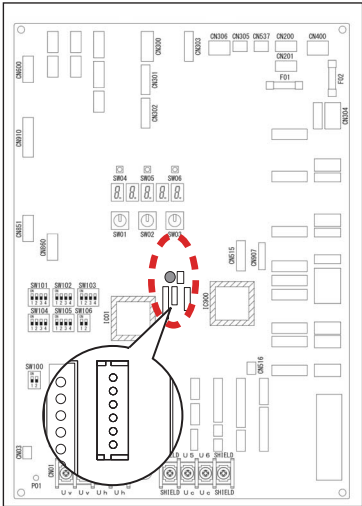
Do not connect it to a circuit breaker, wall outlet, or other commercial power supply.

When power is supplied to the USB type-C connector (USB-COM/USB2.0), connect the power cable to a USB port capable of supplying 5 V at 1.3 A or more.

When using the power cable	When supplying power to the USB type-C connector
 Connect the power cable to the yellow connector on the air conditioner board.	 Adapter, mobile battery, etc.

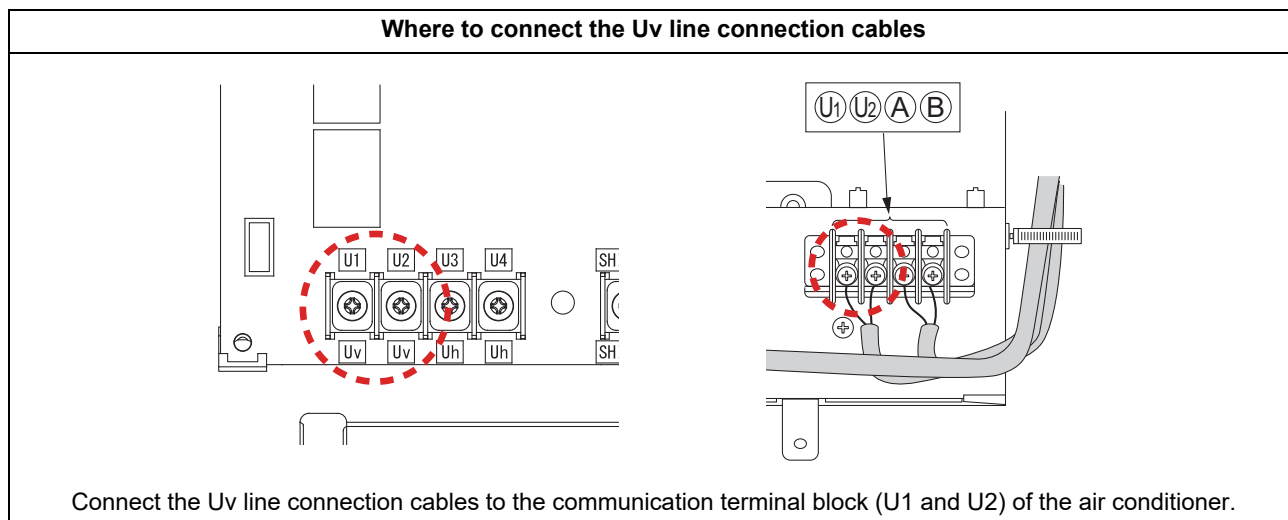
Connecting the UART wire

Connect the wire to the outdoor unit board using the accompanying air conditioner connection cable.

Where to connect the air conditioner connection cable
 Connect the cable to the connector on the air conditioner board that corresponds to the connector shape of the accompanying cable.

Connecting the Uv line communication wires

Connect the wires to the U1 and U2 terminals of the Uv line using the accompanying Uv line connection cables. When extending the communication wires, follow the instructions given below.

**Extended wire specifications**

Number of cores	2 cores, non-polar
Type	Unshielded
Extension length	1.25 to 1.5 mm ² 20 m max.

Carrier Japan Corporation

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