

Iris controller
SSH-C1 IR

User's Manual

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For Your Safety




Before using this product, read this manual and all warnings or cautions in the documentation provided.

Only Factory Authorized Personnel should be changes and/or adjust the parts of controller.

The Symbols Used in This Manual


 WARNING	 CAUTION
This symbol marks warnings that should be read and used to prevent serious injury or death.	This symbol indicates where caution should be used to avoid possible injury to yourself or others, or damage to property.

The above indications are used together with the following symbols to indicate the exact nature of the warning or caution.

Examples of Symbols Accompanying Warnings and Cautions	
	△ - Symbols enclosed in a triangle indicate warnings and cautions. The exact nature of the warning or caution is indicated by the symbol inside (the symbol at left indicates risk of electrocution).
	○ - Symbols enclosed in a circle indicate actions that must not be performed. The exact nature of the prohibition is indicated by the symbol inside or next to the circle mark (the symbol at left indicates that the product must not be disassembled).
	● - Symbols inside a black circle indicate actions that must be performed to ensure safety. The exact nature of the action that must be performed is indicated by the symbol inside (the symbol at left is used in cases in which the AC adapter must be unplugged to ensure safety).

Symbols on the product

The symbol mark on the product calls your attention. Please refer to the manual, in the case that you operate the part of the symbol mark on the product.

	This symbol with the Exclamation Point calls your attention.
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- ① SIGMAKOKI CO., LTD. does not accept liability for damage resulting from the use of this product or the inability to use this product.
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- ③ SIGMAKOKI CO., LTD. does not accept liability for damage resulting from the use of this product in extraordinary conditions, including fire, earthquakes, and other acts of God, action by any third party, other accidents, and deliberate or accidental misuse.
- ④ If the equipment is used in a manner not specified by the SIGMAKOKI CO., LTD., the protection provided by the equipment may be impaired.



WARNING

- Do not use this product in the presence of flammable gas, explosives, or corrosive substances, in areas exposed to high levels of moisture or humidity, in poorly ventilated areas, or near flammable materials.
- Do not connect or check the product while the power is on.
- Installation and connection should be performed only by a qualified technician.
- Do not bend, pull, damage, or modify the power or connecting cables.
- Do not touch the product's internal parts.
- Connect the earth terminal to ground.
- Should the product overheat, or if you notice an unusual smell, heat, or unusual noises coming from the product, turn off the power immediately.
- Do not turn on the power in the event that it has received a strong physical shock as the result of a fall or other accident.
- Do not touch the stage while operation.
- Only use a dry cloth for cleaning the equipment.

Before You Begin

Package Contents

Purchasers of the Motorized iris diaphragm controller should find that the package contains the items listed below. Check the package contents using the following checklist. Contact your retailer as soon as possible in the event that you should find that any item is missing or damaged.

SSH-C1IR product contents (standard equipment)

- SSH-C1IR Motorized iris diaphragm controller: 1 ea.
- User's Manual (This manual): 1 ea.
- ILOCK connector (Included with the main unit): 1 ea.
- AC Adapter: 1 ea.

SSH-C1IR optional items

- Motorized iris diaphragm
Model number : C30-SSH-17IR,C60-SSH-25IR
- Motorized iris diaphragm cable (2m)
Model number : SSH-AIR-CA-2

Customers who intend on controlling this product from a personal computer will have to provide an RS232C cable or a USB 2.0 cable (mini-B), which must be purchased separately.

Basic Operations

Explains the part names and usage of this product.

Basic operation procedure

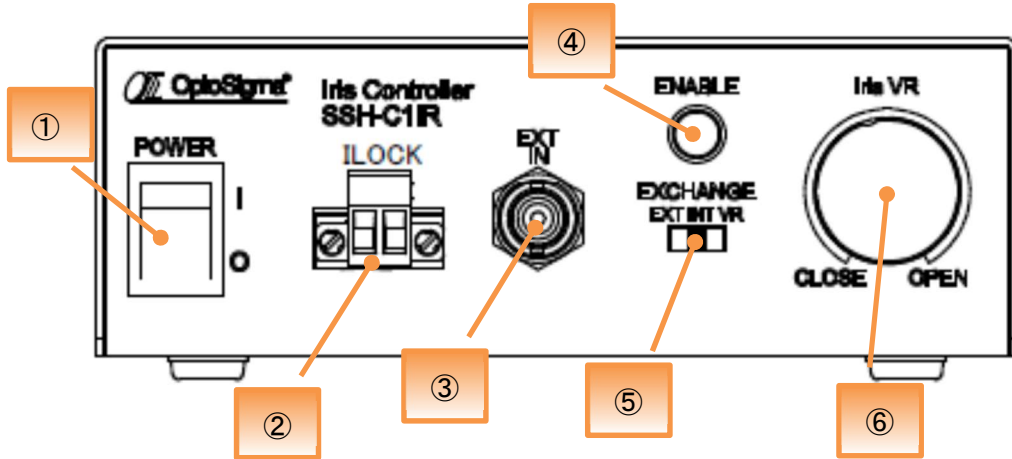
1. Connecting the controller and motorized iris diaphragm.
Make sure that the product is not turned on, connect the motorized iris diaphragm and motorized iris diaphragm cable, and if necessary, connect the RS232C cable or USB cable to the connector of this product.
2. Connect the ILOCK connector
Connect the supplied ILOCK connector to the ILOCK of this product.
3. Connect the AC adapter
Connect the supplied AC adapter to the DC12V of this product.
4. Power on
Tilt the POWER switch upward and turn on the power.
5. Gain and offset adjustment
The amount of gain and offset adjustment varies depending on the motorized iris diaphragm products.
6. Make adjustments
Open / close the iris diaphragm
Rotate the control knob to open and close the motorized iris diaphragm.

Notes

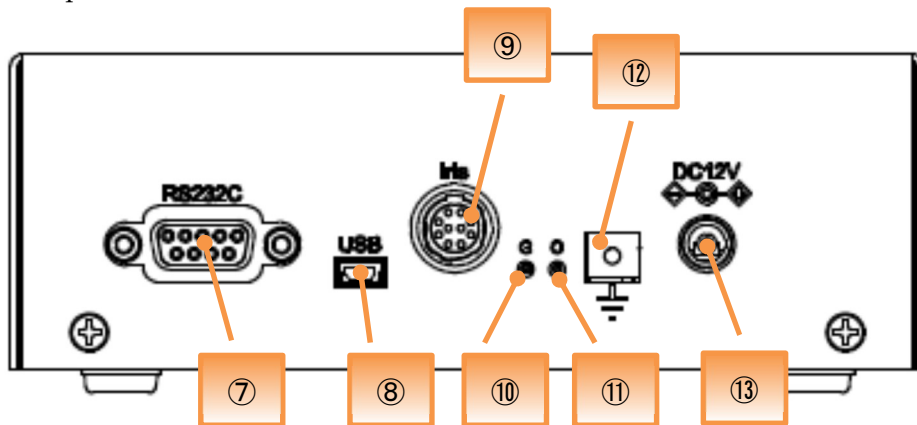
In order to make the aperture of the motorized iris diaphragm the same diameter repeatedly, close it once and then open it. Due to the structure of the aperture, when it closes from the open state, it will not move within a certain range.

Names and Functions of Each Part

Front panel



Rear panel



① Power button

This is the power switch for this product. Tilt upwards to turn on the power, and downwards to power off.

② ILOCK

Connect the ILOCK connector. When the ILOCK connector line is open, the motorized iris diaphragm closes. (Motorized iris diaphragm opens when reconnected.)

③ EXT IN (BNC connector)

Used to open and close the motorized iris diaphragm with an external signal.

Please input 0V ~ 5V.

④ ENABLE switch

When both the ENABLE switch and ILOCK connector are enabled, a control signal is output from the motorized iris diaphragm output connector. When the ENABLE switch is turned on, a control signal is output, the motorized iris diaphragm opens to the determined aperture, and the ENABLE switch lamp lights.

When the ENABLE switch is turned OFF, the motorized iris diaphragm is completely closed and the ENABLE switch lamp turns off.

⑤ Operation method selector switch

Three types of operations can be switched.

INT: Operation by external communication.

VR: Operation knob operation.

EXT: External analog signal (0-5V) operation.

⑥ Operation knob

Rotate the control knob to open and close the motorized iris diaphragm.

⑦ RS232C

Used for serial communication.

⑧ USB

Used for USB serial communication.

⑨ Motorized iris diaphragm output connector (Iris)

Connect to the motorized iris diaphragm.

⑩ Gain adjustment

Adjust the motorized iris diaphragm opening / closing operation.

Clockwise direction if the diaphragm can be too easily opened.

Counterclockwise direction if the diaphragm is difficult to open.

⑪ Offset adjustment

Adjust the opening / closing operation of the motorized iris diaphragm.

Clockwise direction: The aperture range moves in the closing direction.

Counterclockwise direction: The aperture range moves in the opening.

※For ⑩and⑪, there is a semi-fixed variable resistor (11 rotation type) in the controller. Adjust using a precision flathead screwdriver in the access hole.

※Gain and offset need to be adjusted according to individual preference. Make adjustments each time you change the connection.

⑫ FG terminal

Please ground for safety.

⑬ DC12V

Connect the included AC adapter.

Serial communication

This product is capable of serial communication via RS-232C and USB. You can control the motorized iris diaphragm by sending and receiving communication commands to and from your computer.

• Connect to PC via RS-232C

Use a straight cable.

The communication settings are as follows.

communication speed	115,200bps
data bit	8bit
parity bit	None
stop bits	1bit
flow control	None
delimiter	CR+LF

• Connect to PC via USB cable

You need to install a device driver on your computer.

Install the device driver before connecting this product to the computer.

Install the device driver with administrator privileges.

The communication settings when controlling as a serial port are as follows.

Use USB as a Virtual COM Port.

communication speed	9,600bps
data bit	8bit
parity bit	None
stop bits	1bit
flow control	None
delimiter	CR+LF

Obtaining the device driver

Please download the device driver from our website below.

<URL>

https://jp.optosigma.com/en_jp/software__usb

Installing the device driver

To install the device driver, follow the steps below.

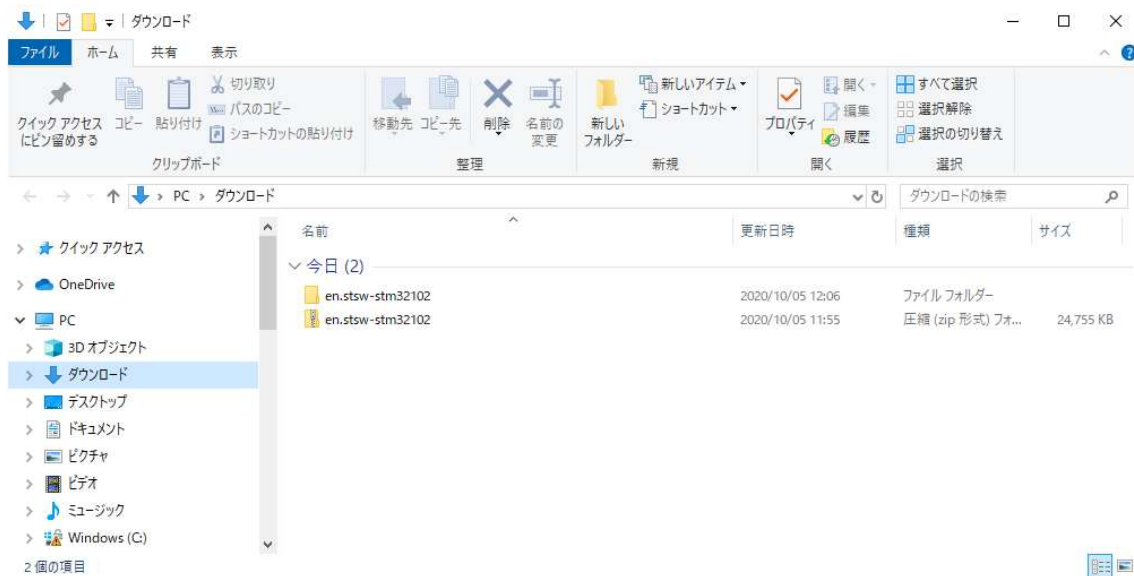
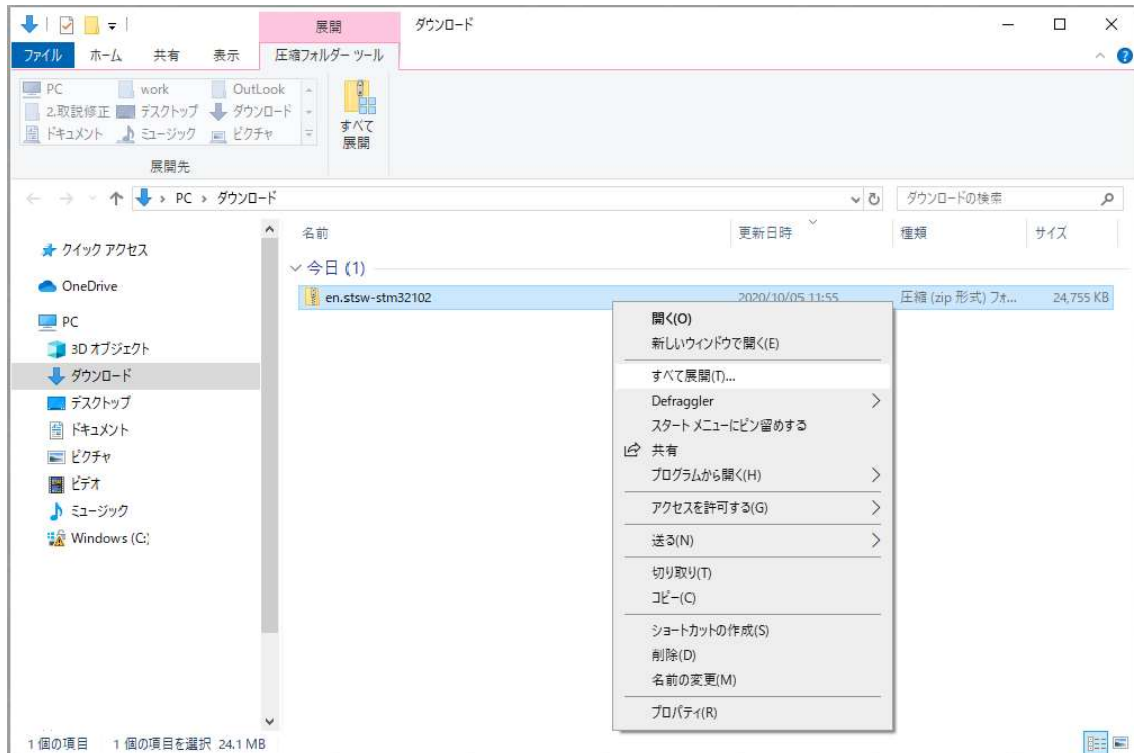
1. Extract the acquired device driver.
2. Run the installer.

The explanation and screen are examples of Windows 10 64 bit version.

Extract the acquired device driver

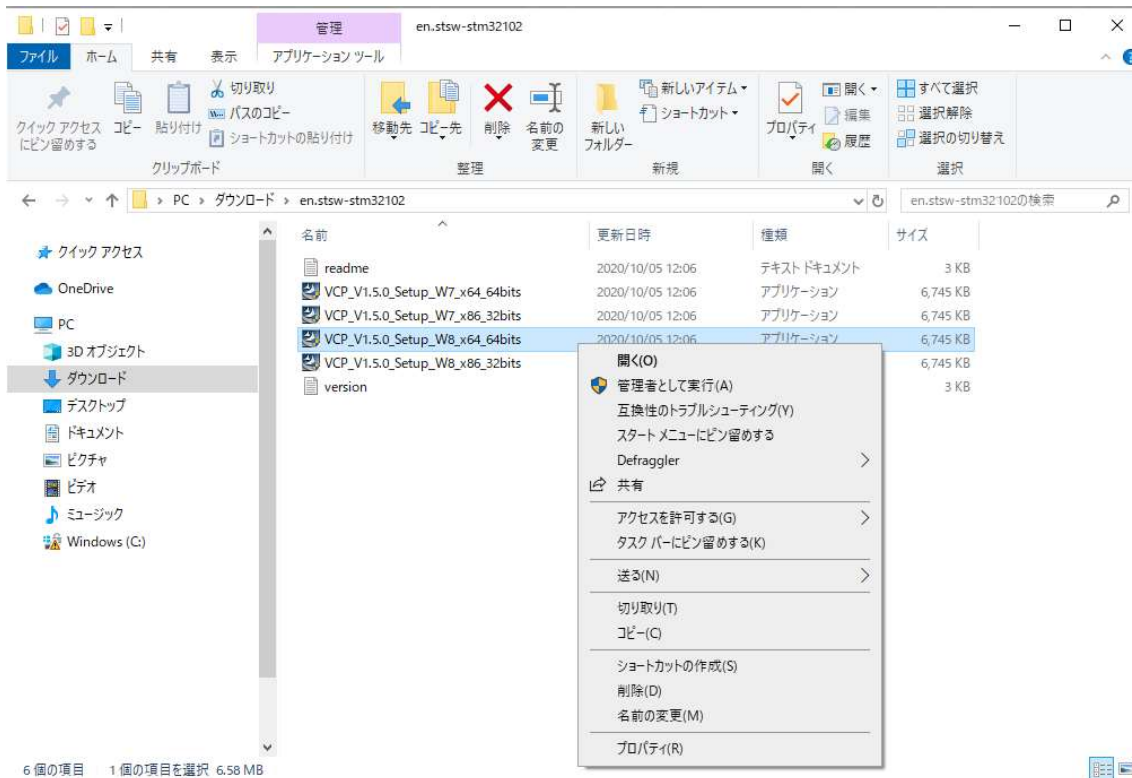
First unzip the device driver compressed in ZIP format.

In this example, the decompression function of Windows 10 is used.



Stsw-stm32102 is created under the Download folder.

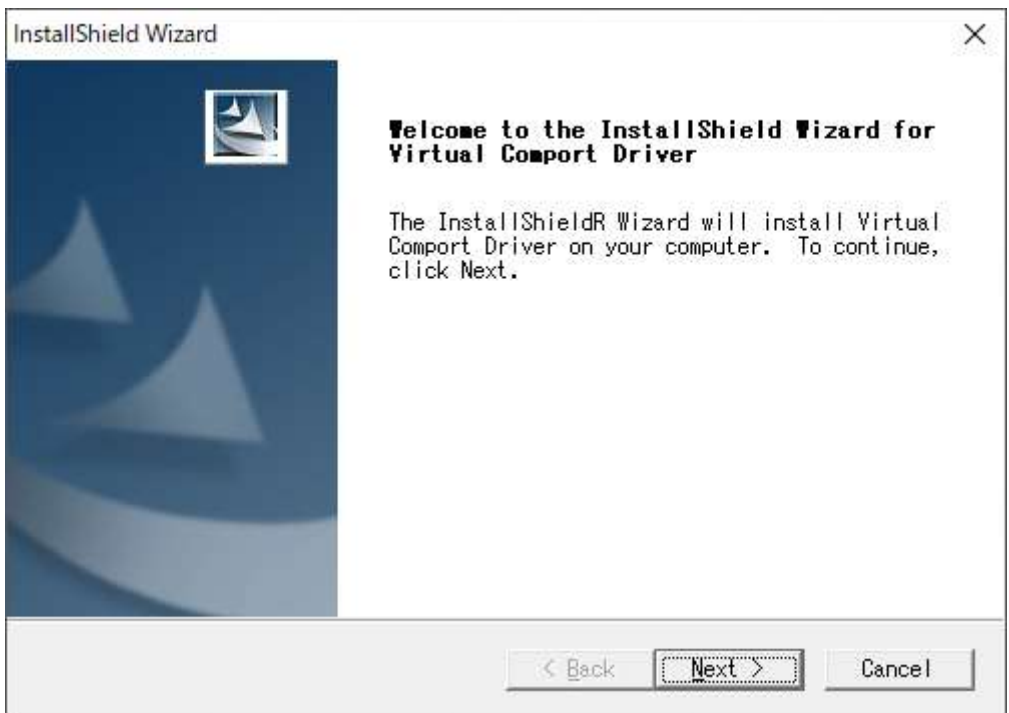
Invoking the installer



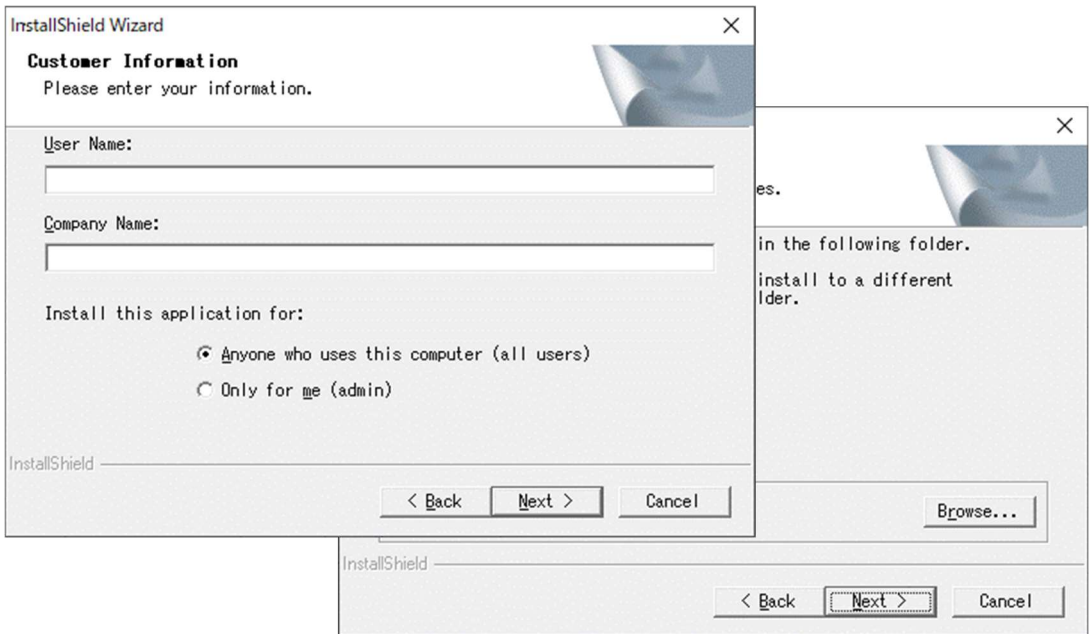
Go to stsw-stm32102 and run VCP_V1.5.0_Setup_W8_x64_64bits.

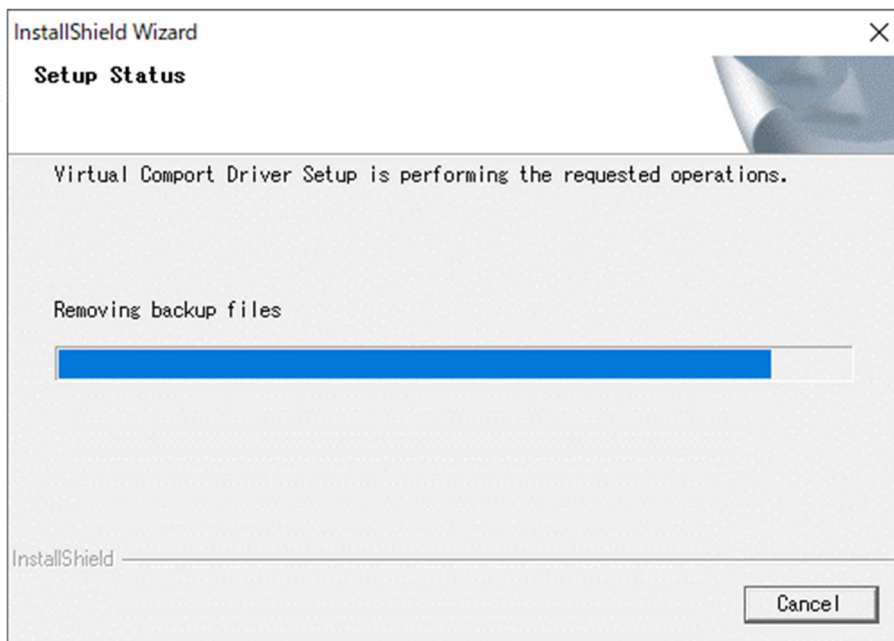
In the above example, VCP_V1.5.0_Setup_W8_x64_64bits is executed with administrator privilege from the right-click menu.

If the User Account Control dialog box is displayed, please press "Yes" to proceed.

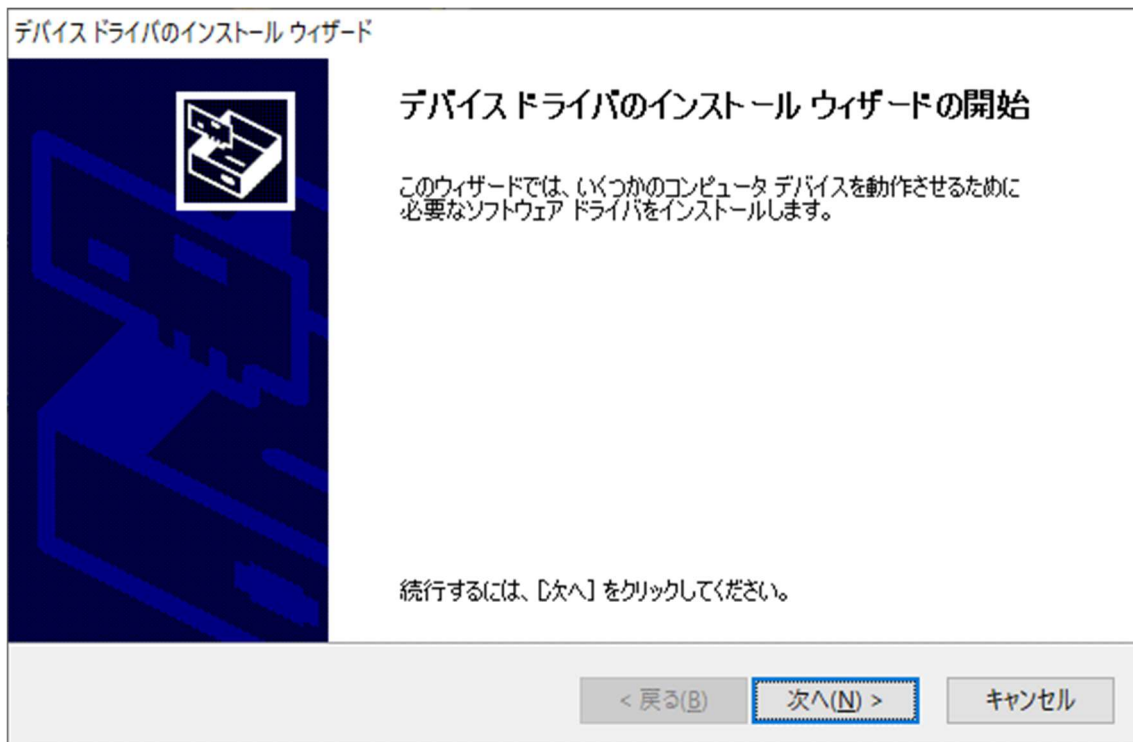


When the installer starts up, please press "Next>" to proceed.
The Customer Information, Choose Destination Location screen continues.
Enter the appropriate information and press "Next>" to proceed.

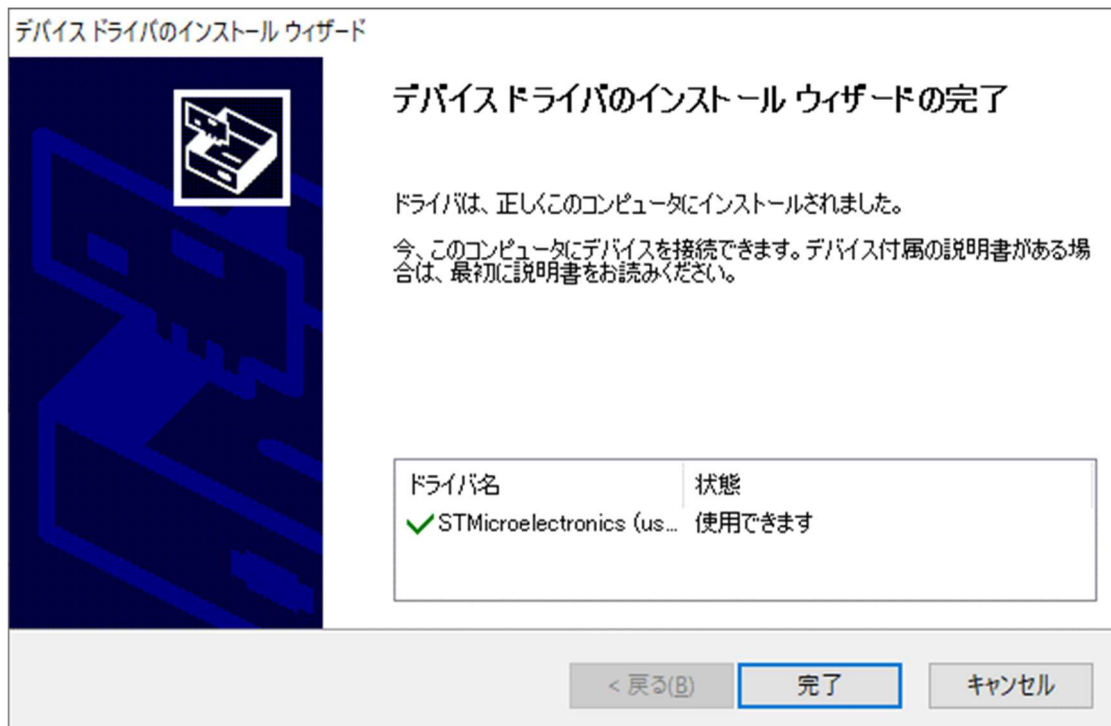




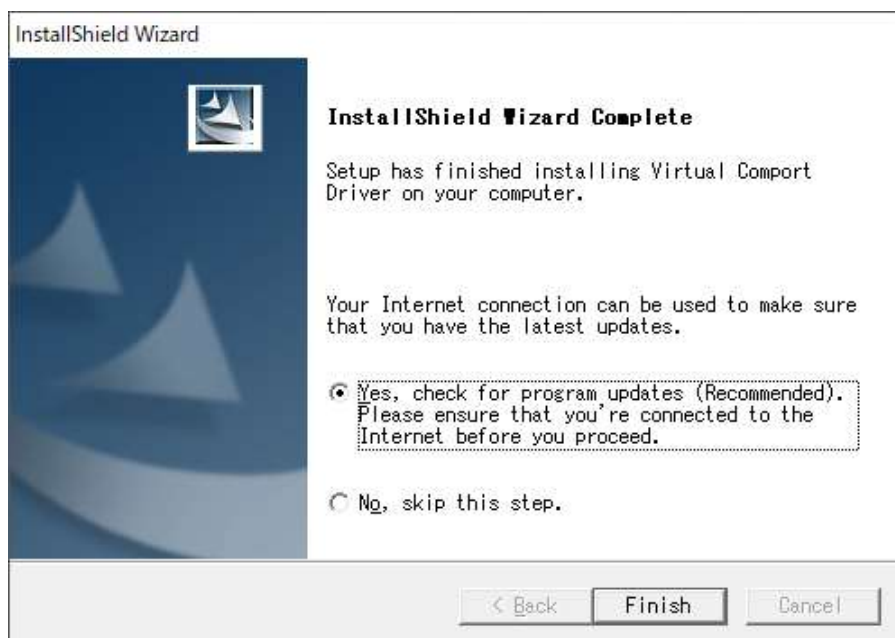
After the Setup Status screen above, you will see the following screen.



If you want to continue the installation, press "Next>" to proceed.



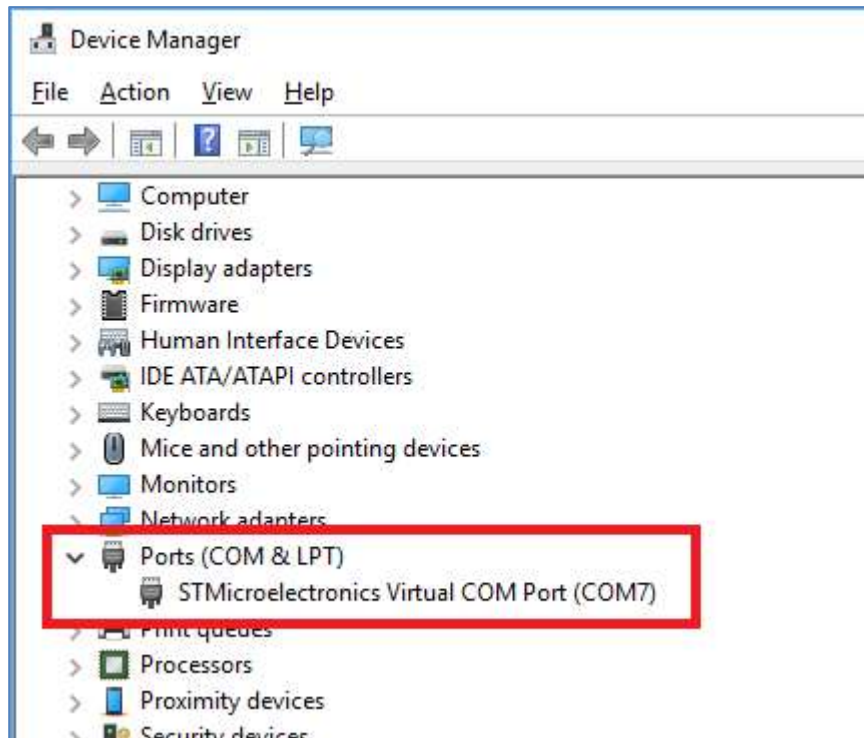
When the installation is complete, the screen above will be displayed.
Press "Finish" to proceed.



When the installation is completed, it switches to the screen above. Press "Finish"
Please finish installing the device driver.

If the installation is successful and the product is connected to the personal computer via USB, it will be recognized from the PC as virtual COM.

The virtual COM is recognized from the device manager as follows.



About Communication Command

- The command method is by text format and the data length is mainly variable type.
- The text you enter may be either uppercase or lowercase letters.
- Be sure to accompany the delimiter at the end of the transmission data.
 - There are two types of replay data, [command reception] and [acquired data], and delimiters are always attached to the end of the reply data.

[Acquired data] is replying the acquired contents of each command, see the description of each command for the details.

[Command acceptance] returns the acceptance status of transmission data.

OK . . . Successful command acceptance

NG . . . Command acceptance failed

When NG is returned, the format of the communication command is incorrect. Please check that there is no mistake of the input format, the value is not outside the input range and the presence or absence of the delimiter.

- For the reply data format of each command, refer to "Communication command list".
※ “%” in the command is a reference value. Please note that the actual aperture is not exactly the same.

Communication command list

Item	Function	Command	Reply data
Drive related	Mechanical origin return	H:	OK or NG
	Relative movement setting	M:	OK or NG
	Absolute movement setting	A:	OK or NG
	Start movement	G:	OK or NG
Control setting related	Stop	L:	OK or NG
	Alarm stop	E:	OK or NG
Status	Acquire overall status	Q:	Acquired data
	Acquisition of positioning status	!:	Acquired data
Equipment information	Get product name	?:N	Acquired data
	Get version information	?:V	Acquired data
	Get revision information	?:-	Acquired data
	Get ENABLE switch information	?:E	Acquired data
	Get Operation method	?:M	Acquired data

Drive related command description

Mechanical origin return

Function: Fully closes the motorized iris diaphragm.

※When this command is sent to the axis in the busy state, "NG" is returned.

Format : H:1

H:W

Example : H:W Starts full closing of motorized iris diaphragm.

Relative movement setting

Function: Sets the opening / closing direction and opening / closing amount from the current position.

※The movement will not start until the drive start command (G :) is sent immediately after the relative movement setting.

Format : M:1 [*dir*]/P [*posi*]

M:W [*dir*]/P [*dir*]

Parameters

[*dir*] : Direction of opening/closing

+ . . . Positive counting direction (opening direction)

- . . . Negative counting direction (closing direction)

[*posi*] : Amount of movement

0~100 . . . Unit [%], number only

※Signs and symbols cannot be added.

Example : M:1+P70 Set to the value added 70% in the opening direction from the current value.

Example : M:W-P50 Set to the current value minus 50% in the closing direction.

Absolute movement setting

Function: Set the opening / closing amount from the machine origin position (coordinate value 0).

※The movement will not start until the drive start command (G :) is sent immediately after the absolute movement setting.

Format : A:1+P [*posi*]

A:W+P [*posi*]

Parameters

[*posi*] : Amount of movement

0~100 . . . Unit [%], number only

※Signs and symbols cannot be added.

Example : A:1+P70 Open / close setting of 70% from absolute coordinate value.

Example : A:W+P50 Open / close setting of 50% from absolute coordinate value.

Start movement

Function: When transmitting immediately after "Relative movement setting" or "Absolute movement setting", the motorized iris diaphragm will open or close according to the setting.

※If this command is sent other than immediately after the above command, "NG" will be returned.

※"NG" will be returned if the Busy state axis is included in the axis to start movement.

Format : G:

Example :

(Send 1) M:W+P50 Received OK

Setting of 50% relative movement in the opening direction.

(Send 2) G: Received OK

Relative movement started.

Control setting command description

Stop

Function: Immediately stop the motorized iris diaphragm operation (stop at the current aperture position).

Format : L:1

L;W

Example : L:1 Immediately stop.

Alarm stop

Function: : When in the Busy state, the motorized iris diaphragm operation is stopped, and the motorized iris diaphragm is closed and then stopped. In the Ready state, it stops after closing the motorized iris diaphragm.

Format : E:

Example : E: The motorized iris diaphragm is closed and then stopped.

Status command description

When the actuator is moving, use the two types of status commands to check the Busy status. There are communication commands that cannot be accepted in Busy state when sending movement and control related commands subsequently.

※Since the feedback control is off at the completion of positioning, even if the movement state is R, the counter display may fluctuate if load is applied to the actuator drive section. Even if the counter display fluctuates, the moving state remains R.

Acquire overall status

Function: Returns the motorized iris diaphragm coordinates and status.

Format : Q:

Reply format : *[cont1]*, *[stat1]*, *[stat2]*, *[stat3]*

Parameters

[cont]: Motorized iris diaphragm coordinate value

0~100 . . . Unit [%], fixed length of 10 digits

The format consists of signs (+, -) and spaces.

[stat1]: Command reception status

K . . . Command normal reception

X . . . Command error

[stat2]: State of standstill

K . . . Normal stop

L . . . Stop at limit

[stat3]: State of standstill

B . . . Busy state, motorized iris diaphragm moving

R . . . Positioning complete, motorized iris diaphragm stopped

Example : (Send) Q:

(Receive) +_ _ _ _ _ _ 70, K, K, R _ : Represents a space

Opening and closing rate is 70%.Command normal reception.

Normal stop. Positioning complete and stopped.

Acquisition of positioning status

Function: Returns the state of the motorized iris diaphragm.

Format : !:

Reply format : *[stat1]*

Parameters

[stat1] : Movement state of the motorized iris diaphragm.

B . . . Busy state, a motorized iris diaphragm moving

R . . . Positioning complete, motorized iris diaphragm
stopped

Example : (Send) !:

(Receive) R Positioning complete and stopped.

Equipment information command description

Product name acquisition

Function: Returns the name of this product.

Format : **?:N**

Reply content : It is only **"SSH-C1IR"**.

Version information acquisition

Function: Returns the firmware version of this product.

Format : **?:V**

Reply contents: All three characters starting with V

Example : (Send) **?:V**

(Receive) **V01**

Revision information acquisition

Function: Returns the firmware revision number of this product.

Format : **?:-**

Reply contents: All two characters

Example : (Send) **?:-**

(Receive) **00**

ENABLE switch information acquisition

Function: Returns the status of the ENABLE switch.

Format : **?:E**

Reply contents: 0 or 1

OFF when 0, ON when 1

Example : (Send) **?:E**

(Receive) **1**

ENABLE switch is ON.

Operation method acquisition

Function: Returns the currently selected operation method.

Format : **?:M**

Reply contents : 0 or 1 or 2

0 for INT, 1 for VR, 2 for EXT

Example : (Send) **?:M**

(Receive) **0**

The currently operation method is INT.

Specification

General specifications

Power supply (using AC adapter)	AC100-240V (50 / 60Hz)
Power consumption	15VA
Operating temperature	5 ~ 40°C (41 ~ 104°F)
Storage temperature	-20 ~ 60°C (-4 ~ 140°F)
Ambient humidity	20 ~ 80% RH (No condensation)
External dimensions (W × H × D)	145 x 50 x 86 mm (excluding protrusions)
Mass	0.63kg
Interface	RS232C USB (mini-B female connector)

Connector pin assignment

RS232C

Pin number	Name
1	NC
2	TxD(OUT)
3	RxD(IN)
4	DSR
5	GND
6	ER
7	CS
8	RS
9	NC

4-6 and 7-8 are shorted internally.

USB

Pin number	Name
1	V _{BUS}
2	DATA-
3	DATA+
4	NC
5	GND

External dimensions

