

Factory Drive Recorder Quick Start Guide

Version 1.0, July 2022



Omron Automation Americas

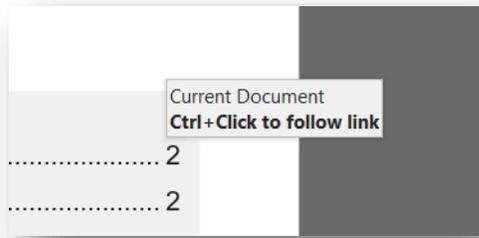
2895 Greenspoint Parkway, Suite 200, Hoffman Estates, IL 60169

2801 Rochelle Rd., Suite 100, DFW Airport, TX 75261

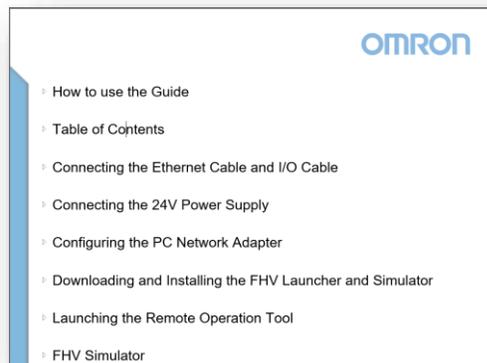
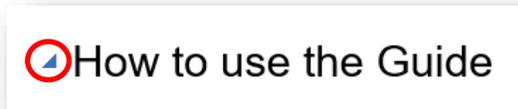
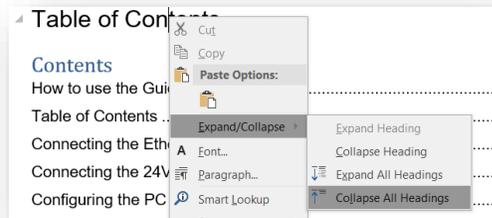
100 Consilium Place, Suite 802, Toronto, Ontario, M1H 3E3

How to use the Guide

1. The Table of Contents is hyperlinked for ease of use. Hold the control button and click the page number or title of the desired section to be read.



2. Each section of this guide can be expanded or collapsed. Right click on the title of a section and select collapse all headings. The contents of the guide can then be individually expanded or collapsed as needed. Additionally, by hovering the mouse over the left hand side of a section title, a triangular icon will appear that can be clicked to expand or collapse that particular section.



3. Double click on the icon to open embedded documents.



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Guide Objective and Terminology

This guide covers all of the steps required to start using the Factory Drive recorder. Please refer to the Factory Drive Recorder manual and the applicable camera manuals for further guidance.



FactoryDriveRecorder
_Users Guide_A.pdf

Purpose of the Factory Drive Recorder

The primary function of the factory Drive Recorder is to provide a video record that is useful for fault diagnosis. It can be used for the following functions:

1. Diagnostics for intermittent faults.
2. Detection of unauthorized access
3. Analysis of mechanical problems on factory line
4. Creating high speed captures of errors
5. Providing remote Monitoring
6. Providing manual Viewing

Computer Selection

It is important to select a powerful enough computer. If the computer is not up to the task, the frame rate of the cameras will need to be reduced. It is recommended to have the computer exclusively be used for the Factory Drive Recorder application.

1. Recommend minimum configuration
 - a. Processor - Intel i7, 3GHz+
 - b. Memory - 16GB, high speed
 - c. Hard Drive - Solid State 1TB
 - i. Size based on storage time and cameras
 - ii. This Excel file can help estimate the required hard drive space



Factory Drive
Recorder computer r

- d. Operating System - Windows 10
- e. Recommended Omron IPC - NYB27414P2

Connect the Camera(s)

Connect up to 8 cameras from the following families:

1. GigE Vision M-Series
2. USB3 Vision M-Series
3. GigE Vision B-Series (Board Cameras)
4. UVC (mutually exclusive with the other types of cameras)
5. USB3 Vision Remote Head

Refer to the camera's manual for information on Power and I/O connections. Be careful because cameras have different pinouts and functions for the same connector. Even some series have different pinouts within the series.

Install a Lens

In order to use the camera(s) a lens must be installed. Refer to the camera's manual to determine what lens mount to use.

For more information on the available C-mount lenses see the Vision Accessory Catalog.



Vision Accessory
Catalog.pdf



lens calculations
template-5.xlsx



How to select a
lens.pdf

Refer to the applicable camera datasheet, to determine the camera's sensor size and resolution. Choose a lens family, which is appropriate for the resolution and sensor size, using the Vision Accessory Catalog as a guide. Calculate the required lens focal length to attain the correct field of view. The training "How to Select a Lens" may help on the calculations. To attach the lens screw the lens on to the camera. Torque should be "hand tight".



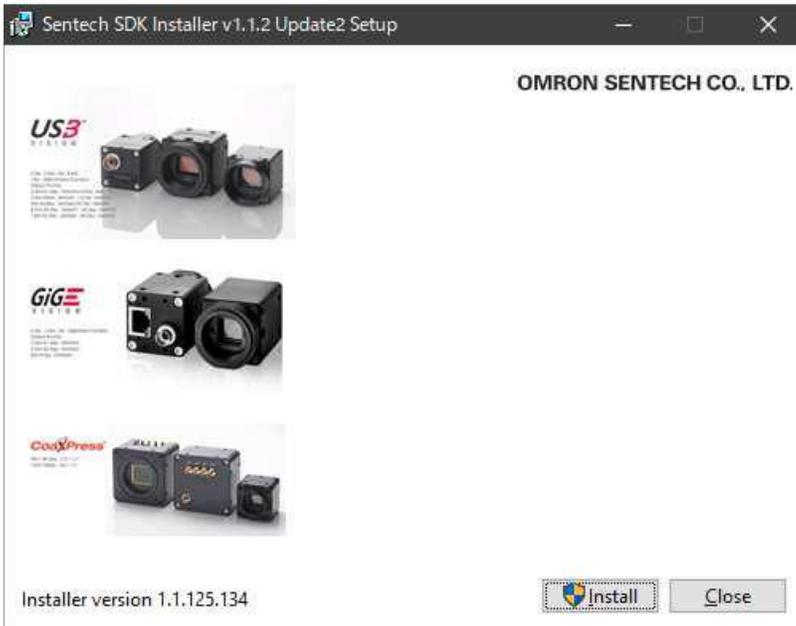
Download and Install the SDK Software

1. Download the SDK software, using the below link:



SentechSDK(v1.1.2_Update5).zip (Command Line)

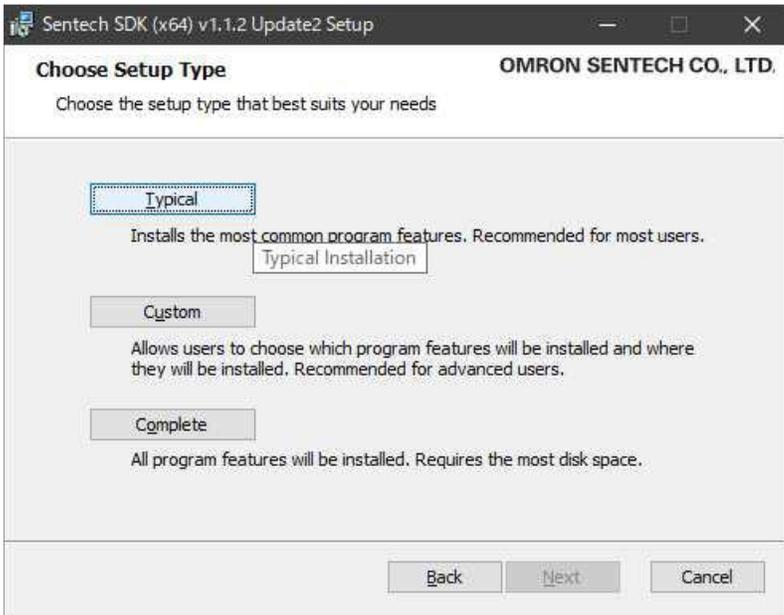
2. Install the SentechSDK software as follows:
 - a. Unzip the SentechSDK(version).zip folder
 - b. Run the SentechSDKInstaller.exe file
 - c. Click “Install”



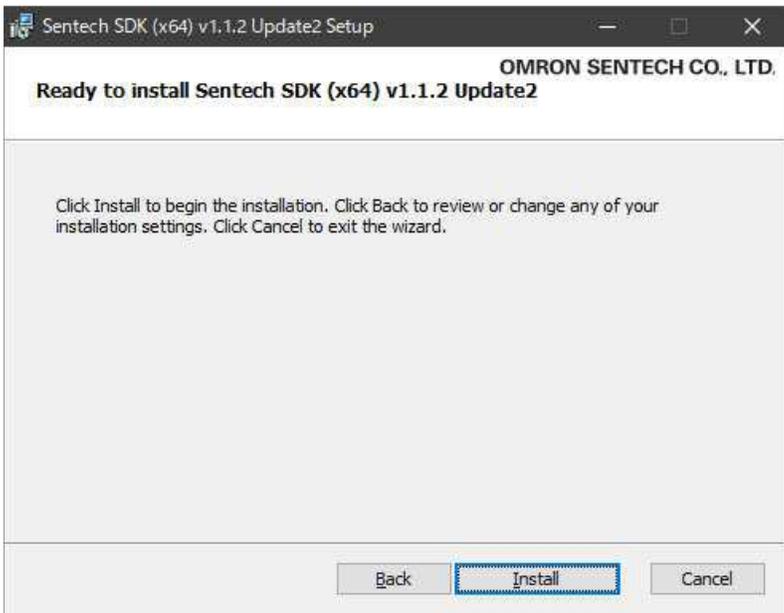
- d. Click on “I accept...”
- e. Click “Next”



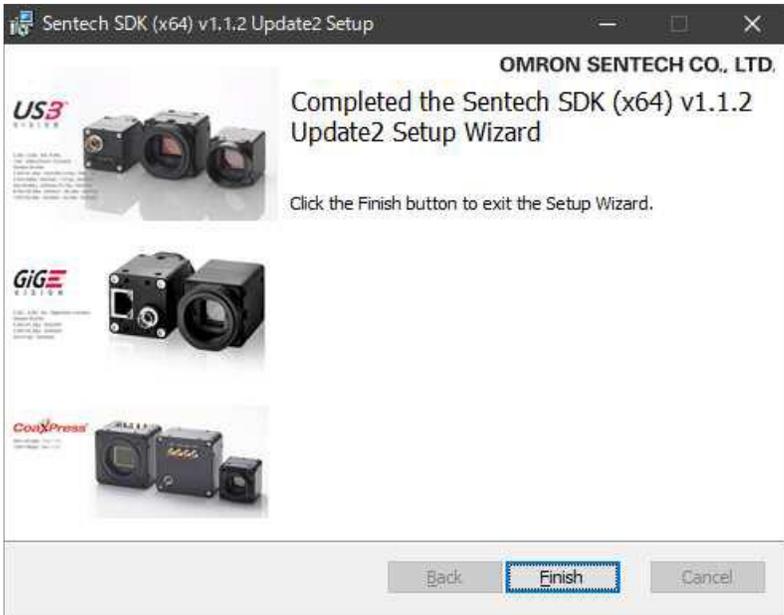
- f. Click on the “Complete” button
- g. Click “Next”



- h. Click the “Install” button



- i. Click the “Finish” button



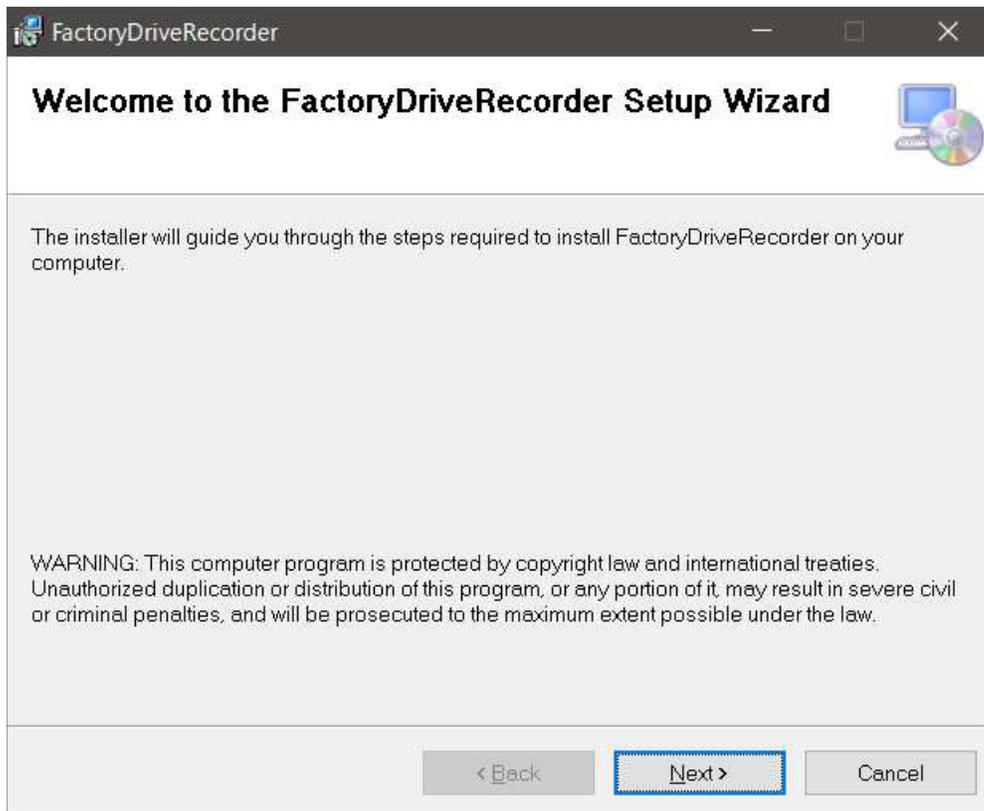
Download and install the Factory Drive Recorder Software

1. Download the SDK software, using the below link:

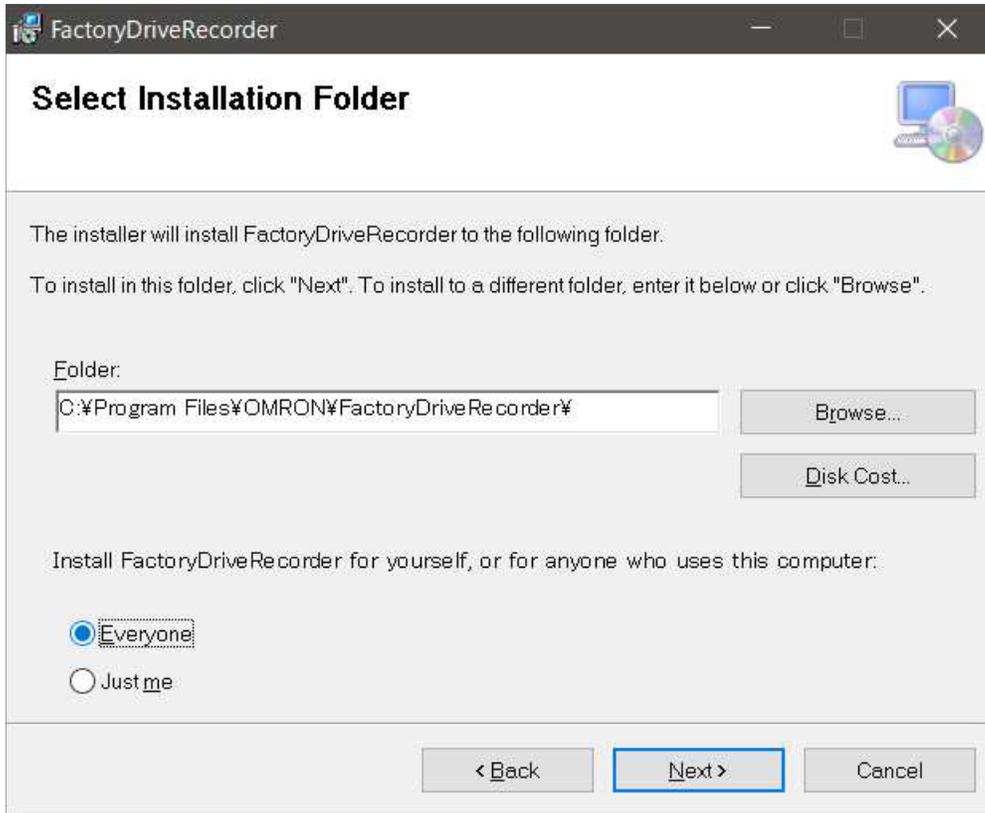


FactoryDriveRecorder
Setup_Ver.1.1.0.0.zip

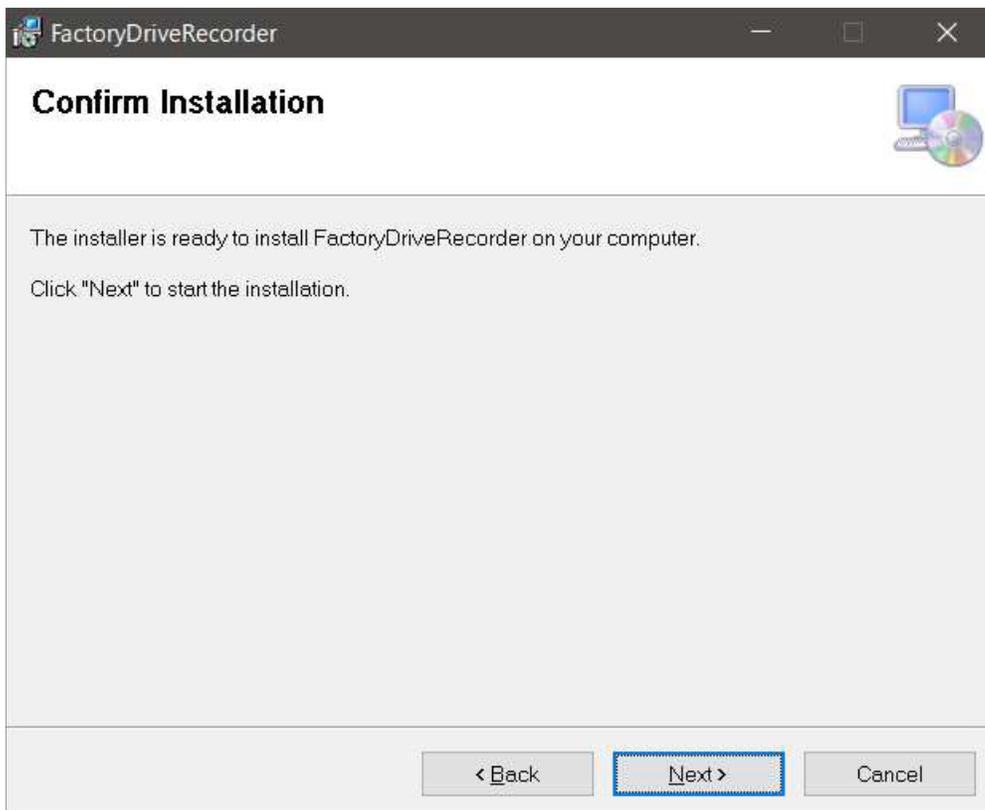
2. Install the Factory Drive Recorder software as follows:
 - a. Unzip the FactoryDriveRecorderSetup(version).zip folder
 - b. Run the Setup.exe file
 - c. Click “Next”



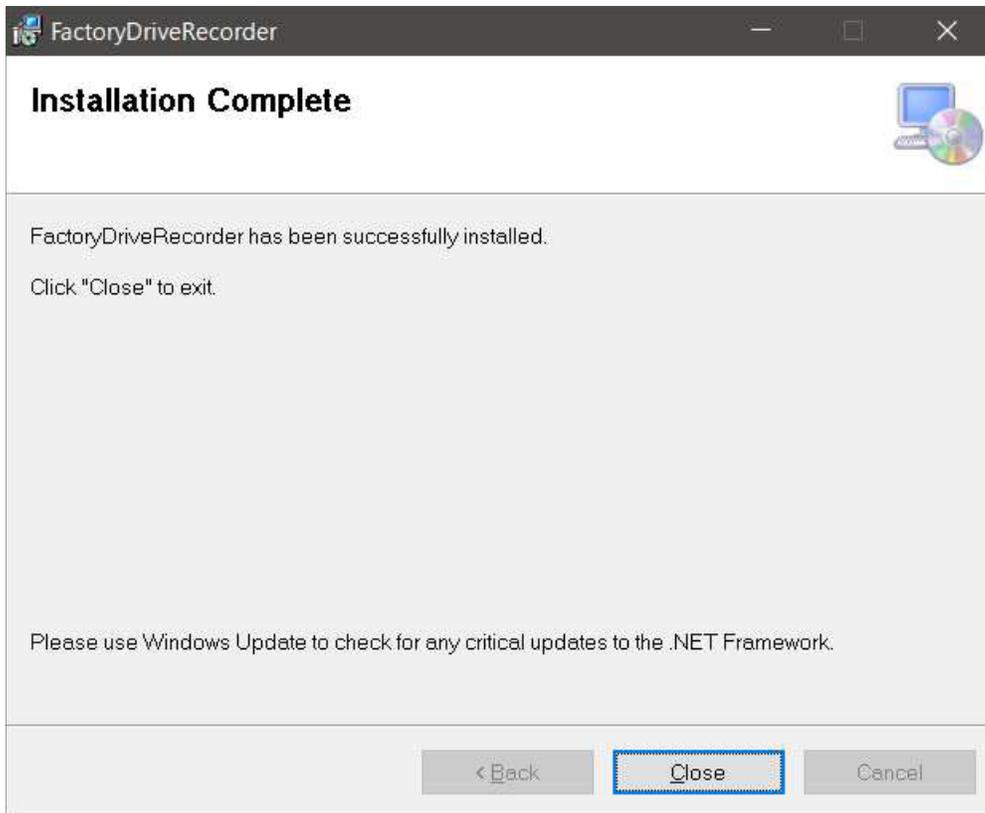
d. Click the "Next" button



e. Click the "Next" button



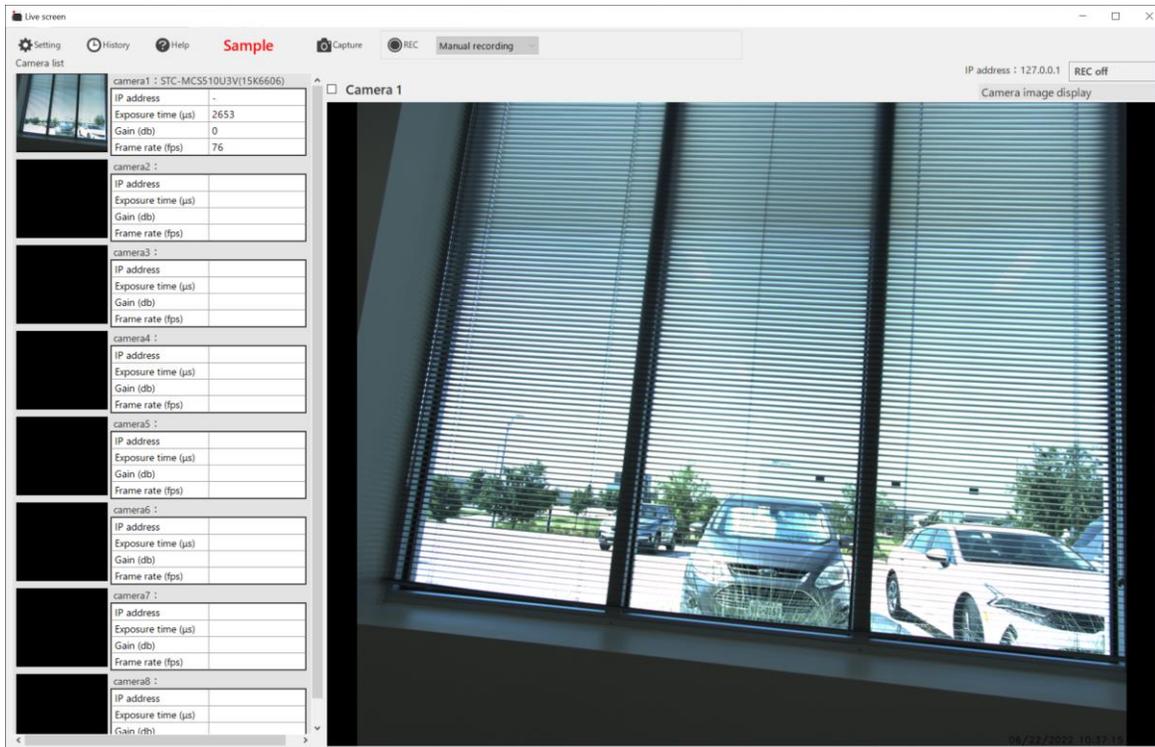
f. Click the "Close" button



Launch the Factory Drive Recorder Software

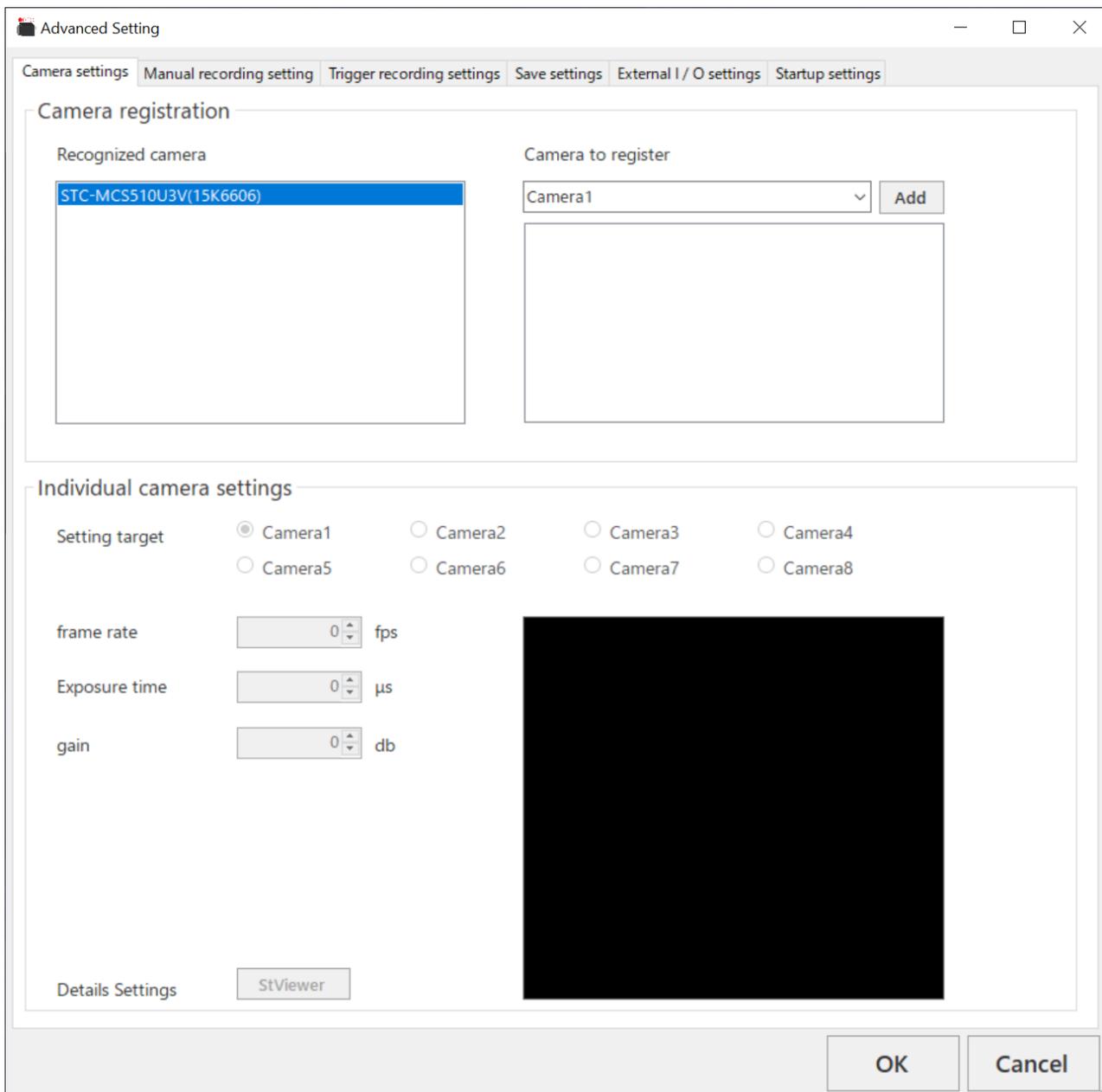
Have cameras powered and connected before starting the Factory Drive Recorder

1. The Factory Drive Recorder software can be found in the start menu under
 - a. Omron
 - i. FactoryDriveRecorder
2. Double click to open

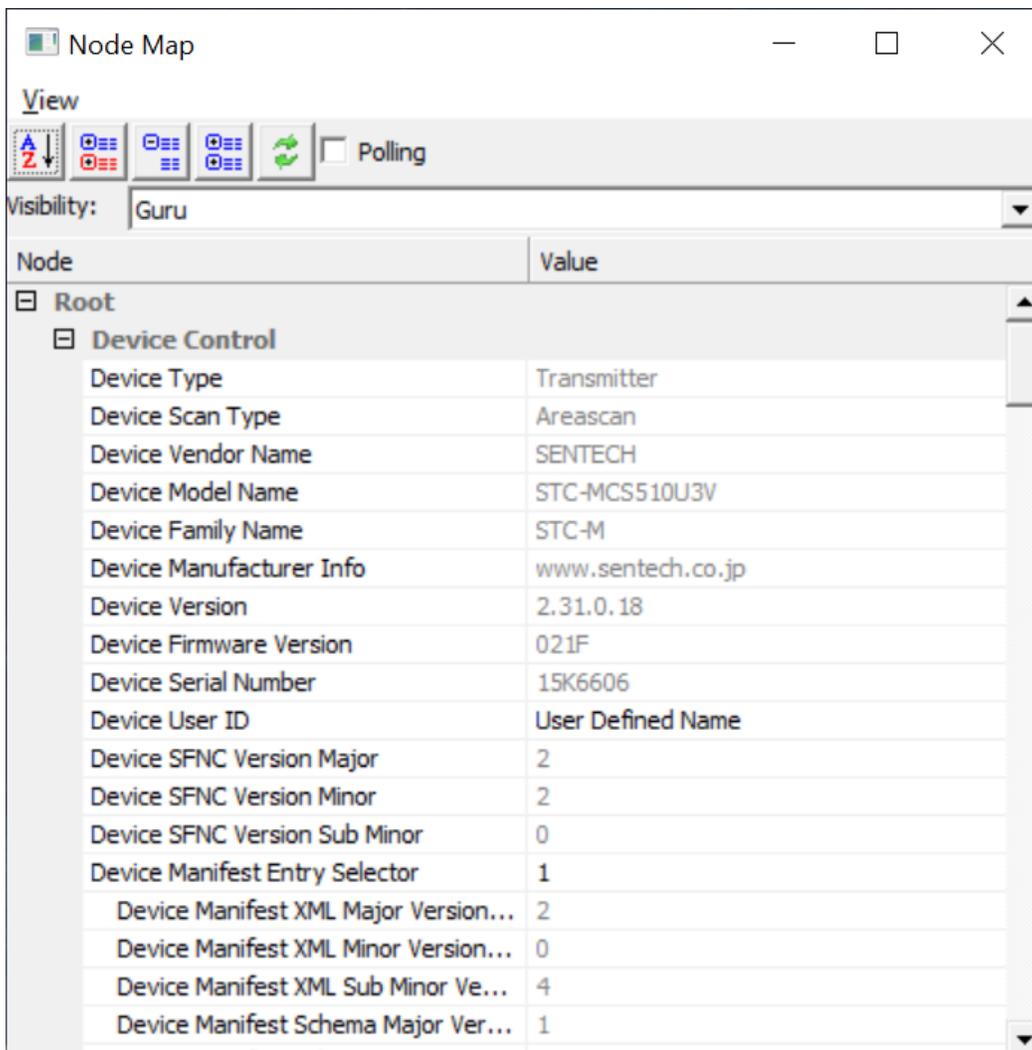


Camera Registration and Configuration

1. Open Settings
 - a. Click on “Settings”
 - b. Select the “Camera settings” tab
2. Register each camera
 - a. For each camera
 - i. Select the camera number from the “Camera to register” dropdown
 - ii. Click on the desired camera in the “Recognized camera” box
 - iii. Click the “Add” button in the “Camera to register” section
 - iv. To remove a camera
 1. Right click on the camera in the “Camera to register” box
 2. Click on the Japanese text that pops up.



3. Adjust camera settings for each camera
 - a. Select the camera to set, with the “Setting target” radio buttons
 - b. You can set frame rate with the “frame rate” entry box.
 - c. It is recommend to use auto exposure for most applications
 - i. This can be set using StViewer
 - d. It is recommended to keep gain to as low as possible value to prevent noise.
 - e. Use the StViewer button for more settings
 - i. Camera setting are under remote device
 - ii. Commonly used settings:
 1. “Acquisition Control”
 - a. “Exposure Auto”
 2. “Analog Control”
 - a. “Auto Luminance Target”
 - b. White Balance”
 - c. “Gamma”



- f. Click “OK” to exit settings
 - i. Do not use the X at the top right

Initial Setup

1. Save settings
 - a. Click “Settings”
 - b. Select the “Save settings” tab
 - c. Specify the folder for saving videos in “Save recording data”, “Folder path”
 - d. Specify the folder for saving image captures in “Save image data”, “folder path”
 - e. Specify image capture file type in “Save image data”, “type”
 - f. You can also specify
 - i. the HTML export folder
 - ii. The clock display settings
 - g. Click “OK” to exit settings

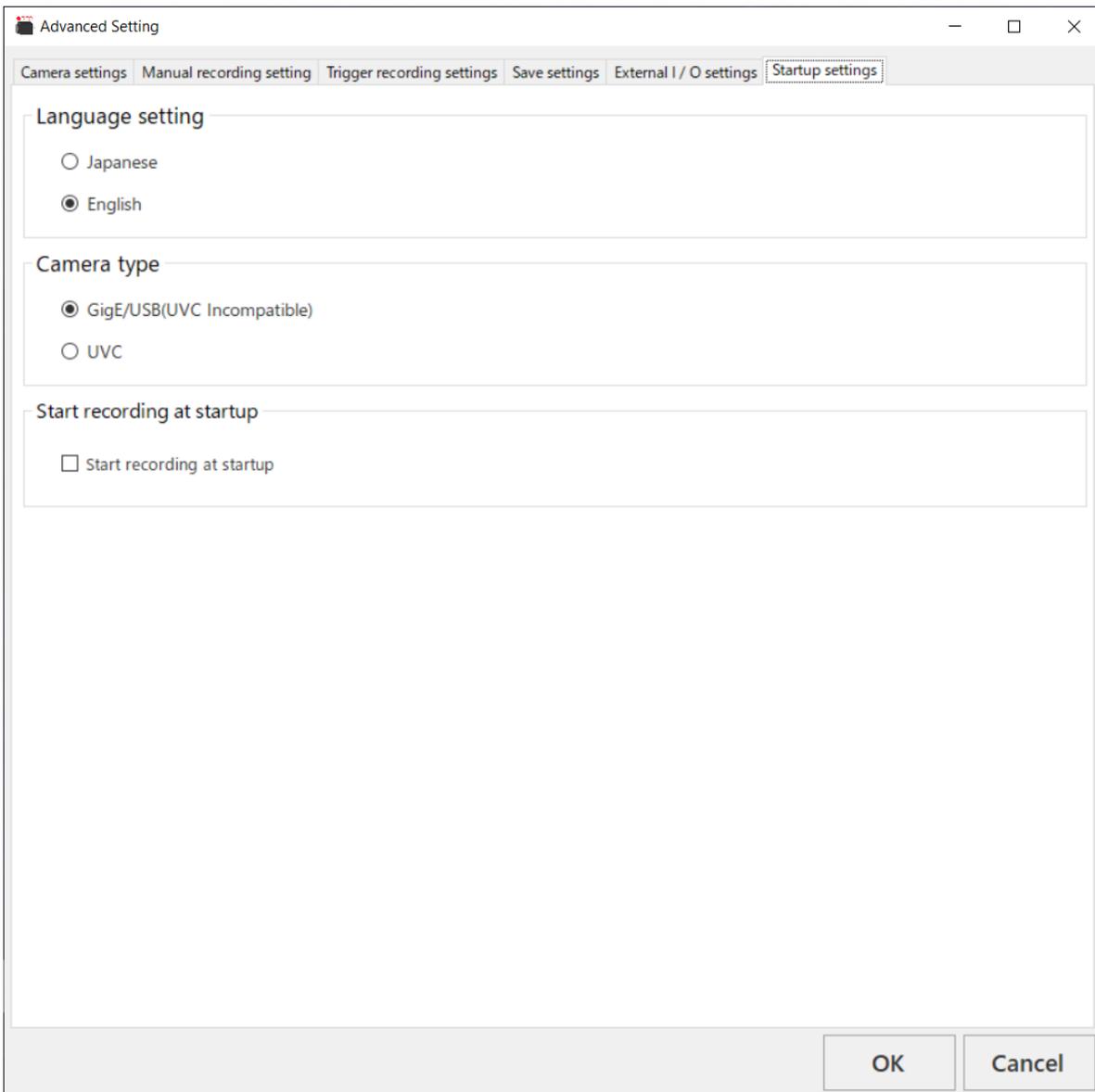
The screenshot shows the 'Advanced Setting' dialog box with the 'Save settings' tab selected. The dialog is divided into several sections:

- Save recording data:** Folder path is set to 'C:\Users\brian.jepesen\OneDrive - OMRON\Documents\FDR\CAPTURES' and Tag is 'video'.
- Save image data:** Folder path is the same as above, Tag is 'image', and type is 'jpg'.
- Save export HTML:** Folder path is 'C:\OMRON\FactoryDriveRecorder\Export'.
- Clock display:** Setting target is 'Camera1' (selected), Display position is 'lower right', Color is black, and Magnification is '1.0'.

At the bottom right, there are 'OK' and 'Cancel' buttons.

2. Startup settings

- a. Click “Settings”
- b. Select the “Startup settings” tab
- c. Specify language
 - i. Japanese
 - ii. English
- d. Specify Camera type
 - i. Non-UVC
 - ii. UVC
- e. “Start recording at startup”
 - i. If checked, upon startup, software will be immediately ready for a trigger
- f. Click “OK” to exit settings



3. Network settings

- a. Click “Settings”
- b. Select the “External I / O settings” tab
- c. “TCP output setting”
 - i. Used to transmit status
 - ii. Set the IP address
 1. Must be changed from the default
 - a. Not a valid address
 2. Must match the address of the receiving computer
 3. Factory Drive Recorder computer must be set to the same subnet
 - iii. Set the port number
 1. Receiving software must look for communications on this port
- d. “TCP input setting”
 - i. Used for Signal triggers
 1. Set IP address
 - a. Must be changed from the default
 - i. Not a valid address
 - b. Factory Drive Recorder computer must be set to this address
 - c. Transmitting computer must be set to the same subnet
 - ii. Set the port number
 1. Transmitting software must use this port
- e. Click “OK” to exit settings

The screenshot shows the 'Advanced Setting' dialog box with the 'External I / O settings' tab selected. The 'TCP output setting' section has an IP address of 192.168.251.1 and a port number of 3001. The 'TCP input setting' section has an IP address of 127.0.0.1 and a port number of 3000. The 'External input display' section includes radio buttons for Camera 1 through Camera 8, with Camera 1 selected. It also has a dropdown for 'Input port' set to 0, a dropdown for 'Display position' set to 'do not show', a color slider, a 'Magnification' dropdown set to 1.0, and an 'Additional string' text field. The 'OK' and 'Cancel' buttons are located at the bottom right of the dialog.

Setting up a Signal Trigger

1. Factory Drive Recorder setup
 - a. Click “Settings”
 - b. Select the “Trigger recording settings” tab
 - c. Select Event Signal to “Trigger signal”
 - d. Specify how long to record, before and after the Trigger.
 - e. Click “OK”
 - f. In main page Change from manual recording to trigger recording

Advanced Setting

Camera settings | Manual recording setting | **Trigger recording settings** | Save settings | External I / O settings | Startup settings

Event signal

Time trigger

Motion detection

Master image comparison

Trigger signal

Recording time

15 seconds ago to (0 - 3600) 15 seconds later (0 - 3600)

Trigger occurrence time (time trigger)

14 Hour 32 Minutes

Detection condition (trigger signal)

Camera receiving the Signal

Camera1 Camera2 Camera3 Camera4

Camera5 Camera6 Camera7 Camera8

Line Settings

Detection conditions (motion detection / master image comparison)

Individual camera settings

Setting target

Camera1 Camera2 Camera3 Camera4

Camera5 Camera6 Camera7 Camera8

Master image file

C:\Users\brian.jepesen\OneDrive - OMRON\Documents\FDR\CAPTURES\image_2022062...

Detection point (1 - 10) 2 Location **Detection**

Detection difference (1 - 255) 100

Difference area ratio (1 - 100) 1 %

Common settings for all cameras

Detection interval (0.2 - 10.0) 0.2 Seconds

Recording target

Only the triggered Camera **All cameras**

OK **Cancel**

2. Software trigger setup:

- a. Set up the Network settings per the previous section
- b. On main page press REC
- c. Send triggers in this format:
 - i. trigger n(CR)
 1. N- camera number to record
 - a. Use 0 for all
 2. (CR) is a carriage return
 - a. ASCII decimal value 13
 - ii. Example
 1. trigger 2
 - a. The above is followed by the carriage return
 - iii. A Sysmac function block is available help send the trigger



FDR

Interface_R101.slr

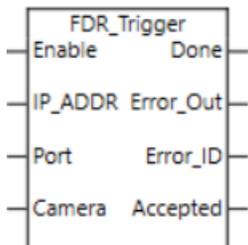
3. Hardware trigger setup:

- a. Wire up the trigger connection to input 1 on the camera.
 - i. Refer to the camera's manual for connection information.
 - ii. The I/O wiring of these cameras are different.
 - iii. Miswiring can cause camera damage
 - iv. You may need to install a series resistor
- b. On main page press REC

Use of Sysmac Function Blocks

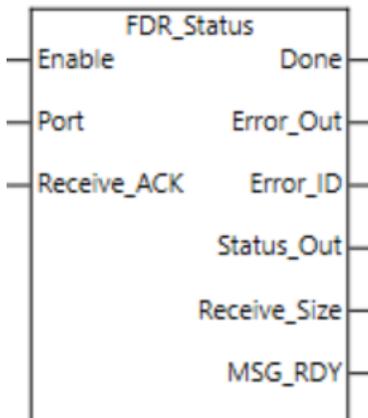
1. Trigger function block usage

- a. Specify the IP address of the computer running the factory drive recorder software.
 - i. This must be on the same subnet as the Controller running Sysmac.
- b. Specify the port that matches the Factory Drive Recorder Software setting
- c. Specify which camera you want to record
 - i. Use 0 to record all connected cameras
- d. Set Enable high to start a trigger.
 - i. When “Done” is received, you may return Enable low.



2. Status function block usage

- a. Specify the port that matches the Factory Drive Recorder Software setting
- b. “Receive_ACK” should be initially low
 - i. Set “Receive_ACK” high to clear the “MSG_RDY” flag
- c. Before sending a trigger set “Enable” high
- d. When a message is ready at the “Status_Out” port the “MSG_RDY” flag will go high.



3. For further details, refer to the help file enclosed in the library

- a. A link to the library is in the previous section

Viewing an Image

1. In the Factory Drive Recorder software
 - a. Click on history
 - b. Select recording of interest
 - c. Recording will play automatically
 - d. You can select full screen if desired

Recording history

Date period: 20220628132100091 ~ 20220628160826828

No	Date	Camera name	Recording mode	Save path
1	20220628160826828	camera1	trigger	C:\Users\brian.jepp...
2	20220628160826617	camera2	trigger	C:\Users\brian.jepp...
3	20220628154831792	camera1	trigger	C:\Users\brian.jepp...
4	20220628154831208	camera2	trigger	C:\Users\brian.jepp...
5	20220628154450809	camera1	trigger	C:\Users\brian.jepp...
6	20220628154450805	camera2	trigger	C:\Users\brian.jepp...
7	20220628151058792	camera1	trigger	C:\Users\brian.jepp...
8	20220628151057992	camera2	trigger	C:\Users\brian.jepp...
9	20220628145128368	camera2	trigger	C:\Users\brian.jepp...
10	20220628132652379	camera1	trigger	C:\Users\brian.jepp...
11	20220628132100091	camera1	trigger	C:\Users\brian.jepp...

Detailed information

Date: 20220628160826828

Camera name: camera1

Recording mode: trigger

Save path: C:\Users\brian.jeppesen\OneDrive - Omron Automation Americas Inc\...

HTML close

2. Third party software
 - a. Browse to file location and start third party software