

# Factory Drive Recorder

Users Guide

形 STC-FDR-SW01

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## INTRODUCTION

Thank you for purchasing the Factory Drive Recorder.

This manual contains information that is necessary to use the Factory Drive Recorder.

Please read this manual and make sure you understand the functionality and performance of the Factory Drive Recorder before you attempt to use it in a control system.

Keep this manual in a safe place where it will be available for reference during operation.

#### Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of introducing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of installing and maintaining FA systems.
- Personnel in charge of managing FA systems and facilities.

### Applicable Products

This manual covers the following products.

- Gig-E Vision STC-M∕L Series
- Gig-E Vision Board-level Model STC-B Series
- USB3 Vision STC−M/L Series
- USB3 Vision Remote Head Model STC-R Series
- UVC STC-S133/P213 Series

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## 1. CONCEPT OF THIS DOCUMENT

This document describes about "Factory Drive Recorder" system and function design of its applications.

## 2. SYSTEM CONFIGURATION

This system is an application that connects industrial camera to Windows PC and records video from camera.



## 2-1. Machine Configuration

#### Recommended machines/Specifications

Machines	Design	Specifications/Functions
IPC/PC	OMRON IPC Machine Controller	OS: Windows10/11 (64bit
	Sysmac IPC NY5 Series or	ver.)
	generic PC	CPU:Core-i7 3GHz or higher
		RAM:16GB
		Display:XGA(1024×768)
Cameras	Gig-E Vision STC-M/L Series	Maximum of 8 cameras
	Gig-E Vision Board-level Model	See [Camera configuration
	STC-B Series	example]
	USB3 Vision STC-M/L Series	
	USB3 Vision Remote Head	
	Model STC-R Series	
	UVC STC-S133/P213 Series	

Pixels	# of cameras	Connection Type	Maximum Frame rate (※)
0.4 MP	1∙color	USB3.0	330 fps
0.4 MP	1.monochrome	USB3.0	440 fps
0.4 MP	1·color	GigE	240 fps
0.4 MP	2.color.monochrome	USB3.0	300 fps
0.4 MP	8∙color	GigE	30 fps
1.3 MP	1·color	USB3.0	60 fps
1.3 MP	1.monochrome	USB3.0	60 fps
1.3 MP	2.color.monochrome	USB3.0	60 fps
1.3 MP	4.monochrome	USB3.0	30 fps
1.3 MP	1·color	UVC	60 fps
1.3 MP	2·color	UVC	60 fps
1.3 MP	4∙color	UVC	60 fps
1.6 MP	1·color	USB3.0	95 fps
2.0 MP	2.monochrome	GigE	25 fps
2.0 MP	4.color2.monochrome2	GigE	10 fps
3.0 MP	1.monochrome	USB3.0	55 fps
3.0 MP	2.monochrome	USB3.0	55 fps
5.0 MP	1·color	USB3.0	30 fps
8.9 MP	1·color	USB3.0	20 fps
12.0 MP	1·color	USB3.0	15 fps
20.0 MP	1.monochrome	USB3.0	18 fps

#### Camera configuration example

\*: The maximum frame rate depends on the performance of your PC.

## 3. INSTALLING APPLICATIONS

#### Install applications to your PC to use this system. Installation required

Application Name	File Name	Description		
SentechSDK v1.2	SentechSDKInstaller.exe	Camera driver and detailed		
		camera settings		
Factory Drive Recorder	Setup.exe	This application		
red for PC environment to use system				

Application Name	Version	Description
Windows Media Player	12 or later	For playing recorded video

2) Check on "I accept..." and click the [Next] button.

## 3-1. Installing Sentech SDK

Requ

#### 1) Execute SentechSDKInstaller.exe.

#### 🞲 Sentech SDK Installer v1.2.1 Setup 🖟 Sentech SDK (x64) v1.2.1 Setup OMBON SENTECH CO., LTD. End-User License Agreement OMRON SENTECH CO., LTD. Please read the following license agreement carefully Sentech SDK Installer v1.2.1 US<mark>3</mark> Welcome Attention: Setup will install Sentech SDK Installer v1.2.1 on your computer. Click install to continue or Close to exit. USE OF THE SOFTWARE IS SUBJECT TO THE OMRON SENTECH CO.. CAE OF THE SOFT WARE IS A GUERNET TO THE SWARON SERVICE TO C.T. LTD. (OMRON'S ENTECH) SOFWARE LICENSE TERMS SET FORTH HEREIN. USING THE SOFTWARE INDICATES YOUR ACCEPT ANCE OF THESE LICENSE TERMS. IF YOU DO NOT ACCEPT THESE LICENSE TERMS, YOU COULD NOT USE THE SOFTWARE. GiG OMRON SENTECH SOFTWARE LICENSE TERMS: The following License Terms govern your use of the accompanying Software unless you have a separate written agreement with OMRON SENTECH. inless you have a separate written agreement ☑ accept the terms in the License Agreement Print Back Next Cancel Installer version 1.2.34.187 ♀Install Close 4) Click the [Install] button. 3) Click the [Typical] button. i 🖥 Sentech SDK (x64) v1.2.1 Setup i 📅 Sentech SDK (x64) v1.2.1 Setup OMRON SENTECH CO., LTD. OMRON SENTECH CO., LTD Choose Setup Type Ready to install Sentech SDK (x64) v1.2.1 Choose the setup type that best suits your needs <u>T</u>ypical Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard. Installs the most common program features. Recommended for most users. Custom Allows users to choose which program features will be installed and where they will be installed. Recommended for advanced users. Complete All program features will be installed. Requires the most disk space. Back Next Cancel Back Install Cancel

5) Click the [Finish] button and complete the installation.



## 3-2. Installing Factory Driver Recorder

1) Execute Setup.exe. 2) Change installation folder or click the [Next] button.



### 3-3. Uninstallation

Here are steps to uninstall this system from your PC:

- 1) Open Windows Start menu > Control Panel > All Control Panel Items > Program and features
- 2) Right click and uninstall [Sentech SDK(x64)v1.2.1].
- 3) Right click and uninstall [FactoryDriveRecorder].

## 4. Application

Please execute this application with administrator account. Also, please connect cameras before running the application.

## 4-1. About GUI of this Application

#### 4-1-1. Application window

The main window is displayed when application is started.

Live screen										-		×
Setting (	History PHelp		O <sup>•</sup> Capture	REC	Manu	al recording	~					
Camera list							IP a	ddress:127	7.0.0.1	REC o	off	
	camera1 : STC-MBE	132U3V(20ME453)		Camera 1	←⑤	6 All Camera	a Live	Camera ir	nage di	splay		
AR .	IP address	-				ALKIN .	1	0.1				
A A A	Exposure time (µs)	16380					P-P-P					
	Gain (db)	0					88	ATTA				
	Frame rate (fps)	10		-								
	camera2:							1977				
	IP address											
	Exposure time (µs)				2					194		
	Gain (db)						1			199		
	Frame rate (fps)			Par						88		
	camera3 :					1 19	The second			20		1
	IP address						U.S.		Xac	20		
	Exposure time (µs)				>		1	All	1			
	Gain (db)			A	Th	X						2
	Frame rate (fps)			All	11.		P					5
	camera4:				The				Or			
	IP address				17				Y			
	Exposure time (µs)				111	ATA.					/	-
	Gain (db)				111	The		PT		1	5	
	Frame rate (fps)				44		-		2	/		

No.	Name
1	Toolbar
2	Camera list
3	Status
4	Camera live video
5	Camera No.
6	All Camera Live

#### 4-1-2. Toolbar

Tool Name	Description
Setting	This can change detailed settings in the advanced setting window.
	This will not work while recording.
History	This shows a list of recorded files. This will not work while
	recording.
Help	This shows the version of this application.

Capture	This records video capture images of all connected cameras.	
REC	If [Manual recording] is selected from recording selector, this will	
	start the manual recording. If [Trigger recording] is selected,	
	trigger recording will start.	
Recording	Recording behavior can be selected from [Manual recording] or	
selector	[Trigger recording].	
Continuous	Continuous recording will run if this is ON. Turn this OFF if you	
	want to stop the continuous recording.	

#### 4-1-3. Camera List

This list shows thumbnails and settings of connected cameras.

Items	Description	
IP address	IP addresses of cameras connected by LAN(GigE)	
Exposure time	Exposure time of camera (µs)	
Gain	Camera gain (db)	
Frame rate	Camera frame rate (Fps)	
	X"Dropped" with red font will be shown when frame	
	drop occurs.	

#### 4-1-4. Status

This shows working status of the application.

Status	Description
Camera image display	Camera is showing live video.
Recording	Video is being saved (except for
	continuous recording).
I saved the image	Images from camera are saved by
	[Capture] button.
Waiting for trigger	For trigger recording (See <u>6-3-7. Timing</u>
	of Trigger Recording).
Video is being saved	Video is being saved with Motion
	Detection, Master Image Comparison, or
	Trigger Signal is selected.

#### 4-1-5. Camera Live Video

This shows video of camera selected from thumbnail in the camera list.



Camera No. is shown on top left side of live video.

If the box near the camera No. is clicked, detection area set by motion detection recording/master image comparison recording is shown.

#### 4-1-6. All Camera Live

Displays video for each camera.



Expansion/Reduction of window or [CTRL] + Mouse wheel operation in the window will zoom in/out the live video.

Live video will be adjusted to window size by double-clicking the window.

\*Please use this under confirmation since screen may not be updated due to recording conditions (Camera resolution, frame rate, continuous recording ON, trigger recording operating at same time, etc.)

This window can configure settings of connected cameras.

### 5-1. Description of Camera Settings

### 5-1-1. Camera Registration and Settings

This settings will register connected cameras.

🖆 Advanced Setting								
Camera settings Manual rec	ording setting Trigger reco	ording settings	Save settings	Delete settings	External I / O settings	Startup settings		
Camera registration	n							
Recognized camera			Camera to	register				
STC-MCE132U3V(17A	A983)		Camera1		~	Add		
	1		STC-MCE1	32U3V(17AA983	2			
Individual camera	settings							
Setting target	Camera1	O Camera2		Camera3	Camera4			
	Camera5	Camera6		Camera7	Camera8			
frame rate (1 - 10)	10 + fps	3						
Exposure time	100006 <b>μ</b> s		0					
gain	100 🔹 db							
white balance R	245 🜩							
G	113 🜩				100	(4)		
В	204							
Details Settings	StViewer 5						J	
					(	ОК	Cancel	

No.	Items	Description
1	Recognized camera	The list of connected cameras is shown here.
		Click and select cameras to register.
		%Selected cameras at Camera type in the Startup
		settings will be shown here.
2	Camera to register	Select registered camera No. from list and click the
		[Add] button.
		Selected camera will be registered, and registered
		camera will be shown here.
3	Individual camera	This can change frame rate/exposure time/gain/white
	settings	balance settings of selected camera.
		🕼 The frame rate range will change by value of
		exposure time.
4	Camera video preview	This shows preview video of camera selected in
		Individual camera settings.
5	Details Settings	More detailed settings of camera can be changed.
		StViewer will run if [StViewer] button is clicked.
		→See 8-5.StViewer

## 6. Recording

Record	ling Behavior	Description
Continuous recording		Video will be recorded all the time.
Manual rec	ording	Recording can be started/stopped manually.
		This can record video by maximum of 60 minutes.
Trigger	Time trigger	Recording will run once a day at specified time.
recording	Motion	Recording will run when any change of camera's video
	detection	is detected.
	Master image	Recording will run when any difference between
	comparison	prepared image and camera's video is detected.
	Trigger signal	Uses switch input connected to camera for trigger of
		recording.
	Trigger signal	Uses TCP command input for trigger of recording.
	(TCP command)	

This system can select following recording behaviors:

### 6-1. Continuous Recording

This recording will allow all registered camera to record video all the time.

The behavior of continuous recording can be configured at the [Manual recording setting] tab in the Advanced Setting window.

💾 Advanced Setting	-	- 🗆 X
Camera settings Manual recording setting Trigger recording settings Save settings Delete settings External I / O s	ettings Startup sett	ings
Continuous recording setting		
Split file recording time (1 - 60) 10 🚖 Minutes		
Manual recording setting		
Recording time (1 - 60) 10 🔔 Minutes		
	ОК	Cancel

Configuration item	Description
Split file recording	Sets recording time for each file.
time	Range: 1 – 60 minutes
	(If time is set to 60 minutes, 24 files are
	generated each day.)

#### [1]Setting continuous recording

- 1) Click the [Setting] button in the main window, then click the [Manual recording setting] tab in the Advanced Setting window.
- 2) Set "Split file recording time" in the Continuous recording setting section.
- 3) Close the Advanced Setting window by clicking the [OK] button.

#### [2]Starting continuous recording

				-		×
O <sup>•</sup> Capture	REC	Manual recording ~				
		IP a	address:127.0.0.1	REC	off	
^ 🗆 Ca	mera 1	All Camera Live	Camera image di	splay		

- 4) Recording will start if [REC off] button in the main window is clicked (Will be switched to [REC on]).
- 5) All registered camera's video will be recorded.

#### [3]Confirming recorded videos

- 6) Confirm save folder by Windows explorer, etc.
  Save folder path for continuous recording:
  C:¥OMRON¥FactoryDriveRecorder¥Movies¥Always (Default)
  Folders are split by date.
- ☞ Save folder for video files can be changed by settings. (See <u>8-1. Save Setting</u>)
- ☞ Recording will stop if [Continuous] button is clicked during continuous recording. ([Continuous] is turned OFF)
- $\ensuremath{\texttt{CF}}$  Recorded files are split by each date folder.

### 6-2. Manual Recording

This allows all registered camera to record video manually.

The behavior of manual recording can be configured at the [Manual recording setting] tab in the Advanced Setting window.

💾 Advanced Setting					-	□ ×
Camera settings Manual recording setting Trie	gger recording settings	Save settings	Delete settings	External I / O settings	Startup settings	1
Continuous recording setting						
Split file recording time (1 - 60)	10 🗧 Minutes	5				
Manual recording setting						
Recording time (1 - 60)	10 Minutes	5				
					ОК	Cancel

Configuration item	Description
Recording time	Sets maximum time of manual recording.
	Range: 1 – 60 minutes
	After starting manual recording, the recording will
	stop automatically when specified recording time is
	exceeded. (Recording can be stopped manually)

#### [1]Setting manual recording

- 1) Click the [Setting] button in the main window, then click the [Manual recording setting] tab in the Advanced Setting window.
- 2) Set "Recording days" in the Manual recording setting section.
- 3) Close the Advanced Setting window by clicking the [OK] button.

#### [2]Starting manual recording

💾 Live screen								
Setting	GHistory	() Help		O <sup>*</sup> Capture	<b>O</b> REC	Manual re	cording	~
Camera list								
	camera	a1:STC-MCE1	32U3V(17AA983)	<u>^</u> 🗆 C	amera 1		All Camera	a Live
	IP add	ress	-					

- 4) Select [Manual recording] and click [REC] button in the main window.
- 5) All registered camera's video will be recorded.

#### [3]Confirming recorded videos

6) Click the [History] button in the main window and confirm. (See <u>7. Watching Recorded Video</u>)

☞ Save folder for video files can be changed by settings. (See <u>8-1. Save Setting</u>)

**G** Recording will stop when [REC] button is clicked during the manual recording.

 $\ensuremath{\texttt{G}}\xspace$  [Setting] button is inactive during manual recording.

## 6-3. Trigger recording

This recording allows cameras to record videos before/after events by using specified event signal for trigger.

The behavior of trigger recording can be configured at the [Trigger recording settings] tab in the Advanced setting window.

Advanced Setting				-	- 🗆 X
Camera settings Manual recording setting	Trigger recording se	ttings Save settings Delete set	ttings External I / O	settings Startup setti	ings
Event signal O Time trigger	Recording time	<b>2</b> seconds ago to (0 - 3600)	3600 🛓	seconds later(0	- 3600)
Motion detection     Master image comparison     Trigger signal	Trigger time (tin	ne trigger) 0 🐳 Minutes	Recording ta O Only the O All camer	arget triggered Camera as	1
Detection condition (trigger	signal)	0.6	0.0	0.6	-1
Line Settings	Camera 1	Camera2	Camera3	Camer	a4 a8
Detection conditions (motion Individual camera settings - Setting target	n detection / m © <sub>Camera1</sub>	aster image compariso 5 Camera2	Camera3	O Camer	a4
	Camera5	○ Camera6	○ Camera7	O Camer	a8
Master image file	C:¥OMRON¥Facto	ryDriveRecorder¥Config¥Mas	terlmage.png		
Detection point (1 - 10) Detection difference (1 - 255) Difference area ratio (1 - 100)		Location Detection			
Common settings for all car Detection interval (0.2 - 10.0)	0.2	Seconds 6			
1				ОК	Cancel

No.	Name	Description
1	Event signal	Selects type of trigger recording.
2	Recording time	Sets trigger recording time.(%1)
		Range: 3600 sec. before trigger – 3600 sec.
		after trigger
3	Trigger occurrence time (time	If [Time trigger] is selected in the
	trigger)	Event signal section, trigger time can be
		specified.
		Range: 0:00 – 23:59
4	Detection condition (trigger	If [Trigger signal] is selected in the Event signal
	signal)	section, a camera to receive trigger signal can
		be selected.
5	Detection condition (motion	If [Motion detection] or [Master image
	detection / master image	comparison] is selected in the Event signal
	comparison)	section, trigger condition for registered
		camera's video can be specified.
		→See 6.3.2 Motion Detection / 6.3.4 Master
		Image Comparison

6	Common settings for all	Sets detection interval of trigger events.
	cameras	
7	Recording target	Selects camera to record video when event is
		occurred.

%1:If you set the recording time to 1 second or more ago, the recording file will continue to be created even if the trigger does not occur, so be careful about the limit on the number of times you can write to the recording medium.

#### 6-3-1. Time Trigger

Time trigger recording allows camera to record video at specified time.

#### [1]Setting time trigger

	💾 Advanced Setting		×
	Camera settings Manual recording setting	Trigger recording settings Save settings Delete settings External I / O settings Startup settings	
2	Event signal	Recording time 3	
2)	Time trigger	5 seconds ago to (0 - 3600) 30 seconds later (0 - 3600)	
	O Motion detection	Trigger time (time trigger) Pecording target	
	O Master image comparison	Only the trigger damera	
	O Trigger signal	0 Hour 0 Minutes  All cameras	

1) Click the [Setting] button in the main window, then select [Trigger recording settings] tab in the Advanced setting window.

- 2) Select [Time trigger] in the Event signal section.
- 3) Configure the recording time.
- 4) Configure the trigger occurrence time.
- 5) Close the Advanced Setting window by clicking the [OK] button.

#### [2]Starting trigger recording

💾 Live screen					7)	6)		
Setting	History	<b>?</b> Help		O'Capture	<b>●</b> REC	Trigger re	ecording ~	Time trigger
Camera list								IP address : 12
	camera	1:STC-MCE	132U3V(17AA983)	<u>^</u> 0 (	Camera 1		All Camera Live	Camera
	IP addr	ess	-					

6) Select [Trigger recording] in the main window.

7) If [REC] button is clicked, status will change to waiting trigger.

→Recording will start on the configured time (near time set in the recording time setting).

#### [3]Confirming recorded video

8) Click the [History] button in the main window and confirm. (See <u>7. Watching Recorded Video</u>)

#### 6-3-2. Motion Detection

Motion detection recording allows using change of camera images as trigger of recording.

	💾 Advanced Setting					-	
	Camera settings Manual recording setting	Trigger recording se	ttings Save	settings Delete se	ettings External I / O s	ettings Startup settin	gs
	Event signal	Recording time	3)				
	○ Time trigger	1	seconds a	go to (0 - 3600	) 1	seconds later (0 -	3600)
2	Motion detection	Trigger time (tij	me triaae	r)	Recording ta	raet	
	O Master image comparison				O Only the t	riggered Camera	
	O Trigger signal	0 - Hour	0	Minutes	All camera	S	
	Detection condition (trigger s	signal)					
	Camera receiving the Signal	Camera1	0 <b>c</b>	amera2	Camera3	Camera	4
	Line Settings	Camera5	<u></u> с	amera6	Camera7	Camera	8
	Detection conditions (motion	n detection / m	aster ima	ge compariso	on)		
	Individual camera settings –						
4	Setting target	Camera1	<u></u> с	amera2	Camera3	O Camera	4
		🔾 Camera5	0 c	amera6	Camera7	🔿 Camera	8
	Master image file	C:¥OMRON¥Facto	ryDriveReco	rder¥Config¥Ma	sterlmage.png		
5	Detection point (1 - 10)	1	Location [	Detection			
	Detection difference (1 - 255)	100 🔹					
	Difference area ratio (1 - 100)	50 🜩	%				
	Common settings for all can	neras					
6	Detection interval (0.2 - 10.0)	0.2	Seconds				
						ОК	Cancel

#### [1]Setting motion detection trigger

- 1) Click the [Setting] button in the main window, then select [Trigger recording settings] tab in the Advanced setting window.
- 2) Select [Motion detection] in the Event signal section.
- 3) Configure the recording time.
- 4) Select a camera to configure detection conditions.
- 5) Configure details of detection conditions for camera selected in 4).
- 6) Configure running interval of detection conditions set in 5).
- 7) Select recording target.
- 8) Close the Advanced Setting window by clicking the [OK] button.

#### [2]Starting trigger recording

💾 Live screen								
Setting	History	<b>Help</b>		O <sup>•</sup> Capture	REC	Trigger recording	~ Mo	otion detection
Camera list							IP a	address: 127.0.0.
	camera	1:STC-MCE13	2U3V(17AA983)	_ ^ 🗆 Ca	mera 1	All Came	era Live	Camera image
	IP addr	ess -					·	

- 9) Select [Trigger recording] in the main window.
  - ([Motion detection] is shown on right side.)
- 10) If [REC] button is clicked, status will change to waiting trigger.
   →Video is saved when motion is detected.

#### [3]Confirming recorded video

11) Click the [History] button in the main window and confirm. (See <u>7. Watching Recorded Video</u>) Master image comparison recording enables recording that uses difference between master image and camera video as trigger.

Ē,	Advanced Setting							· □ ×		
	Camera settings Manual recording setting Trigger recording settings Save settings Delete settings External I / O settings Startup settings									
	Event signal									
	○ Time trigger	1	seconds a	go to (0 - 360	)))	1	seconds later(0	- 3600)		
	O Motion detection	- Trigger time (ti	me triage	r)	Rec	ording ta	arget			
2)	Master image comparison			·/	8)	) Only the	triggered Camera			
	O Trigger signal	U → Hour	0 -	Minutes	(	All camer	as			
	Detection condition (trigge	r signal)								
	Camera receiving the Signal	Camera1	0 c	amera2	0 0	Camera3	Camera	a4		
	Line Settings	Camera5	0 0	amera6	0 (	Camera7	Camera	a8		
	Detection conditions (motio	on detection / n	naster ima	ge compari	son) —					
	Individual camera settings									
4)	Setting target	Camera1	0 <b>c</b>	amera2	$\circ$ c	Camera3	Camera	a4		
		○ Camera5	0 c	amera6	0 0	Camera7	○ Camera	a8		
5)	Master image file	C:¥OMRON¥Facto	oryDriveReco	rder¥Config¥N	lasterima	ge.png				
	Detection point (1 - 10)	1	Location	Detection						
6)	Detection difference (1 - 255)	100 💂								
	Difference area ratio (1 - 100)	50 💂	%							
	Common settings for all ca	imeras								
7)	Detection interval (0.2 - 10.0)	0.2	Seconds	7						
	L									
							ОК	Cancel		

#### [1]Setting master image comparison

- 1) Click the [Setting] button in the main window, then select [Trigger recording settings] tab in the Advanced setting window.
- 2) Select [Master image comparison] in the Event signal section.
- 3) Configure the recording time.
- 4) Select a camera to configure detection conditions.
- 5) Set a master image to compare for camera selected in 4).Set an image file which was taken in the main window in advance. (Both camera and master image's resolution must be same.)Master image setting is applied for all connected cameras.
- 6) Configure details of detection conditions for camera selected in 4).
- 7) Configure running interval of detection conditions set in 6).
- 8) Select recording target.
- 9) Close the Advanced Setting window by clicking the [OK] button.

#### [2]Starting trigger recording

Eive screen								-
Setting	History	<b>?</b> Help	O <sup>•</sup> Capture		Trigger recording	~ Ma	aster image compari	ison
Camera list						IP a	address: 127.0.0.1	RE
	camera1	: STC-MCE132U3V(17AA983)	^ 🗆 Ca	mera 1	All Camera	a Live	Camera image	displa
	IP addre	ss -				÷		

- 10) Select [Trigger recording] in the main window. ([Master image comparison] is shown on right side.)
- 11) If [REC] button is clicked, status will change to waiting trigger.
   →Video is saved when trigger is detected.

#### [3]Confirming recorded video

12) Click the [History] button in the main window and confirm. (See <u>7. Watching Recorded Video</u>)

#### 6-3-4. Trigger Signal

Trigger signal recording enables recording that uses external input connected to camera or TCP command input as trigger of recording.

#### [1]Setting trigger signal

	Advanced Setting				_	
	Camera settings Manual recording setting	Trigger recording settings	Save settings Delete set	tings External I / O setting	gs Startup setti	ngs
	Event signal	Recording time				
	○ Time trigger 3)	30 🗧 seco	nds ago to(0 - 3600)	30 🔹 sec	onds later(0	- 3600)
	O Motion detection	- Trigger time (time tr	igger)	Recording target	t	
	Master image comparison	0 Hour	Minutos 4	Only the trigge	ered Camera	
)	Trigger signal	· · · · · · · · · · · · · · · · · · ·	• Windles	All cameras		
	Detection condition (trigger	signal)				
	Camera receiving the Signal	Camera1	Camera2	Camera3	Camera	a4
!	5) Line Settings	Camera5	Camera6	Camera7	O Camera	a8
	Setting target	Camera1	Camera2	Camera3	Camer	a4
		Camera5	Camera6	Camera7	Camera	a8
	Master image file	C:¥OMRON¥FactoryDriv	eRecorder¥Config¥Mas	terlmage.png		
	Detection point (1 - 10)	1 📮 Locat	tion Detection			
	Detection difference (1 - 255)	100 💂				
	Difference area ratio (1 - 100)	50 🔹 %				
	Common settings for all car	neras				
	Detection interval (0.2 - 10.0)	0.2 🔹 Secon	nds			
					ОК	Cancel

- 1) Click the [Setting] button in the main window, then select [Trigger recording settings] tab in the Advanced setting window.
- 2) Select [Trigger signal] in the Event signal section.
- 3) Configure the recording time.
- 4) Select the recording target.
- 5) Configure the detection condition.

→Only if "All cameras" is selected in 4), Camera receiving the Signal can be selected.
Only one camera can be selected.

6) Close the Advanced Setting window by clicking the [OK] button.

#### [2]Starting trigger recording

Live screen								
Setting	History	<b>P</b> Help	¢.	O <sup>•</sup> Capture	<b>REC</b>	Trigger recording	~ Trig	gger signal
Camera list							IP a	address:127.
	camera1	STC-MCE132	J3V(17AA983)	🔺 🗆 Ca	mera 1	All Cam	era Live	Camera im
	IP addre	ess -					1	

6) Select [Trigger recording] in the main window. ([Trigger signal] is shown on right side.)

7) If [REC] button is clicked, status will change to waiting trigger.

 $\rightarrow$  Video is saved when trigger is detected.

☞ The external input signal from the camera is "input 0".

Please see your camera's manual for external input signals.

☞ For TCP command external input, following command is send to this application.

Command	Description
trigger n(CR)	n:Camera No.(1~8)
	"0" is a recording from all cameras
	(CR): Carriage return code (0x0d)

"OK" is returned if command is successfully received.

#### [3]Confirming recorded video

8) Click the [History] button in the main window and confirm. (See <u>7. Watching Recorded Video</u>) Detection condition of trigger signal can be configured here.

Trigger Signal Detect Settings window is shown, when [Line Settings] button at Detection condition (trigger signal) in Advanced setting window is clicked.

Trigger Signal Detect Settings X							
Camera1	High	~					
Camera2	High	$\sim$					
Camera3	High	$\sim$					
Camera4	High	$\sim$					
Camera5	High	$\sim$					
Camera6	High	$\sim$					
Camera7	High	$\sim$					
Camera8	High	$\sim$					
2		3	)				
0	K		Cancel				

No.	Items	Description
1	Detection trigger settings	Sets the detection trigger for each camera.
2	ОК	Saves settings and close this window.
3	Cancel	Closes this window without saving settings.

#### [1]Detection trigger settings

Trigger S	ignal Dete	ct Sett	ings	×
<b>1)</b> Camera1	High	~		
Camera2	High	$\sim$		
Camera3	High	$\sim$		
Camera4	High	$\sim$		
Camera5	High	$\sim$		
Camera6	High	$\sim$		
Camera7	High	$\sim$		
Camera8	High	$\sim$		
C	K		Cancel	

1) Select the detection trigger of input signal for cameras.

#### [2]Saving settings

- 2) Click "OK" to close the window and return to Advanced setting window.
- 3) Close the Advanced Setting window by clicking the [OK] button.

#### 6-3-6. Detection Setting

For detection condition settings in motion detection and master image detection, detailed detection settings can be configured here.

Detection setting window is shown, when [Detection] button at Detection condition (motion detection/master image comparison) in Advanced setting window is clicked.



No.	Items	Description
1	Display area	Camera image is shown here if "Motion detection" is
		selected in the event signal settings. Master image is
		shown here if "Master image comparison" is selected.
2	all	All configured area is displayed in the image if this is
	(Checkbox)	checked.
		Currently configured area is indicated with red lines,
		and others are with gray lines.
		Only selected No. area is displayed with red lines if this
		is not checked.
3	Number	Selects area No. to configure.
		Only numbers set in number of detection positions set
		in Advanced setting window can be selected.
4	Event occurrence	If this is checked, current camera image is shown as
	confirmation	live image. This enables confirmation of event
	(Checkbox)	occurrence status based on detection area, detection
		difference value, and difference area rate.
		See "[2] Confirming event occurrence" for details.

5	Detection difference	Sets difference value for event occurrence.
		(Range: 1 - 255)
		Setting value set in the Advanced setting window is
		initially set, and any changes made in here will be
		applied to Advanced setting windows.
		If this value is small, events will occur more frequently,
		and if this value is large, events will occur less
		frequently.
6	Difference area ratio	Sets difference area rate inside configured area.
		(Range:1 - 100%)
		Setting value set in the Advanced setting window is
		initially set, and any changes made in here will be
		applied to Advanced setting windows.
		If this value is small, events will occur more frequently,
		and if this value is large, events will occur less
		frequently.
7	ОК	Saves settings and close this window.
8	Cancel	Closes this window without saving settings.

#### [1]Setting detection area



- 1) Select setting No. to add area.
- 2) Move mouse cursor to the image, and set start point (top-left) by left mouse click.
- 3) Drag the mouse cursor to the end point (bottom-right) and stop clicking.

Please make sure that end point is on bottom-right side of start point.

If [Number] is set to 1 or more in the Advanced setting button, 1) – 3) is done by number of detection points.

#### [2]Confirming event occurrence



- 4) Camera video is shown if [Event occurrence confirmation] checkbox is ON.
- 5) If event is detected by configured setting, [Event!] and detection value is displayed.

Items	Description
Detection position	Area number that difference is monitored
Difference value	The maximum difference value occurred in the area
Area ratio	Area rate that difference (*) exceeds the threshold

\*difference

Master Image Comparison: comparison result of master image with the current camera frame

Motion Detection: comparison result of the immediately preceding camera frame with the current camera frame

#### [3]Saving settings

- 6) Click "OK" to close the window and return to Advanced setting window.
- 7) Close the Advanced Setting window by clicking the [OK] button.

Timing of trigger recording depends on selected event signal types.

#### 1) Timing of Time trigger recording

All cameras start recording around the configured time.



# 2) Timing of Motion detection/Master image comparison/Trigger signal (external input signal) recording

·If recording target is "Only the triggered camera"

After event, only the target camera's recording starts automatically.

("Recording 1" in the diagram)

Events for same camera will not occur until the recording is finished.

Recording will run in parallel if events occur in other camera which is not recording. ("Recording 2" in the diagram)

New events for same camera can be detected during recording after previous event. ("Recording 3" in the diagram)

(Note that part of Recording 3 overlapping with Recording 1 will not be recorded as shown below.)



·If recording target is "All cameras"

All camera's recording start at same time if events occur in any camera.

("Recording 4" in the diagram)

After the event, new events will not occur until the recording is finished.

After recording is done, next event can be occurred without waiting for recording time completion before the event. ("Recording 5" in the diagram)



#### 3) Trigger signal (TCP command input)

Camera specified by TCP command starts recording.



#### Status display during trigger recording

Status	Just after	[REC] button	Before trigger	Triggered	After trigger	[REC] button
	switching	clicked (Start	Recording		Recording time	clicked
		recording)	time passed		passed	(End
						recording)
Display	Camera image	Waiting for	Waiting for	Recording	Waiting for	Camera image
	display	trigger	trigger		trigger	display
					→During	
					combining:	
					"Video is being	
					saved"	

## 7. Watching Recorded Video

This history window can play recorded video files in History window is displayed when [History] button in the main window is clicked.

💾 Recording history						– 🗆 X
		Date	period 2021	1111132534799	• ~ 20211111161521	1601 -
				Camera name	Recording mode	Save path
		1	2021111116152160	camera1	manual	C:¥OMRON¥Factor
		2	20211111132543729	camera1	manual	C:¥OMRON¥Factor
		3	20211111132534799	camera1	manual	C:¥OMRON¥Factor
			2			
Detailed inform	nation 3					
Date	20211111161521601					
Camera name	camera1					
Recording mode	manual					
Save path	C:¥OMRON¥FactoryDriveRecorder¥Mov					
	· · · ·					
				4	HTML	close

No.	Items	Description
1	Playing area	Plays recorded video files.
2	Recorded file list	List of recorded files is shown here.
		Recorded file selected from this list is played on the
		playing area.
		Recorded files can be searched by "Date period".
		Also, the list can be sorted by clicking on list items
		(No/Date/Camera name/Recording mode/Save path).
3	Details of recorded file	Details of recording file is shown here.
		Recording mode "manual" is a file recorded by "Manual
		recording".
		Recording mode "trigger" is a file recorded by "Trigger
		recording".
4	HTML	Exports recorded file list by HTML format.
		The list of recorded files and details can be confirmed
		via browser.

☞Video files are played via Windows Media Player.

Please install Windows Media Player to your PC if it is not installed.

☞Video files of continuous recording and image files will not be shown in [History] window.

# 8. Other Settings

## 8-1. Save settings

Advanced Setting		– 🗆 X
Camera settings Manual re	cording setting Trigger recording settings Save settings Delete settings External I / O settings Startup set	ttings
Save format	1	
Movie	O Image	
Save recording da	ita 2	
Folder path	C:¥OMRON¥FactoryDriveRecorder¥Movies	
Tag	video Compression MPEG-4	÷
– Save image data –	3	
Folder path	C:¥OMRON¥FactoryDriveRecorder¥Images	
Tag	image type jpg	•
Save export HTML	- 4	
Folder path	C:¥OMRON¥FactoryDriveRecorder¥Export	
Display		
Setting target	Camera1 O Camera2 O Camera3 O Camera4	0)
	Camera5 Camera6 Camera7 Camera8	- 9)
Clock	Fixed String	not show 🗸
Display position	do not show V Display position do not show V upp	per left per center
Color	Text color Color Text color low	per right ver left
Magnification	1.0 ÷ Magnification 1.0 ÷ low low	er center ver right
	String	
	Dive Borner Sinn 30	
	ОК	Cancel

#### For monochrome camera

Setting target	Camera1 Camera5	<ul> <li>Camera2</li> <li>Camera6</li> </ul>	<ul> <li>Camera3</li> <li>Camera7</li> </ul>	<ul> <li>Camera4</li> <li>Camera8</li> </ul>	1 ► P/S (1 - 10)
Clock				Fixed String	
Display position	do not show	$\sim$		Display position	do not show $\checkmark$
Color				Color	
Magnification	1.0			Magnification	1.0
				String	

No.	Items	Description		
1	Save format	If "Movie" is selected, recorded data will be saved as		
		video format. If "Image" is selected, it will be saved		
		as image format.		
2	Save recording data	Save folder for recorded data (Movies/Images). "C:¥OMRON¥FactoryDriveRecorder¥Movies" is set as default. Click on button to select folder if this needs to		
		be changed.		

		"Tag" will be added on beginning of recorded data
		filename.
		Encoding format of recorded data can be selected from
		MPEG-4/MotionJPEG. Each has following advantages:
		MPEG-4: Low file size
		MotionJPEG: Many compatible softwares
		For image format, folders are created for each event in
		corresponding recording type folder, and image data
		with selected image format will be created inside.
3	Save image data	Save folder for image data.
		"C:¥OMRON¥FactoryDriveRecorder¥Images" is set as
		default.
		Click on the hystophy and a to call at foldow if this provide to
		be changed.
		"Tag" will be added on beginning of recorded data
		filename.
		Image format can be selected from JPG/PNG/BMP.
4	Save export HTML	Save folder for exported HTML from history window.
		"C:¥OMRON¥FactoryDriveRecorder¥Export" is set as
		default.
		Click on the button to select folder if this needs to
		be sharped
-	Disalau	be changed.
5	Display	Embed the clock/string during recording, and display it
		while playing video.
		Select a camera that configures clock/string display in
		Setting target.
		Sclost clock (string display position in Display position
		Select clock/string display position in Display position
		(See the below).
		(% For monochrome compare adjust toxt color using
		color bar. It turns white to the right, and black to the
		left.)
		Select font size in Magnification.
		String can be input in the "String" textbox (maximum of
		50 characters).

About clock/string display position



Advanced Setting					-	□ ×
Camera settings Manual	recording setting Trigger recording	settings Save setting	gs Delete settings	External I / O settings	Startup settings	;
Delete recording	g data					
O Don't delete	(1)					
Oelete						
☑ Remaining o	apacity	10 🜩	GB or less			
🗹 days	Manual Trigger recording	366 🔹	days or more			
	Continuous recording	366 🜩	days or more			
					ОК	Cancel

This window can configure recorded data deletion settings.

No.	Items	Description
1	Delete recording data	If "Don't delete" is selected, recorded data will not be deleted, and if "Delete" is selected, data will be deleted under condition shown below this selection. If "Remaining capacity" is checked, old files in the
		recorded data saving directory will be deleted when disk capacity is less than specified GB. If "days" is checked.

TCP communication can be configured here.

Camera setting       Manual recording setting       Tigger recording settings       External I / 0 settings       Startup settings         IP address       127.0.0.1       Image: Camera in put display       Image: Camera in put display         External input display       Image: Camera in put display       Image: Camera in put display       Image: Camera in put display         Setting target       Image: Camera in put display         Display position       Image: Image: Camera in put display       Image: Imag	🛗 Advanced Setting							-		×
TCP output setting   IP address   port number   3001      TCP input setting   IP address   127.0.0.1   port number   3000      External input display   Setting target   © Camera1   Camera5   Camera6   Camera7   Camera8   Input port   Or   Text color   Upper center   Upper center <	Camera settings Manual	recording setting Trigger re	cording settings	Save settings	Delete settings	External I / O set	ings Startup	o settings		
IP address 127.0.0.1   port number 3001 •     TCP input setting   IP address 127.0.0.1   IP address 127.0.0.1   opt number 3000 •     External input display   Setting target • Camera1   • Camera5 • Camera3   • Input port • • • • • • • • • • • • • • • • • • •	TCP output setti	ng								٦
port number 3001     TCP input setting   IP address   127.0.0.1   port number   3000     External input display   Setting target   © Camera3   Camera5   Camera6   © Camera7   Camera8   Input port   0   Upper left   Iower center   Iower center </td <td>IP address</td> <td>127.0.0.1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	IP address	127.0.0.1								
TCP input setting         IP address       127.0.0.1         port number       3000 •         External input display         Setting target       • Camera1       • Camera2         Camera5       • Camera6       • Camera7         Input port       • • • • • • • • • • • • • • • • • • •	port number	3001 🛓		U						
IP address 127.0.0.1 port number 3000 External input display Setting target © Camera1 Camera2 Camera3 Camera4 Camera5 Camera6 Camera7 Camera8 Input port 0 do not show Upper center Upper left Iower left Iower left Iower left Iower right Color 1.5 Additional string AlarmSignal:	TCP input setting	g								٦
port number 3000 •     External input display   Setting target   • Camera1   • Camera5   • Camera6   • Camera7   • Camera8   Input port   • Or   • Text color   • Nagnification   • 1.5   • Additional string   AlarmSignal:     • External output setting   Recording output     • OK   Camera3	IP address	127.0.0.1	~	2						
External input display Setting target © Camera 1 Camera 2 Camera 3 Camera 4 Camera 5 Camera 6 3 Camera 7 Camera 8 Input port © ✓	port number	3000 👻		<b>U</b>						
External input display   Setting target   © Camera1   Camera5   Camera6   © Camera6   © Camera7   Camera8   Input port   0   Input port   0   Imput port   0   0   1    1    1    1   1		-1								╡
Setting target Califerat Califorat Califorat Califorat Califorat Califorat C	- External input disp	© Comoral	0.000000		0.000000	0.				
Input port Display position Color Magnification Additional string External output setting Recording output do not OK Cancel	Setting target	Camera I	Camera2		Camera3	0	Camera4			
Input port Display position Color Magnification Additional string External output setting Recording output do not OK Cancel		Califerad	U Califerato	3	U Califerar	Color	X			
Display position do not show v upper left upper right Color Text color Magnification 1.5 Additional string AlarmSignal: External output setting Recording output do not v OK Cancel	Input port	0 ~	de	o not show	$\sim$	Basic colors:				
Color Magnification Additional string Additional string Recording output setting Recording output do not OK Cancel	Display position	do not show $\sim$	ui ui	oper left						
Magnification 1.5 Additional string AlarmSignal:	Color	Text color	ui lo	oper right wer left						
Additional string AlarmSignal:	March 10		lo	wer center wer right		Oustom colors:				
Additional string AlarmSignal:	Magnification	1.5								
External output setting Recording output do not  OK Cancel	Additional string	AlarmSignal:				Define Oustom O OK Gancel	olors >>			
Recording output do not  OK Cancel	External output	setting								í
OK Cancel	Recording output	do not 🗸		4						
OK Cancel	L									
							OK	0	ance	

#### For monochrome camera

External input dis	splay			
Setting target	Camera1	🔿 Camera2	Camera3	🔿 Camera4
	🔿 Camera5	🔘 Camera6	🔘 Camera7	🔿 Camera8
Input port	0 ~			
Display position	do not show $~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~$			
Color				
Magnification	1.5			
Additional string	AlarmSignal:			

No.	Items	Description		
1	TCP output setting	Outputs this system's status via TCP.		
		Sets output IP address and port number.		
		Please see the table below for TCP output information.		
2	TCP input setting	Configures TCP port for TCP command in trigger		
		recording when "trigger signal" is selected for event		
		signal.		
		Sets input IP address and port number.		

3	External input display	Embeds the external signal input during recording, and		
_		display it while playing video.		
		Select a camera that configures external input display		
		in Setting target.		
		→This configuration can be set for each camera.		
		Select input port.		
		Select external input display position in Display		
		position (See the below).		
		Select text color in Color.		
		(%For monochrome camera, adjust text color using		
		color bar. It turns white on the right, and black on the		
		left.)		
		Select font size in Magnification.		
		Enter strings in Additional string.		
4	External output setting	Configures whether external signal output is executed		
		during recording or not.		
		If OUT2 is selected, recording will be High output		
		during recording, and Low output while not recording.		

#### About external input display position

AlarmSignal:ON upper left	upper center	upper right	do not show do not show upper left upper center upper right lower left lower center lower right
lower left	lower center	lower right	

## 8-4. Startup settings

L

Startup settings of this application can be configured here.

💾 Advanced Setting					-		×
Camera settings Manual recording setting	Trigger recording settings	Save settings	Delete settings	External I / O settings	Startup setting	gs	
Language setting O Japanese ® English	3	)					
Camera type GigE/USB(UVC Incompatible) UVC	2	)					
Start recording at startup	1	)					
							_
					ОК	Canc	el

No.	Items	Description
1	Language setting	If Japanese is selected, this application is displayed in
		Japanese.
		If English is selected, this application is displayed in English.
2	Camera type	If GigE/USB is selected, the camera mode is set in GigE/USB.
		If UVC is selected, the camera mode is set in UVC.
3	Start recording at	Recording can be started without clicking the REC button at
	startup	startup.

This application will be closed automatically if this setting is changed. Please run the application again.

### 8-5. StViewer

This is a camera setting tool included in Sentech SDK.

Other settings not included in Advanced setting window can be configured in this tool.

StViewer (Version 1.1.	2) - [STC-MCS510U3V(17DF69	9)[User Defined Name]]			
: 👩 <u>F</u> ile <u>V</u> iew <u>W</u> indo	ow <u>H</u> elp				_ 8×
: 🔁 😂 🕒 🕨 💷 🗍	A 📑 🖬 🗋				
STC-MCS510U3V(17DE699	)[User Defined Name] ×	4 4	NodeMap-STC-MCS510U3V(17DF699)/User D	efined Name)	<b>4</b> >
			Visibility: Guru		`
			Filter Regular expression		
			Node	Value	
				value	
			Device Information		
			Device ID	14211704E699	_
			Device Serial Number	17DF699	
			Device User ID	User Defined Name	
			Device Vendor Name	SENTECH	
			Device Model Name	STC-MCS510U3V	
			Device Family Name	STC-M	
			Device Version	2.31.0.18	
			Device Manufacturer Info	www.sentech.co.jp	
			Device Type	USB3 Vision	
			Device Display Name	STC-MCS510U3V(17DF699)	
			Device Access Status	Open Read Write	
			Device Chunk Data Format	GigE Vision	
			Device Event Data Format	GigE Vision	
			Device Control		
			Device Endianess Mechanism	Standard	
			Link Command Timeout (us)	300000.000000	
Output					Φ×
Time	Source	Log			
2021/03/01 22:55:29.885	StViewer	Started			
2021/03/01 22:55:37.186	STC-MCS510U3V(17DF69	Device opened.			
IC C D D Log					
Ready		(0, 0) -	Received=0[Dropped=0]	0.00[fps] / 0.00[bps]	

"Reading settings" must be done before setting cameras. Control "NodeMap" on the right side of the StViewer window.

Ν	lodeMap	p-STC-MCS510U3V(17DF699)[User Defined N	lame]		<b>Φ</b> Χ
5	Ž↓ O==	🔍 😳 🌮 Polling			
Vis	sibility:	Guru			~
	Filter	Regular expression			
N	lode		Value		
		Event Test		(Not available)	^
		Event Test Timestamp (ns)		(Not available)	
	🗆 Us	ser Set Control	2)		
1)	Us	er Set Selector	User Set 1		-
1		User Set Load[User Set Selector]	Default		
		User Set Save[User Set Selector]	User Set 0		
	Use	er Set Default	User Set 1		
	🗆 Ch	unk Data Control	User Set 2		
			User Set 4		· ·
F			User Set 5		
	leor	Set Selector	User Set 6		<u>^</u>
1	USEI	Set Selector	User Set 7		
9	selects t	the feature User Set to load, save or co	nfigure.		
s	elects th	e feature User Set to load, save or configure.			
n	lame:U	JserSetSelector			~
1)	حمامه	st "Usar Sat Salastar" Nad	0		

- 1) Select "User Set Selector" Node.
- 2) Select "User Set 1" from the list.
- \*This system uses "User Set 1".

1		Event Lest Limestamp (ns)	(NOT AVAIIADIE)
		User Set Control	
2		User Set Selector	User Set 1
3/		User Set Load[User Set Selector]	Execute
	5	User Set Save[User Set Selector]	Execute
		User Set Default	Default
		Chunk Data Control	

3) Click the "Execute" button in "User Set Load" Node. Camera settings will be read.

#### 8-5-2. Saving Settings

After configuration, this tool can "save" these settings.

User Set Control User Set 1 User Set 1	
1) User Set Selector User Set 1	_
1/	
User Set Load User Set Selector Execute	
2) User Set Save[User Set Selector] Execute	
User Set Default Default	
Chunk Data Control	~

- 1) Confirm that "User Set 1" is selected in "User Set Selector" Node.
- 2) Click the "Execute" button in "User Set Save"Node.

## 9. TCP input/output

## 9-1. TCP command list

Command name	Command	Option	Paramet	er	Data details
Manual recording	recstart	manual	Camera I	No.	0: All cameras recording
start					1 – 8: Individual camera
					recording
Manual recording	recstop	manual	Camera I	No.	0: All cameras recording
stop					1 – 8: Individual camera
					recording
Trigger recording	recstart	trigger	-		-
start					
Trigger input	trigger	-	Camera I	No.	Camera No.
					0: All cameras recording
					1 – 8: Individual camera
					recording
Trigger recording	recstop	trigger	-		-
stop					
Capture	capture	-	-		-
File name	settings	recname	strings		Processes data from space
change(Movie)					to CR as a file name.
					(extension need not to add)
File name	settings	imgname	strings		Processes data from space
change(Image)					to CR as a file name.
					(extension need not to add)
Folder path	settings	recdirectory	strings		Processes data from space
change(Movie)					to CR as a path.
					(extension need not to add)
Folder path	settings	imgdirectory	strings		Processes data from space
change(Image)					to CR as a path.
					(extension need not to add)
Trigger type	settings	triggertype	timer		-
change			motion		-
			master		-
			signal		-
Change string	settings	recstring	Camera	strin	0: Change string for all
			No.	gs	camera
					1 – 8: Change string for each
					camera
					Characters from hankaku
					space to CR, or ASCII up to
					length of 50 characters will
					be processed as string.

%Parameter finishes in CR(0x0d).

\*Command (Command type) is stored at the front.

\*Separates the Command, Option and Parameter with a space.

#### 9-1-1. TCP Command details

#### Common error

•Command, Option, or Parameter is wrong.

 $\cdot \textsc{Cannot}$  run because the main window is not displayed.

 $\cdot \textsc{Cannot}$  run because the camera is not connected.

#### ■Manual recording start

Specifies the manual recording start.

#### <Command format>

recstart manual  $\square$  (CR)  $\therefore$  means Camera No.

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •Cannot run because the Camera No. is out of range.

#### <Usage example>

recstart manual 0 (CR)

#### Manual recording stop

Specifies the manual recording stop.

#### <Command format>

recstop manual □ (CR) ※□ means Camera No.

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the Camera No. is out of range.

#### <Usage example>

recstop manual 0 (CR)

#### ■Trigger recording start

Specifies the trigger recording start.

#### <Command format>

recstart trigger (CR)

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress.

#### <Usage example>

recstart trigger (CR)

#### Trigger input

Inputs the trigger.

#### <Command format>

trigger □ (CR) ※□ means Camera No.

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •Cannot run because the Camera No. is out of range. •Cannot run because the trigger recording is not started.

#### <Usage example >

trigger 0 (CR)

#### Trigger recording stop

Specifies the trigger recording stop.

#### <Command format> recstop trigger (CR)

#### <Response format>

Success:OK(CR) Error:NG(CR)

#### <Usage example>

recstop trigger (CR)

**<u>Capture</u>** Specifies the image capture.

<Command format> capture (CR)

<**Response format**> Success:OK(CR) Error:NG(CR)

<Usage example> capture (CR)

**<u>File name change</u>**(Movie) Specifies the name change of files in the recorded data saving path.

<Command format> settings recname file name (CR)

<Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •The file name includes strings that cannot be specified.

<Usage example> settings recname SampleVideoName001 (CR)

**<u>File name change</u>**(Image) Specifies the name change of files in the recorded data saving path.

<Command format> settings imgname file name (CR)

<Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •The file name includes strings that cannot be specified.

<Usage example> settings imgname SampleImageName001 (CR)

#### ■Folder path change(Movie)

Specifies the path change of recorded data saving folder.

#### <Command format>

settings recdirectory folder path (CR)

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •The folder name includes strings that cannot be specified. •The specified path cannot generate a folder.

<Usage example> settings recdirectory C:\Sample Video\FctoryDriveRecorder (CR)

**Folder path change**(Image) Specifies the folder path change.

<Command format> settings imgdirectory folder path (CR)

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •The folder name includes strings that cannot be specified.

•The specified path cannot generate a folder.

#### <Usage example>

settings imgdirectory C:\Sample Image\FctoryDriveRecorder (CR)

#### Trigger type change

Specifies the trigger type change.

#### <Command format>

settings triggertype 🗆 🗆 🗆 (CR)

 $\square$  means the following strings.

- timer : Time trigger
- motion : Motion detection
- master : Master image comparison
- signal : Trigger signal

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress.

#### <Usage example>

settings triggertype timer (CR)

#### ■String change

Specifies changes of string.

#### <Command format>

settings recstring □ strings(CR) ※□ means Camera No.

#### <Response format>

Success:OK(CR) Error:NG(CR) •Cannot run because the recording is currently in progress. •Cannot be changed because disabled characters are included.

•Cannot run because the Camera No. is out of range.

#### <Usage example>

settings recstring 0 Process-A (CR)

### 9-2.TCP Output list

Command name	Command	Option	Parameter 1	Parameter 2
Recording start	recstart	always	0	-
		manual	Camera No.	
		motion		
		master		
		timer		
		signal		
Recording stop	recstop	always	0	-
		manual	Camera No.	
		motion		
		master		
		timer		
		signal		
Recorded file	recfilename	-	Camera No.	File path, or
name notice				folder path

#### 9-2-1. TCP Output details

#### ■Recording start

#### <Command format>

recstart  $\Box\Box\Box\Box\Box$   $\triangle$  (CR)

 $\square$  means the following strings.

- always : Continuous recording
- manual : Manual recording
- motion : Motion detection
- master : Master image comparison
- timer : Time trigger
- signal : Trigger signal

 $\Delta$  means Camera No.(0 is set for continuous recording)

#### <Usage example>

recstart manual 0 (CR)

#### Recording stop

#### <Command format>

recstop  $\Box\Box\Box\Box\Box \Delta$  (CR)

 $\square$  means the following strings.

- always : Continuous recording
- manual : Manual recording
- motion : Motion detection
- master : Master image comparison
- timer : Time trigger

#### signal : Trigger signal

% means Camera No.(0 is set for continuous recording)

<Usage example>

recstop motion 1 (CR)

■Recorded file name notice

#### <Command format>

recfilename △ OOOOO (CR)
※△ means Camera No.
※O means file path for movie, and folder path for image

#### <Usage example>

recfilename 1 C:¥Sample¥Manual¥video\_manual\_20211102\_161829033\_camera1.avi (CR) recfilename 1 C:¥Sample¥Manual¥image\_manual\_20211102\_161829033\_camera1¥ (CR)

## 10-1. USB Connectors for your PC

If camera can connect to PC via USB, please make sure to connect to "USB3.0" port on your PC.

	USB2.0	USB3.0
Logo		SS←
Connector		Blue connector

If camera is connected to USB 2.0 port, recording by high resolution/high frame rate may not work properly.

### 10-2. PC Network Settings

Please follow steps below if camera is connecting to your PC via GigE.

1) Open the Device Manager from Windows Control Panel.



2) Select the LAN adapter that uses "Network adapters", then select Properties.

📅 Device Manager		
File Action View Help		
<del>(</del> ≠ →   💼   📓 🗊   🖳   💺 🗙 ⊙		
		^
WAN Miniport (IP) Disable device		
WAN Miniport (L2TP)		
WAN Miniport (Network Monitor) Scan for hardware changes		
WAN Miniport (PPPOE)     Properties		
WAN Miniport (SSTP)		
🔪 💼 Drint mining		~
Opens property sheet for the current selection.		

3) Select "Jumbo Packet" from [Advanced] tab.

4) Change value from "Disabled" to "9014 Bytes", then click the "OK" button.

General     Advanced     Driver     Details       The following properties are available for this network adapter. Click he property you want to change on the left, and then select its value in the right.     Value:       Property:     Value:       Adaptive Inter-Frame Spacing ARP Offload <ul> <li>Portion of Gigabit Master Slave Mode Interrupt Moderation Interrupt Moderation Interrupt Moderation Rate IPv4 Checksum Offload</li> <li>Unbo Packet</li> <li>Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload</li> </ul>	General     Advanced     Driver     D       The following properties are available for this network adapter. Click he property you want to change on the left, and then select its value on the right.     Click he property is value.       Property:     Value:       Adaptive Inter-Frame Spacing ARP Offload     9014 Bytes       Flow Control Gigabit Master Slave Mode Interrupt Moderation     9014 Bytes	Details k ue
The following properties are available for this network adapter. Click ne property you want to change on the left, and then select its value in the right. Property: Adaptive Inter-Frame Spacing ARP Offload Row Control Gigabit Master Slave Mode Interrupt Moderation Interrupt Moderation Rate IPv4 Checksum Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload	The following properties are available for this network adapter. Click he property you want to change on the left, and then select its value on the right. Property: Adaptive Inter-Frame Spacing ARP Offload Flow Control Gigabit Master Slave Mode Interrupt Moderation ARP Offload Flow Control Gigabit Master Slave Mode Interrupt Moderation	k ue
Adaptive Inter-Frame Spacing ARP Offload Flow Control Gigabit Master Slave Mode Interrupt Moderation Interrupt Moderation Rate IPv4 Checksum Offload Jumbo Packet Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload	Adaptive Inter-Frame Spacing ARP Offload Flow Control Gigabit Master Slave Mode Interrupt Moderation	
ARP Offload Flow Control Gigabit Master Slave Mode Interrupt Moderation Interrupt Moderation Rate IPv4 Checksum Offload Jumbo Packet Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload	ARP Offload Flow Control Gigabit Master Slave Mode Interrupt Moderation	
Plow Control Gigabit Master Slave Mode Interrupt Moderation Rate IPv4 Checksum Offload Jumbo Packet Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload ❤	Gigabit Master Slave Mode 9014 Bytes Disabled Disabled	
Linterrupt Moderation     Interrupt Moderation Rate       Interrupt Moderation Rate     Interrupt Moderation Rate       IPv4 Checksum Offload     Jumbo Packet       Large Send Offload V2 (IPv4)       Large Send Offload V2 (IPv6)       Locally Administered Address       Log Link State Event       No Description       NS Offload	Interrupt Moderation	
Interrupt Moderation Rate IPv4 Checksum Offload Jumbo Packet Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload		
IPV4 Checksum Offload Jumbo Packet Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload ✓	Interrupt Moderation Rate	
Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload	IPv4 Checksum Offload	
	Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Log Link State Event No Description NS Offload ✓	

Without this setting, recording by high resolution/high frame rate may not work properly.

# 11. Error Processing

## 11-1. Troubleshooting

Problems	Solutions
Camera video is not displayed on main	·Confirm camera connection.
window.	•Confirm that PC is compatible with USB 3.0 if
	camera is connected by USB.
	•Confirm that camera's power is charged if camera is
	connected via LAN.
Cannot record video.	·Confirm PC storage capacity.
	·Lower the frame rate.
	When message "Failed to save recorded data." is
	shown, the speculated cause and solutions are
	displayed.
	Ex.) "Failed to save recorded data. Out of memory.
	Restart the app and lower the frame rate."
Recording file is played too fast.	•Confirm that PC is compatible with USB 3.0 if
	camera is connected by USB.
	•Confirm settings shown in chapter 10.2 if camera is
	connected via LAN.
Camera cannot be recognized.	·Confirm camera connection.
	•Confirm that camera's power is charged if camera is
	connected via LAN.
	·Confirm that IP address is in the same network if
	camera is connected via LAN.
TCP command cannot be received.	•Confirm that TCP input port is matched.
	·Confirm PC's firewall settings.
Cannot output via TCP.	$\cdot$ Confirm that output IP address and port number is
	correct.
	·Confirm whether port number is disconnected at
	output side or not.
Motion detection recording is not	$\cdot$ Confirm if the detection is intended by detection
working.	settings window.
Master image comparison recording is	·Confirm that master image and camera resolution is
not working.	matched.
	$\cdot$ Confirm if the detection is intended by detection
	settings window.

## 11-2. Error Status

Messages	Solutions
"Out of memory error"	•Set camera's resolution or frame rate lower than
	current settings.
"Failed to save recorded data. Out of	•Confirm camera connection.
disk space.	•Confirm whether PC storage is enough or not.
Restart the app and increase the	
amount of free space."	
"Failed to save recorded data. Out of	•Confirm camera connection.
memory.	•Set camera's resolution or frame rate lower than
Restart the app and lower the frame	current settings.
rate."	
"Out of disk space" (System error)	•PC storage is not enough. Clean up PC storage by
	moving recording files to external storage, etc.
"Sentech SDK V1.2 is not installed."	•Follow steps in "3-1.Installing Sentech SDK".

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