



**Safety Light Curtain Configuration Tool for Model F3SG
SD Manager 2**

User's Manual



Original instructions

Introduction

Thank you for selecting our products, Safety Light Curtain Configuration Tool for Model F3SG and Interface Unit for F3SG Safety Light Curtain.

This is the instruction manual describing the use of the Safety Light Curtain Configuration Tool for Model F3SG.

Always heed the following points when using them:

- Be sure to have the Safety Light Curtain Configuration Tool for Model F3SG and the F3SG Safety Light Curtain to be configured be handled by a "Responsible Person" who is well aware of and familiar with the machine to be installed.
- The term "Responsible Person" used in this Manual means the person qualified, authorized and responsible to secure "safety" in each process of the design, installation, operation, maintenance services and disposition of the machine.
- It is assumed that the Safety Light Curtain Configuration Tool for Model F3SG and the F3SG Safety Light Curtain will be used properly according to the installation environment, performance and function of the machine. Responsible Person should conduct risk assessment on the machine and determine the suitability of the products before installation.
- Read this Manual thoroughly to understand and make good use of the descriptions before installing and operating the products.
- Keep this Manual at the place where the operator can refer to whenever necessary.

Visual Aids

The following symbols appear in this document to help you locate different types of information.



CHECK!

Indicates important information or advice on a function or operation of the product.



Indicates page numbers or chapter title of related information.

Trademarks

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Reference Manuals

Also refer to the following related manuals.

Document Title	Cat. No.
Safety Light Curtain F3SG-R Series User's Manual	Z352-E1
Interface Unit for F3SG Safety Light Curtain Instruction Sheet	9600137-6

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4. CHANGE IN SPECIFICATION

The software specifications and accessories may be changed at any time based on improvements and other reasons.

5. ERRORS AND OMISSIONS

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This Software: SD Manager 2

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Safety Precautions

Indications and Meanings for Safe Use



The precautions listed in this document indicated by alert symbols and statements must be followed for the safe use of the Safety Light Curtain Configuration Tool for Model F3SG. Failure to follow all precautions and alerts may result in an unsafe use or operation. Thoroughly read this manual and understand the installation procedures, operation check procedures, and maintenance procedures before using the Safety Light Curtain Configuration Tool for Model F3SG.

The following word and symbols are used in this document.

Meaning of Signal Word

 WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or in property damage.

Meanings of Alert Symbols

	Indicates prohibited actions.
	Indicates mandatory actions.

Alert Statements in this Manual

For users

WARNING

After changing settings, the responsible person must perform a start inspection and check the safety before beginning normal operation.



For installation

WARNING

Do not use the F3SG Safety Light Curtain and the Interface Unit in an environment with excessive noise when make changes to settings of the F3SG Safety Light Curtain. Doing so may cause proper setting changes to fail and unintended function setting change may cause a person to go undetected, resulting in serious injury.



⚠ CAUTION

Make sure to connect the cables properly to prevent them being disconnected during settings.



For Settings

⚠ WARNING

Some settings of functions or the Setting Recovery function configurable with the Configuration Tool may increase risks. Make sure the Responsible Person conduct a thorough risk assessment analysis before managing and changing the settings. Unintended changes to the settings may cause a person go to undetected, resulting in serious injury.



Before making changes to settings, make sure they comply with all relevant legislation and standards.



Precautions for Correct Use

Observe the precautions described below to prevent operation failure, malfunctions, or undesirable effects on product performance.

■ Settings

When the F3SG Safety Light Curtain is disconnected while the SD Manager 2 is running, a communication error occurs and the data being edited is cancelled.



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Chapter 1 Overview and Specifications

1-1. Overview of Configuration Tool

The user can configure various functions and view operating states of the F3SG Safety Light Curtain, using the following tools.

- Interface Unit for F3SG Safety Light Curtain: F39-GIF
- Safety Light Curtain Configuration Tool for Model F3SG: SD Manager 2

Hereinafter, the Interface Unit for F3SG Safety Light Curtain and the Safety Light Curtain Configuration Tool for Model F3SG are referred to as the "Interface Unit" and "SD Manager 2".

1-2. System Environment

To use SD Manager 2, the following PC environment is necessary:

Operating system (OS)	Windows 7 32-bit or 64-bit edition Windows 8 32-bit or 64-bit edition Language: Japanese, English
CPU	1 GHz or higher
Memory capacity	1 GB or higher for 32-bit OS edition 2 GB or higher for 64-bit OS edition
Operating condition	.NET Framework 4.5.2 or higher must be installed.

1-3. How to Install SD Manager 2

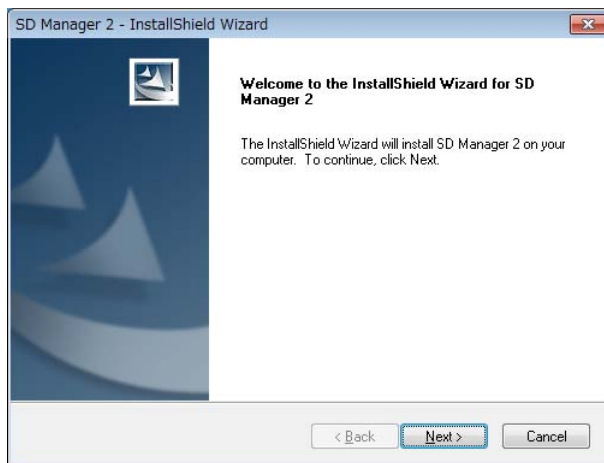
1-3-1. Downloading SD Manager 2

Download **SDManager2_Setup.exe** from the URL below and save it to a desired location on a PC.

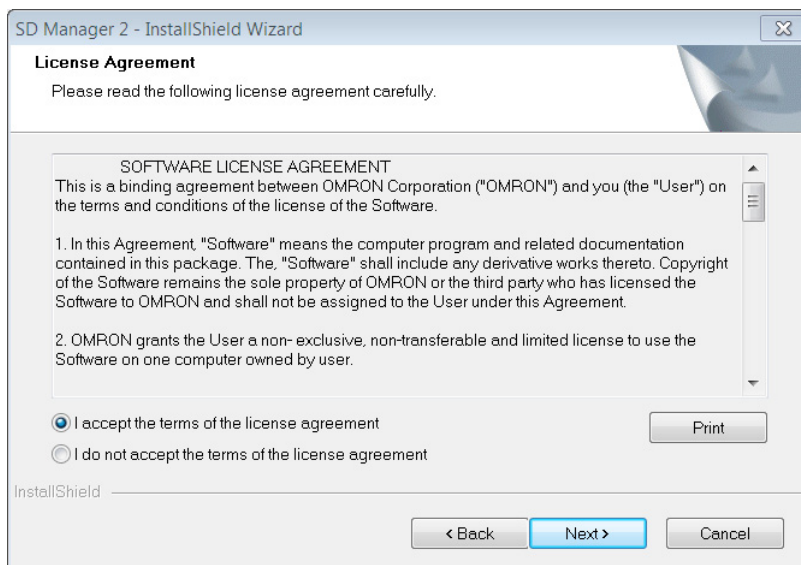
http://www.ia.omron.com/f3sg-r_tool

1-3-2. Installing SD Manager 2

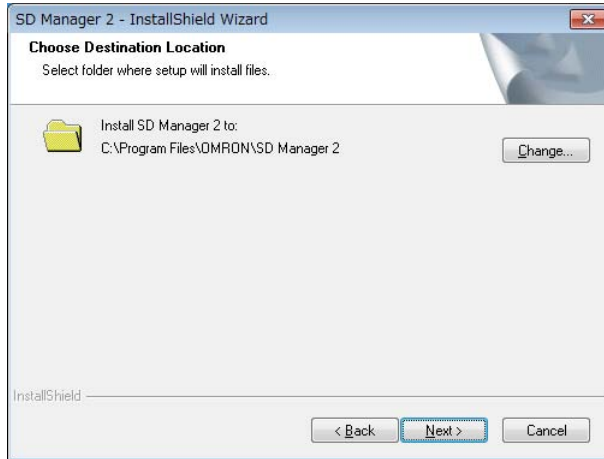
1. Make sure that the PC is not connected to the Interface Unit.
2. Double-click on **SDManager2_Setup.exe**.
3. Select a desired language and click [Next].
4. The Installation wizard is displayed. Click [Next].



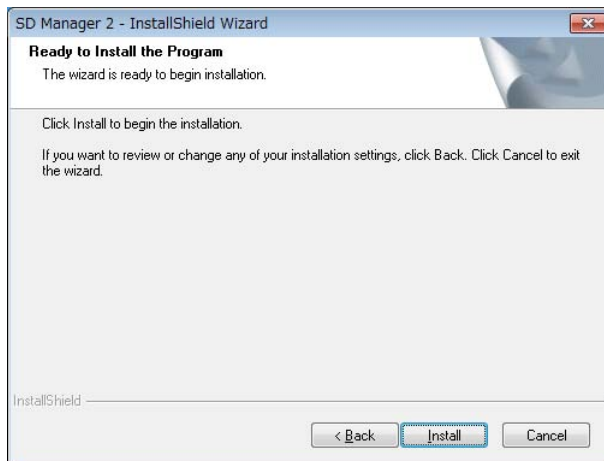
5. Read the software license agreement. If accepting, select [I accept the terms of the license agreement] and click [Next].



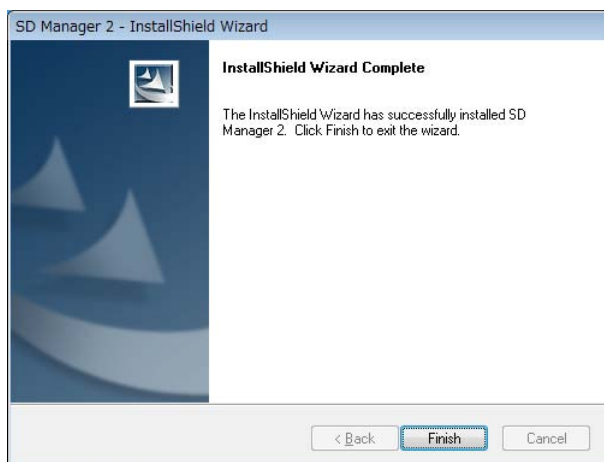
6. Select a desired location to install and click [Next].



7. The prompt window shown below is displayed. Click [Install] to start the installation.



8. Click [Finish]. Now the installation is complete.

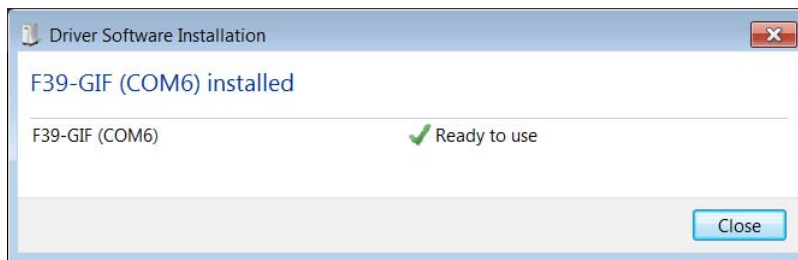


1-3-3. Installing Driver of Interface Unit

1. When SD Manager 2 is successfully installed, connect the Interface Unit to the PC.
2. The PC starts to install the driver automatically. You can click on the icon below on the task tray to view the progress. Wait until the installation process is complete.



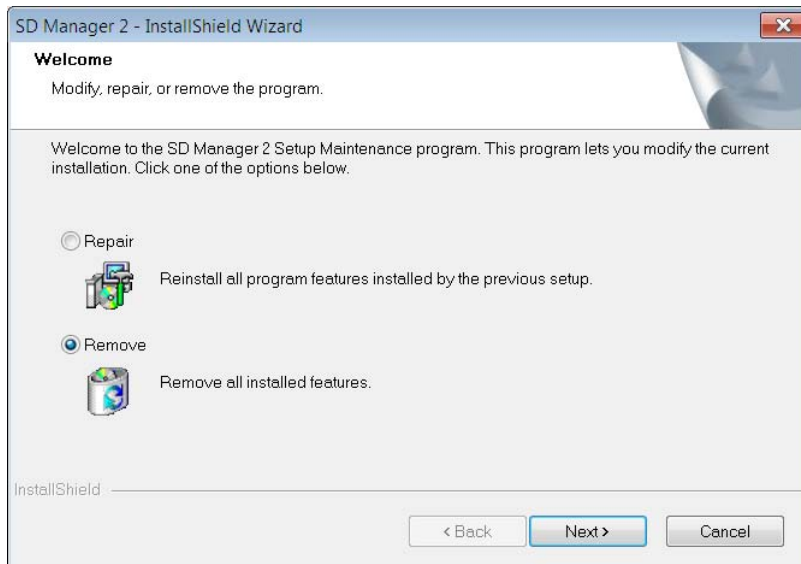
3. The window shown below is displayed when the installation is complete. In this example, the communication port is set to COM6. Click [Close] to finish.



1-4. How to Uninstall SD Manager 2

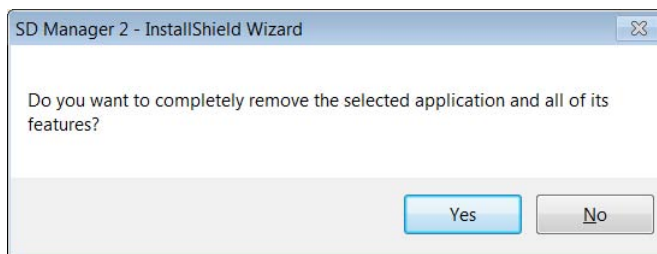
You can uninstall SD Manager 2 using the **SDManager2_Setup.exe** file or **Control Panel**.

1. Double-click on **SDManager2_Setup.exe**. Confirm [Remove] is selected in the window shown below and click [Next].

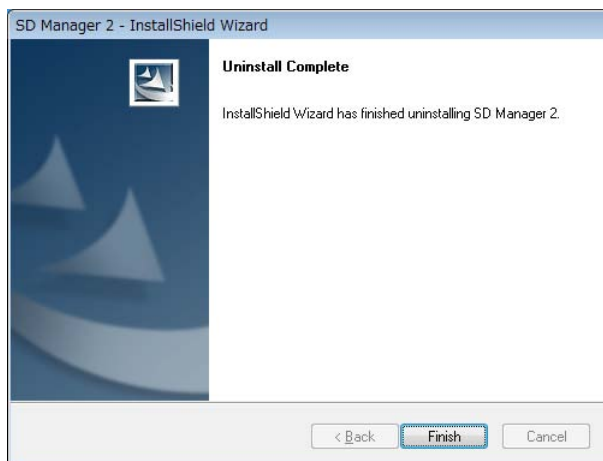


Or from the Start menu, select [Control Panel] and [Uninstall a program]. From the list shown, select [SD Manager 2] and click [Uninstall].

2. Click [Yes] in the window shown below.



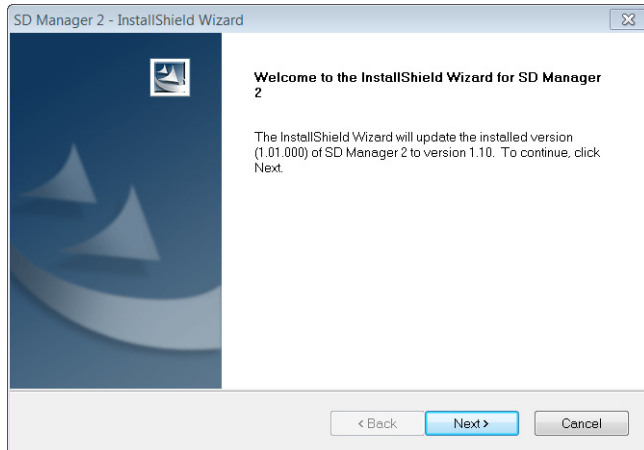
3. The window shown below is displayed when the uninstallation is complete. Click [Finish].



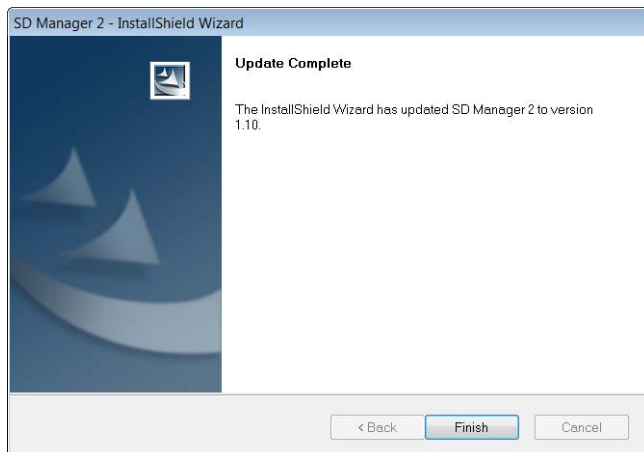
1-5. How to Update SD Manager 2

To update an SD Manager 2 installed in a PC to a new version, follow the steps below.

1. Download **SDManager2_Setup.exe** from the URL below and save it to a desired location on a PC.
http://www.ia.omron.com/f3sg-r_tool
2. Double-click on **SDManager2_Setup.exe**.
3. The Installation wizard to start update is displayed. Click **[Next]**.



4. The window shown below is displayed when the update is complete. Click **[Finish]**.



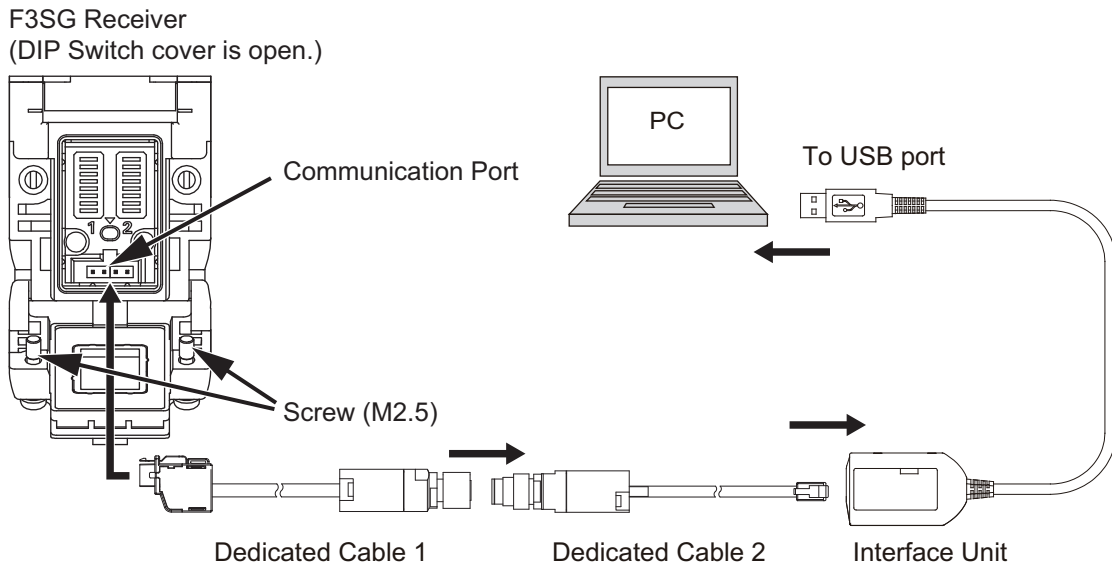
1-6. Connection with F3SG

CAUTION

Make sure to connect the cables properly to prevent them being disconnected during settings.



Connect the USB port of the PC with the Interface Unit, and the Interface Unit with the receiver of the F3SG. Connect the Interface Unit with the Communication Port inside the cover on the power cable side of the receiver.



To change the settings of the F3SG using SD Manager 2, it is necessary to set ON the receiver's two DIP switches No. 8 both. In addition, use the F3SG with both the switches ON even after changing the settings. If both the switches OFF, it is not able to change the settings using SD Manager 2.

CHECK! The settings changed by SD Manager 2 are saved in the internal memory of the F3SG. If Position 8 of the DIP Switch is set OFF after the settings are changed, the F3SG operates based on the settings of the DIP Switch.

If Position 8 of the DIP switch is turned ON again, the F3SG operates based on the settings saved in the internal memory.

CHECK! It is not able to connect the emitter with the Interface Unit.


CHECK! The settings can be read out even if the Position 8 of the two DIP Switches is set to OFF (DIP Switch Enabled).

CHECK! Refer to *Interface Unit for F3SG Safety Light Curtain Instruction Sheet* for more information on the Interface Unit.


1-7. List of Functions

1-7-1. Versions

Available features vary depending on the versions.

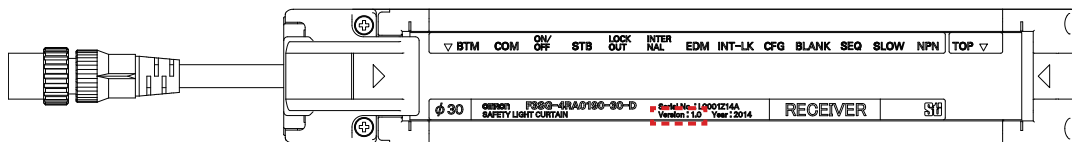
 When Versions 1.0 and 1.1 of F3SG-RA are in cascade connection, all cascaded segments operate as Version 1.0.
CHECK!

SD Manager 2 Version	F3SG Version	
	1.0	1.1 and up
1.01 and down	Supported	-
1.10 and up	Supported	Supported

 Refer to ■ Functions by versions under 1-7-2. List of Configurable Functions for more information.

Please note that it is not possible to update the version of the F3SG with the SD Manager 2.

You can find a version of F3SG on the nameplate of the receiver as shown below.




1-7-2. List of Configurable Functions

Feature	Setting by DIP Switch	Setting by Configuration Tool	Factory default setting
Scan Code Selection	X		Code A
PNP/NPN Selection	X		PNP output
External Test	X		24 V Active
Interlock	X	X	Auto Reset Mode
Pre-Reset	X	X	Disabled
External Device Monitoring(EDM)	X	X	Disabled
Auxiliary Output		X	Muting/Override information
Muting		X	Standard Muting mode
Override		X	Enabled
Fixed Blanking *	X	X	Disabled
Floating Blanking *	X	X	Disabled
Reduced Resolution		X	Disabled
Warning Zone		X	Disabled
Operating Range Selection	X		Short mode
Response Time Adjustment		X	Disabled
Lamp		X	Red:Disabled Orange:Disabled Green:Muting/Override information
Designated Beam Output		X	Disabled
Muting Statistics data recording *		X	Enabled

* The functions are upgraded in Version 1.1 of F3SG-RA.

■ Functions by versions

	F3SG	
	Version 1.0	Version 1.1
Fixed Blanking	Configuring an allowable beam is possible on both ends of Fixed Blanking zone.	Configuring an allowable beam is possible on both or either end of Fixed Blanking zone.
Floating Blanking	Temporarily Disable Monitoring function is only available when the F3SG-RA is in one segment system.	Temporarily Disable Monitoring function is available when the F3SG-RA is in either one segment system or cascade connection.
Muting Statistics Information	Monitoring muting statistics information is only possible when it is offline.	Monitoring muting statistics information is possible when it is either online or offline. Clearing log files of muting statistics information is possible.

 Refer to 1-7-1. *Versions* to check versions of your F3SG.

1-7-3. Other Functions

- Light Level Monitoring
- Maintenance Information
- Operating Status Monitoring
- Setting Recovery

The Light Level Monitoring, Maintenance Information and Operating Status Monitoring functions are available even if the Position 8 of the two DIP Switches is set to OFF (DIP Switch Enabled).

1-7-4. Combination of Functions

Possible combinations of the functions are shown in the table below. The combinations in the table are available under certain conditions. The other functions can be combined without any limitations.

YES: Combination available

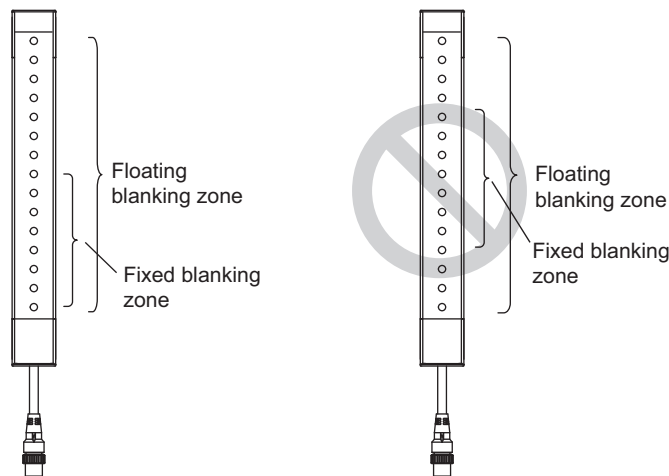
YES-C: Combination available by setting with SD Manager 2

NO: Combination unavailable

	Fixed Blanking	Floating Blanking	Reduced Resolution	Muting/Override	Pre-Reset	Warning Zone	EDM	Interlock
Fixed Blanking	-	YES-C *2	NO	YES	NO	YES-C	YES	YES
Floating Blanking	YES-C *2	-	NO	YES *1	NO	YES-C	YES	YES
Reduced Resolution	NO	NO	-	NO	YES-C	NO	YES-C	YES-C
Muting/Override	YES	YES *1	NO	-	NO	YES-C	YES	YES
Pre-Reset	NO	NO	YES-C	NO	-	YES-C	YES	NO
Warning Zone	YES-C	YES-C	NO	YES-C	YES-C	-	YES-C	YES-C
EDM	YES	YES	YES-C	YES	YES	YES-C	-	YES
Interlock	YES	YES	YES-C	YES	NO	YES-C	YES	-

*1. This combination requires that the Floating Blanking zone covers the full detection zone and that the Muting/Override function also covers the full detection zone.

*2. When the Fixed Blanking and Floating Blanking are selected, the top or bottom beam must be included in the Fixed Blanking zone, as shown in the left figure below. It is not allowed to set the Fixed Blanking zone not to cover the top or bottom beam, as shown in the right figure below.



1-8. Status of F3SG with SD Manager 2 Connected

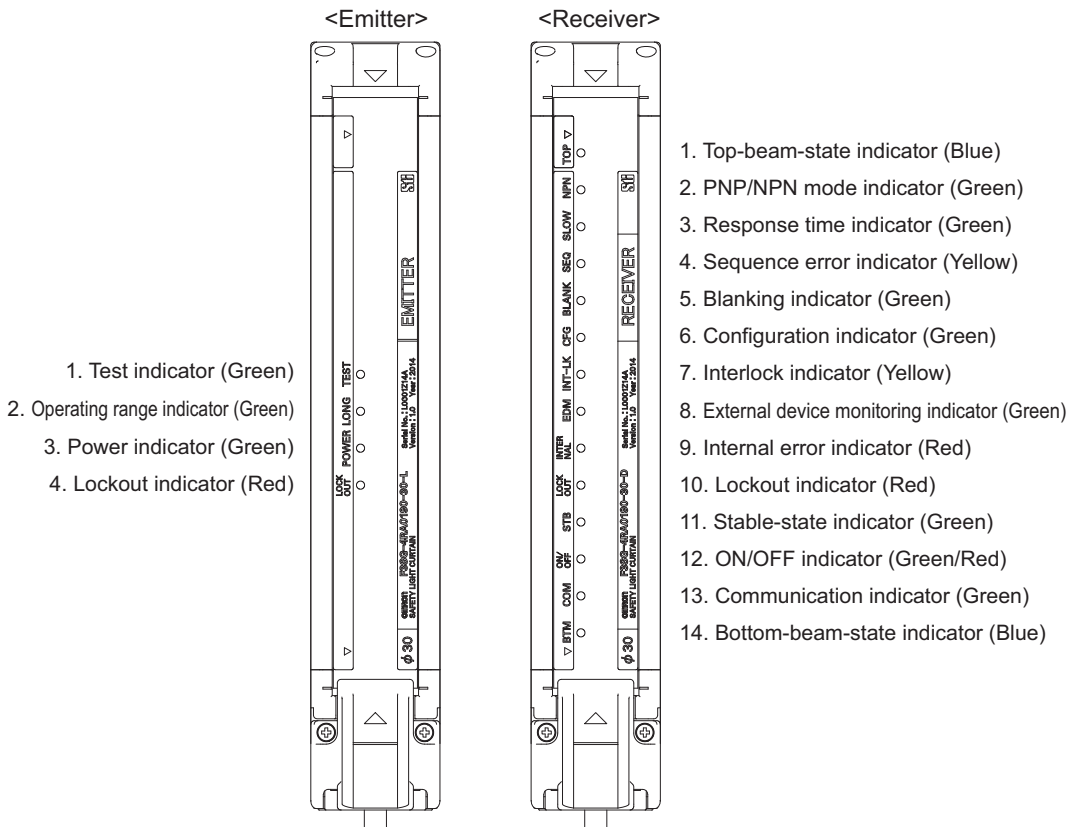
The F3SG can be changed to the Setting state by SD Manager 2.

In the Setting state, two types of access levels called operator level and administrator level can be selected.

For operator and administrator levels, refer to 2-5. *Logging In*.

In the Setting state, the F3SG operates as follows.

- The safety outputs are in the OFF state.
- The LED indicator blinks in the following patterns according to the access level.



Receiver

LED Indicator	Access Level	
	Operator Level	Administrator Level
TOP	Blinking once	Blinking twice
NPN	Off	Off
SLOW	Off	Off
SEQ	Off	Off
BLANKING	Off	Off
CFG	Blinking once	Blinking twice
INT-LK	Off	Off
EDM	Off	Off
INTERNAL	Off	Off
LOCKOUT	Blinking once	Blinking twice
STB	Blinking once	Blinking twice
ON/OFF	Blinking once	Blinking twice
COM	Off	Off
BTM	Off	Off

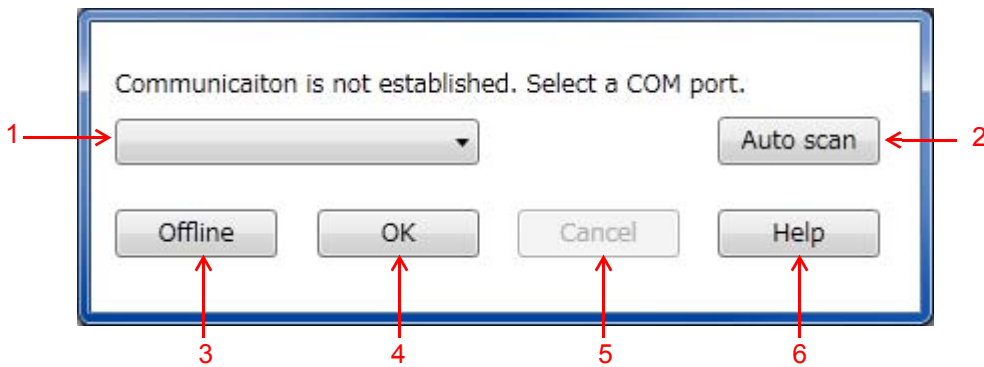
For the access levels, refer to 2-5. *Logging In*.

Chapter 2 Basic Operation of SD Manager 2

2-1. Getting Started

To get started, select [All Programs], [OMRON] and [SD Manager 2] from the Start menu.

SD Manager 2 starts up, and the following dialog is displayed.



No.	Function	Description
1	Select COM port	Select the COM port with which the Interface Unit is connected.
2	Auto scan	Obtains an available COM port.
3	Offline	Starts the SD Manager 2 in the offline mode.
4	OK	Starts the SD Manager 2.
5	Cancel	Cancels the start of SD Manager 2.
6	Help	Used to go to the troubleshooting website.

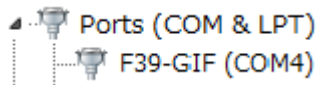


The COM port with which the Interface Unit is connected can be confirmed by Device Manager.

CHECK!

To start up Device Manager, select [Start] -> [Search programs and files] to search for and click [Device Manager]. In the Ports category of Device Manager, confirm the COM port assigned to F39-GIF.

In the examples below, it can be confirmed that the Interface Unit is connected with COM4.



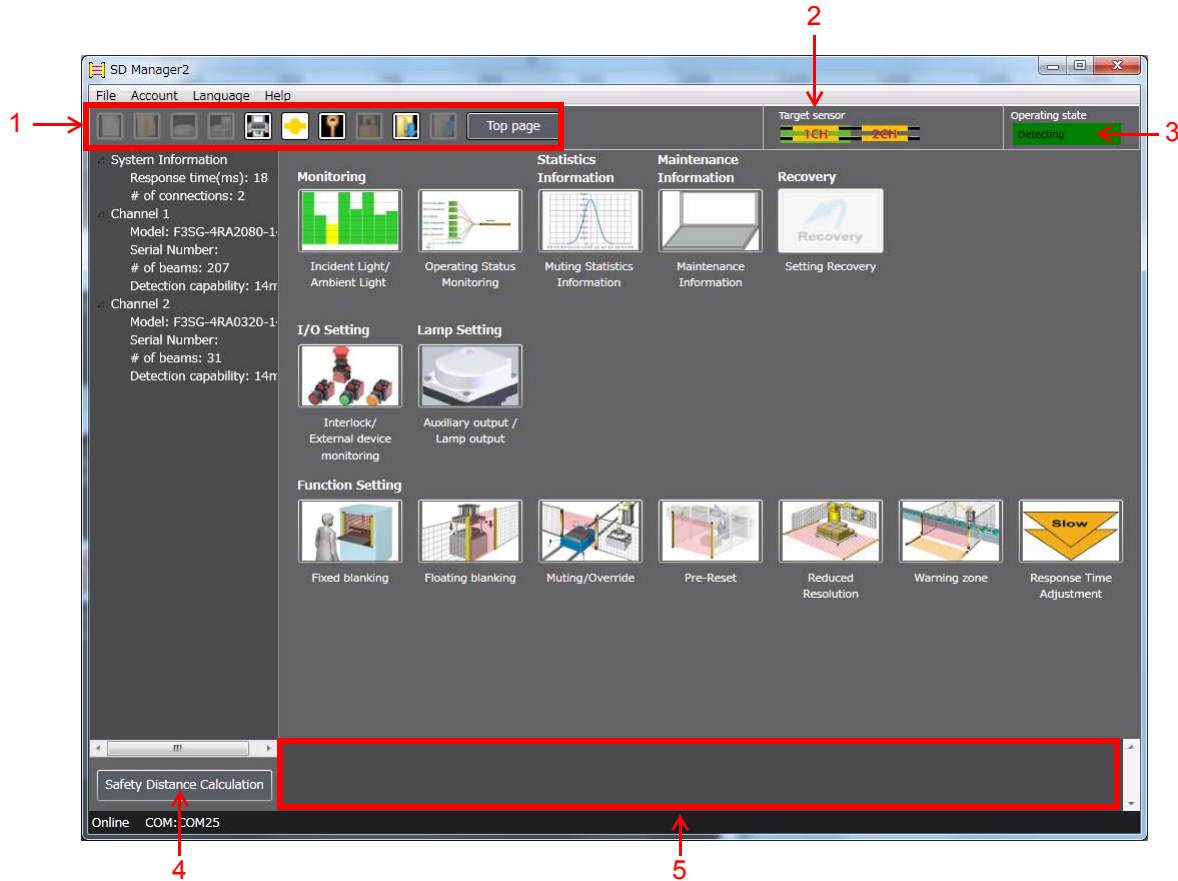
In the offline mode, the setting data file can be edited without connecting with the F3SG.

CHECK!





Troubleshooting website: <http://www.ia.omron.com/f3sg-r>









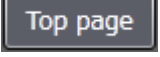
The Top page is displayed.



No.	Function	Description
1	Menu	The menu can be selected using the buttons.
2	Target sensor	Select a target sensor segment to write information to or read information from. The view changes according to actual cascade connection of the F3SG. The example above shows the F3SG system with two sensor segments in cascade connection is connected to the PC.
3	Operating state	Shows the following statuses of the F3SG. <div style="display: flex; align-items: flex-start;"> <div style="width: 100px; border: 1px solid black; margin-bottom: 5px;">Detecting</div> <div>Operating: The F3SG keeps normal operation.</div> </div> <div style="display: flex; align-items: flex-start; margin-bottom: 5px;"> <div style="width: 100px; border: 1px solid black; margin-bottom: 5px;">Setting state</div> <div>Setting state: It is possible to write configuration to the F3SG. The safety outputs of the F3SG are in the OFF state.</div> </div> <div style="display: flex; align-items: flex-start; margin-bottom: 5px;"> <div style="width: 100px; border: 1px solid black; margin-bottom: 5px;">Lockout state</div> <div>Lockout state: The F3SG is in the Lockout State.</div> </div> <div style="display: flex; align-items: flex-start;"> <div style="width: 100px; border: 1px solid black; margin-bottom: 5px;">No connection</div> <div>No connection: The SD Manager 2 is running offline or disconnected from or not properly connected to the F3SG.</div> </div>
4	Safety distance calculation	Used to calculate the safety distance.
5	View message	Shows messages according to operations and settings of SD Manager 2.

Descriptions of buttons

Button	Function	Description
	New	Creates a new configuration file.
	Open	Opens a configuration file.

Button	Function	Description
	Save	Saves or overrites configuration file.
	Save As	Saves configuration file as another file name.
	Print	Prints muting settings.
	Monitor	Switches the operating state from [Setting state] to [Operating].
	Login	Shows the login screen.
	Log-out	Used to log out of SD Manager 2.
	Read configuration	Reads configuration information from the F3SG. Pressing this button switches the safety outputs to the OFF state and the operating state to [Setting state].
	Write configuration	Writes configuration information to the F3SG.
	Top page	Used to return to the Top page.

2-2. Password Protection

■ Access Restriction

The administrator level requires a password to log in. The initial password for administrator login is "0000".

■ Changing Password

To prevent unintended configurations by an unauthorized user, the administrator must change the password. The password must contain no more than 6 alphanumeric characters. The password is case-sensitive.

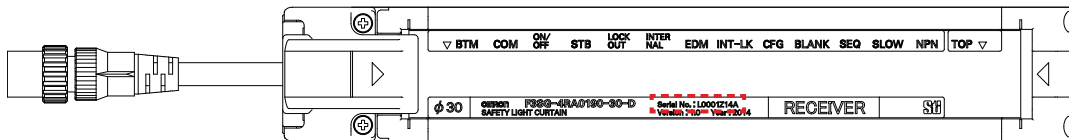
The new password will take effect by power-cycling the F3SG. Shut down SD Manager 2 and power cycle the F3SG.

■ Forgot the Password?

If you forget the password after changing it from the initial setting, contact your sales representative with the serial number on the nameplate of the F3SG receiver.


A master password will be issued to reset to the initial password "0000".

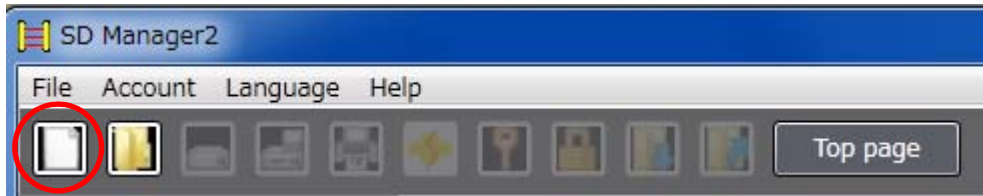
Location of serial number (as shown by dashed line)



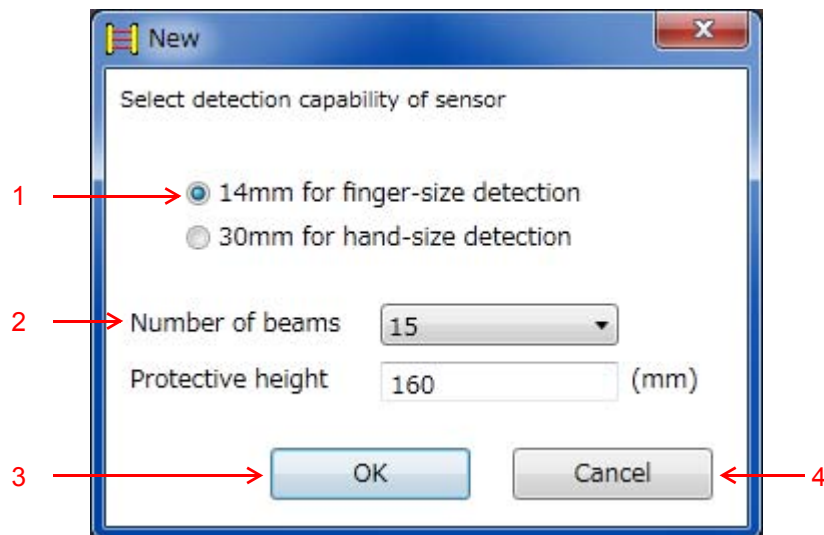
2-3. Starting SD Manager 2 Offline

2-3-1. Creating New Configuration File

You can create a configuration file when the F3SG is not connected to the PC (or offline). Start SD Manager 2 offline and select [File] and [New], or click the  button.



The following dialog is displayed.




No.	Function	Description
1	Detection capability	Select a desired detection capability from 14mm or 30mm.
2	Number of beams	Select the desired number of beams from the drop-down list. The protective height is changed automatically according to the number of beams selected.
3	OK	Enables SD Manager 2 to be launched according to the settings made.
4	Cancel	Cancels the creation of a new file.





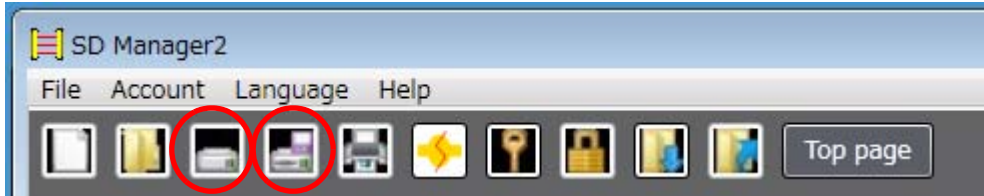
Creating a new configuration is only possible when the F3SG is not connected to the PC (offline).

2-3-2. Reading Configuration from PC

You can read a configuration file saved on a PC into SD Manager 2. Start SD Manager 2 offline and select [File] and [Open], or click the  button. Select a desired configuration file (with extension .sdm2) saved on your PC.

2-3-3. Saving New Configuration File to PC

Select [File] and [Save] or [Save As], or click the  or  button.
Save the configuration file to a desired location on your PC.



2-4. Shutting Down


To shut down SD Manager 2, click the X mark in the top right corner of the Top page or select [File] and [Exit] on the toolbar.

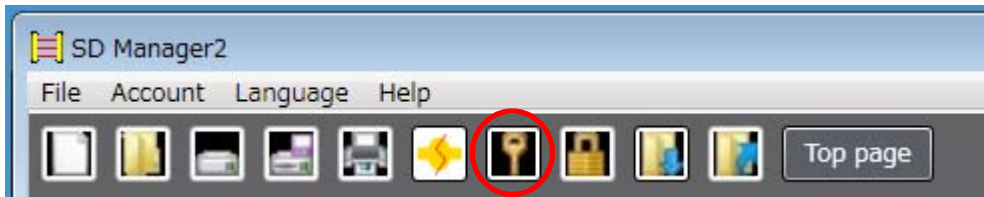


2-5. Logging In

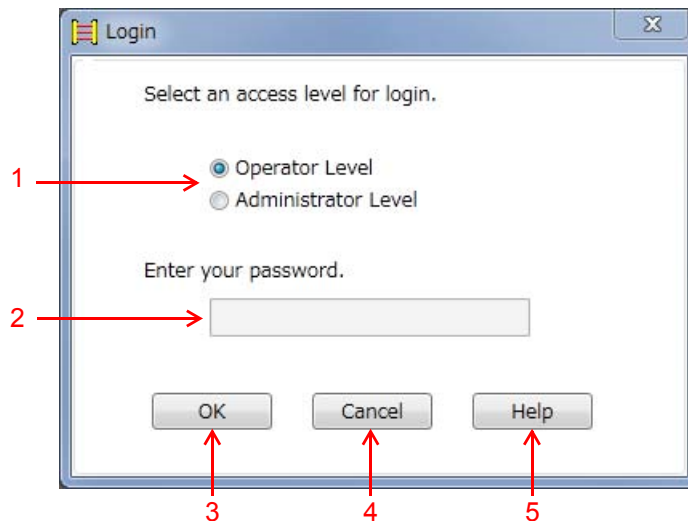
When moving the F3SG to the Setting state by SD Manager 2, the following two access levels can be selected. When you log in SD Manager 2, select the level you want to log in.

- Operator level: Only reading configuration information is available.
- Administrator level: Reading and changing configuration information is available.


When logging in the software, the safety outputs of the F3SG are turned to the OFF state. On the toolbar, select [Account] and [Login], or click the  button.



The following dialog is displayed.



No.	Function	Description
1	Operator Level Administrator Level	Select an access level.
2	Enter your password	Enter a password if you want to log in with the administrator level.
3	OK	Enables the login at the selected level.
4	Cancel	Cancels the login.
5	Help	The screen is linked with the troubleshooting website.

 Troubleshooting website: <http://www.ia.omron.com/f3sg-r>

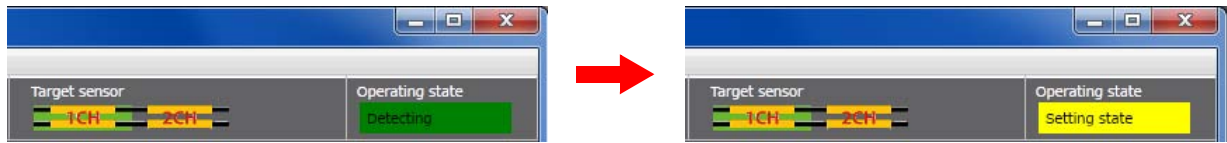
When logging in at the administrator level:

Select the administrator level, enter the password, and click [OK]. The initial password is "0000".


When logging in at the operator level:

Select the operator level, and click [OK].

When login succeeds, the [Operating state] indication in the top right corner of the Top page is changed from [Detecting] to [Setting state].



2-6. Logging Out

When you are logged in with at the administrator level, select [Account] and [Logout], or click the  button.



Access level is changed from the administrator level to the operator level.



It is not possible to log out using the operator level.

CHECK!

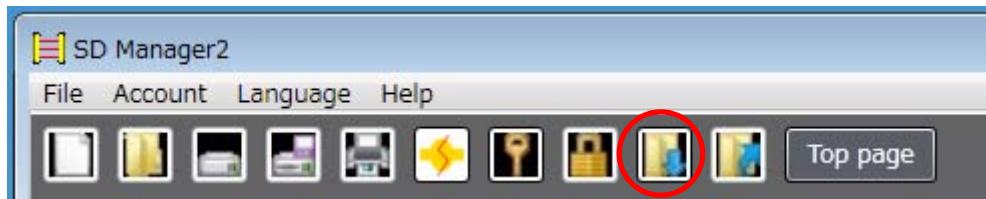


To return to the [Detecting] state, power cycle the F3SG.

CHECK!

2-7. Reading Configuration from F3SG

When the operating state of the F3SG is [Detecting] or [Setting state], click the  button



When the F3SG is in the [Detecting] state, a dialog to confirm if it is OK to change mode is displayed. When OK is selected, the F3SG enters the Setting state (at the operator level). The safety outputs of the F3SG are turned to the OFF state.

CHECK!

By clicking the button, configuration information is received. The user can confirm the information on setting screens of corresponding functions.

It is able to move to a setting screen by clicking an icon of a function on the Top page.





For how to use setting screens, refer to the descriptions on how to change settings of corresponding functions.

2-8. Saving F3SG Configuration to PC

Confirm that the operating state of the F3SG is [Detecting] or [Setting state].


Follow the steps in 2-7. *Reading Configuration from F3SG* to read configuration information from the F3SG.

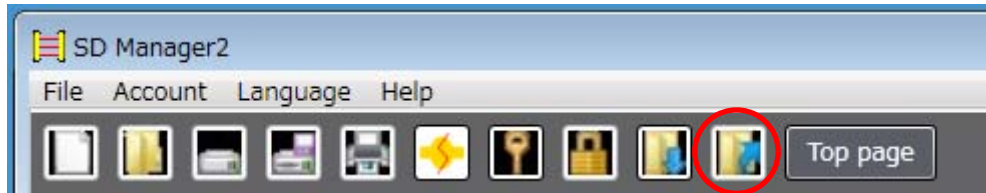
Select [File] and [Save] or [Save As], or click the  or  button.

Save the configuration file to a desired location on your PC.

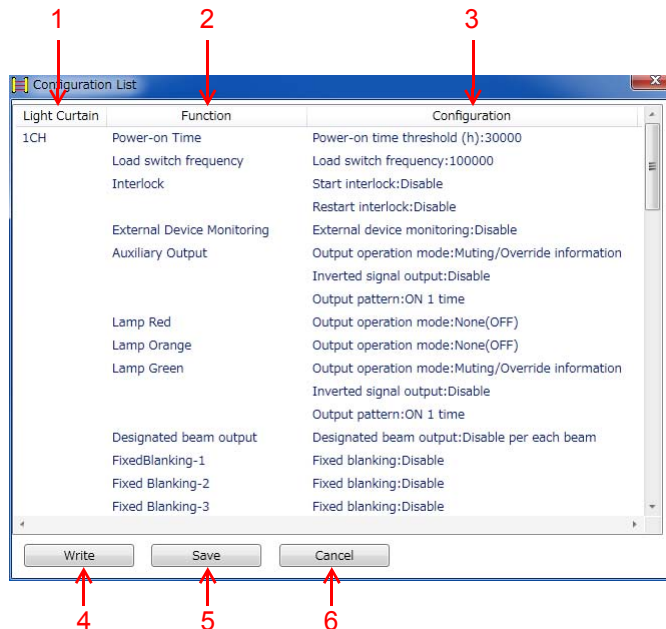
2-9. Writing Configuration to F3SG

2-9-1. Writing Configuration Edited with SD Manager 2 to F3SG Directly


When you are logged in with the administrator level, change the settings. Then click the  button.




A Configuration List is displayed. The user can confirm the configuration information to be written to the F3SG. By clicking [Write], the information is sent to the F3SG.



No.	Function	Description
1	Light Curtain	The target sensor segment to write the settings to is displayed.
2	Function	The function name is displayed.
3	Parameter	The parameters to be to be written to in the sensor segment are displayed.
4	OK	Enables the writing.
5	Save	Saves the parameters in a configuration file.
6	Cancel	Cancels the writing.

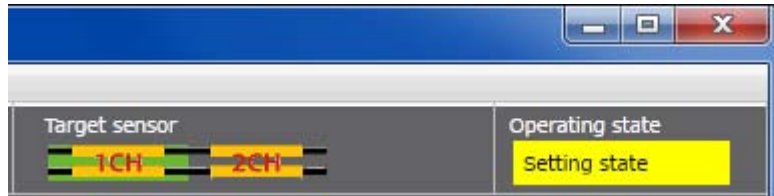
 For operator and administrator levels, refer to 2-5. *Logging In*.


 For reading configuration information from the F3SG, refer to 2-7. *Reading Configuration from F3SG*.


2-9-2. Writing Configuration File Saved on a PC into F3SG

Log in SD Manager 2 at the administrator level.


When the F3SG is in a cascade connection, select a desired sensor segment to write parameters from [Target sensor] in the top right corner of the screen. The example below shows the Channel 1 sensor is selected.




Select [File] and [Open], or click the  button. Then select a configuration file (with extension .sdm2) saved in a desired location.

Click the  button to write parameters.

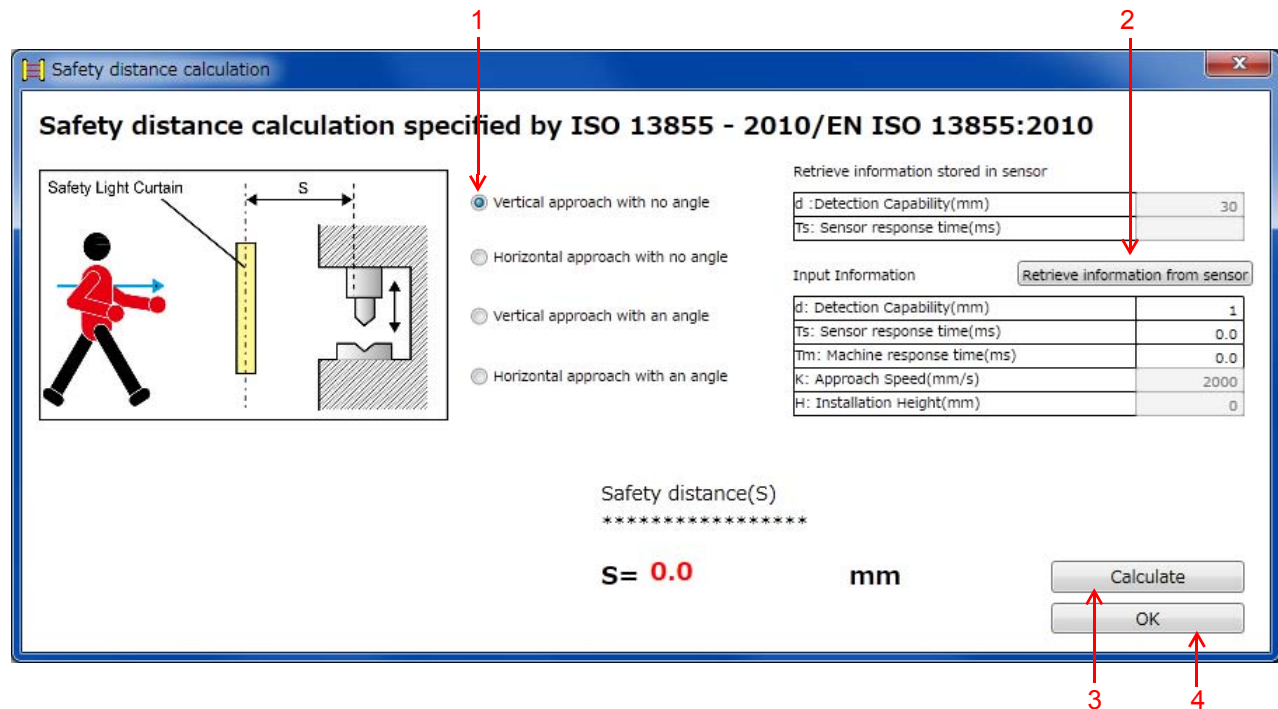
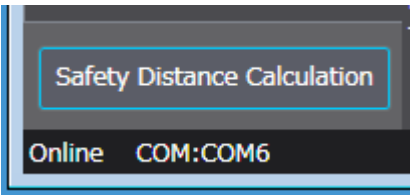
 For operator and administrator levels, refer to 2-5. *Logging In*.

 For reading a configuration file saved on a PC, refer to 2-3-2. *Reading Configuration from PC*.

 For writing configuration to the F3SG, 2-9-1. *Writing Configuration Edited with SD Manager 2 to F3SG Directly*.

2-10. Safety Distance Calculation

Click the following button in the bottom left corner of the Top page.



No.	Function	Description
1	Types of safety distance	Select a type of safety distance to be calculated.
2	Retrieve information from sensor	Update the data in [Input Information] to reflect the information retrieved from the F3SG.
3	Calculate	Calculates safety distance according to the specified condition.
4	OK	Closes the [Safety Distance Calculation] window.

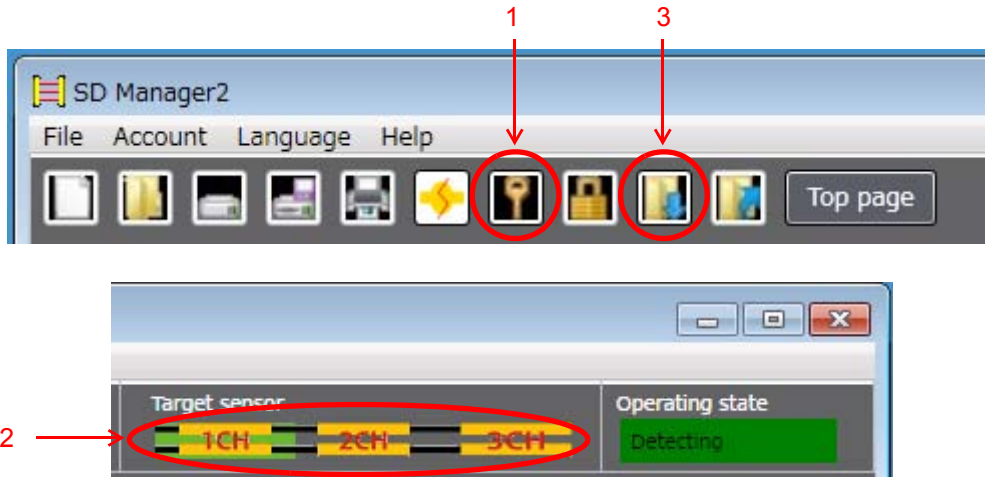


The calculation is based on values entered in the screen. To calculate based on the settings of the F3SG currently connected to the PC, click the [Retrieve information from sensor] button to refresh the values.

Chapter 3 Changing Settings with SD Manager 2

3-1. Preparing to Change Settings

To change settings, log in SD Manager 2 with the administrator level.



No.	Function	Description
1	Login	Shows the login screen.
2	Target sensor	Select a sensor to be configured. The part displayed in green indicates the target sensor.
3	Read configuration	Reads configuration information from the F3SG.

For the administrator level and login, refer to 2-5. *Logging In*.

For reading the configuration, refer to 2-7. *Reading Configuration from F3SG*.

For reflecting settings of functions described later to the sensor, refer to 2-9. *Writing Configuration to F3SG*.

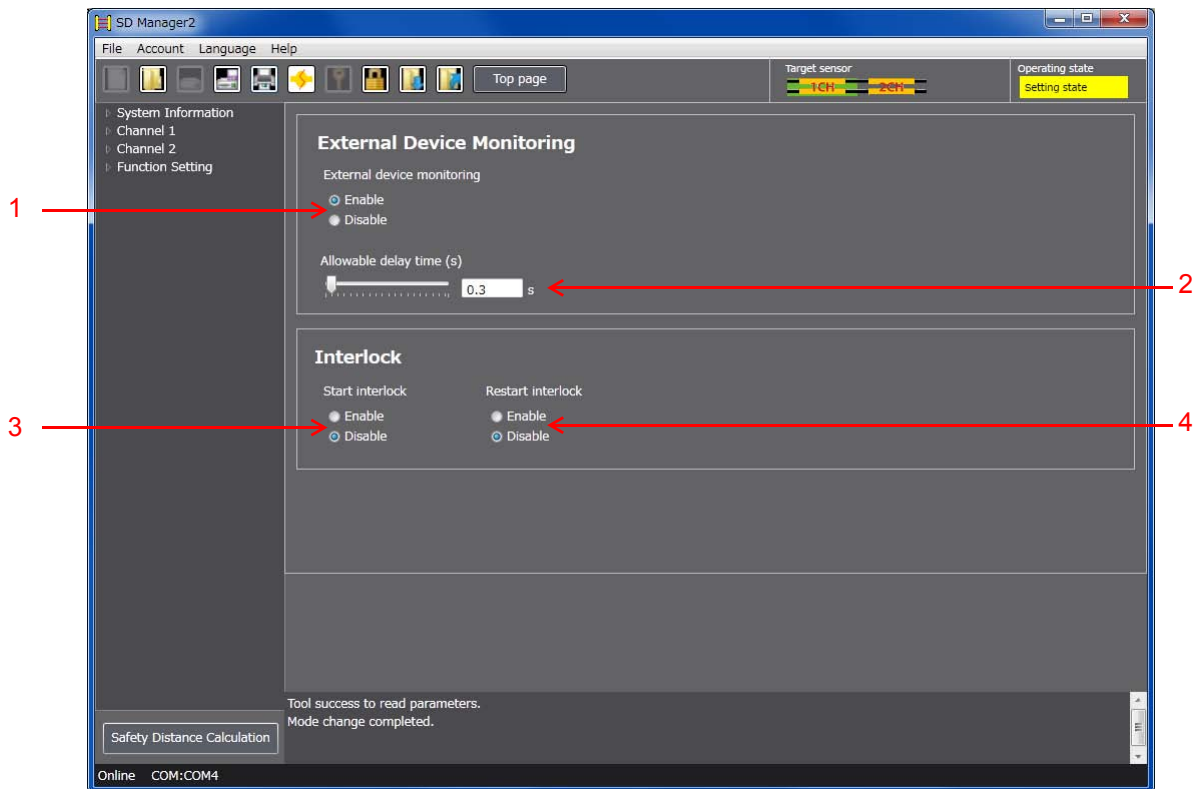
3-2. Interlock/External Device Monitor (EDM)

First, follow the steps in 3-1. *Preparing to Change Settings.*

Next, click the icon below on the Top page.



The setting screen below is displayed.



No.	Function	Description
1	External device monitoring	Select Enable or Disable for the External Device Monitoring function.
2	Allowable delay time	Select desired delay time for the External Device Monitoring function.
3	Start interlock	Select Enable or Disable for the Start Interlock function.
4	Restart interlock	Select Enable or Disable for the Restart Interlock function.

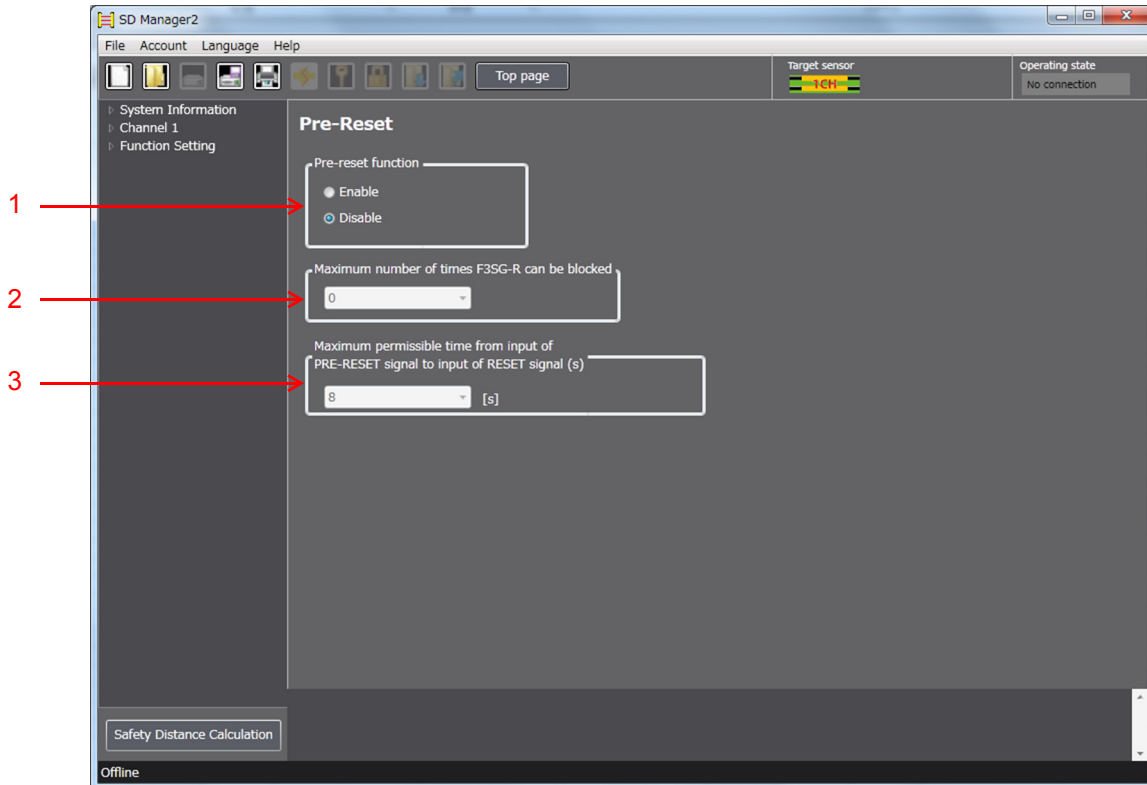
3-3. Pre-Reset

First, follow the steps in 3-1. *Preparing to Change Settings*.


Next, click the icon below on the Top page.



The setting screen below is displayed.



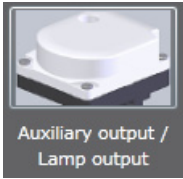
No.	Function	Description
1	Pre-Reset function	Select Enable or Disable for the Pre-Reset function.
2	Maximum number of times F3SG-R is blocked	Select desired maximum number the F3SG can be blocked in the Pre-Reset process. The minimum number of times is 1. If you want to set this item to infinite, select zero.
3	Maximum period of time from input of PRE-RESET signal to input of RESET signal	Select desired maximum time from inputting the PRE-RESET signal to inputting the RESET signal.

 It is not possible to configure the Pre-Reset function together with the Muting function. To enable settings of the Pre-Reset function, disable the Muting function.

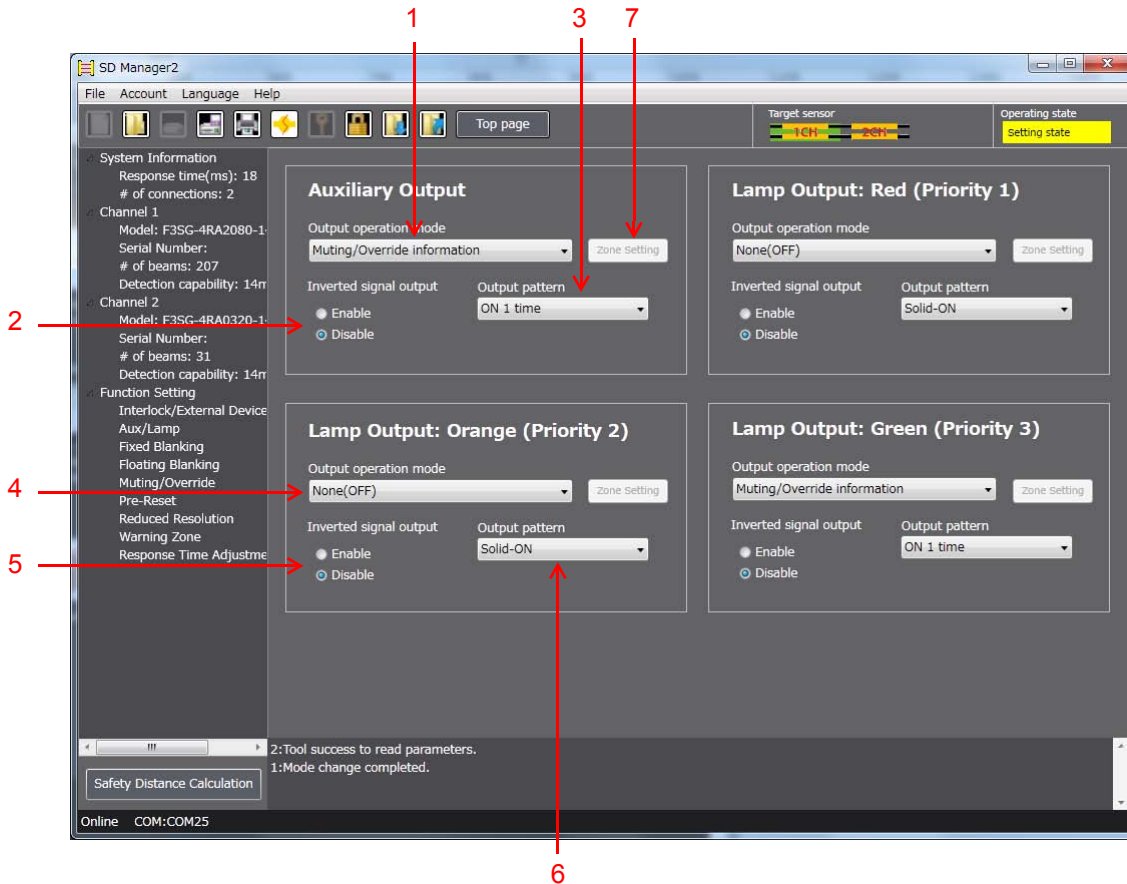
CHECK!



3-4. Auxiliary Output / Lamp

First, follow the steps in 3-1. *Preparing to Change Settings*.
Next, click the icon below on the Top page.



The setting screen below is displayed.



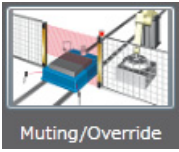
No.	Function	Description
1	Output operation mode of auxiliary output	Select desired information to assign to the auxiliary output.
2	Inverted signal output of auxiliary output	Select Enable or Disable for inverted signal of the auxiliary output.
3	Output pattern of auxiliary output	Select a desired output pattern of the auxiliary output.
4	Output operation mode of Lamp output (orange) *	Select a desired information to assign to the Lamp output (orange).
5	Inverted signal output of Lamp output (orange) *	Select Enable or Disable for inverted signal of the Lamp output (orange).
6	Output pattern of Lamp output (orange) *	Select a desired output pattern of the Lamp output (orange).
7	Zone setting	Opens a zone setting screen for the Designated Beam Output function. The [Zone setting] button is only active when the [Designated beam output information] option is selected for the [Output operation mode].  CHECK!  For details of the setup method, refer to 3-12. <i>Designated Beam Output</i> .

* This function is applicable to the Lamp outputs (green and red), too.

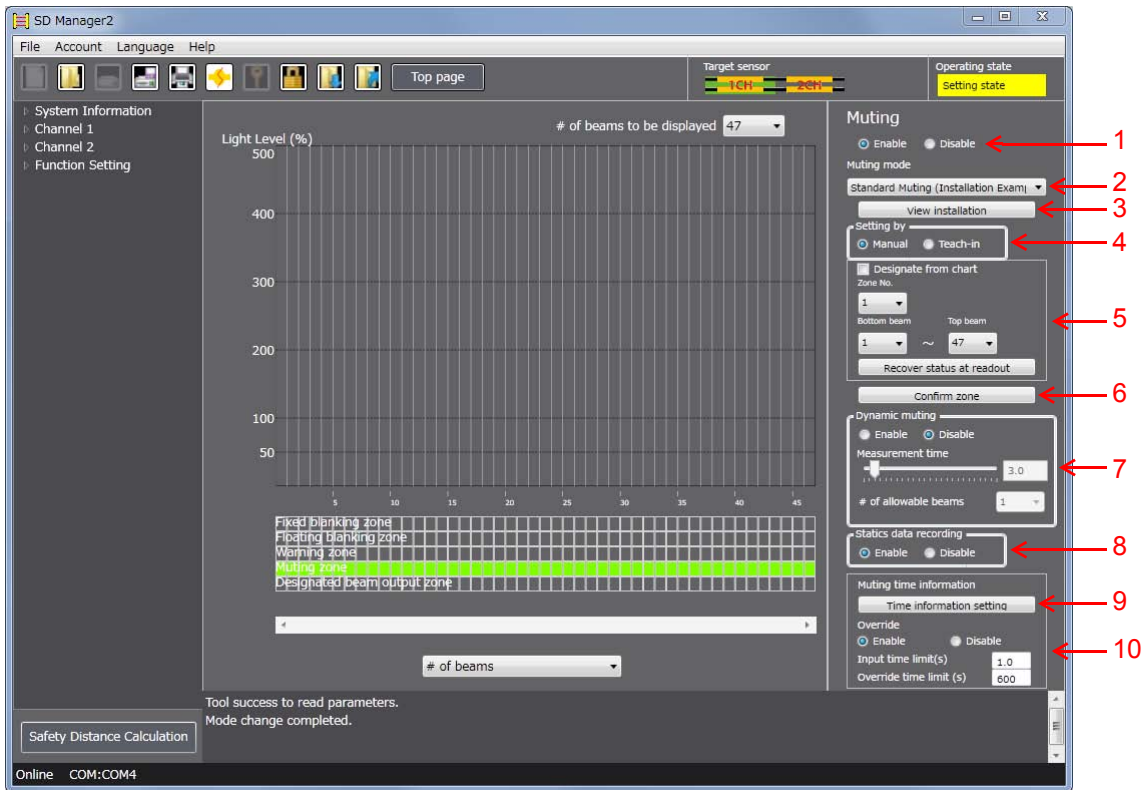
3-5. Muting/Override

First, follow the steps in 3-1. *Preparing to Change Settings*.

Next, click the icon below on the Top page.



The setting screen below is displayed.



No.	Function	Description
1	Muting	Select Enable or Disable for the Muting function.
2	Muting mode	Select a desired muting mode.
3	View installation	Shows installation conditions.
4	Setting by	Select manual setting using this software or setting by teach-in.
5	Zone setting	Select a desired zone number. To configure zone settings, specify desired bottom and top beam numbers from the drop-down list, or directly on the chart. When you check the [Designate from chart] box, you can specify a zone range by dragging red lines shown on the chart. In both cases above, click [Confirm zone] to confirm the settings. When you want to restore the settings received from the F3SG, click [Recover status at readout].
6	Confirm zone	Confirm the settings of the zone.
7	Dynamic muting	Select Enable or Disable, measurement time and the number of allowable for the Dynamic Muting function.
8	Statics data recording	Select Enable or Disable for the Statistics Data Recording function.
9	Time information setting	Shows a setting screen of muting time information.
10	Override	Select Enable or Disable and a time limit for the Override function.

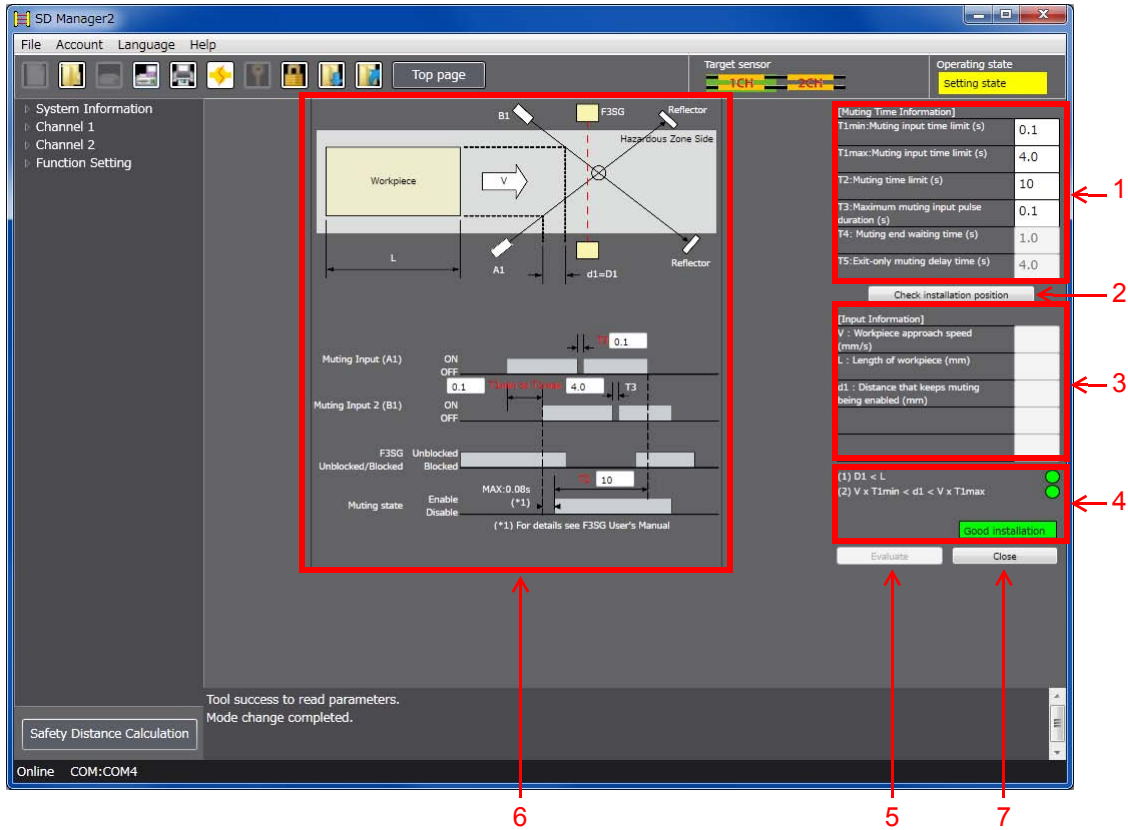
■ Muting Setup Procedure

1. Enable the Muting function (button 1).
2. Select a muting type (button 2).
3. Set up a zone (Details are described later) (buttons 4, 5, and 6).
4. As needed, set up the Dynamic Muting function (button 7).
5. As needed, set up the Statistics Data Recording function (button 8).
6. Set up muting time information (Details are described later) (button 9).
7. As needed, set up the Override function (button 10).
8. Click the [Write Configuration] button. On the settings list which will appear, confirm that the changed content is correct, and click the [OK] button.


■ Muting Zone Setup Procedure

- 3-(1) Select a setup method (button 4).
 - [Manual setting] (button 5)
 - Select a zone No., and set up the bottom and top beam numbers.
 - [Teach-in]
 - When teach-in is selected, the software enters the teach-in mode.
 - Block light in the zone that you wish to specify as the muting zone.
- 3-(2) Determine the zone (button 6)
 - When the zone has been selected by teach-in, select the Manual button again after the zone is determined (button 4)


Setting of muting time information



No.	Function	Description
1	Muting Time Information	Enter values of Muting-related time limits. For the Muting time input time limit and the Muting time limit, setting the value to zero means the time limit is infinite.
2	Check installation position	Reflects the Muting Time Information settings to the timing chart shown in the left side of the screen, and allows data entry to the Input Information fields.
3	Input Information	Enter information about the work-piece.
4	Diagnosis of installation condition	It is diagnosed and displayed if the setting condition is appropriate.
5	Evaluate	Checks if the muting with the entered settings is possible.
6	Installation diagram and Timing chart	Shows the positions and timing chart of a work-piece, the F3SG and muting sensors.
7	Close	Finishes the setting process of muting time information, and returns to muting setting.

 If using this function together with other functions, make settings taking the condition of adjacent zones into account.

CHECK!

 For the condition of adjacent zones, refer to *the manual of the F3SG*.

■ Muting Time Information Setup Procedure

- 6**-(1) Enter [Muting Time Information] according to the setup state (button 1).
- 6**-(2) Click [Installation Position Check] (button 2).
- 6**-(3) Enter [Input Information] according to the setup state (button 3).
- 6**-(4) Click [Evaluation] to confirm the integrity of the entered condition (button 5). The result is displayed in area 4.
If the result is Installation NG, review the entered condition above.
- 6**-(5) Click [Close] (button 7).

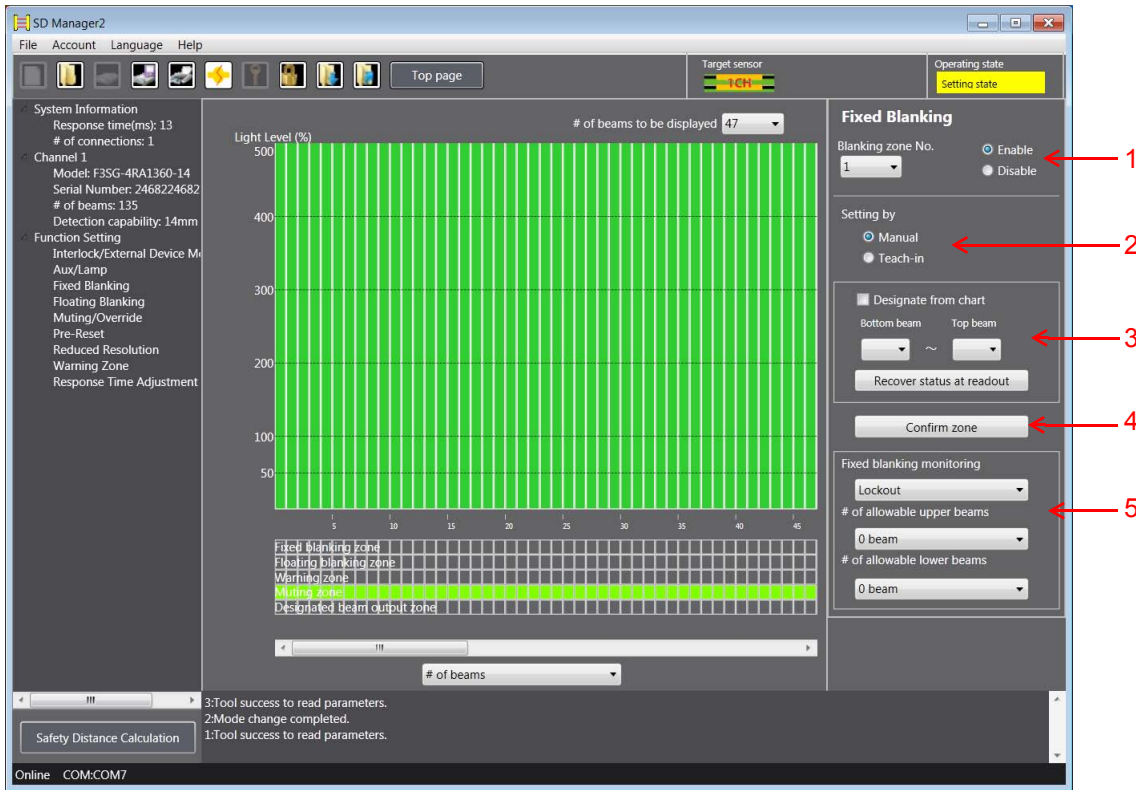
3-6. Fixed Blanking

First, follow the steps in 3-1. *Preparing to Change Settings*.

Next, click the icon below on the Top page.



The setting screen below is displayed.



No.	Function	Description
1	Fixed Blanking	Select Enable or Disable for the Fixed Blanking function.
2	Setting by	Select manual setting using this software or setting by teach-in.
3	Zone setting	To configure zone settings, specify desired bottom and top beam numbers from the drop-down list, or directly on the chart. When you check the [Designate from chart] box, you can specify a zone range by dragging red lines shown on the chart. In both cases above, click [Confirm zone] to confirm the settings. When you want to restore the settings received from the F3SG, click [Recover status at readout].
4	Confirm zone	Confirm the settings of the zone.
5	Other setting	Select a desired monitoring method and number of allowable beams.

If using this function together with other functions, make settings taking the condition of adjacent zones into account.

CHECK!

For the condition of adjacent zones, refer to *the manual of the F3SG*.

■ Fixed Blanking Setup Procedure

1. Select a fixed blanking zone, and enable the function (button 1).
2. Set up the zone (Details are described later) (buttons 2, 3, and 4).
3. Set up the fixed blanking monitoring function (button 5).
4. Set up the number of allowable beams (button 5).
The set allowable beams will be indicated as shown below. In this example, one upper and two lower beams are set as allowable beams.

	1	2	3	4	5	6
Fixed blanking zone						
Floating blanking zone						
Warning zone						
Muting zone						
Designated beam output zone						

5. Click the [Write Configuration] button. On the settings list which will appear, confirm that the changed content is correct, and click the [OK] button.

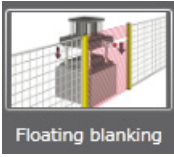
■ Fixed Blanking Zone Setup Procedure

- 2-(1) Select a setup method (button 2).
 [Manual setting] (button 3)
 Set up the bottom and top beam numbers.
 [Teach-in]
 When teach-in is selected, the software enters the teach-in mode.
 Block light in the zone that you wish to set up as the fixed blanking zone.
- 2-(2) Determine the zone (button 4).
 When the zone has been selected by teach-in, select the Manual button again after the zone is determined (button 2).

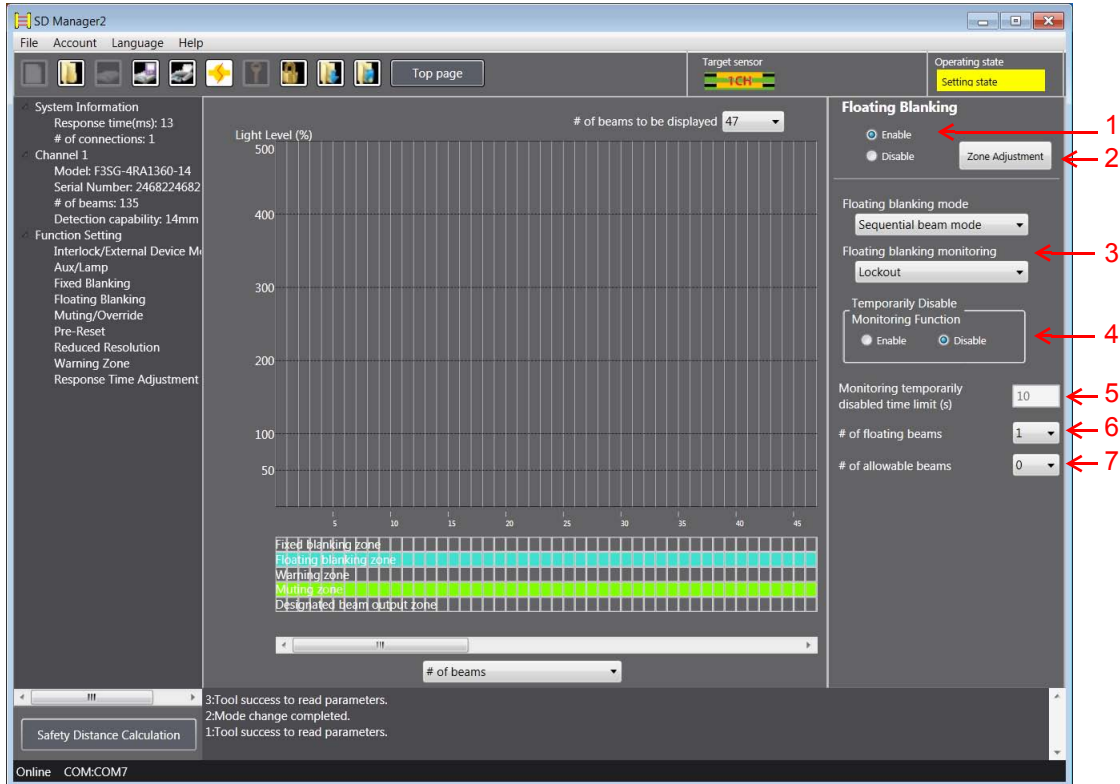
3-7. Floating Blanking

First, follow the steps in 3-1. *Preparing to Change Settings*.

Next, click the icon below on the Top page.



The setting screen below is displayed.



No.	Function	Description
1	Floating Blanking	Select Enable or Disable for the Floating Blanking function.
2	Zone Adjustment	Automatically adjusts a floating blanking zone setting when the setting is not correct.
3	Floating blanking monitoring	Select a desired monitoring function.
4, 5	Temporarily Disable Monitoring Function	Select Enable or Disable for the Temporarily Disable Monitoring function and configure the Monitoring-temporarily-disabled time limit.
6, 7	Other setting	Configure the numbers of floating beams and allowable beams.

If using this function together with other functions, make settings taking the condition of adjacent zones into account.


CHECK!

When the Reduced Resolution is enabled, all floating blanking zones are highlighted in the zone information section in the lower middle of the screen even when the Floating Blanking function is disabled.

CHECK!

For the condition of adjacent zones, refer to *the manual of the F3SG*.

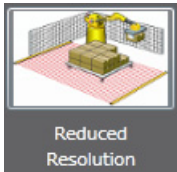
■ Floating Blanking Setup Procedure

1. Enable the floating blanking function (button 1).
2. Set up the floating monitoring function (button 3).
3. Set up the temporarily disable monitoring function (button 4).
When Enable is selected, also set up the monitoring-temporarily-disabled time limit (button 5).
 This function is only available when [Lockout] or [Cancel blanking zone] option is selected for the Floating Blanking Monitoring function.
CHECK!
4. Set up the number of floating beams (button 6).
5. Set up the number of allowable beams (button 7).
6. Click the [Write Configuration] button. On the settings list which will appear, confirm that the changed content is correct, and click the [OK] button.

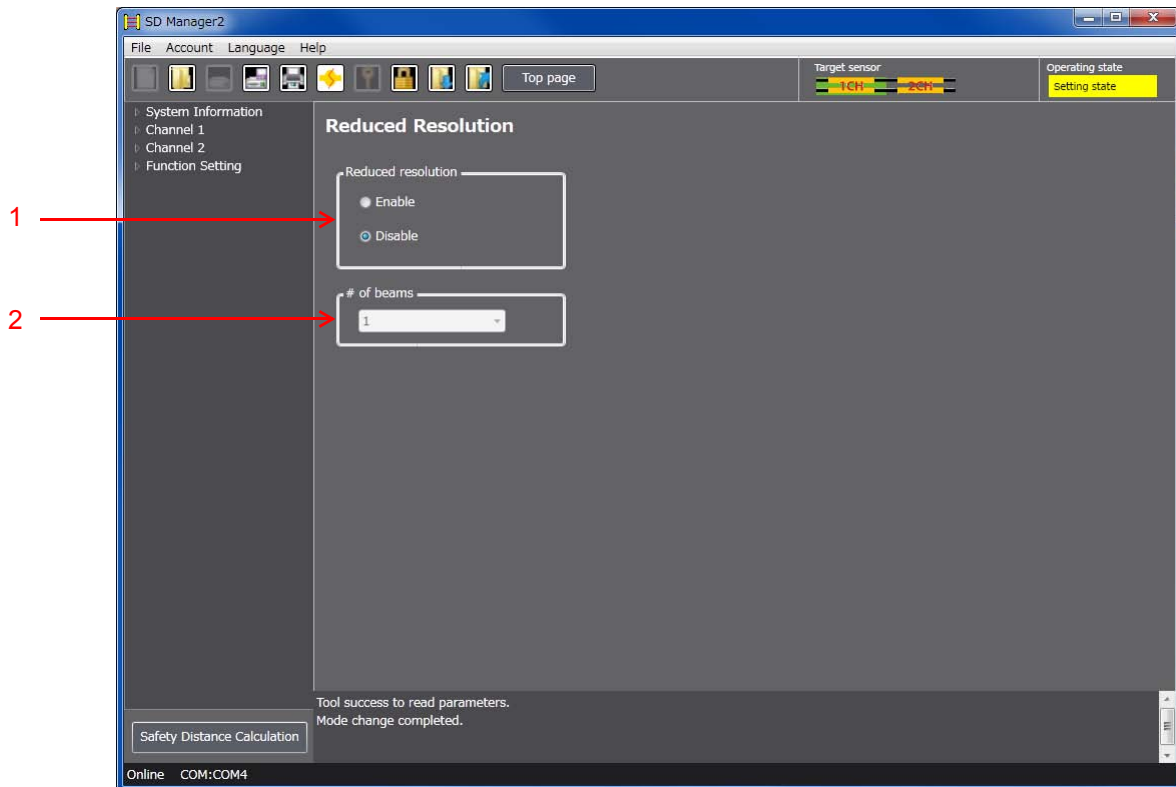
3-8. Reduced Resolution

First, follow the steps in 3-1. *Preparing to Change Settings*.

Next, click the icon below on the Top page.



The setting screen below is displayed.



No.	Function	Description
1	Reduced resolution	Select Enable or Disable for the Reduced Resolution function.
2	No. of beams	Select desired number of beams to be reduced.



It is not possible to configure the Reduced Resolution function together with the Muting function. To enable settings of the Reduced Resolution function, disable the Muting function.

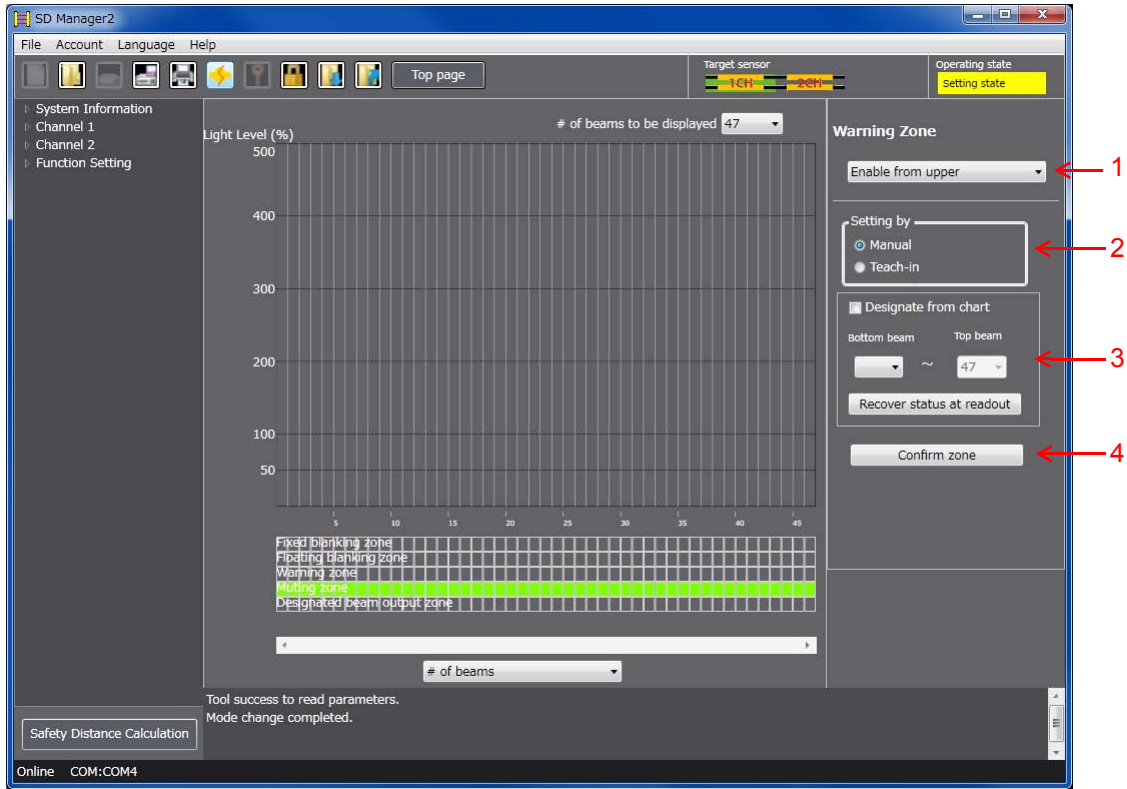
CHECK!

3-9. Warning Zone

First, follow the steps in 3-1. *Preparing to Change Settings*.
 Next, click the icon below on the Top page.



The setting screen below is displayed.



No.	Function	Description
1	Warning Zone	Select Enable or Disable for the Warning Zone function.
2	Setting by	Select either manual setup using this tool or setup by teach-in
3	Zone setting	To configure zone settings, specify desired bottom and top beam numbers from the drop-down list, or directly on the chart. When you check the [Designate from chart] box, you can specify a zone range by dragging red lines shown on the chart. In both cases above, click [Confirm zone] to confirm the settings. When you want to restore the settings received from the F3SG, click [Recover status at readout].
4	Confirm zone	Confirm the settings of the zone.

If using this function together with other functions, make settings taking the condition of adjacent zones into account.

CHECK!

For the condition of adjacent zones, refer to *the manual of the F3SG*.

■ Warning Zone Setup Procedure

1. Enable the Warning Zone function (Details are described later) (button 1).
2. Set up a zone (Details are described later) (buttons 2, 3, and 4).
3. Click the [Write Configuration] button. On the settings list which will appear, confirm that the changed content is correct, and click the OK button.

■ Setup Procedure of the Function

- 1-(1) The warning zone must include the beam on one of the two ends of the F3SG.
 Enable from the upper : The warning zone is enabled from the upper end.
 Enable from the bottom : The warning zone is enabled from the bottom end.
 Disable : The warning zone is disabled.

■ Setup Procedure of the Zone

- 2-(1) Select a setup method (button 2).
 [Manual setting] (button 3)
 Set up the bottom and top beam numbers.
 [Teach-in]
 When teach-in is selected, the software enters the teach-in mode.
 Block light in the zone that you wish to specify as the warning zone.
- 2-(2) Determine the zone (button 4).
 When the zone has been selected by teach-in, select the Manual button again after the zone is determined (button 3)

3-10. Operating Range Selection

The user cannot make any changes to this function by SD Manager 2. Use the DIP Switch of the emitter to change the settings.

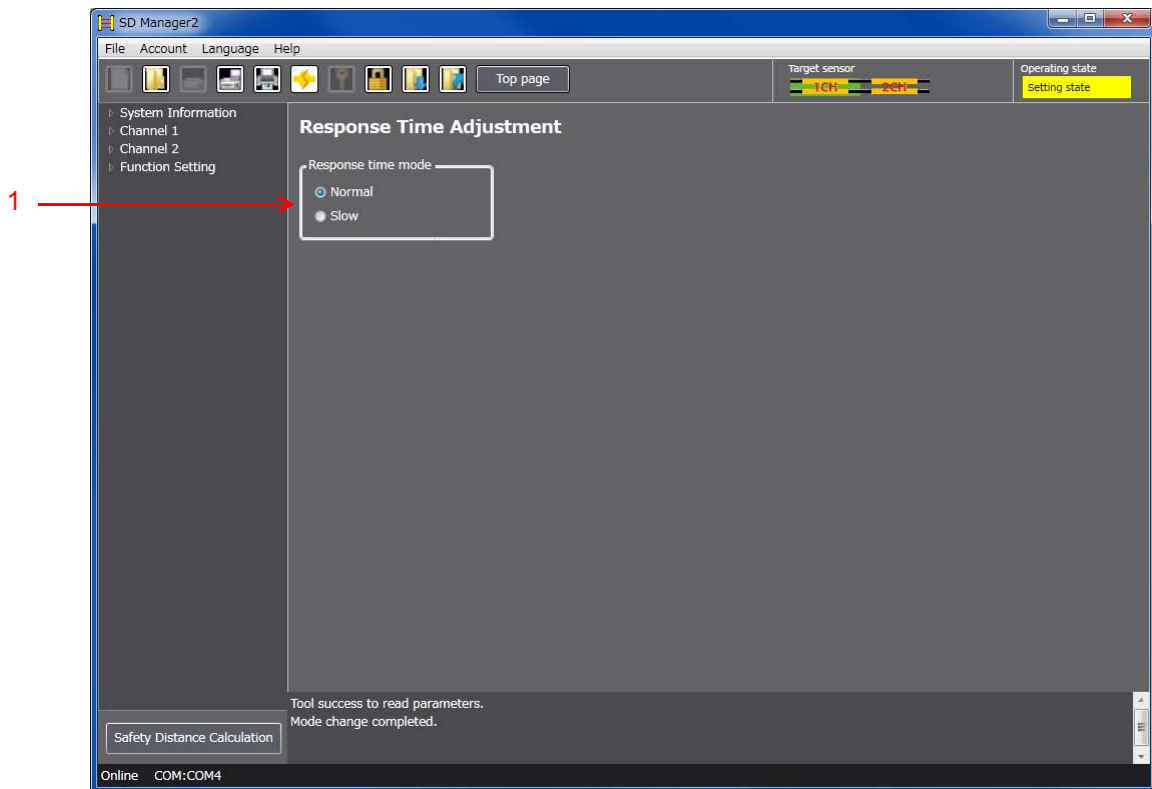
3-11. Response Time Adjustment

First, follow the steps in 3-1. *Preparing to Change Settings*.

Next, click the icon below on the Top page.



The setting screen below is displayed.

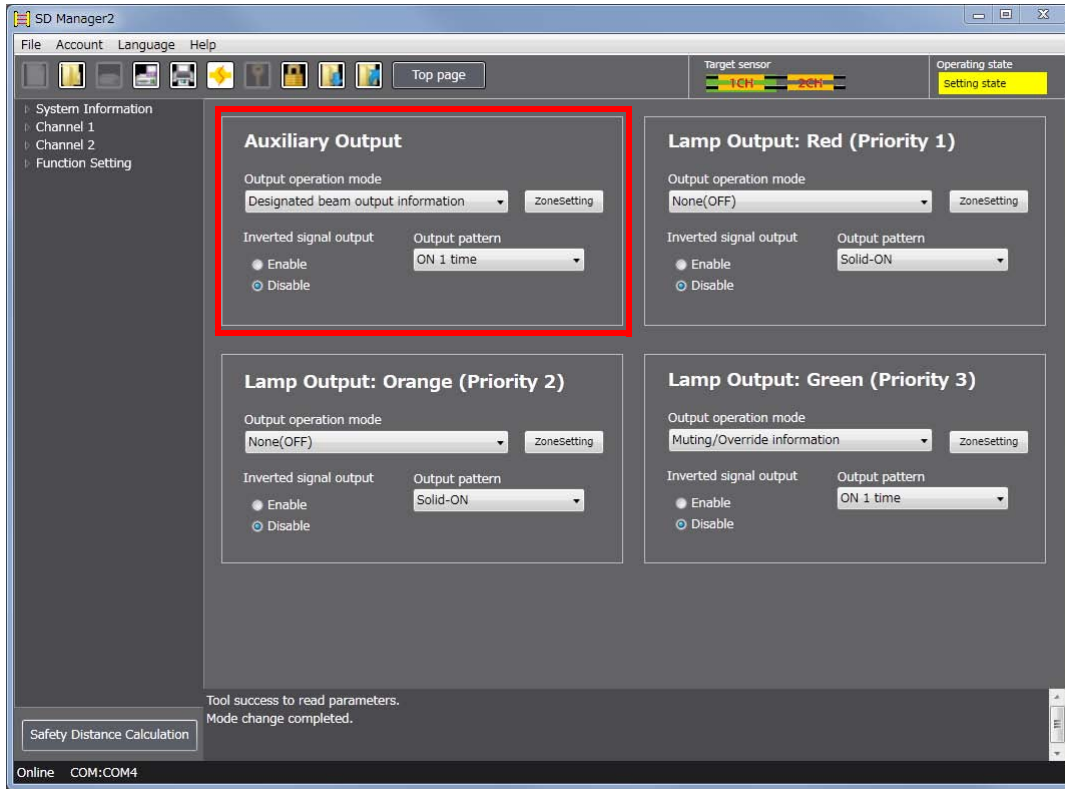


No.	Function	Description
1	Response time mode	Select a desired mode of the response time.

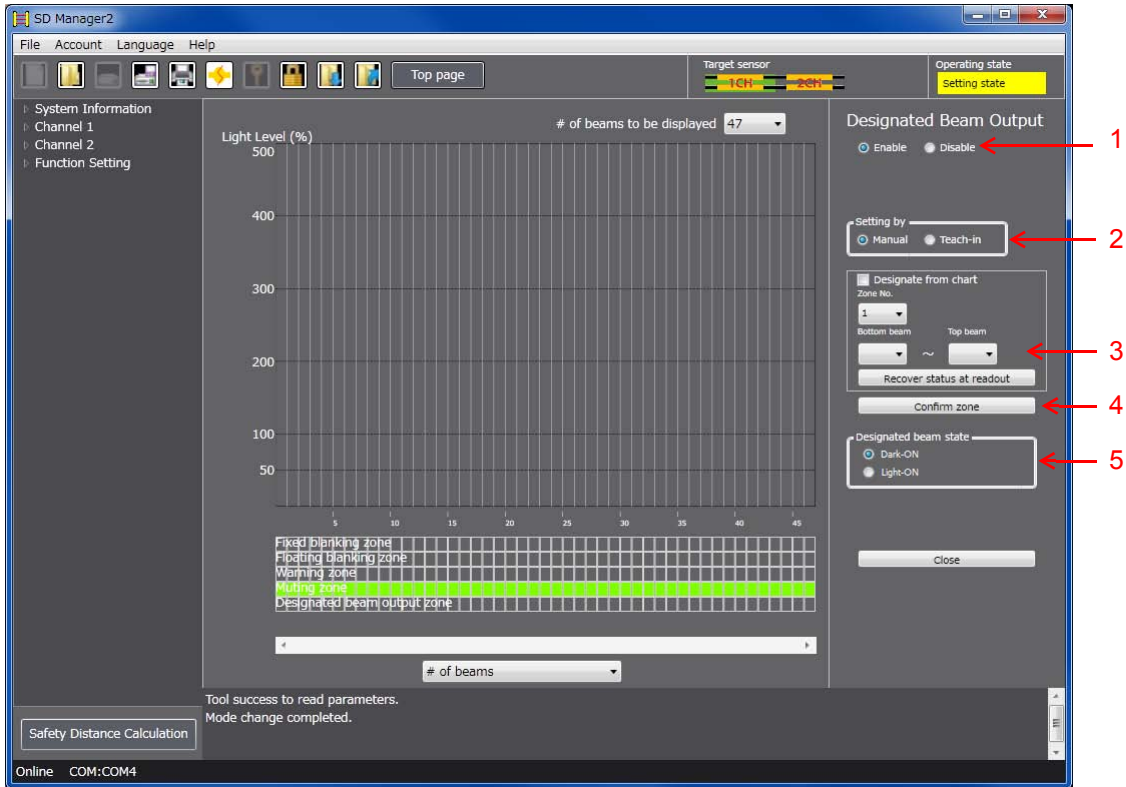
3-12. Designated Beam Output

Select [Designated beam output information] for the output operation mode of the auxiliary output or Lamp output.

In the following example, the designated beam output information is assigned to the output operation mode of the auxiliary output.



Click the [Zone Setting] button to configure the designated beam output.



No.	Function	Description
1	Designated Beam Output	Select Enable or Disable for the Designated Beam Output function.
2	Setting by	Select manual setting using this software or setting by teach-in.
3	Zone setting	Select a desired zone number. To configure zone settings, specify desired bottom and top beam numbers from the drop-down list, or directly on the chart. When you check the [Designate from chart] box, you can specify a zone range by dragging red lines shown on the chart. In both cases above, click [Confirm zone] to confirm the settings. When you want to restore the settings received from the F3SG, click [Recover status at readout].
4	Confirm zone	Confirm the settings of the zone.
5	Designated beam state	Select either Dark-ON or Light-ON.

■ Designated Beam Output Setup Procedure

1. Set the output operation mode of the auxiliary output or lamp output in [Designated beam output information], and press the [Zone Setting] button.
2. Enable the designated beam output function (button 1).
3. Set up the zone (Details are described later) (buttons 2, 3, and 4).
4. Set up the designated beam unblocked state (button 5).
5. Click the [Write Configuration] button. On the settings list which will appear, confirm that the changed content is correct, and click the OK button.

■ Designated Beam Output Zone Setup Procedure

3-(1) Select a setup method (button 2).

[Manual setting] (button 3)

Select a zone No., and set up the bottom and top beam numbers.

[Teach-in]

When teach-in is selected, the software enters the teach-in mode.

Block light in the zone that you wish to specify as the designated beam output zone.

3-(2) Determine the zone (button 4).

When the zone has been selected by teach-in, select the Manual button again after the zone is determined (button 3).

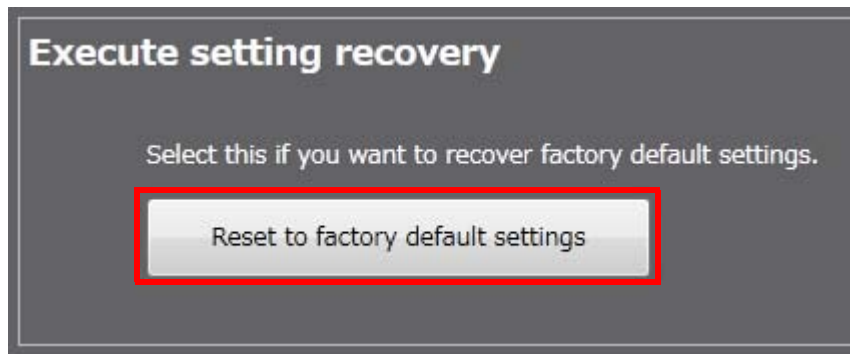
3-13. Setting Recovery

Log in SD Manager 2 with the administrator level, and click the icon below on the Top page:



The setting screen below is displayed on the Top page.

To execute setting recovery, click the [Reset to factory default settings] button.



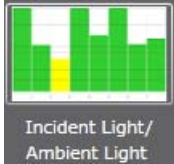
When the F3SG is in a cascade connection, select a desired sensor segment from [Target sensor] in the top right corner of the screen and click [Reset to factory default settings].

Settings of each function can be reset to the factory default.

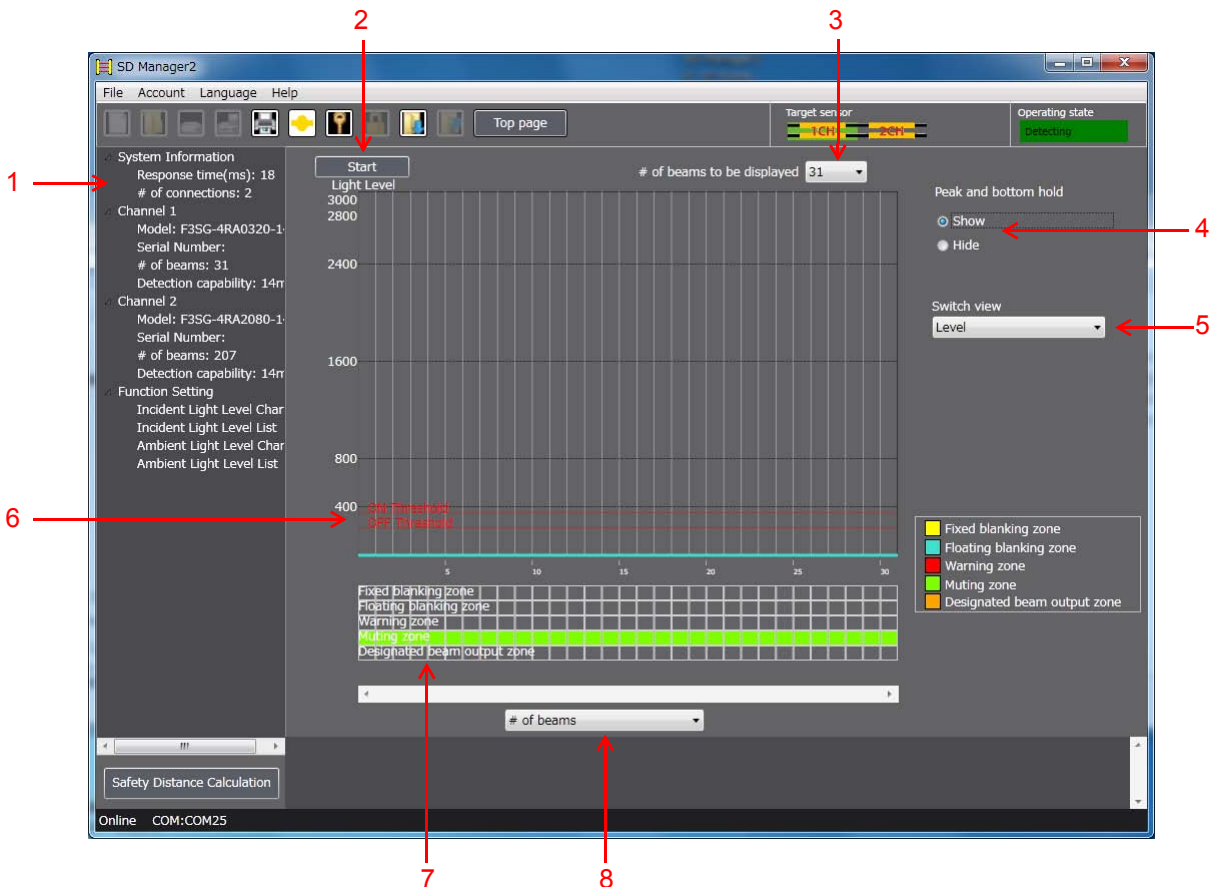
Chapter 4 Monitoring with SD Manager 2

4-1. Light Level Monitoring

On the Top page, click the icon below.



The screen below is displayed.

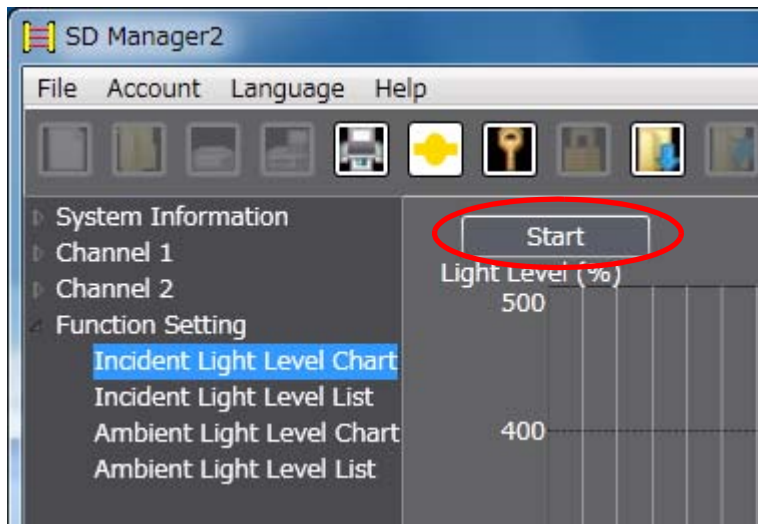


No.	Function	Description
1	Select light level monitoring function	Select incident light level or ambient light level to be monitored and chart or list view.
2	Start/stop	Enables the monitoring to start or stop.
3	No. of beams to be displayed	Select the number of sensor beams to be displayed.
4	Show/hide held peak and bottom hold	Shows the maximum and minimum values of a selected light level by blue and red lines, respectively when [Show] is selected.
5	Select unit of vertical axis	Switch the unit of the vertical axis on the light level chart between Percent and Level. When [Percent] is selected, the light level is shown in percentage based on the ON threshold value as 100%. When [Level] is selected, the light level is converted to voltage.
6	ON/OFF threshold values	Shows the ON and OFF threshold values of the OSSD of the F3SG. This information is only shown when the [Level] view is selected for the unit of vertical axis.

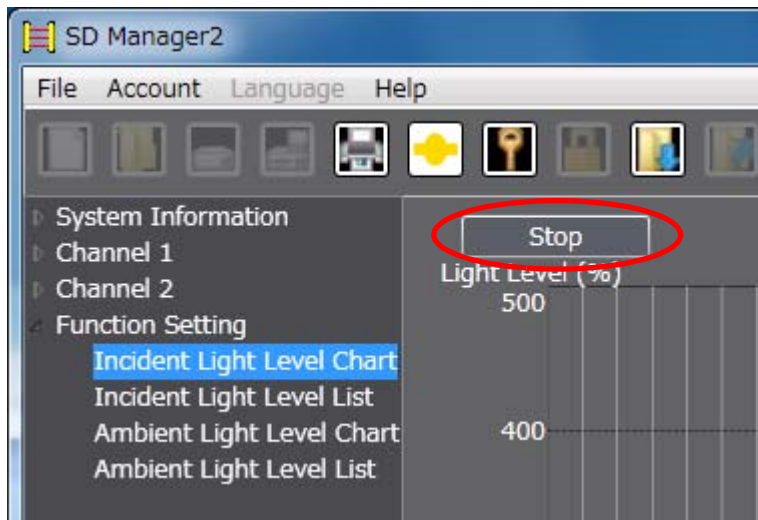
No.	Function	Description
7	Information assigned	Shows a function assigned to the beams. The following five functions can be assigned. - Fixed blanking zone - Floating blanking zone - Warning zone - Muting zone - Designated beam output zone
8	Select unit of horizontal axis	Switch the unit of the horizontal axis on the light level chart between the number of beams and sensor length.


To start monitoring of a light level, select a display type in the [Function Setting] area on the left side of the screen, and click [Start]

When the F3SG is in a cascade connection, select a desired sensor segment from [Target sensor] in the top right corner of the screen and click [Start].



To stop the monitoring, click [Stop].



 The light level monitoring function is available even if the Position 8 of the two DIP Switches is set to OFF (DIP Switch Enabled).

CHECK!

4-2. Maintenance Information

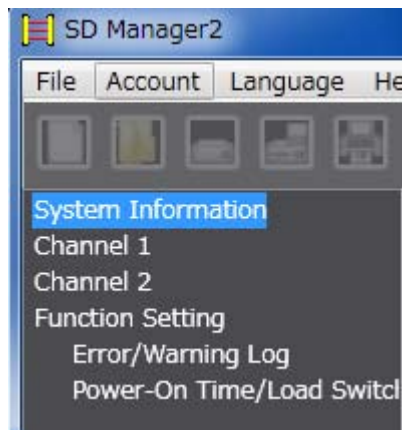
On the Top page, click the icon below.




The screen below is displayed.

In the [Function Setting] area on the left side of the Top page, select a menu of either [Error/Warning Log] or [Power-On Time/Load Switching Frequency].

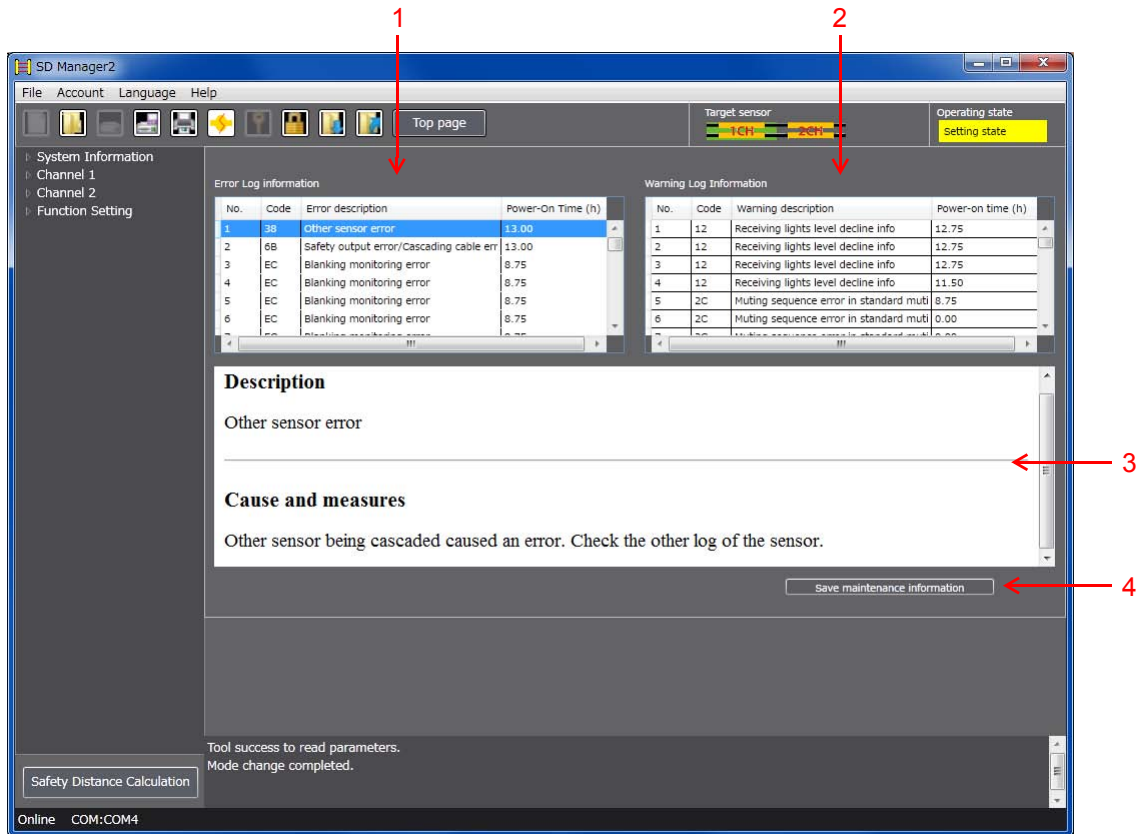
When the F3SG is in a cascade connection, select a desired sensor segment from [Target sensor] in the top right corner of the screen.




 The maintenance information function is available even if the Position 8 of the two DIP Switches is set to OFF (DIP Switch Enabled).

CHECK!

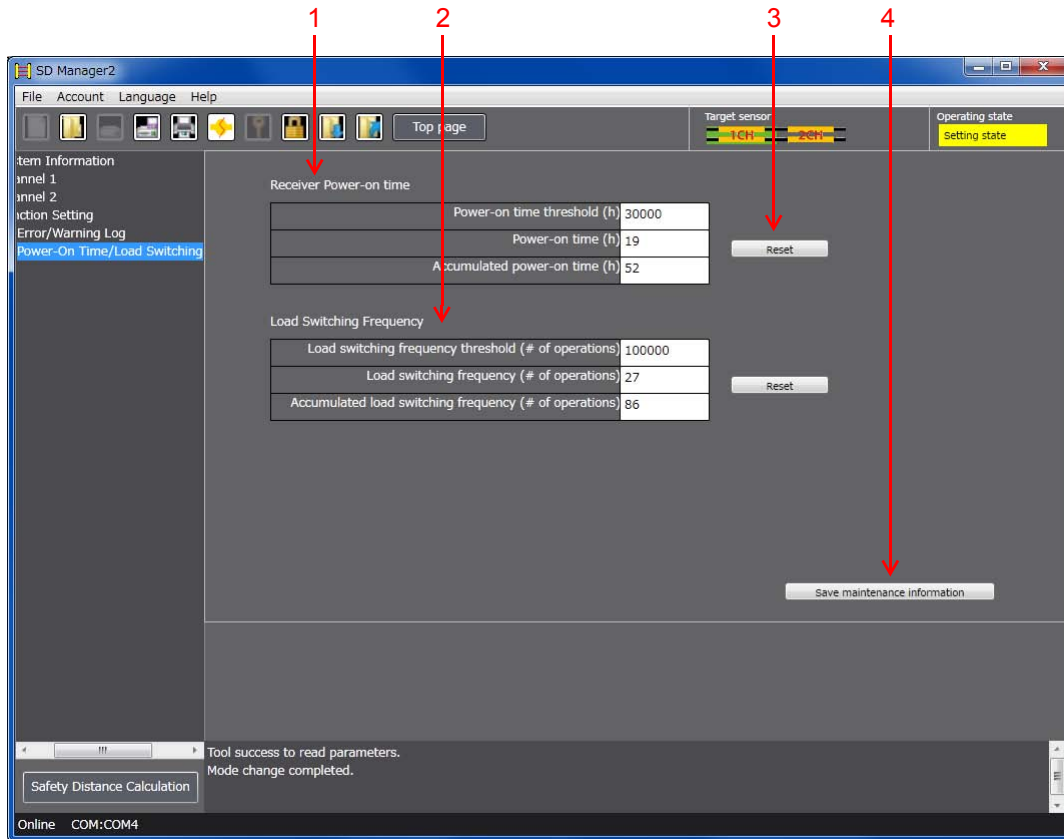
Error/Warning Log




No.	Function	Description
1	Error Log Information	Error logs including error codes, error descriptions and accumulated power-on time at the time when errors occurred are shown, with the most recent errors first.
2	Warning Log information	Warning logs including warning codes, warning descriptions and accumulated power-on time at the time when warnings occurred are shown, with the most recent warnings first.
3	Show error descriptions	Double-click an error or warning log to show details, cause and measures of the event.
4	Save maintenance information	Saves error and warning logs, power-on time, accumulated power-on time, load switching frequency and accumulated load switching frequency as a .csv file.

 To save maintenance information, login at the operator or administrator level is necessary.
CHECK!

Power-On Time/Load Switching Frequency

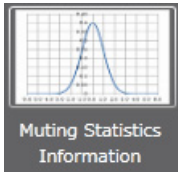


No.	Function	Description
1	Receiver power-on time	Power-on time threshold, power-on time and accumulated power-on time are shown. Only power-on time threshold is configurable.
2	Load switching frequency	Load switching frequency threshold, load switching frequency and accumulated load switching frequency are shown. Only load switching frequency threshold is configurable.
3	Reset	Resets power-on time and load switching frequency to zero. Resetting is only possible when you are logged in with the administrator level.
4	Save maintenance information	Saves error and warning logs, power-on time, accumulated power-on time, load switching frequency and accumulated load switching frequency as a .csv file.

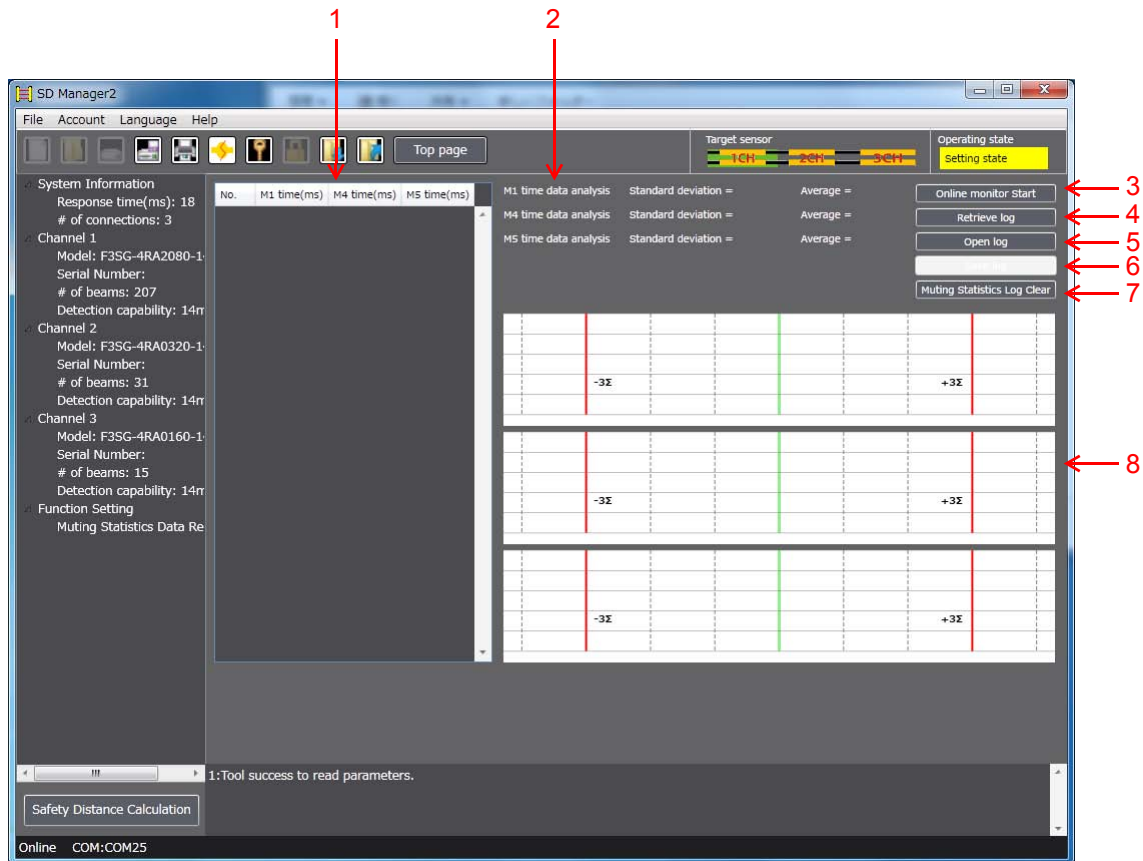
 To save maintenance information, login at the operator or administrator level is necessary.
CHECK!

4-3. Muting Statistics Information


On the Top page, click the icon below.



The screen below is displayed.



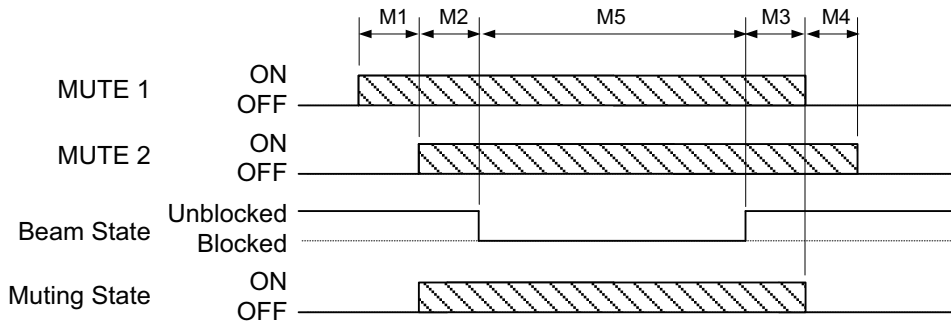
No.	Function	Description
1	Data list	Data recorded in the Muting state is shown.
2	Analysis data	Standard deviation and average of data are shown.
3	Online monitor start	Retrieves and shows data online.
4	Retrieve log	Receives logs saved in the F3SG.
5	Open log	Analyzes and shows logs saved on PC.
6	Save log	Saves data as a .csv file.
7	Muting Statistics Log Clear	Clears logs saved in the F3SG.
8	Chart	Analysis result is shown by a chart.

 The muting statistics information function is available even if the Position 8 of the two DIP Switches is set to OFF (DIP Switch Enabled).
CHECK!

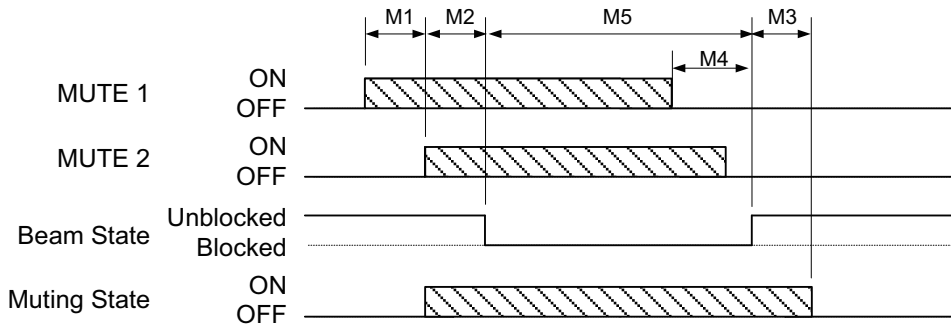
■ Data Description

For the time data obtained, refer to the timing charts below.


■ Standard/ Position Detection Muting

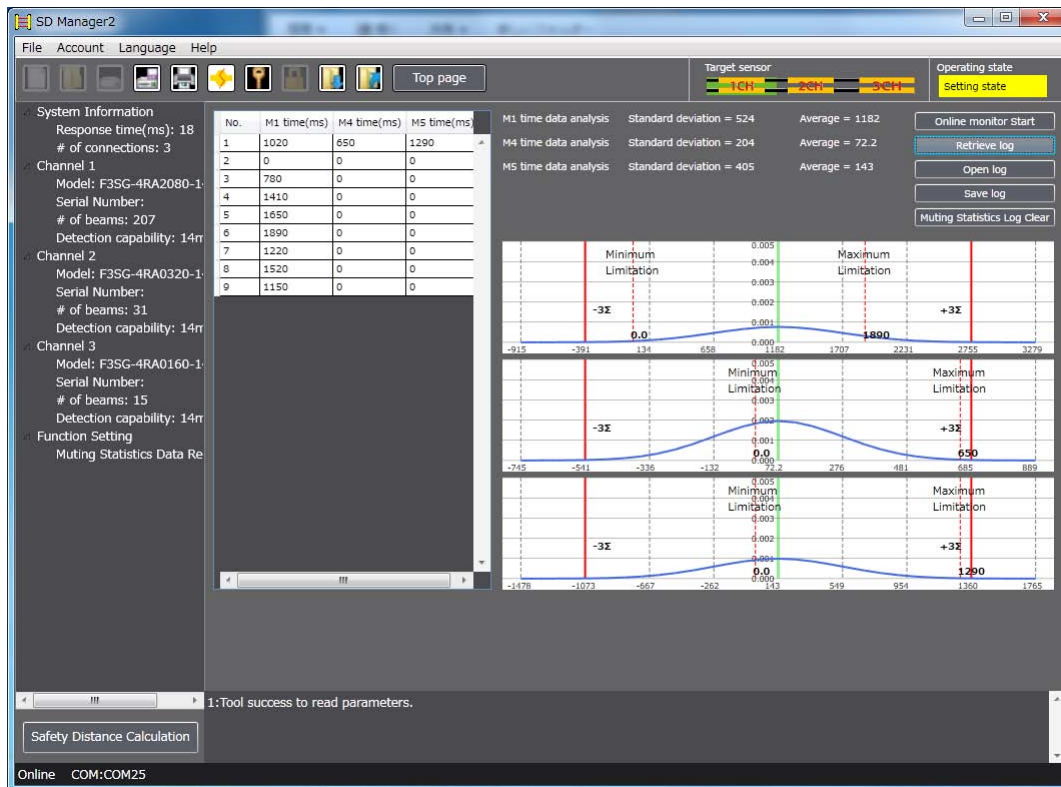


■ Exit Only Muting



■ How to use muting statistics information

1. View a screen of the muting statistics information described above.
2. Click the  button.
3. Click the [Retrieve log] button.
4. Data saved in the F3SG is displayed.



From the data list, check if there is any data that is unnecessary for the analysis. If there is such data, click it on the list and press the [Delete] key to remove it. Once the data is deleted, the analysis data area and chart are immediately updated.

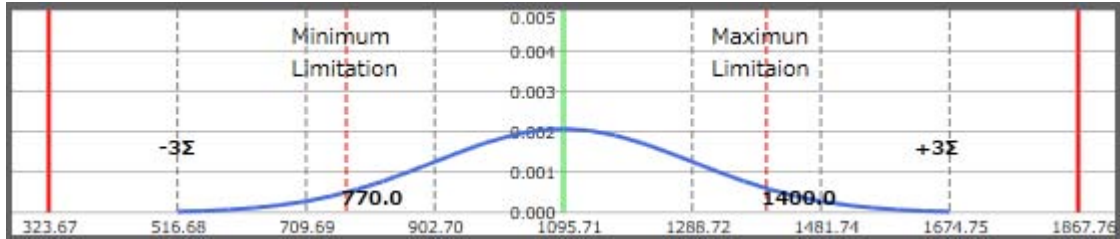
If you delete data accidentally, click the [Retrieve log] button again to recall it.

5. Optimize muting configuration by analysis data.

For example, the following analysis results are shown for data recorded in the standard muting mode.

Maximum: 1400ms, Minimum: 770ms, Average: 1095ms

Also, M1 varies in a range between 516 ms and 1675 ms.

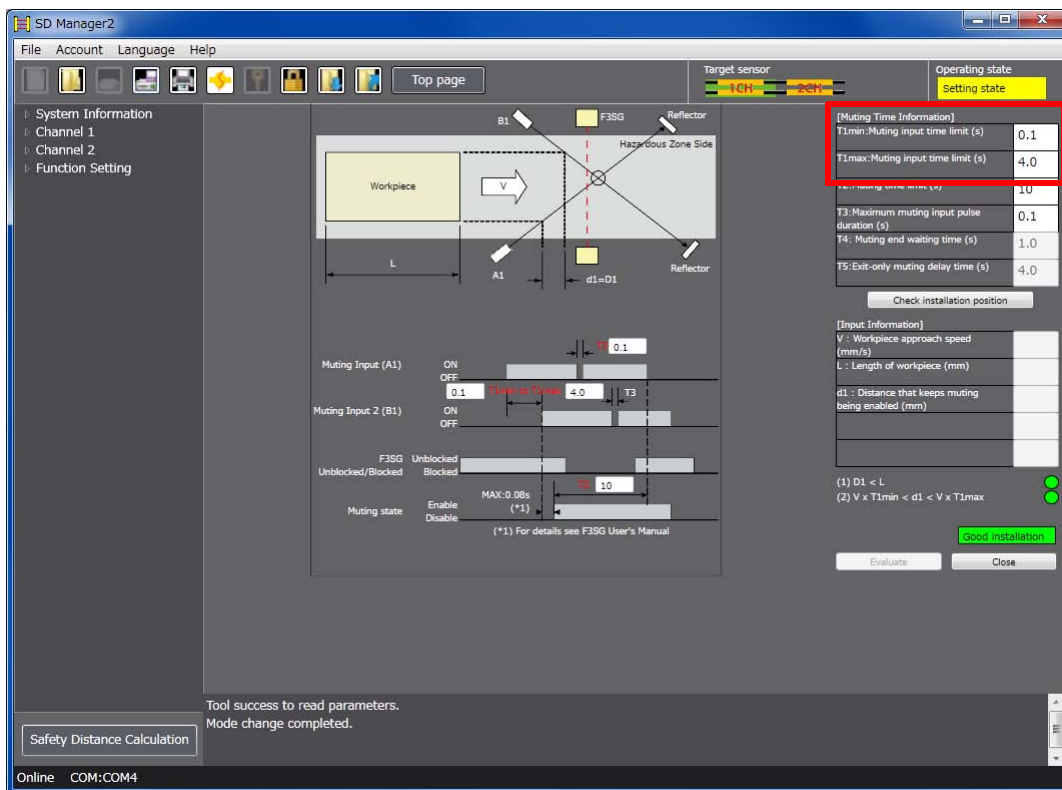


6. Next, Confirm Muting Input Time Limit T1. Confirm the validity of the settings of T1 based on the analysis results of M1 above. The settings are shown in the following muting time information screen.

The settings of T1 are the minimum of 0.1 s (100 ms) and the maximum of 4 s (4000 ms).

From the comparison between the settings and analysis data, it can be expected that the current settings allow stable operation of the F3SG.

Also it is possible to optimize the settings more precisely by configuring the maximum value to 2 s.



The screen above shows the muting time information. (Refer to 3-5. Muting/Override.)

In the same way, M4 and M5 are usable to improve the muting settings and installation condition.

4-4. Operating Status Monitoring

On the Top page, click the icon below.

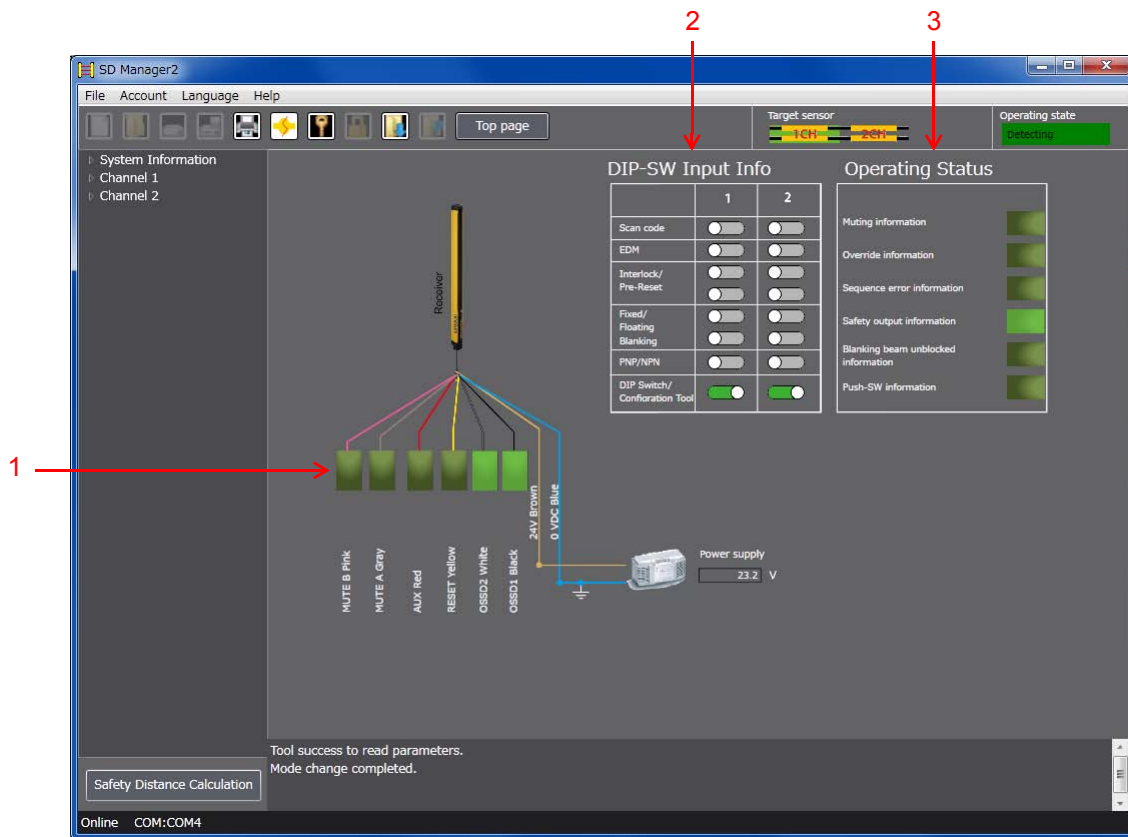


The F3SG enters detecting state, and the safety outputs are turned ON/OFF according to the beam state and settings.



CHECK!

The screen below is displayed.



No.	Function	Description
1	External wiring status	Shows ON or OFF state of signal lines.
2	DIP-SW Input Information	Shows state of DIP Switch settings.
3	Operating Status Monitoring	Shows states of the F3SG.

■ Readout Information

The user can view the following information related to a receiver.

The information is displayed in a block in case of a cascade connection.

Information	Description
Reset input	Linked with reset/external device monitor(EDM)/override input
Muting A/pre-reset input	Linked with muting A/pre-reset input
Muting B input	Linked with muting B input
Safety output 1	Linked with safety output 1
safety output 2	Linked with safety output 2
Auxiliary output	Linked with auxiliary output
Power supply voltage	The power supply voltage in the power-on status is displayed.
Muting information	Linked with muting status
Override information	Linked with override status
Sequence error information	Linked with muting sequence error status or interlock sequence error status
Blanking beam unblocked information	Linked with the state where the blanking beam is unblocked
DIP-SW input information	Linked with the input signal of DIP Switch
Push-SW input information	Linked with the input signal of Push Switch



The operating status monitoring function is available even if the Position 8 of the two DIP Switches is set to OFF (DIP Switch Enabled).

CHECK!

4-5. Revision History

A manual revision number appears as a suffix to the manual number at the bottom of the front and back covers of this manual.

Z357-E1-02



Revision No.

Revision number	Revision date	Description
01	January 2015	First edition
02	April 2015	<ul style="list-style-type: none">- Changed updating procedure- Added version information- Added functions to Muting Statistics Information- Minor corrections

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