

USB-to-Serial Conversion Unit Instruction Manual (Detailed)

USB001Z

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NOTICE



1. Make sure that this instruction manual is delivered to the end user of USB-to-serial conversion unit.
2. Read this manual before installing or operating the USB-to-serial conversion unit. Keep it in a safe place for reference.
3. All information contained in this manual is subject to change without notice. Please confirm the latest information from your distributor.

Toshiba Industrial Products and Systems Corporation




Safety precautions

The items described in these instructions and on the inverter itself are very important so that you can use the inverter safely, prevent injury to yourself and other people around you as well as to prevent damage to property in the area. Thoroughly familiarize yourself with the symbols and indications shown below and then continue to read the manual. Make sure that you observe all warnings given.

Explanation of markings

Marking	Meaning of marking
 WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates information considered important but not hazard-related. It is used to address practices not related to physical injury.

Meanings of symbols

Symbol	Meaning of symbol
	Indicates a prohibition (Do not do it). Detailed information on the prohibition is described in illustration and text in or near the symbol.
	Indicates a mandatory action that must be followed. Detailed information on the mandatory action is described in illustration and text in or near the symbol.
	Indicates a warning or caution. Detailed information on the warning or caution is described in illustration and text in or near the symbol.





■ Limit in purpose






Safety precautions



- ▼ Never use the USB-to-serial conversion unit with any device other than a TOSVERT series inverter, or it will cause an accident.

■ General Operations

 WARNING	
 Prohibition	<ul style="list-style-type: none"> • Never disassemble, modify or repair. This can result in electric shock, fire and injury. For repairs, call your sales agency.
 Prohibition	<ul style="list-style-type: none"> • Do not place or insert any kind of object into the unit (electrical wire cuttings, rods, wires). This can result in electric shock or fire. • Do not allow water or any other fluid to come in contact with the unit. This can result in electric shock or fire.
 Mandatory action	<ul style="list-style-type: none"> • If the unit begins to emit smoke or an unusual odor, or unusual sounds, immediately turn power off. If the equipment is continued to operate in such a state, the result will be fire. Call your local sales agency for repairs.

■ Transportation & installation

 WARNING	
 Prohibition	<ul style="list-style-type: none"> • Don't place any inflammable objects nearby. If a flame is emitted due to malfunction, it will result in a fire. • Don't install in any location where the unit could come into contact with water or other fluids. This can result in electric shock or fire.
 Mandatory action	<ul style="list-style-type: none"> • Must be used in the environmental conditions prescribed in the instruction manual. Use under any other conditions will result in malfunction. • Provide your inverter or other equipment with safety devices to prevent a serious accident from resulting even if the unit malfunctions or fails to operate. Usage without a safety device can result in an accident.

NOTICE	
 Prohibition	<ul style="list-style-type: none"> • Do not connect a LAN cable or modular cable for telephones to the conversion unit. Doing so will cause a failure or accident. • Do not connect more than one conversion unit to one host device (computer). Doing so will cause a failure or accident.
 Mandatory action	<ul style="list-style-type: none"> • Use the Toshiba-specified cable for connecting this optional unit. (Refer to page 5.) The use of any other option will result in an accident. • The following steps must be performed before wiring to an inverter. <ol style="list-style-type: none"> (1) Turn off all input power to the inverter. (2) Wait at least 15 minutes and check to make sure that the charge lamp of inverter is no longer lit. (3) Use a tester that can measure DC voltage 800VDC or more, and check to make sure that the voltage to the DC main circuits (between PA/+ and PC/-) is 45V or less. If these steps are not properly performed, the wiring will cause electric shock.

■ Operations

⚠ WARNING



Prohibition

- Even if this product is deactivated by the occurrence of an event such as an abnormality, when power is supplied to the inverter, do not bring any regions of your body into contact with the inverter terminals. Contact during the power-on status of the inverter can result in electric shock.

NOTICE



Prohibition

- Do not apply a dropping shock or other physical shocks. Otherwise, damage or malfunction will result.
- Do not yank the interconnect cable. Otherwise, damage or malfunction will result.
- Do not disconnect the USB cable during communication with the inverter. Otherwise, damage or malfunction will result.

■ Cautions in using the unit

NOTE

- ▼ Do not install the unit where it will be exposed to abrupt changes in temperature or humidity.
- ▼ Leave space between the interconnect cable (between the inverter and the USB device) and the power cable from the inverter. Or the inverter could malfunction because of noise.
- ▼ Do not connect the conversion unit to more than one inverter. Connect the conversion unit to either the "RS485 (2-wire type)" port or the "LOGIC" port on your inverter, depending on the type of the inverter.
- ▼ Avoid connecting the conversion unit to a USB hub or extended USB port (e.g., PCMCIA card). Or else the conversion unit may become unstable, depending on the environment in which it is used.
- ▼ To allow an emergency stop by means of an external device, insert a magnetic contact or similar device between the inverter and the power supply.

■ Cautions in creating a software program

NOTE

- ▼ The communications software created based on the instruction manual for each TOSVERT series communication function can be used as-is, if the COM port number is changed properly. The conversion unit may, however, be detached from the operating system as a result of a transmission error due to noise, and therefore the occurrence of transmission timeout errors should be monitored using the software, and if they occur in succession, open the port again.

1. Introduction

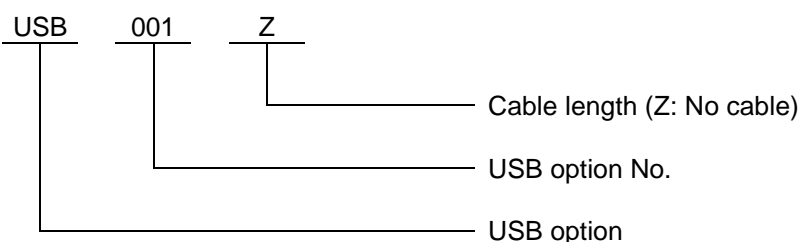
Thank you for purchasing a “USB-to-serial conversion unit (USB001Z unit),” an optional device for the TOSVERT series inverters.

The USB-to-serial conversion unit makes it possible to use a USB port on your computer as a COM port for connecting it to an inverter for data communications.

This instruction manual explains how to connect the USB-to-serial conversion unit, and for correct use of the USB-to-serial conversion unit. Please read this manual carefully along with the instruction manual for your inverter and the communication function manual.

When using the USB-to-serial conversion unit, keep this manual handy for future maintenance and inspections.

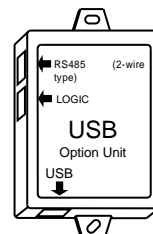
[Explanation about the type of the USB-to-serial conversion unit]



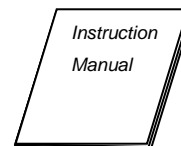
[Accessories check]

The USB-to-serial conversion unit is composed of the items listed below. Unpack the product and check for missing or damaged components.

- (1) USB-to-serial conversion unit 1
(USB001Z)



- (2) USB-to-serial Conversion Unit Instruction Manual..... 1
(E6581282)



[Note]

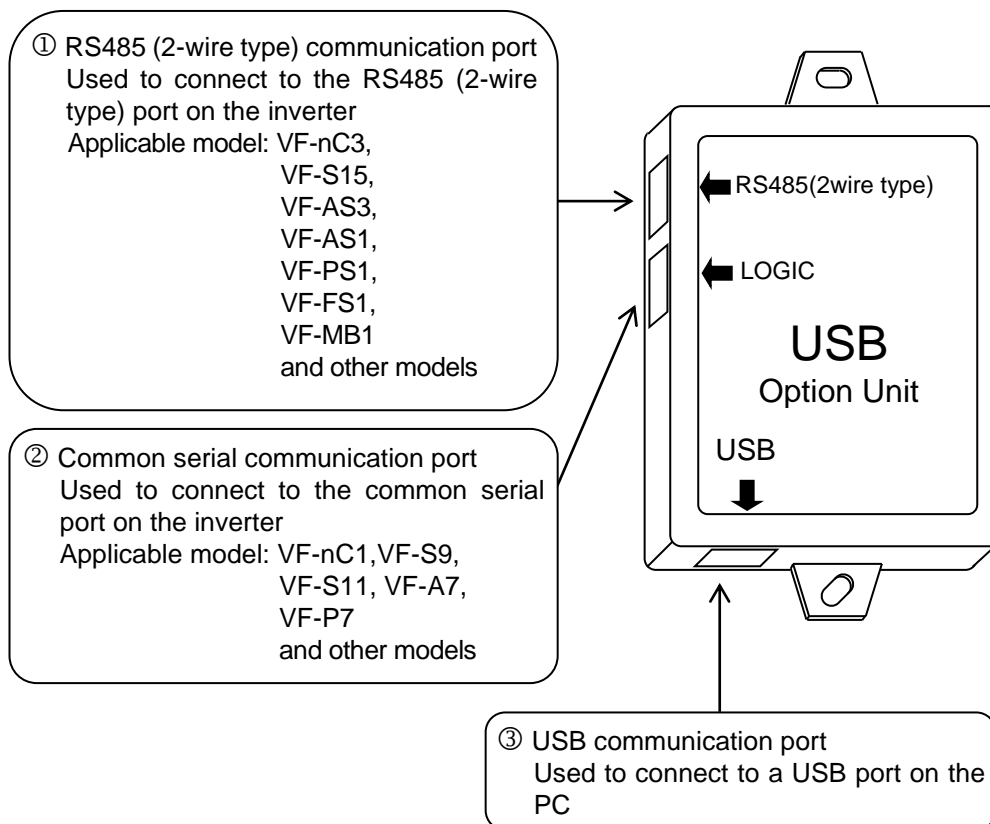
This unit does not include an inverter-unit connection cable or a personal computer-unit connection cable. Purchase these cables separately. (Refer to page 5.)

[Trademark]

Windows® is a registered trademark of Microsoft Corporation.
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.

2. Exterior features

(1) Here are the names and functions of the exterior components of the USB001Z unit.

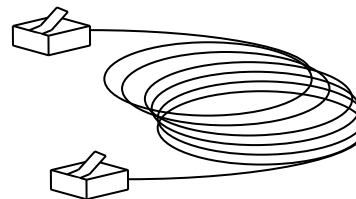


(2) Interconnect cables (No cables are included with this converter unit.)

- Inverter side (Point of connection: Either ① or ② in the above figure)

Use one of the optionally available Toshiba-specified cables listed below.

Inverter-to-unit interconnect cable	Cable length
CAB0011	1.2m
CAB0013	3.6m
CAB0015	4.8m

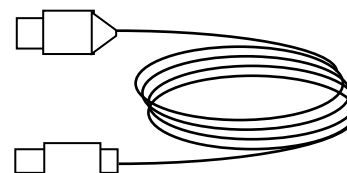


- USB device side (Point of connection: ③ in the above figure)

Use a commercially available USB cable.

(Compliant with USB 1.1/2.0, A-B connection type)

Recommended cable length: 1m or less



3. Installing the device driver

When using the USB001Z unit for the first time, you have to install its driver on your computer. These steps do not need to be performed from the next time onward.

Please obtain the USB001Z installation file from your distributor.

Extract the files from the .zip folder and place them in the appropriate location on your system.

Applicable USB001Z device driver version for operating system.

Operating System	Applicable USB001Z device driver version	Device driver package
Windows 10	V212	CDM212364
Windows 11		

Since the steps to be followed to install the driver vary depending on the operation system used, refer to the section that corresponds to the operating system used.

When the device driver of the previous version is already installed, be sure to install after uninstalling a previous version. Refer to Chapter 5 for the un-installation method.

Note: Unless otherwise specified, the term “click” means “left-click” (default setting) in the following chapters.

3.1. Windows 10

(1) Turn on your computer and start Windows 10.

Note: Log on to Windows 10 as a computer administrator.

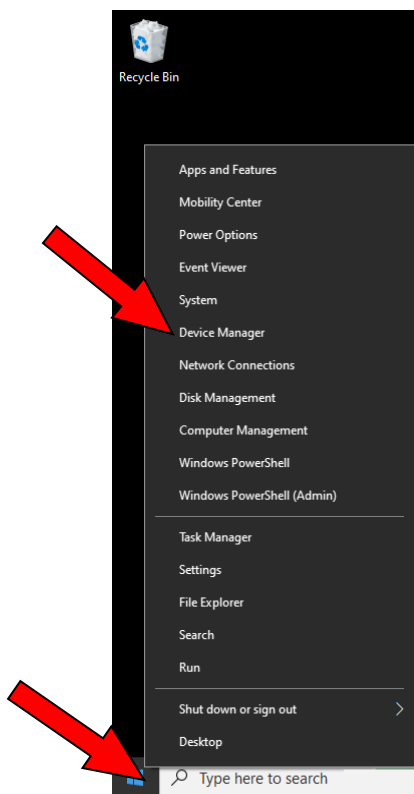
If you got USB001Z_V212.zip file for the device driver, you need to decompress it in an appropriate location on your system beforehand.

(2) Connect the USB001Z unit to the computer with a USB cable.

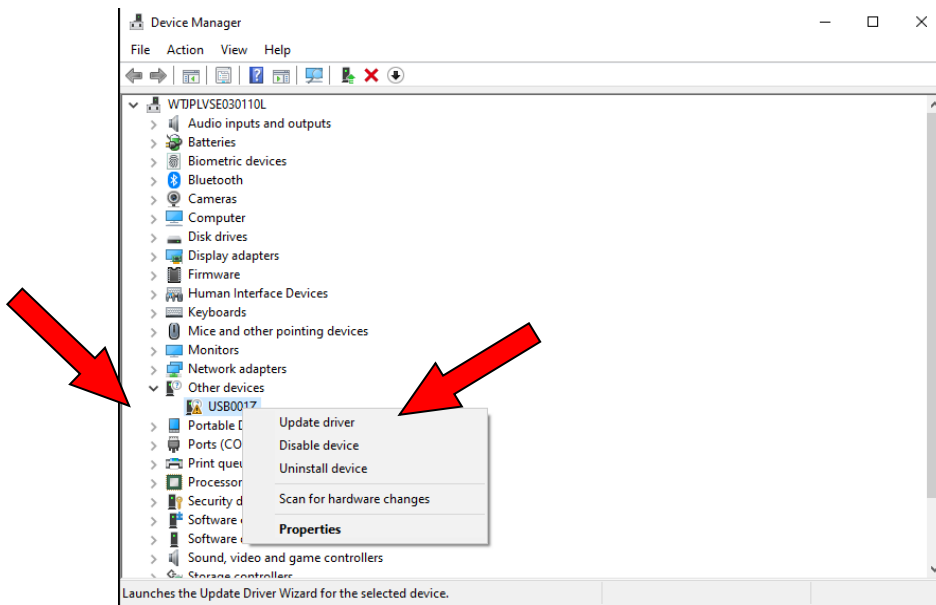
* At this time, do not connect the USB001Z unit to the inverter.

(3) Execute Device Manager.

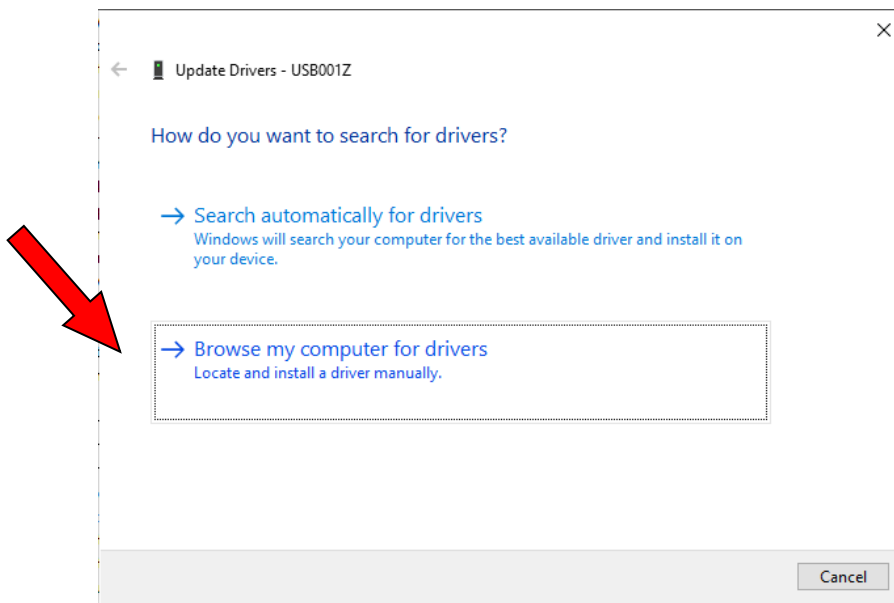
To locate the Device Manager, right click on the start icon at the bottom left corner of the screen and select Device Manager.



(4) In the Device Manager windows, Right click [Other Devices] - [USB001Z] and click “Update Driver”.

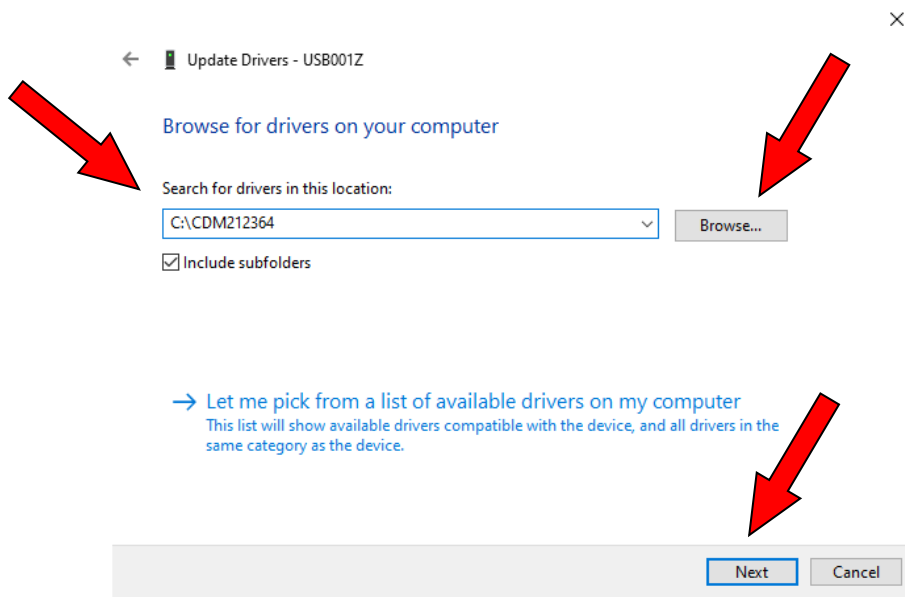


(5) Click “Browse my computer for drivers”.



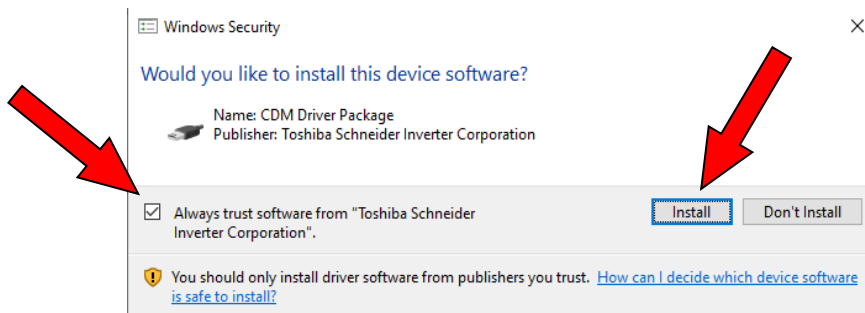
(6) Browse to the folder where the driver has been stored and click [Next].

(The following figure shows the device driver is included in C:\CDM212364.)



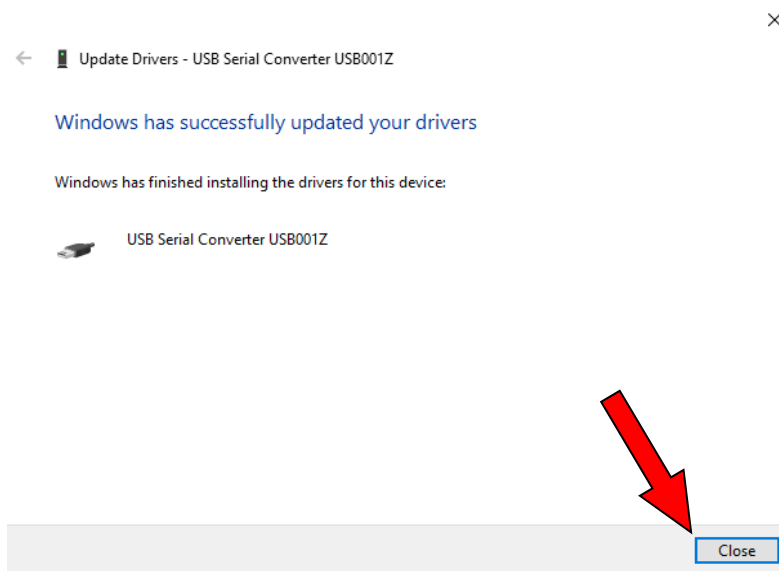
(7) Allow the installation of the device driver for USB001Z.

When the following screen appears, select [Always trust software from "Toshiba Schneider Inverter Corporation"] and click [Install].



(8) Complete the USB001Z device driver installation.

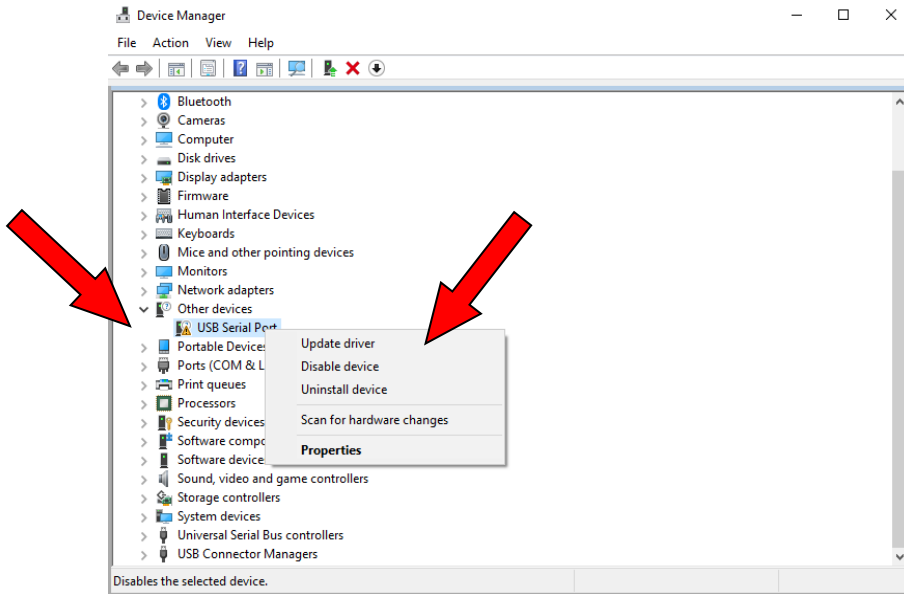
The driver has been installed successfully, click [Close] to complete the installation.



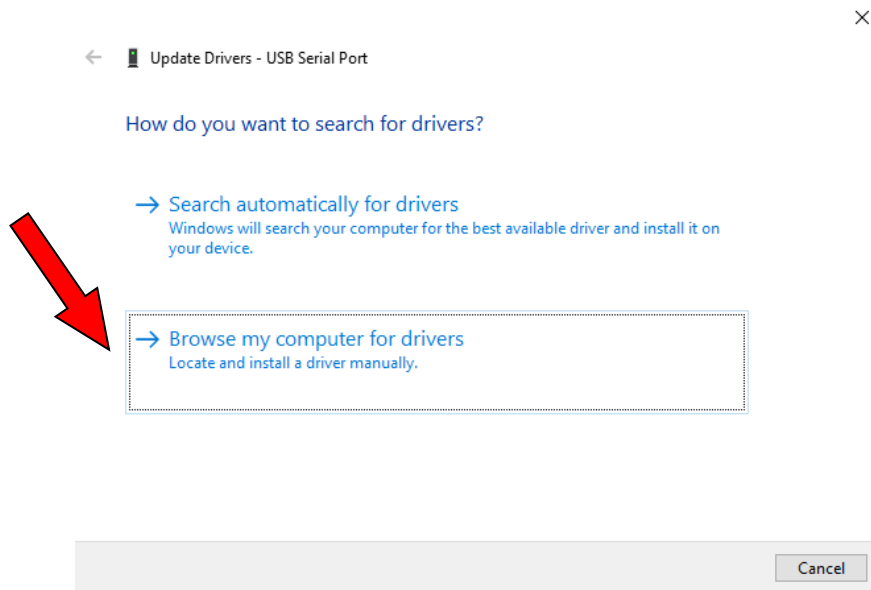
USB port driver is continuously installed.

(9) Execute Device manager

Right click [Other Devices] - [USB Serial Port] in Device Manager and click “Update driver”.

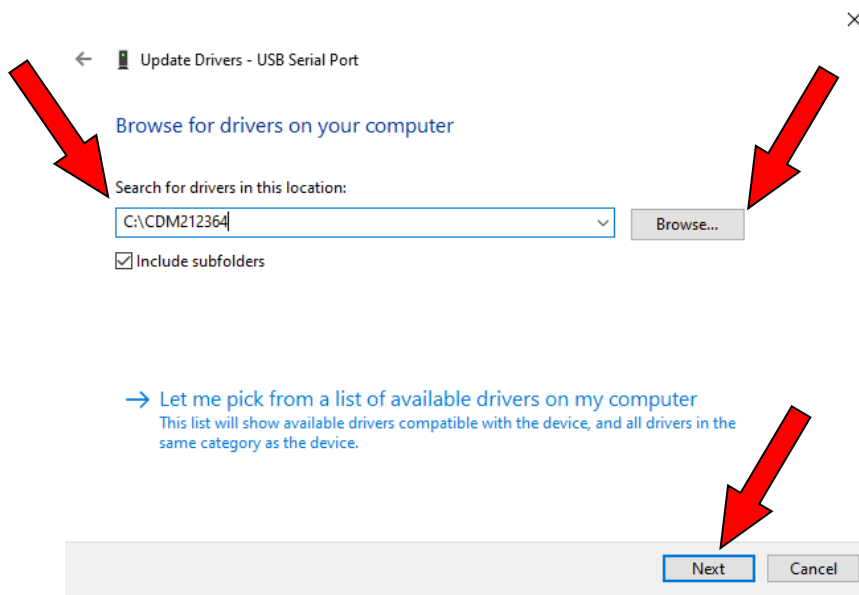


(10) Click “Browse my computer for drivers”.



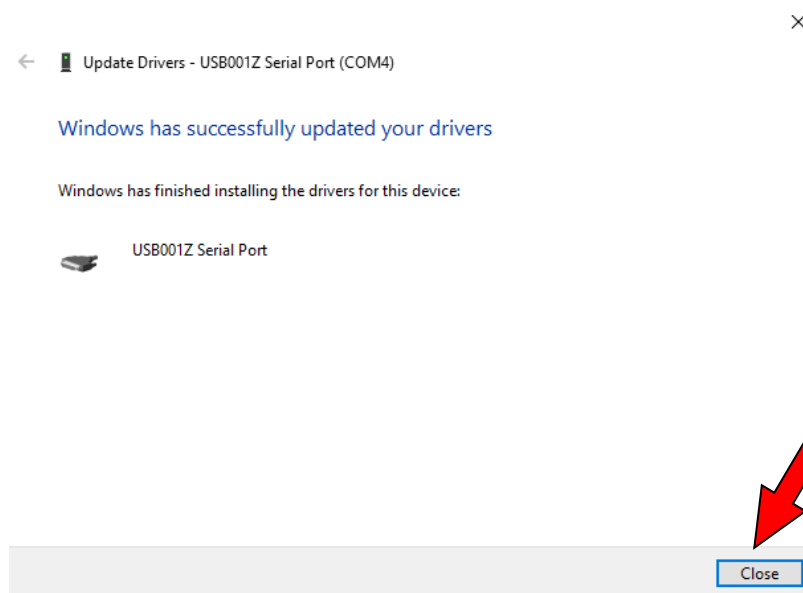
(11) Browse to the folder where USB001Z device driver has been stored and click [Next].

(The following figure shows the device driver is included in folder C:\CDM212364.)



(12) Complete the USB port driver installation.

The driver has been installed successfully, click [Close] to complete the installation.



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*When installing the device driver, if (Code 39) is displayed and the installation is not possible, the memory integrity setting may be turned on in the security settings of the computer (PC). If you can change the settings, please install the device driver with the settings turned OFF. *If you are unsure about whether to turn off the setting, please check with your PC administrator before doing so.

We are not responsible for any problems or damages caused by changing this setting.

Example of how to change settings

1. Right-click the start icon at the bottom left of the PC screen and launch [Settings].
2. Click Update and Security → [Windows Security]
3. Click [Device Security]
4. Click [Core isolation]
5. Set memory integrity to [off]
6. Restart your PC and check if this driver can be installed.

3.2. Windows 11

(1) Turn on your computer and start Windows 11.

Note: Log on to Windows 11 as a computer administrator.

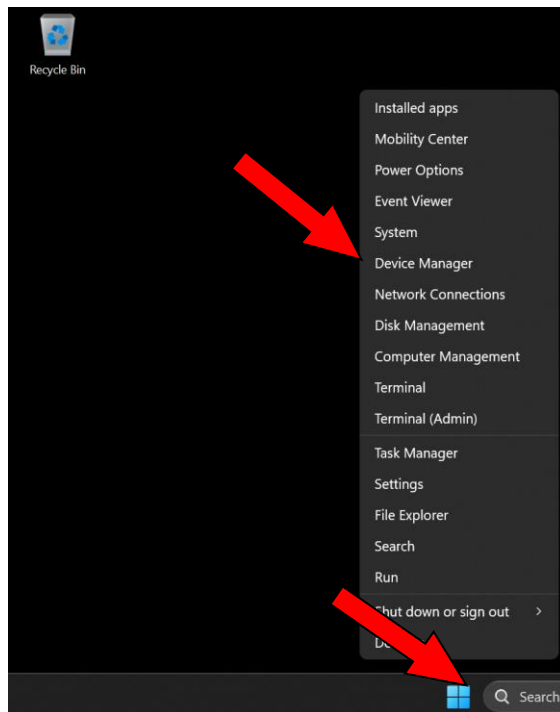
If you got USB001Z_V212.zip file for the device driver, you need to decompress it in an appropriate location on your system beforehand.

(2) Connect the USB001Z unit to the computer with a USB cable.

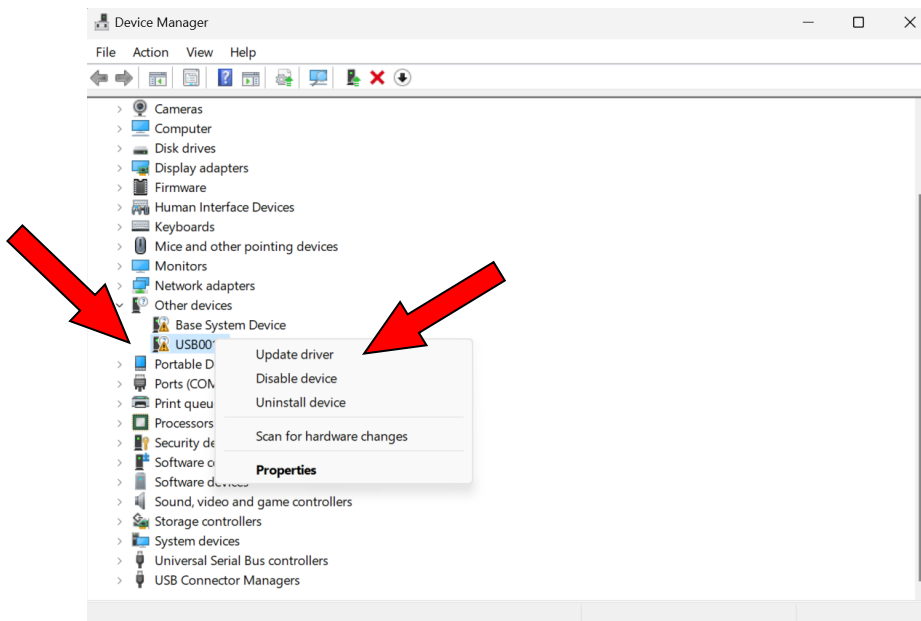
* At this time, do not connect the USB001Z unit to the inverter.

(3) Execute Device Manager.

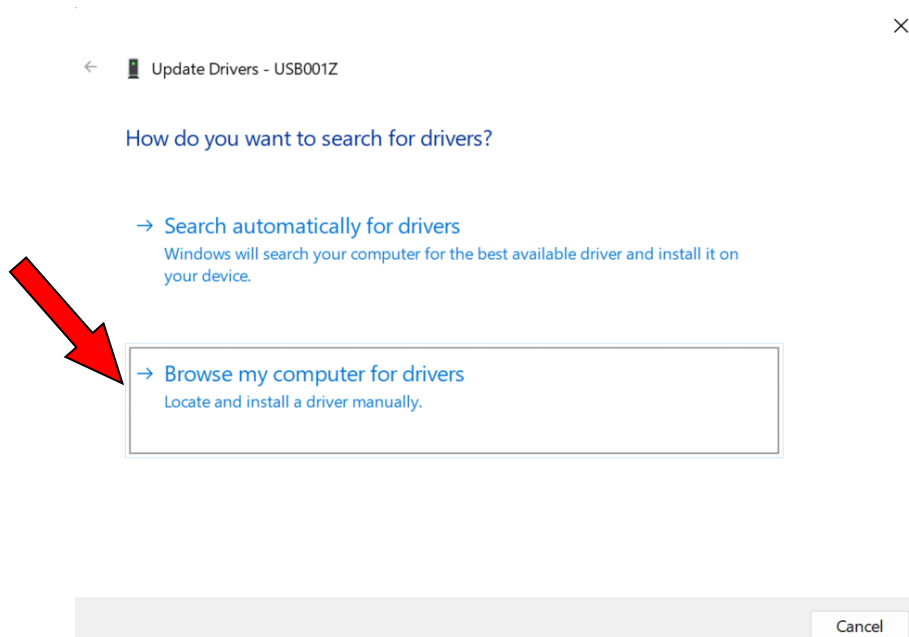
To locate the Device Manager , right click on the start icon at the bottom left corner of the screen and select Device Manager.



(4) In the Device Manager windows, Right click [Other Devices] - [USB001Z] and click “Update driver”.

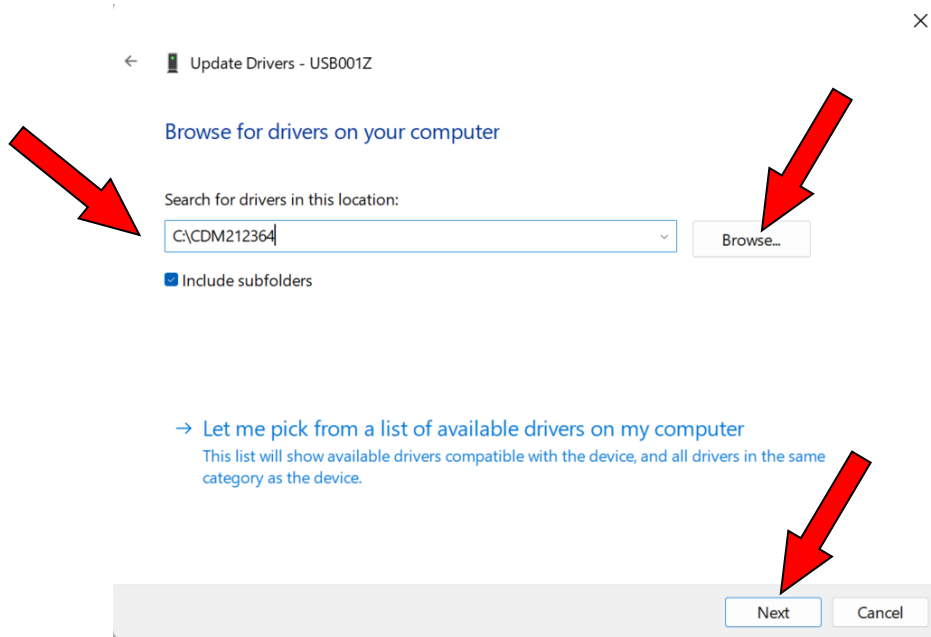


(5) Click “Browse my computer for drivers”.



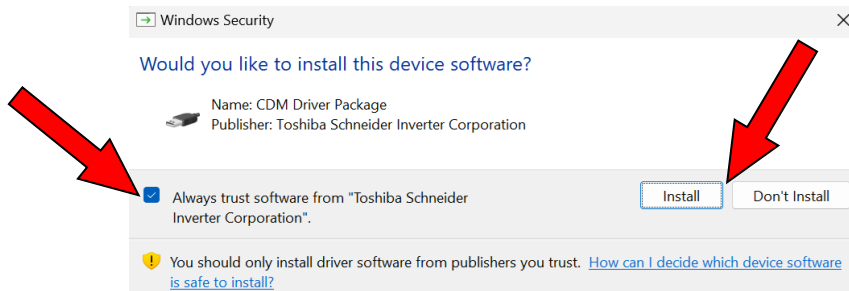
(6) Browse to the folder where the driver has been stored and click [Next].

(The following figure shows the device driver is included in C:\CDM212364.)



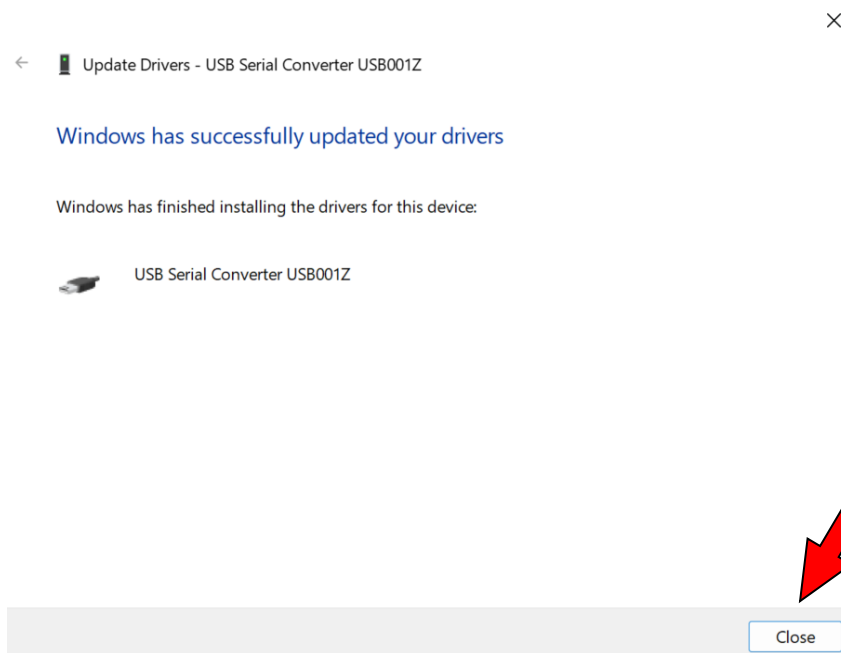
(7) Allow the installation of the device driver for USB001Z.

When the following screen appears, select [Always trust software from "Toshiba Schneider Inverter Corporation"] and click [Install].



(8) Complete the USB001Z device driver installation.

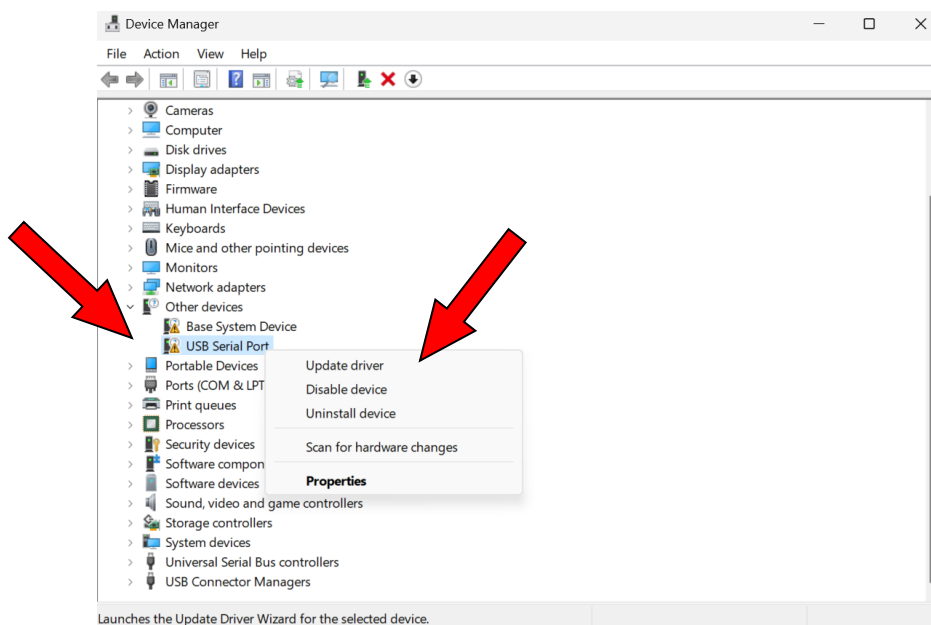
The driver has been installed successfully, click [Close] to complete the installation.



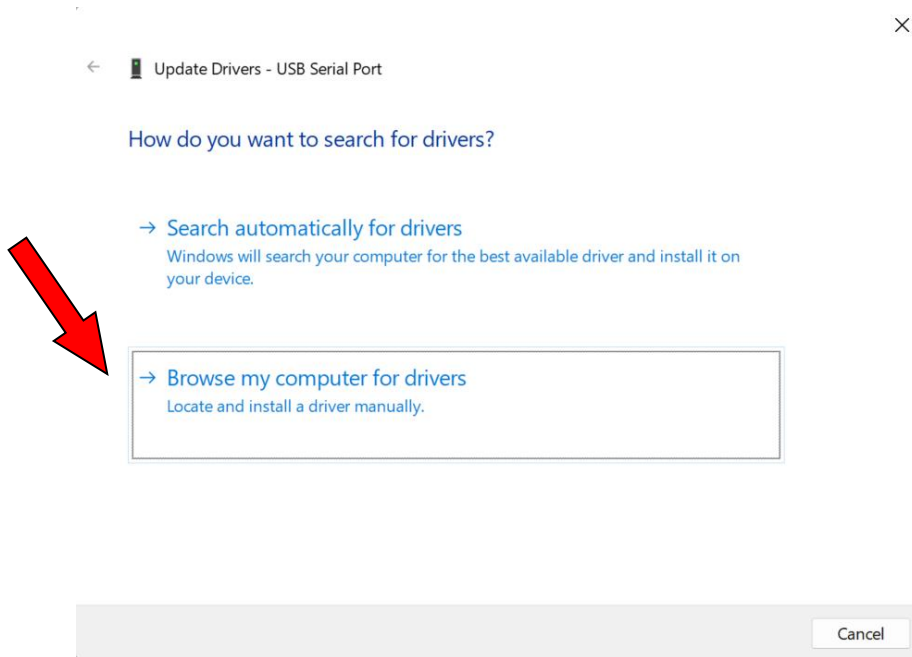
USB port driver is continuously installed.

(9) Execute Device manager

Right click [Other Devices] - [USB Serial Port] in Device Manager and click “Update driver”.

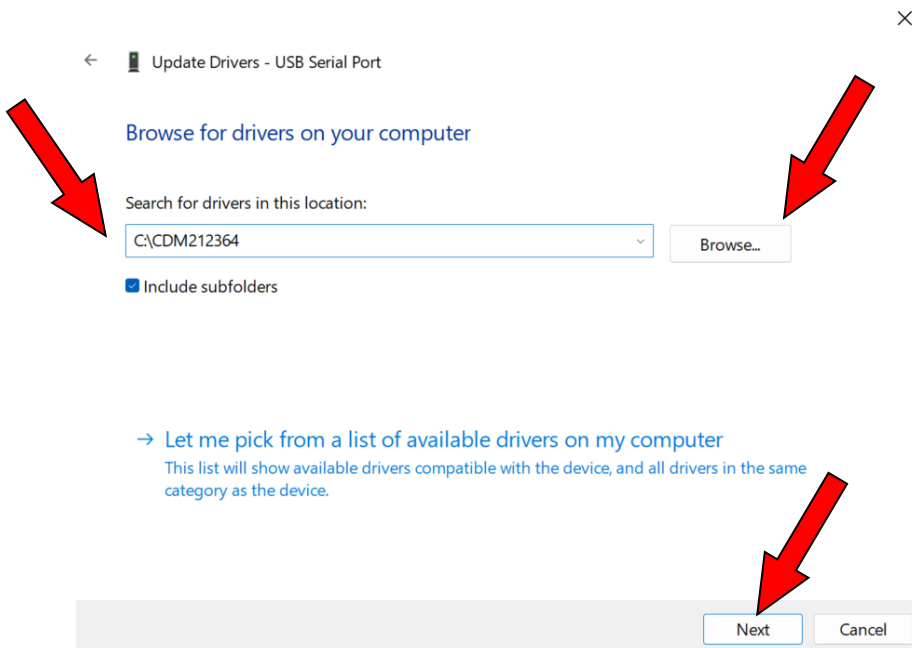


(10) Click “Browse my computer for drivers”.



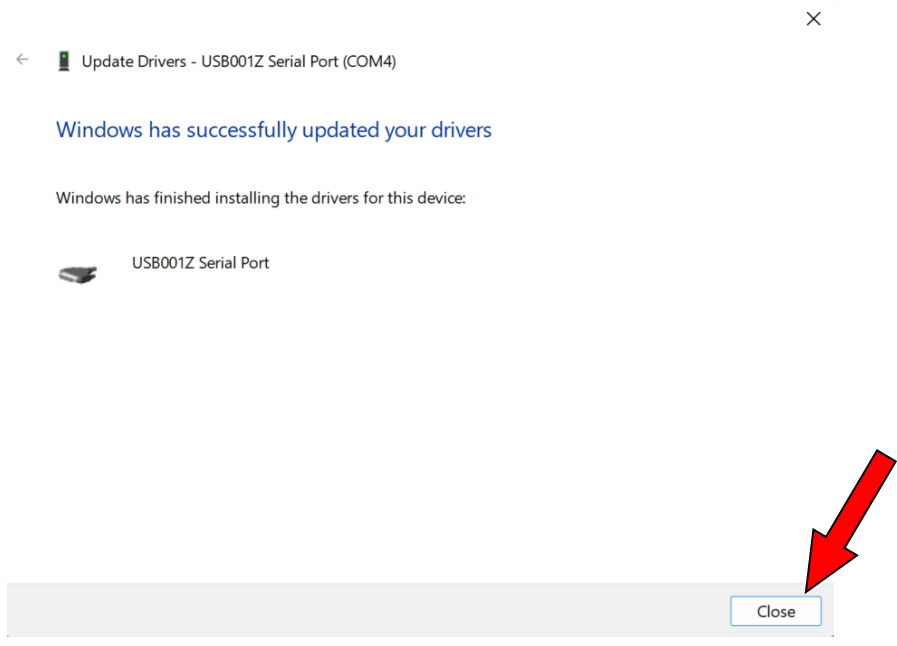
(11) Browse to the folder where USB001Z device driver has been stored and click [Next].

(The following figure shows the device driver is included in folder C:\CDM212364.)



(12) Complete the USB port driver installation.

The driver has been installed successfully, click [Close] to complete the installation.



4. Checking the COM port number

The COM port number is needed for communications with the inverter. So, follow these steps to check on it.

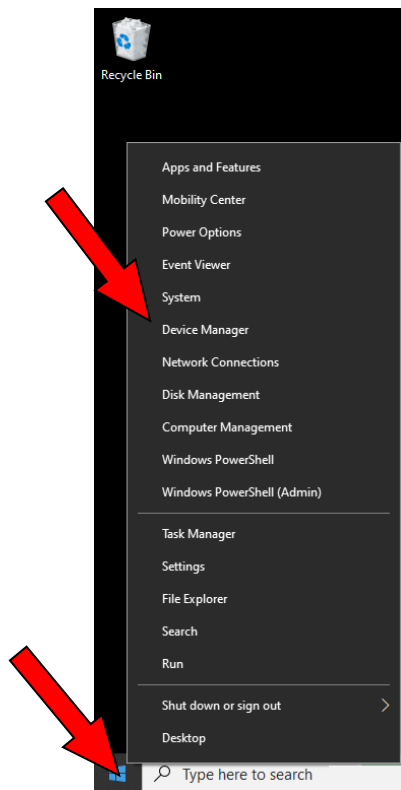
The COM port number is recognized automatically when the installation of the device driver is completed. COM port numbers vary depending on how your computer is set up.

* Perform this check with the USB001Z unit connected to your computer, or else the port number cannot be checked.

Since the steps to be followed to check the number vary depending on the operation system used, refer to the section that corresponds to the operating system used.

4.1. Windows 10

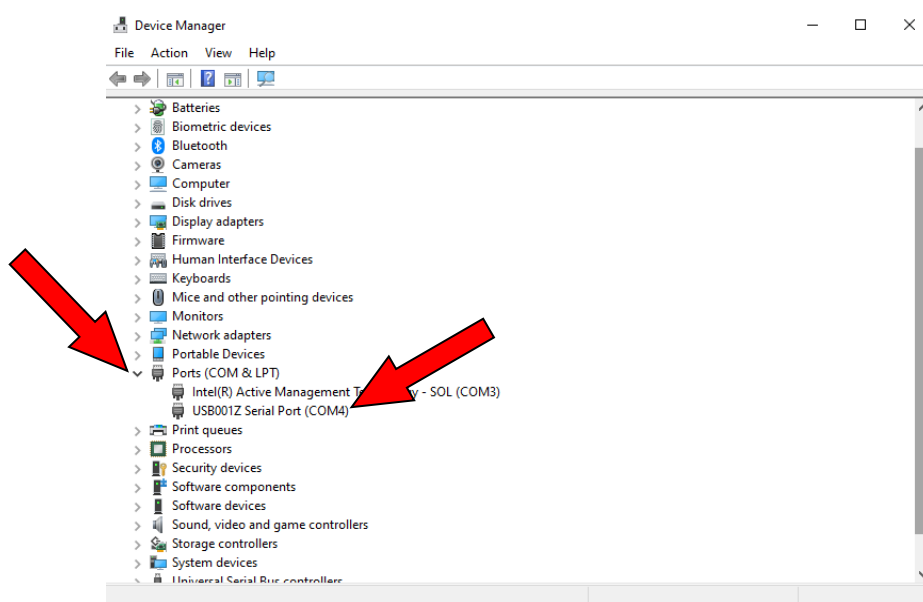
- (1) Right click on the start icon at the bottom left corner of the screen and select Device Manager.



- (2) Click the ">" sign on the left side of "Port (COM&LPT)."

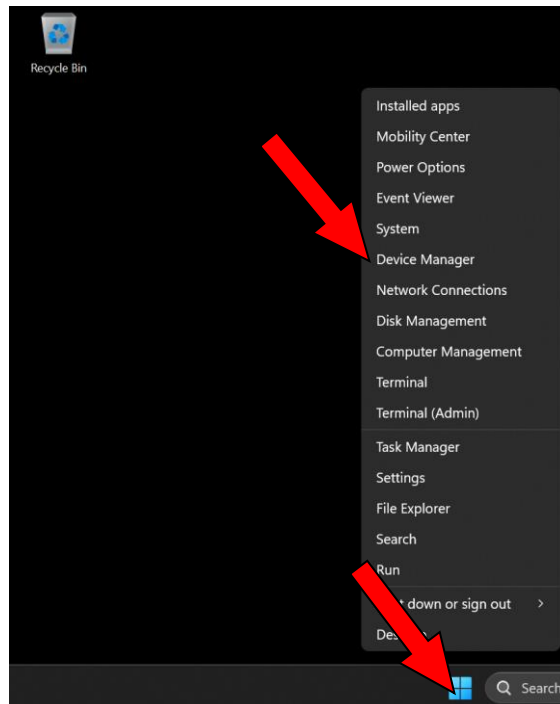
The number in parentheses next to "USB001Z Serial Port" refers to the COM port number.

(In the example shown below, the COM port number is "COM4". If the USB001Z unit is not connected, no COM port number is shown.)



4.2. Windows 11

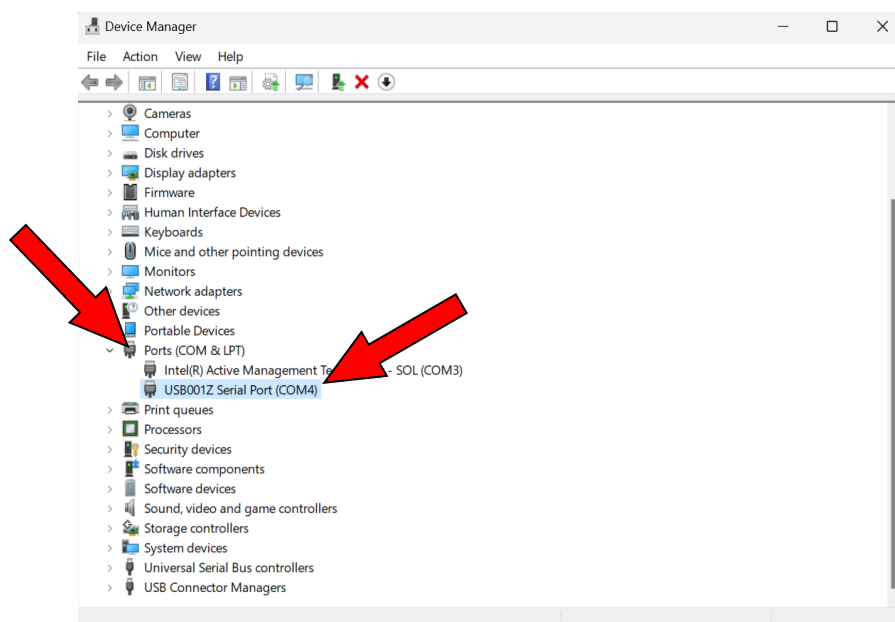
- (1) Right click on the start icon at the bottom left corner of the screen and select Device Manager.



- (2) Click the "▷" sign on the left side of "Port (COM&LPT)."

The number in parentheses next to "USB001Z Serial Port" refers to the COM port number.

(In the example shown below, the COM port number is "COM4". If the USB001Z unit is not connected, no COM port number is shown.)



5. Uninstalling the device driver

Not to be able to install normally and to return the personal computer to the state before the device driver is installed, it's uninstalled.

Since the steps to be followed to uninstall the driver vary depending on the operation system used, refer to the section that corresponds to the operating system used.

5.1. Windows 10

Two drivers can be removed using the *Device Manager*. Do not reverse following (3) (5) in the order by which the driver software is deleted.

(1) Connect the USB001Z unit to the computer with a USB cable.

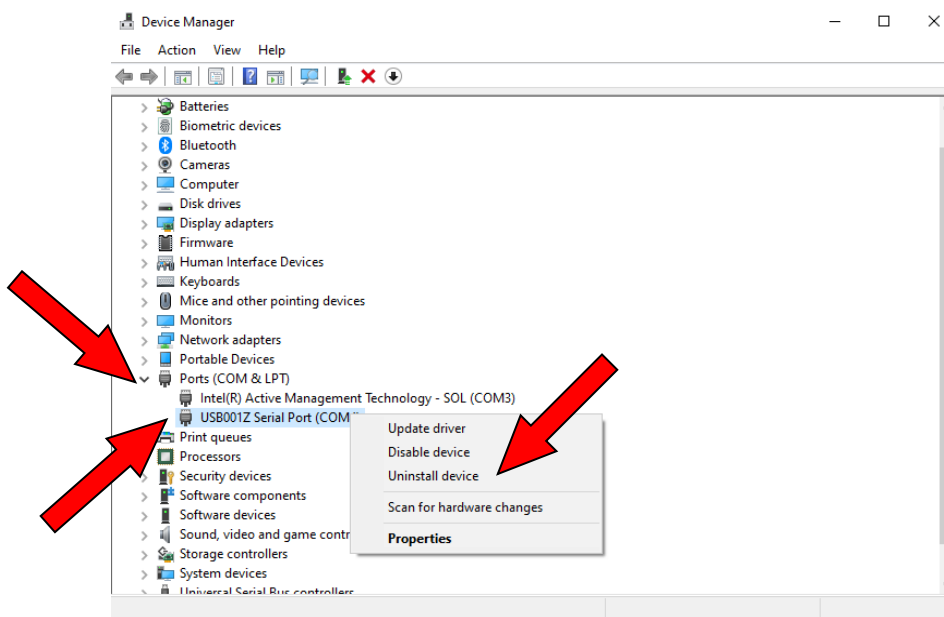
* At this time, do not connect the USB001Z unit to the inverter.

(2) Open the Device Manager.

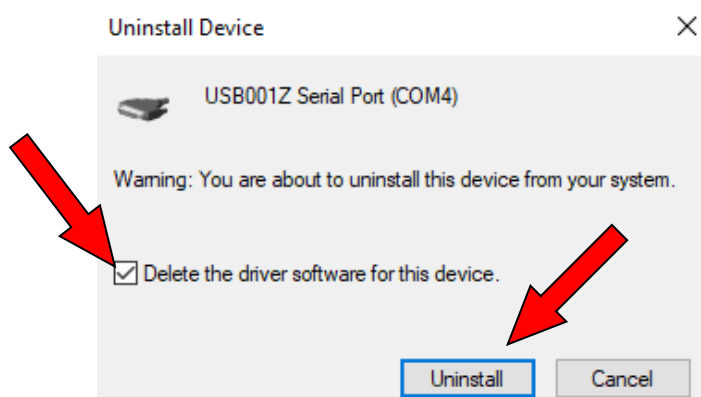
Refer to section 4.1 (1).

(3) Click the "▷" sign on the left side of "Port (COM&LPT)".

Select "USB001Z Serial Port", right-click on the mouse and select "Uninstall device".

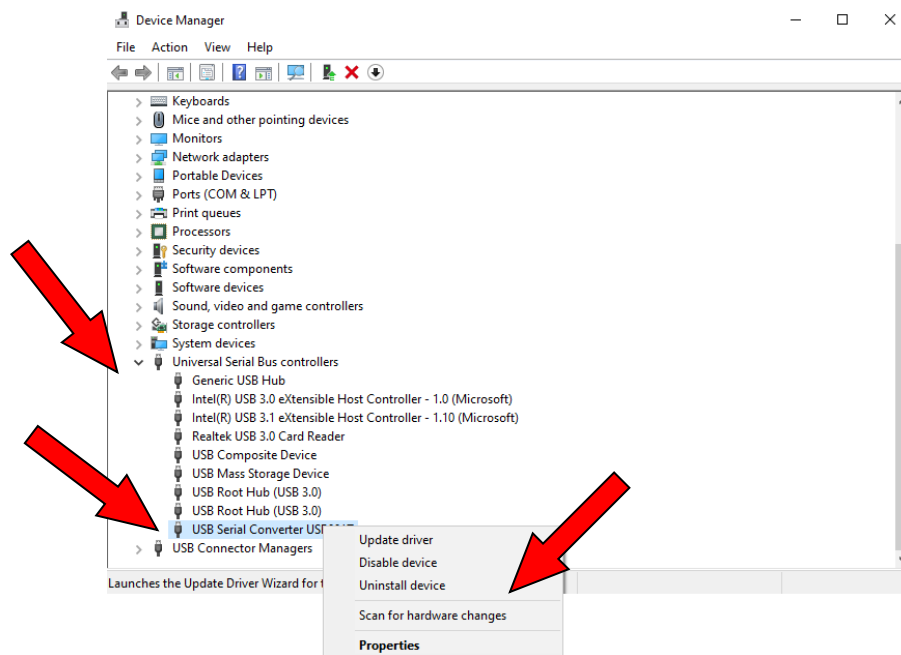


(4) Click the checkbox for "Delete the driver software for this device" on the uninstall dialog box and then click [Uninstall].

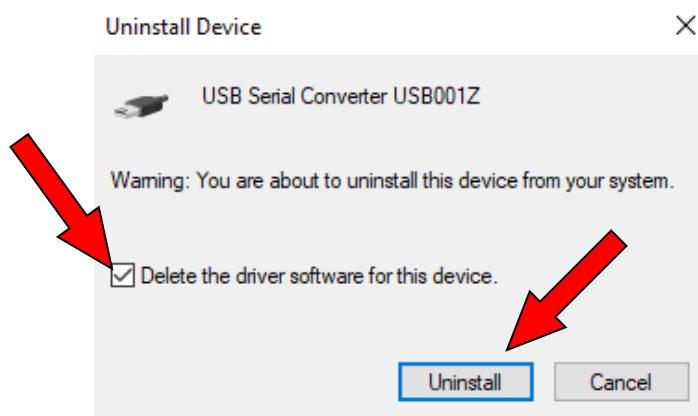


(5) Click the "▷" sign on the left side of "Universal Serial Bus Controllers".

Select "USB001Z Serial Converter USB001Z", right-click on the mouse and select "Uninstall device".



(6) Click the checkbox for "Delete the driver software for this device" on the uninstall dialog box and then click [Uninstall].



(7) Disconnect the USB001Z unit from the computer.

5.2. Windows 11

Two drivers can be removed using the *Device Manager*. Do not reverse following (3) (5) in the order by which the driver software is deleted.

(1) Connect the USB001Z unit to the computer with a USB cable.

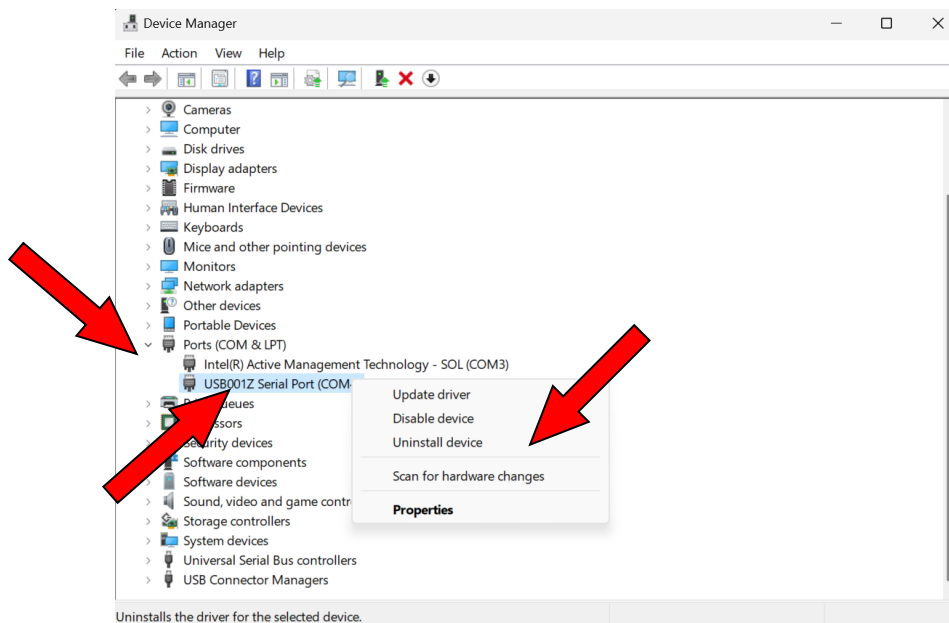
* At this time, do not connect the USB001Z unit to the inverter.

(2) Open the Device Manager.

Refer to section 4.2 (1).

(3) Click the "▷" sign on the left side of "Port (COM&LPT)".

Select "USB001Z Serial Port", right-click on the mouse and select "Uninstall device".

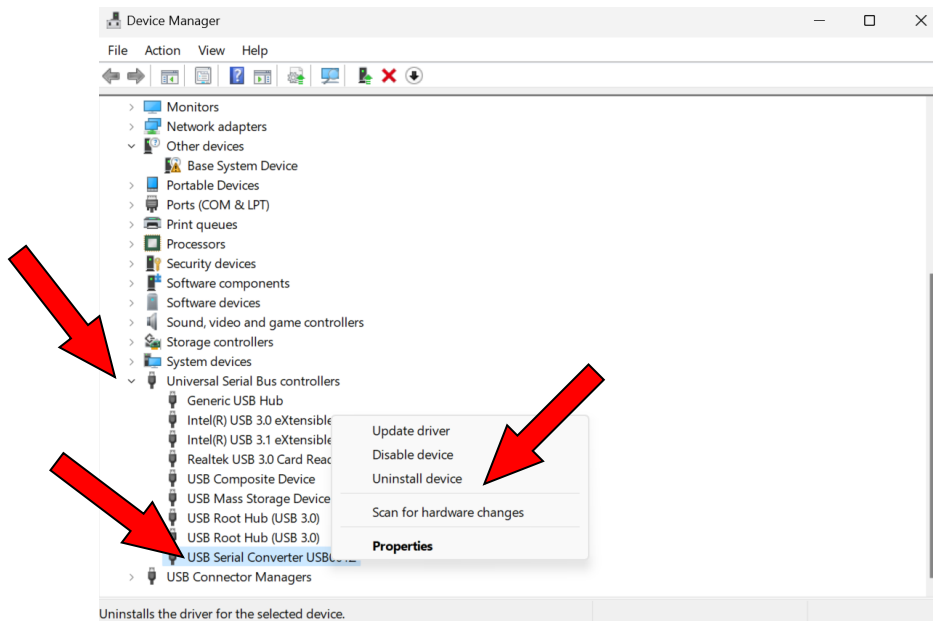


(4) Click the checkbox for "Attempt to remove the driver for this device" on the uninstall dialog box and then click [Uninstall].

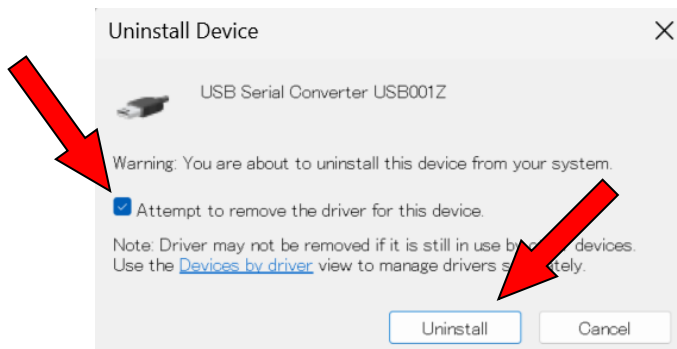


(5) Click the "▷" sign on the left side of "Universal Serial Bus Controllers".

Select "USB001Z Serial Converter USB001Z", right-click on the mouse and select "Uninstall device".



(6) Click the checkbox for "Attempt to remove the driver for this device" on the uninstall dialog box and then click [Uninstall].



(7) Disconnect the USB001Z unit from the computer.

6. Connecting and starting the USB001Z unit

To connect the USB001Z unit to your computer, follow these steps:

- 1) Turn off the input power to the inverter, and after waiting for at least 15 minutes, make sure that the charge lamp on the inverter is no longer lit. (Your personal computer can remain powered on.)
- 2) Connect a USB cable to the USB port on the USB001Z unit and to a USB port on your computer.

When connecting the USB001Z unit to your computer for the first time, you have to install its driver. Refer to Chapter 3.

- 3) Connect an inverter-unit connection cable (optional) between the communication connector of the USB001Z and that of the inverter. Refer to the instruction manual of the inverter for connection to the connection port of the inverter, and choose either RS485 (2-wire type) side or LOGIC (common serial) side on the USB001Z. At this time, be careful not to apply force to the connectors.

RS 485 (2-wire type) side: Connectable to such an RS485 (2-wire type) interface port as that of the VF-nC3, VF-S15, VF-AS3, VF-AS1, VF-PS1, VF-FS1, or VF-MB1.

LOGIC side: Connectable to such a common serial interface port as that of the VF-nC1, VF-S9, VF-S11, VF-A7, or VF-P7.

* Connect the cable only to either RS485 or LOGIC.

- 4) Turn on the power to the inverter, and set communication parameters.
 - * Before disconnecting the USB communication unit, also perform above step 1) beforehand.
 - * Avoid connecting the conversion unit to a USB hub or extended USB port (e.g., PCMCIA card). Or else the conversion unit may become unstable, depending on the environment in which it is used.

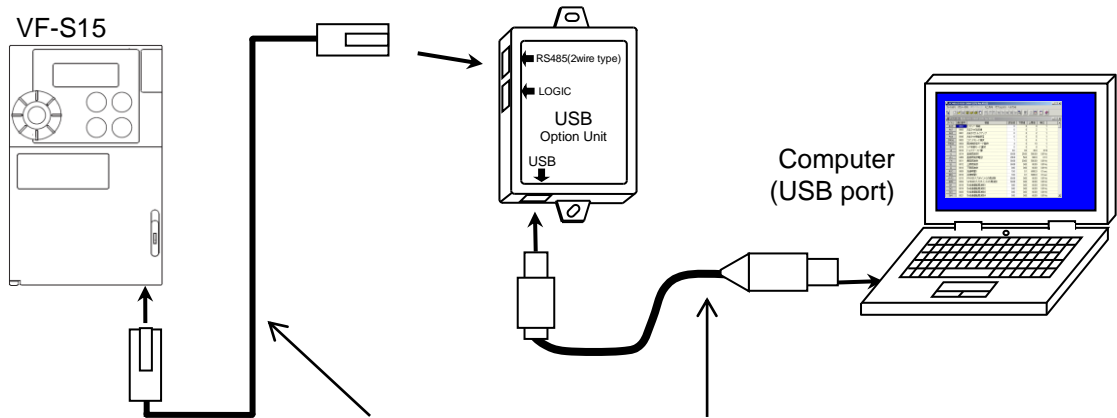
NOTICE



Prohibition

- Do not disconnect the USB cable during communication with the inverter. Otherwise, damage or malfunction will result.

■ Example of connection (In the case of the VF-S15)



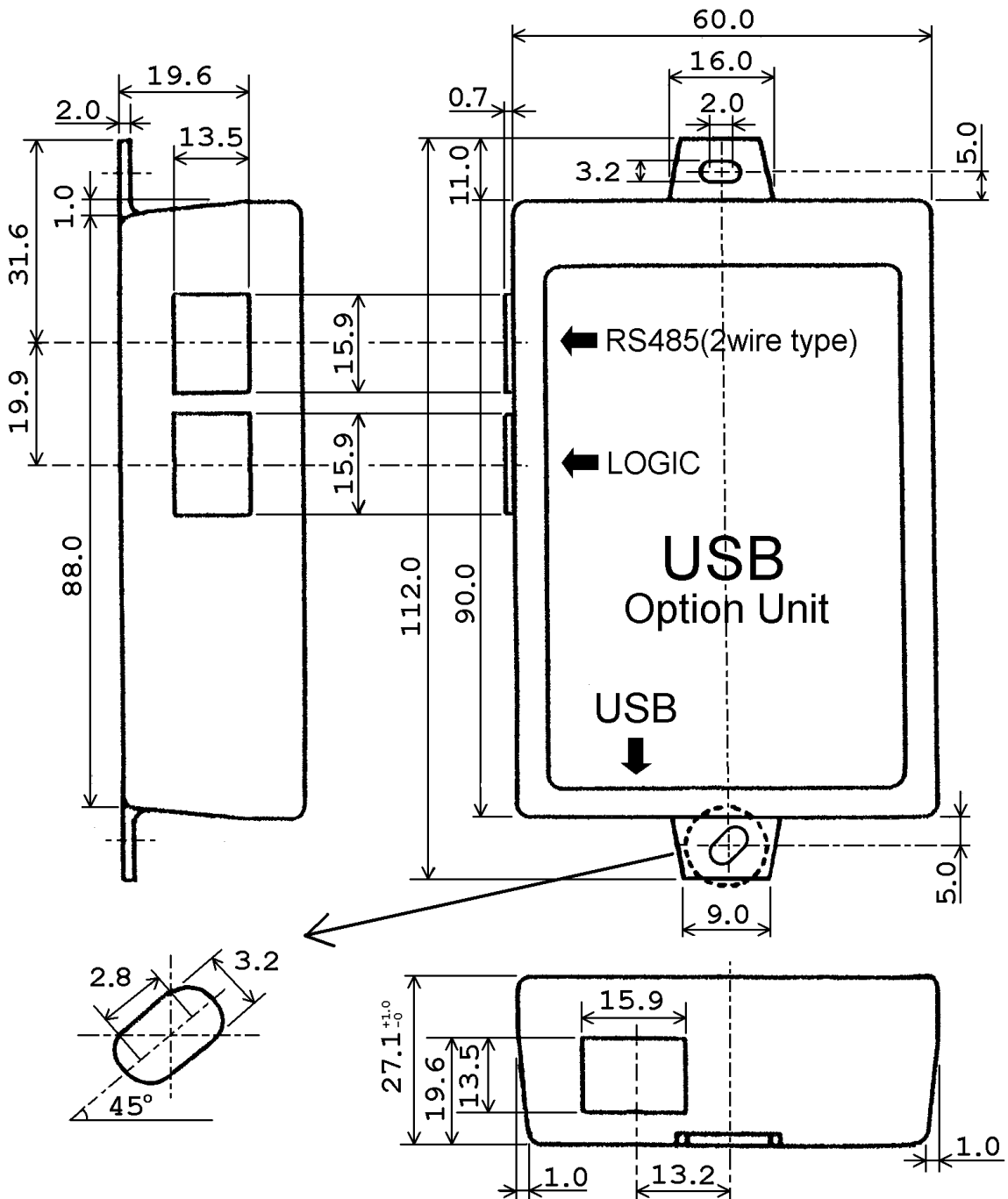
- Inverter-unit connection cable (Optional)

Model number	Cable length
CAB0011	1.2m
CAB0013	3.6m
CAB0015	4.8m

- USB cable (A-B connection type)
 Use a commercially available USB cable.
 (Compliant with USB 1.1/2.0)
 Recommended Cable length: 1m

7. Outline drawing

Here is an outline drawing of the USB001Z unit. (Unit: mm)



General tolerance : ± 0.5

8. Specifications

Item	Specifications
Model number	USB001Z
Applicable model	Model with either an RS485 (2-wire type) connector or a common serial connector (optional). Usable applications: PCM002Z, and others (see instruction manuals of each tool)
Applicable OS ^{*1}	Windows 10 (32bit, 64bit) ,Windows 11 (64bit) ^{*2} However, the personal computer ^{*3} must have a USB port.
Use environments	Indoor operation at an altitude of 1,000m or less and free from direct sunlight, potentially corrosive or explosive gases, steam, dust particles, dust/dirt, and machining fluids (grinding liquid, coolant, included)
Ambient temperature	0 to +50°C
Storage temperature	-25 to +65°C
Relative humidity	20 to 93% (free from condensation and vapor)
Vibration	5.9m/s ² (0.6G) or less (10 to 55Hz) (Compliant with IEC 60068-2-6)
Cooling method	Self-cooling

*1: Applicable OS in this document is subject to change without notice. Please confirm the latest applicable OS from your distributor.

*2: Windows® is a registered trademark of Microsoft Corporation.

*3: No warranty as to the suitability of this product for any computer and any peripheral equipment is either made or implied.

*4: Do not connect two or more USB001Z to PC.

9. Warranty

Warranty period

This product's warranty period is 12 months after the purchase, or 18 months from the date of manufacture printed on the rating plate, whichever precedes the other.

The warranty period of repaired products will not exceed the warranty period before the repair takes place.

Scope of warranty

If a product failure is found during the warranty period due to our negligence, please return the product to Toshiba distributor of purchase, for a replacement or repair of the defective component.

The warranty shall only cover the purchased or delivered product itself.

The following circumstances will incur paid service even before the warranty period expires.

- Product replacement or repair when the product is not returned.
- Product failure or damage due to misuse, inappropriate repair or modification of the product.
- Product failure or damage for reasons such as but not limited to a fall after purchase, an accident during transport, or handling (e.g. smoking) during transport.
- Product failure or damage by natural disasters or unforeseeable external causes such as but not limited to fire, salt exposure, gas exposure, earthquakes, storms, floods, lightning and abnormal voltage.
- Product failure or damage by use under inappropriate circumstances, environments or use not suggested in the product catalog or instruction manual, or use not complying with the original use intended for the product.
- Product failure or damage by the lack of proper maintenance or replacement of expiring parts suggested in the instruction manual.
- In case the product is embedded in your equipment, product failure or damage by causes irrelevant to the product, such as the design of your equipment and software.
- In case the product is embedded in your equipment, product failure that could have been avoided if your equipment had featured a safety device in compliance with the law that governs your equipment, or any feature or structure that is considered the norm by the industry standard.
- Any product failure or damage by accidents that were unforeseeable with the technological standard at shipment.

Warranty exemptions

Irrespective of the warranty period, the warranty shall not cover the following conditions.

- Compensation for any damage not attributed to our negligence.
- Compensation for any loss of business opportunity or income caused by failure of the product.
- All liabilities and compensations for any damage, secondary damage, accidents, damage to any entity that is not the product and damage to any other operations that arise from special circumstances, that we may or may not foresee.
- Any compensations for the results of your product replacement, readjustment of the local equipment after replacement, launch test, inspections, or any other operations.

Service after the stop production

Please ask Toshiba distributor of purchase about the stop of production and repair work for each product.