

# Certificate Generating & Installing Tools

Certificate Generate Tool/  
Certificate Write Tool

## INSTRUCTION MANUAL

Read this Instruction Manual before using the product.

Read the safety notes carefully.

Keep this Instruction Manual in a safe place and be careful not to lose it.

# PREFACE

This instruction manual describes how to generate the certificate required for security communication as well as to install and use the certificate installation tool for the remote I/O RT series OPC UA compatible device unit. Please read this Instruction Manual thoroughly and use the product properly.

Keep this Instruction Manual in a safe place and be careful not to lose it.

Product specifications and appearances presented in this Instruction Manual are subject to change without notice.

CKD does not offer any warranties whatsoever regarding information provided in relation to this software. This includes any warranties regarding descriptions, accuracy, safety, marketability, and fitness for particular uses or purposes.

CKD Corporation shall not be responsible for any damage arising from the software.

# SAFETY INFORMATION

In order to use our products safely, it is important to select, use, handle, and maintain the products properly.

Observe the warnings and precautions described in this Instruction Manual to ensure device safety.

Handling not described in this Instruction Manual may lead to an accident. Thoroughly read and understand this Instruction Manual before using the product.

To explicitly indicate the severity and likelihood of a potential harm or damage, precautions are classified into three categories: "DANGER", "WARNING", and "CAUTION".

 <b>DANGER</b>	Indicates an imminent hazard. Improper handling will cause death or serious injury to people.
 <b>WARNING</b>	Indicates a potential hazard. Improper handling may cause death or serious injury to people.
 <b>CAUTION</b>	Indicates a potential hazard. Improper handling may cause injury to people or damage to property.

Some statements classified as "CAUTION" may still lead to serious results depending on the situation.

All statements that follow these labels are important and must be observed.

**<Types of warning symbols>**

 A general symbol indicating a prohibited (not permitted) action.	 A symbol prohibiting touching objects or equipment.
 A symbol prohibiting putting fingers into openings.	 A general symbol warning of dangers such as electric shock and burns.
 A symbol warning of dangers that occur when starting an automatic equipment.	 A general symbol indicating that a specific course of action must be taken.
 A symbol instructing to read an instruction manual carefully.	 A symbol indicating that the earth terminal must be connected to the ground.

Other general precautions, tips on using the product, or technical information and terminology are indicated by the following icon.



- Contains useful information such as general precautions, supplementary information, and reference information.

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# 1. TOOL OVERVIEW

This software is a tool to manage the certificates required for the communication of the remote I/O RT series OPC UA compatible device unit. Each chapter explains the following two tools:

- **Certificate Generate Tool**

A tool to generate a certificate, private key and Certificate Signing Request(CSR) for OPC UA communication.

- **Certificate Write Tool**

A tool to install and upload the certificate and private key to and from the OPC UA compatible device unit.

## CAUTION



**Before using the device unit, thoroughly read and understand the instruction manual for the industrial network communication system used.**

- Unexpected operation of this product may result in injury or damage to equipment.



**Do not connect or disconnect the USB communication cable or turn the unit's power on or off while transmitting to or receiving from the unit.**

- The device unit may malfunction.



**Do not start and use this tool on one computer at the same time.**

- This may cause communication failure and may lead to unexpected operation of the unit or valve.



**If a communication error occurs, check the connection status of the USB communication cable (whether or not it is disconnected, etc.). Close other communication software when using this software.**

- This cannot be used simultaneously with other communication software that uses the USB communication interface.



**Use a USB communication cable to communicate with the unit.**

- To connect to a USB communication cable, refer to the Instruction Manual for the corresponding device.

# 1.1. Operating Environment

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The following environment is required to operate this software.

<b>OS (Operating system)</b>	Windows®11、Windows®10
<b>Display</b>	640 x 480 or higher (1280 x 800 pixels or higher recommended)
<b>Required memory size</b>	4 GB or more recommended
<b>Hard disk</b>	500MB of free space or more
<b>Interface</b>	Using a Micro-B cable with the remote I/O system is required.



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## 1.2. License Agreement

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- Customers shall not reverse-engineer, decompile, or disassemble this software.
- Customers shall not reproduce the manual or any other printed materials.
- CKD Corporation may terminate this License Agreement if the customer breaches this Agreement. In such case, the customer shall not be able to use the software at all.
- CKD Corporation provides no warranty of any kind regarding the information provided in this software, including any warranty of content, accuracy, safety, merchantability, or fitness for a particular use or purpose.
- CKD Corporation shall not be responsible for any damage arising from this software.
- The contents of this software are subject to change without notice.

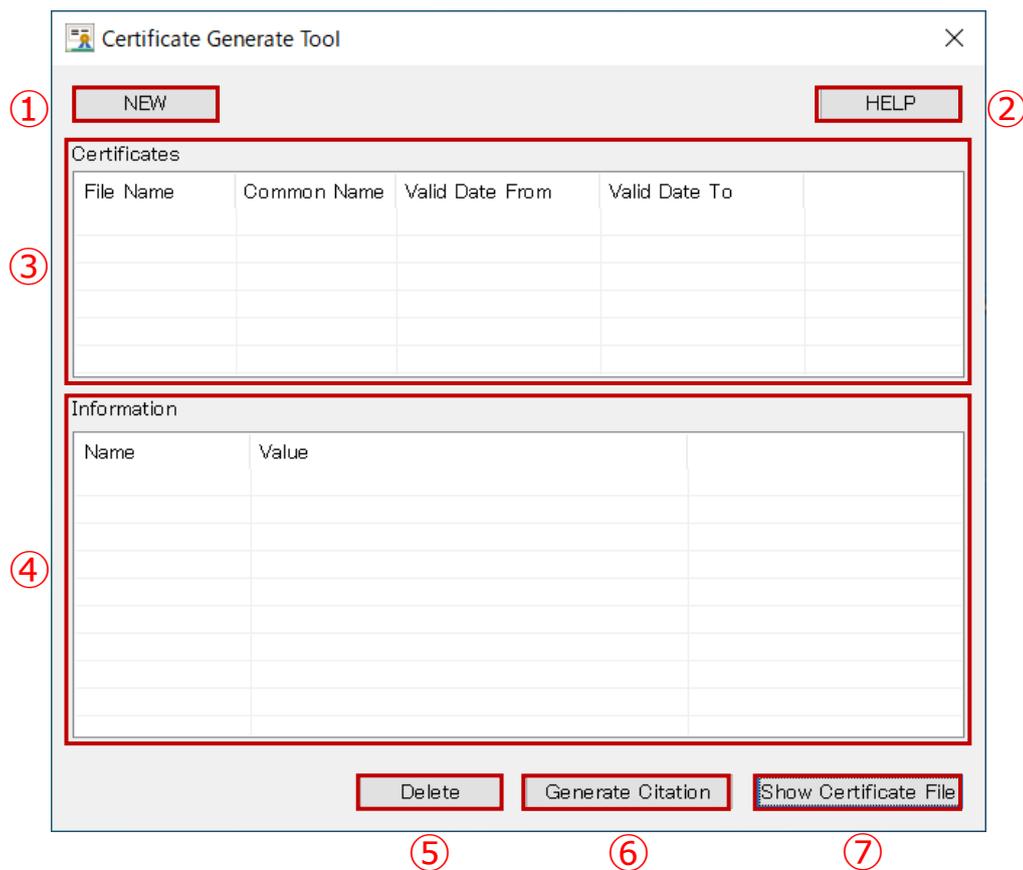
# 2. Certificate Generate Tool

## 2.1. Structure

The Certificate Generate Tool can be used on any PC on which this software is installed.

## 2.2. Screen Description

### ■ Main window



No.	Name	Description	Reference
①	[NEW] button	Generate a new.	-
②	[HELP] button	Displays the instruction manual.	-
③	“Certificates” display	Displays the generated certificate, private key, and CSR.	-
④	“Information” display	Displays the information of generated certificate, private key, and CSR.	-
⑤	[Delete] button	Deletes the selected files.	-
⑥	[Generate Citation] button	Generates the certificate by citing the saved certificate information.	-
⑦	[Show Certificate File] button	Displays the folders various files are saved.	-

## ■ Sub window

No.	Name	Description	Necessity
①	<b>File Name</b>	Enter the file name (up to 64 English letters).	<b>Required</b>
②	<b>Valid Days</b>	Enter the number of days the certificate is valid. (1 to 7300 days)	<b>Required</b>
③	<b>Key Size</b>	Selects the key size. (1024/2048/4096)	<b>Required</b>
④	<b>Key Algorithm</b>	Displays the key algorithm (RSA: cannot be changed).	<b>Required</b>
⑤	<b>IP Address</b>	Enter the IP address of the OPC UA compatible device unit.	<b>Required</b>
⑥	<b>Serial Number</b>	Enter the IP address of the OPC UA compatible device unit. (8 hexadecimal digits)	<b>Required</b>
⑦	<b>Country Name(C)</b>	Enter the country name in two uppercase English letters. (Example: JP (Japan))	Arbitrary
⑧	<b>State or Province(ST)</b>	Enter the state or province name (up to 128 English letters).	Arbitrary
⑨	<b>Locality(L)</b>	Enter the area name (up to 128 English letters).	Arbitrary
⑩	<b>Organization Name(O)</b>	Enter the organization name (up to 64 English letters).	Arbitrary
⑪	<b>Organizational Unit(OU)</b>	Enter the affiliation name (up to 64 English letters).	Arbitrary
⑫	<b>Common Name</b>	Enter the common name for identification (up to 64 English letters).	<b>Required</b>
⑬	<b>E-mail Address</b>	Enter the email address (up to 128 English letters).	Arbitrary

## 2.3. Usage

### 2.3.1. Obtaining the installer

Obtain the installer for the Certificate Generate Tool from the CKD website.  
RT product page: <https://www.ckd.co.jp/kiki/en/product/detail/1064>

<Procedure to obtain>

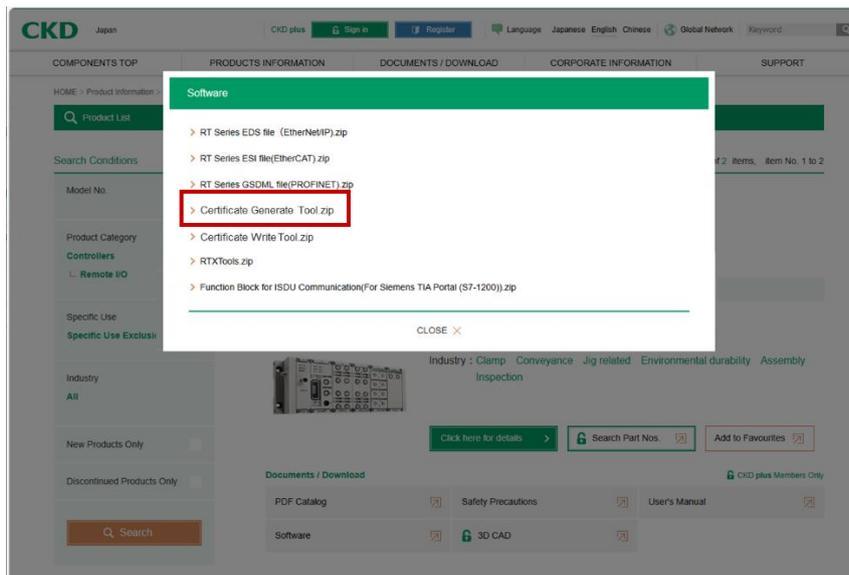
#### 1. Click the above URL or select from the CKD website to display the product detail page.

Select in this order: CKD website → COMPONENTS TOP → Controllers (Category) → Remote I/O (Product Category). Also searchable with the "RT."

#### 2. Click "Software" on the "Remote I/O" page.

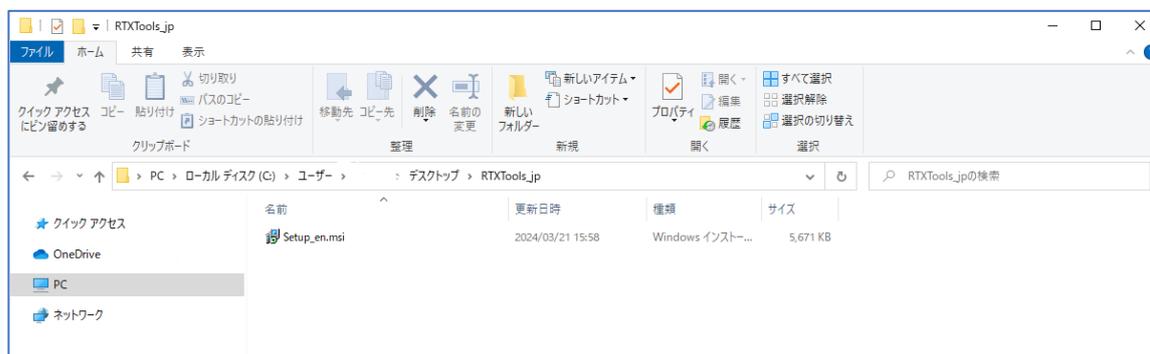
The screenshot shows the CKD website interface for the Remote I/O (Model No. RT) product. The page includes a search bar, search filters (Model No., Product Category, New Products Only, Discontinued Products Only), and a 'Selection Guide' button. The product information section displays the product name, model number, and a list of features and industries. The 'Documents / Download' section is visible at the bottom, with the 'Software' link highlighted by a red box.

### 3. Click the installer [Certificate Generate Tool.zip] on the "Software" select screen to download.



### 4. Download complete

Extract the zip file and a "Certificate Generate Tool" folder containing "Setup\_en.msi" will be created on the desktop.



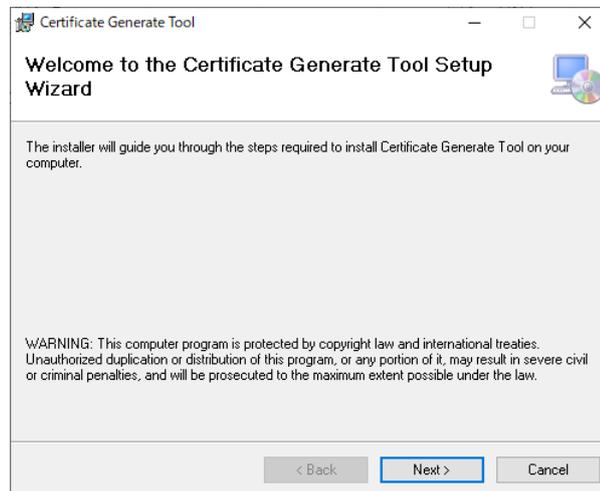
※This image is from the Japanese version of the Windows OS.

## 2.3.2. Installation Procedure

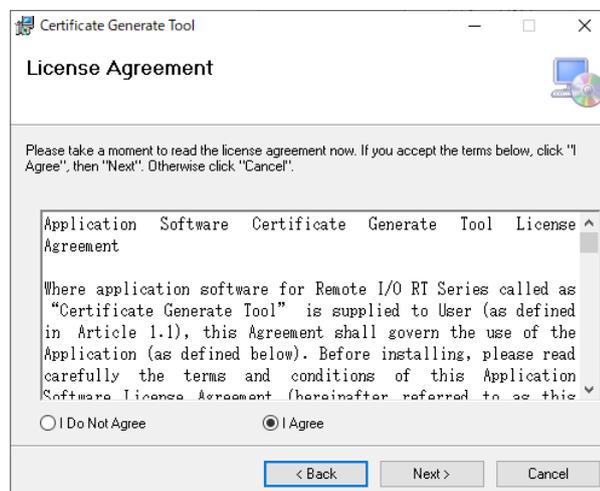
### 1. Double-click "Setup\_en.msi" to start the "Setup Wizard".

If a message that warns of installing a program from an unknown publisher is displayed at the start of the installation, select [Yes] to continue the installation.

### 2. Click [Next] in the "Setup Wizard" dialog box.

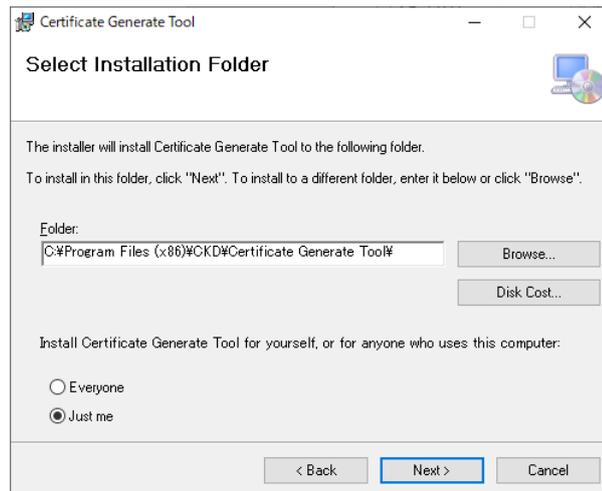


### 3 Read the "License Agreement" dialog box and check the "Agree," then click [Next].

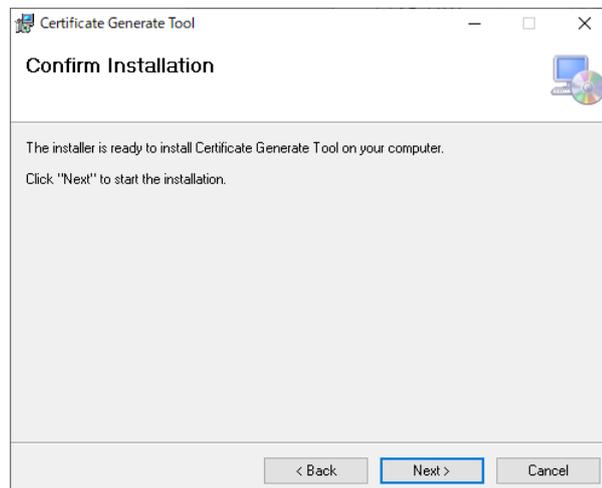


#### 4 Check the destination folder and click [Next].

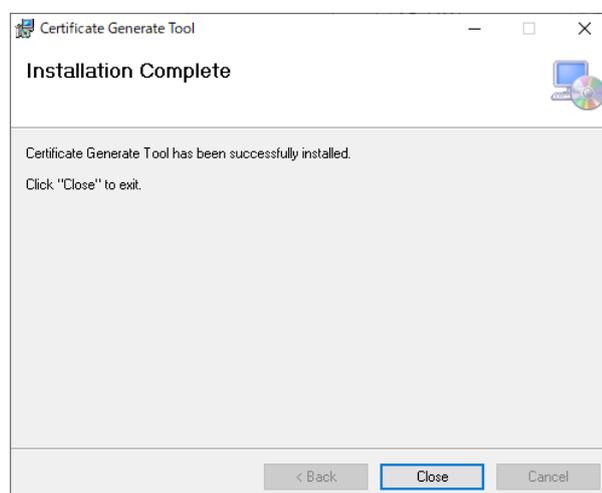
The folder name is displayed by default. To save the file in a different folder, select it with "Browse."



#### 5. Follow the "Confirm Installation" dialog box and click [Next]



#### 6. Follow the "Installation Complete" dialog box and click [Close] to close the dialog box



## 2.3.3. Generating a certificate

### 1 Launch [Certificate Generate Tool]

Select [Certificate Generate Tool] from the [CKD] folder in the Windows Start menu.



### 2 Click [NEW] when the Certificate Generate Tool starts up and a window appears.

A screenshot of the 'Certificate Generate Tool' application window. The window title bar reads 'Certificate Generate Tool' and has a close button (X) on the right. At the top left, there is a 'NEW' button highlighted with a red rectangular box. To its right is a 'HELP' button. Below these buttons is a section titled 'Certificates' containing a table with four columns: 'File Name', 'Common Name', 'Valid Date From', and 'Valid Date To'. The table has five empty rows. Below the 'Certificates' section is a section titled 'Information' containing a table with two columns: 'Name' and 'Value'. This table also has five empty rows. At the bottom of the window, there are three buttons: 'Delete', 'Generate Citation', and 'Show Certificate File'.

### 3. Enter each item and click [OK].

Certificate Generate Tool

(\*)File Name: Example\_certificate

(\*)Valid Days: 365

Key Size: 2048

Key Algorithm: RSA

(\*)IP Address: 192 . 168 . 1 . 1

(\*)Serial Number: 00000001

(\*)Require field

Country Name(C):

State or Province(ST):

Locality(L):

Organization Name(O):

Organizational Unit(OU):

(\*)Common Name: RemoteIO

E-mail Address:

OK Cancel



- Fields marked with (\*) are required.  
2.2Screen Description Enter the required information according to the instructions in the "Sub window".

#### ■ Checking the [Serial Number]

The serial number of the OPC UA device unit must be entered in the [Serial Number] field. The serial number can be checked using RTXTools, the RT series setting software. Follow these steps for checking.



- RTXTools, the RT Series Setting Software and instruction manual can be downloaded from the following URL.  
RT product page: <https://www.ckd.co.jp/kiki/en/product/detail/1064>

### 1. Start RTXTools and click the [Connect] button.

Software Configure

COM Port

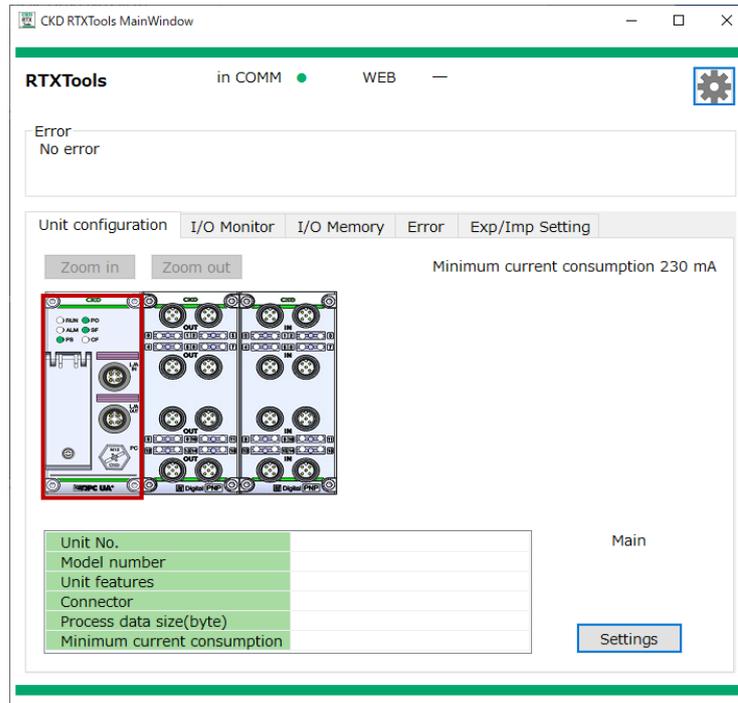
USB シリアル デバイス (COM14) RT Device unit OPC UA

English

Software Version 2.0.1

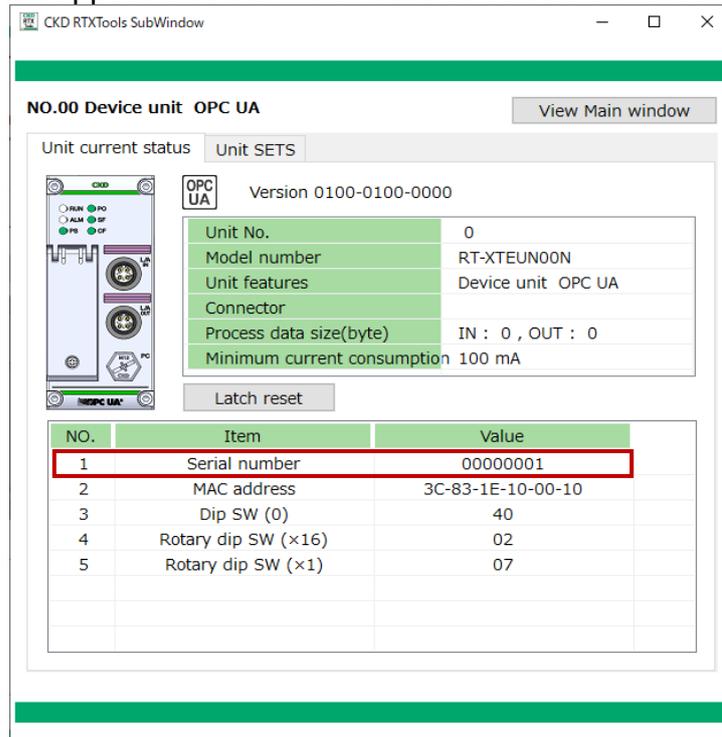
Connect

## 2 Double-click the OPC UA device unit.



## 3 Check the number

A sub window will appear and the serial number can be checked.



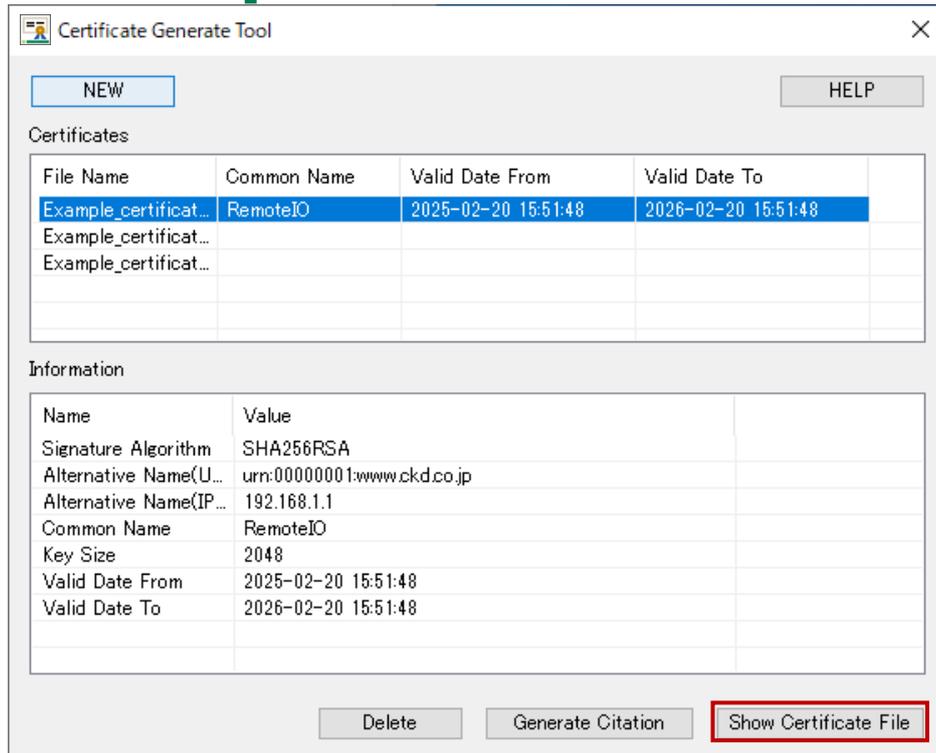
## 2.3.4. Generating files

The following file is generated when a certificate is generated.

Name	extension	Description
Certificate	.crt	A file that verifies the server's identity and establishes secure communication. It is signed by a trusted Certificate Authority (CA) and used by browsers or clients to authenticate the server.
Private Key	.key	A crucial key used for encryption and decryption, paired with a certificate. It enables secure communication and must be kept secret, as its exposure compromises security.
CSR (Certificate Signing Request)	.csr	A request file submitted to a Certificate Authority (CA) to obtain a certificate. It includes the public key and organizational information and is created using a private key. It is used when certifying by CA is needed.

## 2.3.5. Displaying the certificate

### 1 Select the certificate to view and click [Show Certificate File].



### 2 Check the view

The generated certificate is displayed.

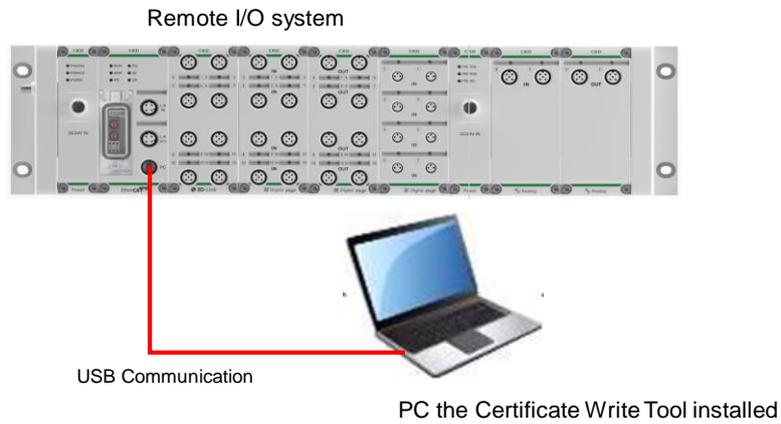
名前	更新日時	種類	サイズ
Example_certificate.crt	2025/02/20 15:51	セキュリティ証明書	1 KB
Example_certificate.csr	2025/02/20 15:51	CSR ファイル	1 KB
Example_certificate.key	2025/02/20 15:51	KEY ファイル	2 KB

# 3. Certificate Write Tool

## 3.1. Structure

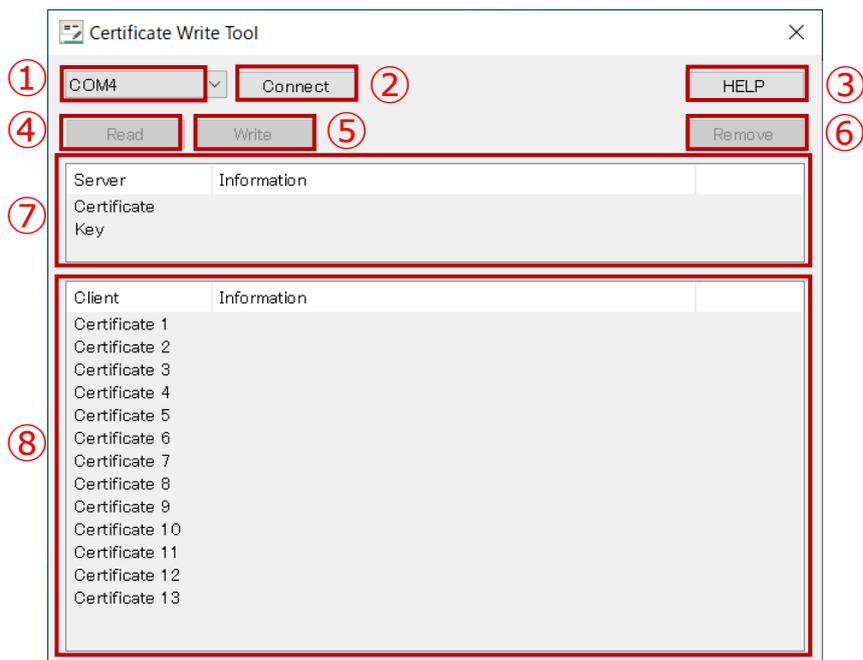
---

Connect the PC the Certificate Write Tool is installed to the remote I/O system with a cable.



## 3.2. Screen Description

### ■ Main window



No.	Name	Description	Reference
①	<b>[COM] select list</b>	Select the COM port for communication with the OPC UA compatible device unit from the drop-down list.	-
②	<b>[Connect] button</b>	Starts communication with an OPC UA compatible device unit. When connected, this button changes to [Disconnect], the disconnect button.	-
③	<b>[HELP] button</b>	Displays the instruction manual.	-
④	<b>[Read] button</b>	Upload the certificate and private key selected in the server or client Information window.	-
⑤	<b>[Write] button</b>	Installs the certificate and private key to the selected index in the server or client Information pane.	-
⑥	<b>[Remove] button</b>	Deletes the certificate and private key of the index selected in the server or client Information window.	-
⑦	<b>Server Information list</b>	Displays a list of server certificates (Certificate) and private keys (Key) written to OPC UA device unit.	-
⑧	<b>Client Information list</b>	Displays a list of client certificates (Certificate) written to OPC UA device unit. A maximum of 13 client certificates can be registered.	-

## 3.3. Usage

### 3.3.1. Obtaining the installer

Obtain the installer for the Certificate Website Tool from the CKD website.  
RT product page: <https://www.ckd.co.jp/kiki/en/product/detail/1064>

<Procedure to obtain>

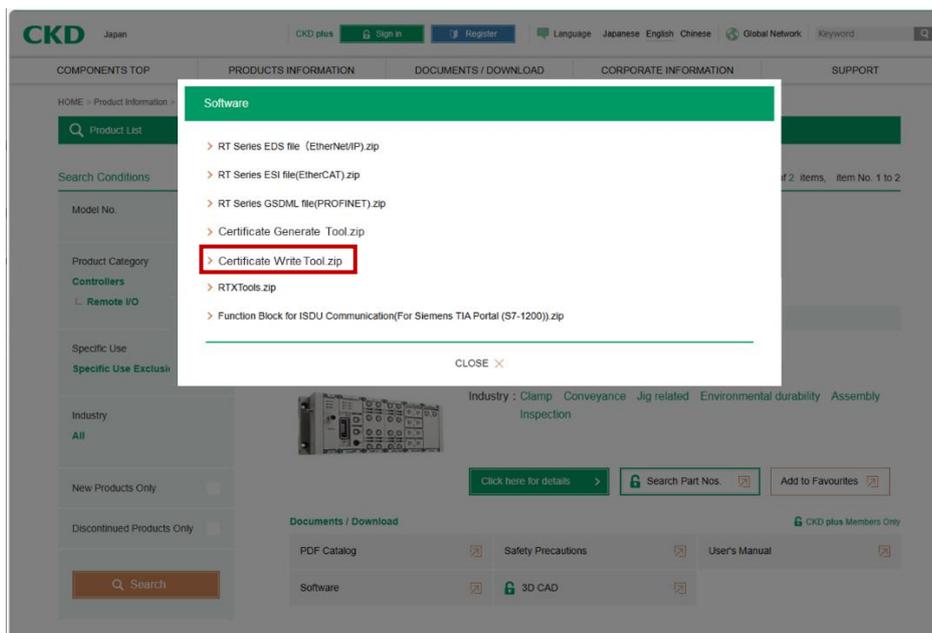
#### 1. Click the above URL or select from the CKD website to display the product detail page.

Select in this order: CKD website → COMPONENTS TOP → Controllers (Category) → Remote I/O (Product Category). Also searchable with the "RT."

#### 2. Click "Software" on the "Remote I/O" page.

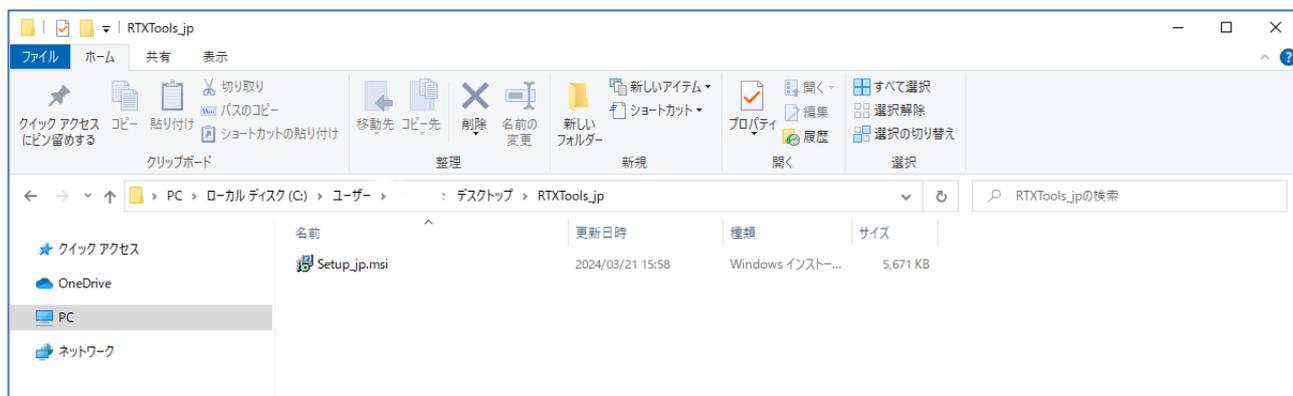
The screenshot shows the CKD website interface for the Remote I/O product. The page includes a search bar, search conditions (Model No. rt, Product Category All), and a product image. The 'Documents / Download' section is visible at the bottom, with the 'Software' link highlighted in a red box. Other links in this section include PDF Catalog, Safety Precautions, Users Manual, and 3D CAD.

### 3. Click the installer [Certificate Write Tool.zip] on the "Software" select screen to download.



### 4. Download complete

Extract the zip file and a "Certificate Write Tool" folder containing "Setup\_jp.ms" will be created on the desktop.



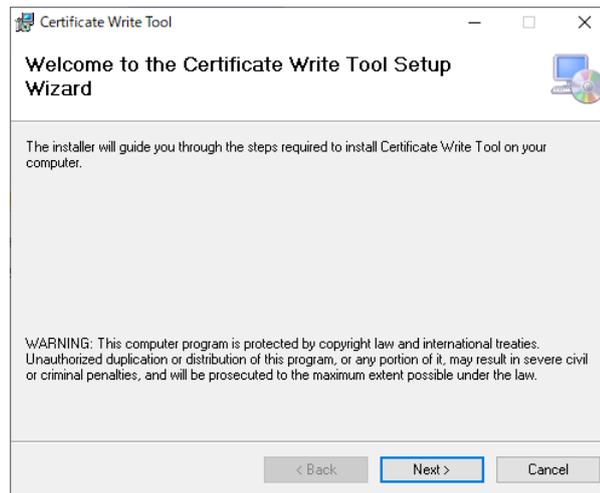
※This image is from the Japanese version of the Windows OS.

## 3.3.2. Installation Procedure

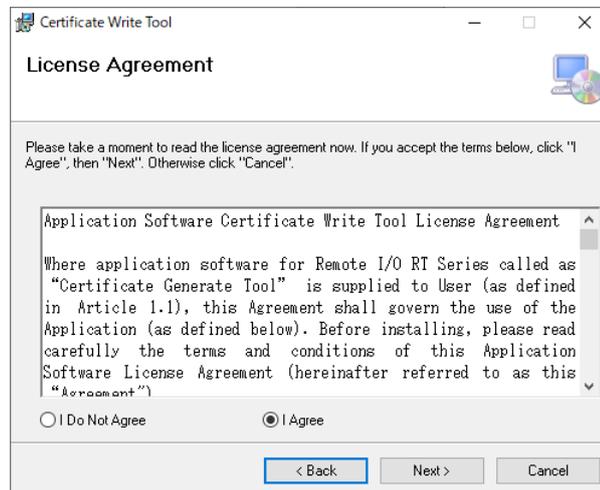
### 1. Double-click "Setup\_jp.msi" to start the "Setup Wizard".

If a message that warns of installing a program from an unknown publisher is displayed at the start of the installation, select [Yes] to continue the installation.

### 2. Click [Next] in the "Setup Wizard" dialog box.

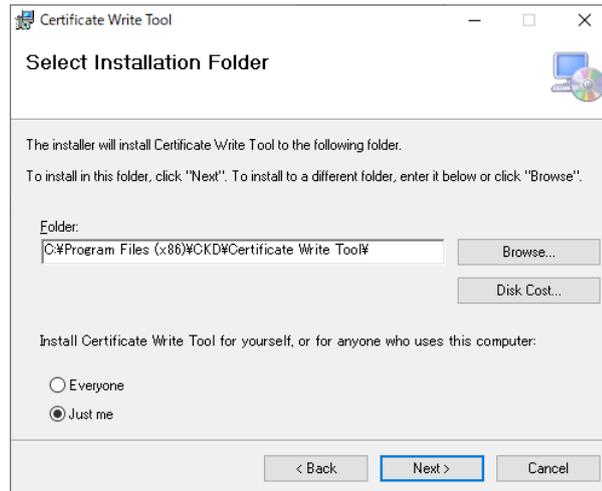


### 3 Read the "License Agreement" dialog box and check the "Agree," then click [Next].

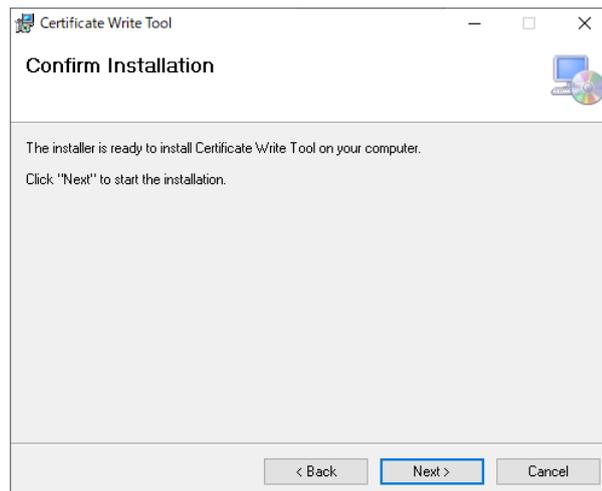


## 4 Check the destination folder and click [Next].

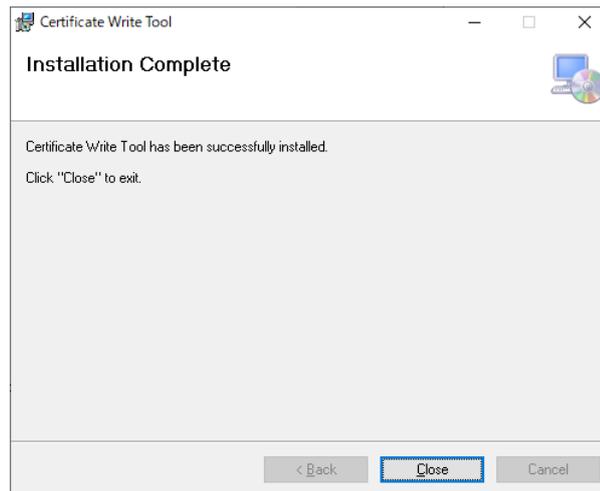
The folder name is displayed by default. To save the file in a different folder, select it with "Browse."



## 5. Follow the "Confirm Installation" dialog box and click [Next]



## 6. Follow the "Installation Complete" dialog box and click [Close] to close the dialog box



### 3.3.3. Installing the certificate

Follow the steps below to install the certificate. Installing the certificate (up to step 6 below) is requested to connect from an OPC UA client to an OPC UA compatible device unit.

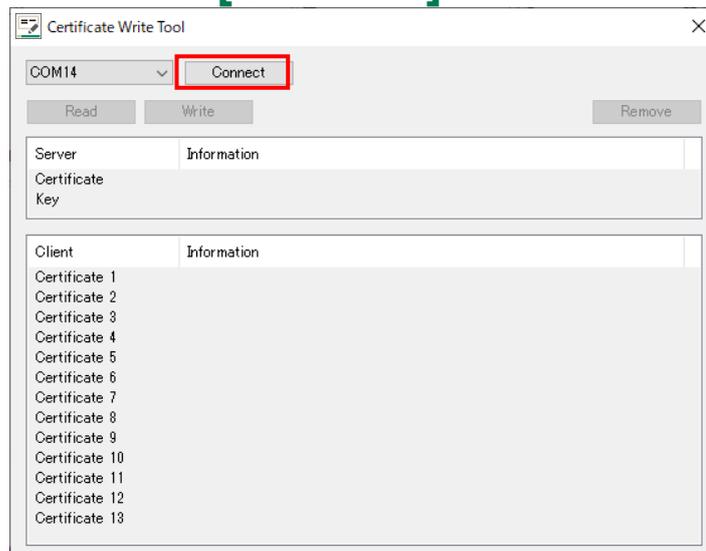
Also, perform steps 8 and onwards to communicate with the client encrypted.

#### 1 Start [Certificate Write Tool]

Select [Certificate Write Tool] from the [CKD] folder in the Windows Start menu.

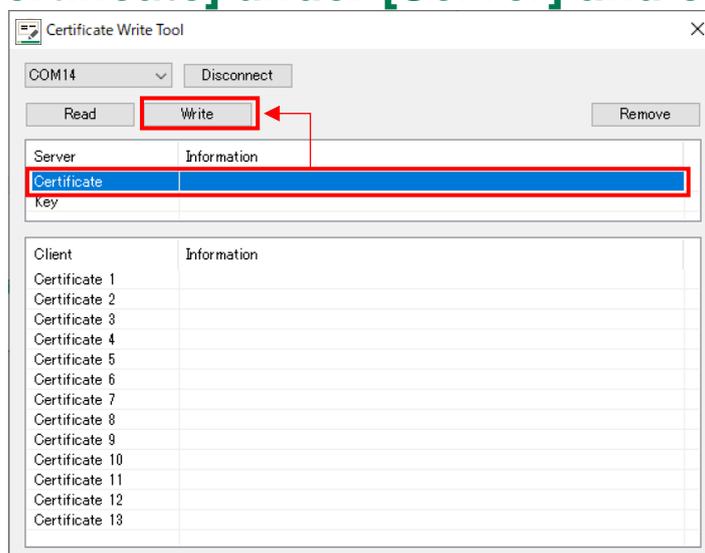


**2** After starting the Certificate Write Tool and a window appeared, select the COM port of the unit to install to and click [Connect].



- When the remote I/O is connected to a PC with a USB cable, the COM port is automatically detected.

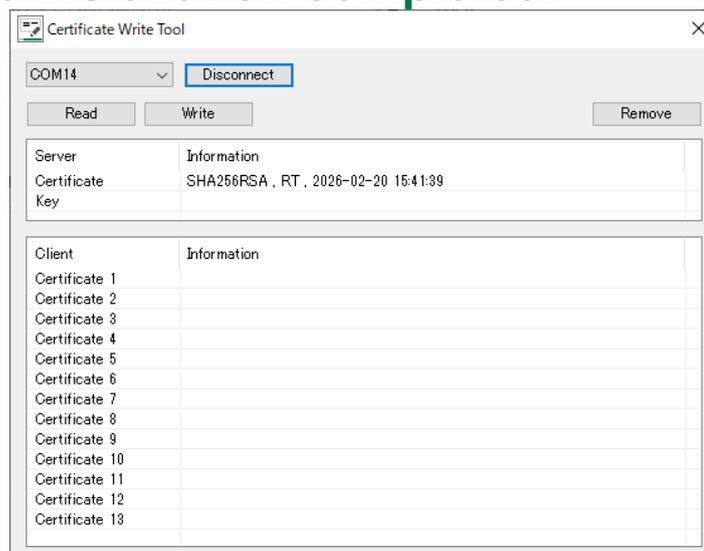
**3** Select [Certificate] under [Server] and click [Write].



**4** Select the certificate file to be installed.

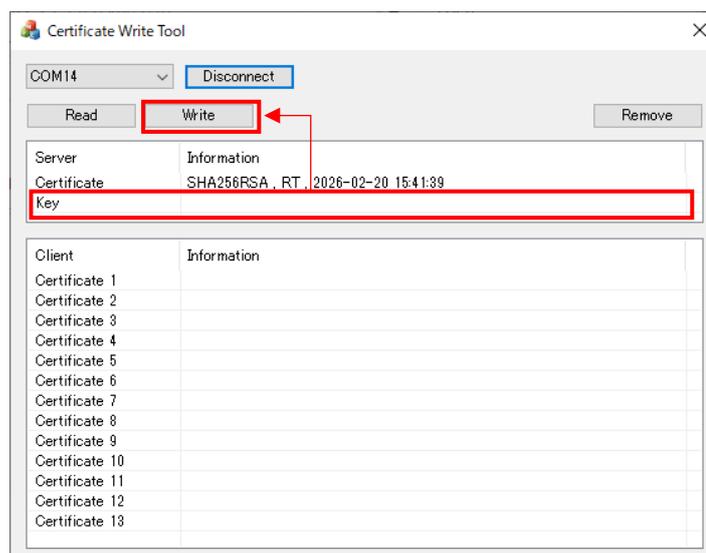
名前	更新日時	種類	サイズ
RemotelO.crt	2025/02/20 15:41	セキュリティ証明書	1 KB

## 5. Certificate installation completed.



- After installing or uploading the server or client certificate or private key, be sure to turn the power of the OPC UA slave station back on to reflect the settings.

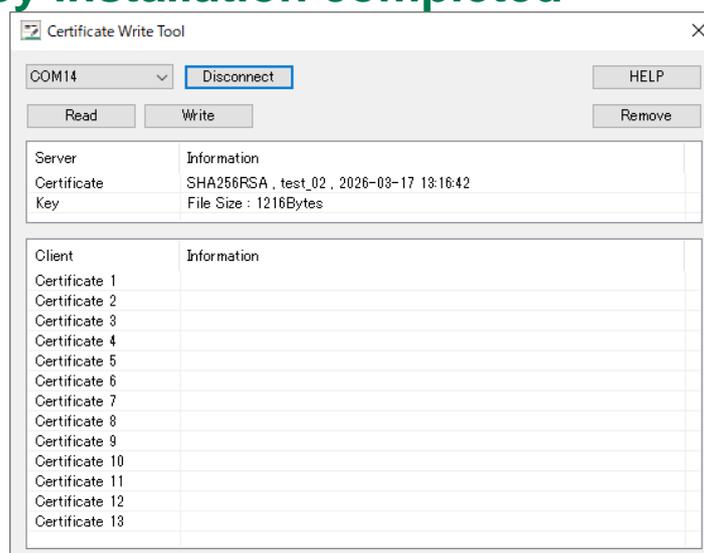
## 6. Select [Key] and click [Write]



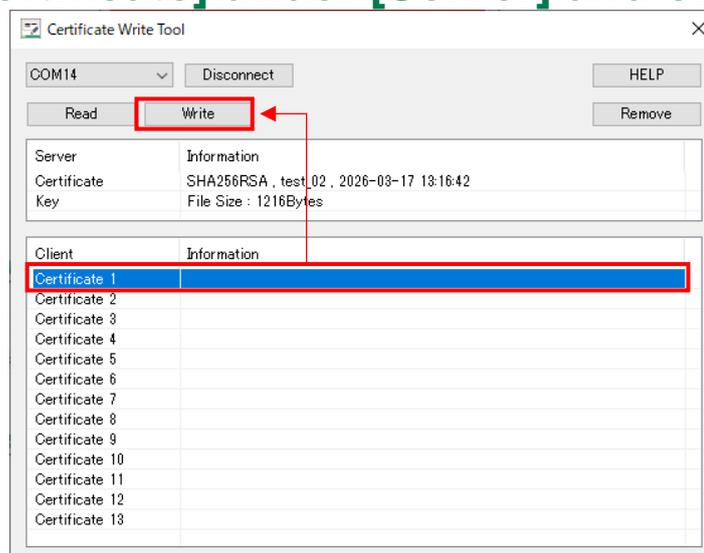
## 7. Select the private key file to be installed.

名前	更新日時	種類	サイズ
 RemotelO.key	2025/02/26 14:33	KEY ファイル	2 KB

## 8. Private key installation completed



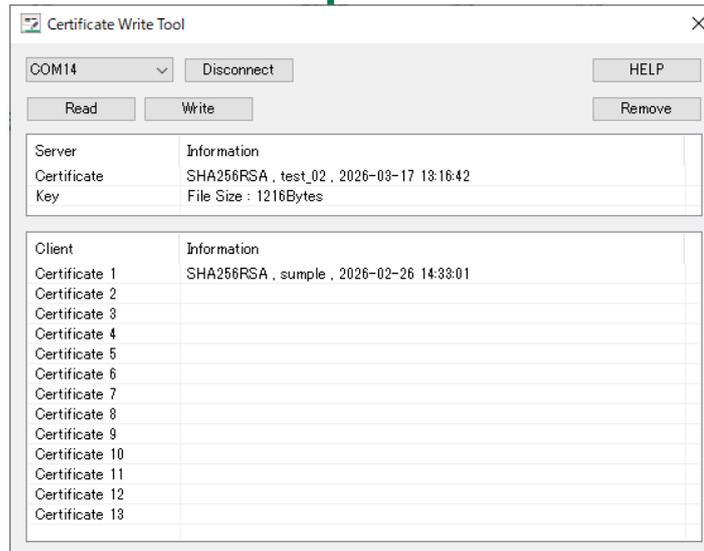
## 9. Select [Certificate] under [Server] and click [Write].



## 10. Select the server certificate file to be installed.

名前	更新日時	種類	サイズ
 RemotelO.crt	2025/02/20 15:41	セキュリティ証明書	1 KB

## 11. Client installation completed.



- Refer to each client software for the installing client certificate.
- A maximum of 13 client certificates can be registered.

# 4. ERROR DESCRIPTIONS

## 4.1. Troubleshooting

### 4.1.1. Certificate Generate Tool

The list of errors is as follows:

Problem	Cause	Solution
<b>Certificate generation failed.</b>	Required fields have not been entered.	Enter the needed information
	Prohibited characters are being used in the input field.	Do not use prohibited characters when entering password. Prohibited characters: ¥, /, :, *, ?, ", <, >,
	The number of characters in the input field is outside the limit.	Follow the message and change the number of characters.
	The entered value is outside the validity period.	Enter a value within the validity period. Validity period: 1 to 7300 days

### 4.1.2. Certificate Write Tool

The list of errors is as follows:

Problem	Cause	Solution
<b>Cannot connect to OPC UA device unit</b>	The specified port does not exist	Check the port currently connected and select the correct one
<b>Cannot upload the certificate/private key</b>	There is no certificate/private key to be uploaded in the target index	Check the specified index.
<b>Failed to install the certificate/private key</b>	The file extension selected when installing is different	The file may be incorrect or corrupted. The available extensions for each file are as follows: Certificate: ".crt", ".cer", ".der" Private key: ".key"
	Communication was lost before installation was completed.	If communication is lost during installing, turn the power of the OPC UA device unit off and on again they retry the installation.