



## SG4 Dongle

Ethernet Adaptor for SG4 Extended Light Curtain Series

### INSTRUCTION MANUAL

**SG4E:** Safety Light Curtain of SG4 Extended series.

**SG Extended GUI:** Graphic User Interface for personal computer for SG4E Series Light Curtains.

#### CLONING

SG-Dongle can download SG4E ACM configuration from SG4E then upload it to other Light Curtains with same product code. That's for backup purposes in case of Light Curtain substitution after damage or series configuration of several ESPEs with the same final function.

##### Step 1: Configuration Backup

Connect SG4-Dongle to source Sg4E as shown in Connection section of this manual.

Hold **DL** button till **d** indication appears on display. Backup is done when DL led stops blinking (Fig. 1)

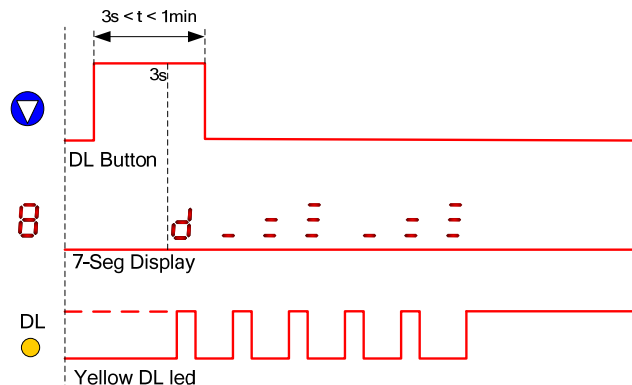


Fig. 1 Configuration download procedure

##### Step 2: Configuration Restore

Connect SG4-Dongle to destination Sg4E as shown in Connection section of this manual.

**Important:** destination Sg4E must have the same product code of source one.

Hold **UL** button till **U** indication appears on display. Restore is done when UL led stops blinking (Fig. 2)

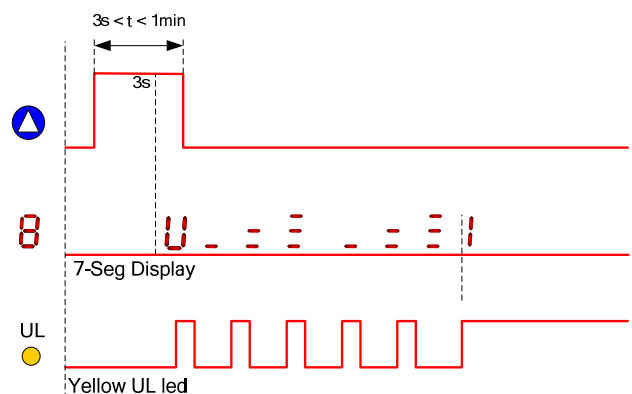


Fig. 2 Configuration Download procedure

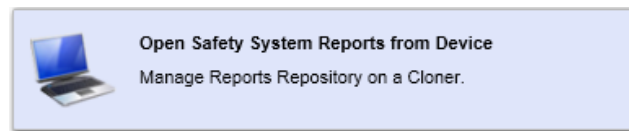
After a successful upload SG4-Dongle stores a configuration report and shows the number of saved report.

A maximum of ten consecutive upload are allowed, then user must download configuration reports by means of SG Extended User Interface.

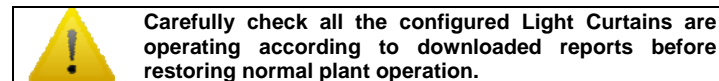
After upload, configuration remains stored in SG4 Dongle: it's possible to upload the same configuration to other light curtains (a new report is generated for each upload).

##### Step 3: Download report and check Light Curtain configuration

Connect SG4-Dongle to **Ethernet and Power** as shown in Connection section of this manual (cfr. SG4 Dongle Standalone Connection). In SG Extended GUI Download all reports stored in SG4-Dongle



Each configuration reports shows the **Light Curtain Serial Number** which the corresponding configuration has been uploaded to and all the configuration parameters.



To erase not relevant or already downloaded Safety Reports hold **DL** button till **E** indication appears on display.

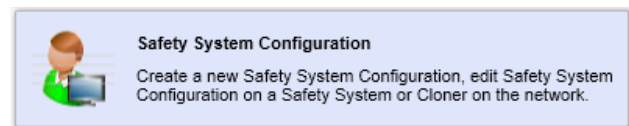
#### OFFLINE CONFIGURATION

SG-Dongle can store SG4E ACM configuration from SG Extended GUI then upload it to one or more SG4E Light Curtains compatibles with configuration parameters. That's useful for configuration of one or more SG4E Light Curtains when no Ethernet connection is available on controlled machinery.

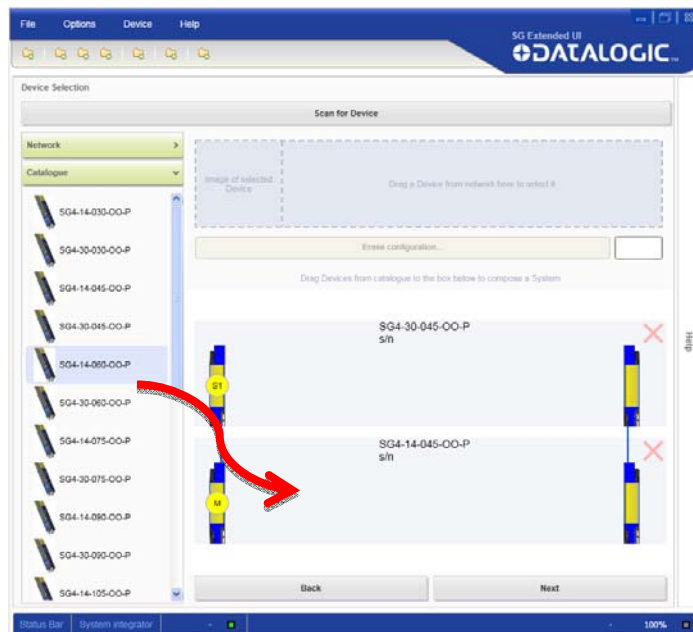
##### Step 1: Store ACM configuration on SG4-Dongle

Connect SG4-Dongle to **Ethernet and Power** as shown in Connection section of this manual (cfr. SG4 Dongle Standalone Connection).

In SG Extended GUI Choose "Safety System Configuration" to begin off-line configuration.



Compose an SG4E System by dragging devices from catalogue with the proper product code. (up to a 3 unit cascade configuration can be stored on Sg4-Dongle)



**Important:** be sure to select the right SG4E product code according to the device the configuration is going to.

A wrong selection will lead to a failure in device upload.

##### Step 2: Upload configuration to SG4E

Connect SG4-Dongle to destination Sg4E as shown in Connection section of this manual.

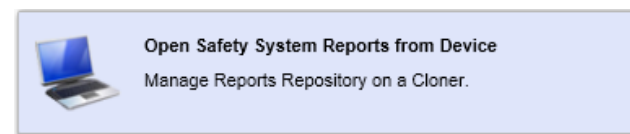
Hold **DL** button till **U** indication appears on display.

After a successful upload SG4-Dongle stores a configuration report. A maximum of ten consecutive upload are allowed, then user must download configuration reports by means of SG Extended GUI.

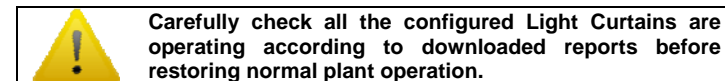
After upload, configuration remains stored in SG4 Dongle: it's possible to upload the same configuration to other light curtains (a new report is generated for each upload).

##### Step 3: Download report and check Light Curtain configuration

Connect SG4-Dongle to **Ethernet and Power** as shown in Connection section of this manual (cfr. SG4 Dongle Standalone Connection). In SG4 UI Download all reports stored in SG4-Dongle



Each configuration reports shows the **Light Curtain Serial Number** which the corresponding configuration has been uploaded to and all the configuration parameters.



#### ERROR LOGGING

When connected to an SG4E System, SG4 Dongle can log light curtain errors: detailed error information is saved on SG4 Dongle memory that can be retrieved with the help of SG Extended GUI. That's useful for diagnostic purposes on randomic light curtains lockout.

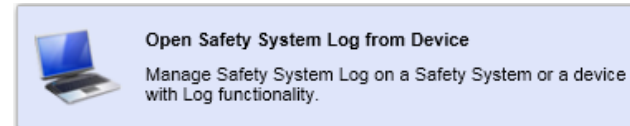
Only ACM configured SG4E Systems can be logged.

SG4 Dongle saves one log item each time the connected SG4E System locks into a noncritical Failure Lockout. Maximum number of Log items depends from cascade topology: 7 items for 3 unit cascades, 11 items for 2 unit cascades, 23 items for single unit cascade.

When SG4E Dongle is moved from one SG4E System to a different one actual log is erased and a new log initialized. Same happens after a change of SG4E System configuration.

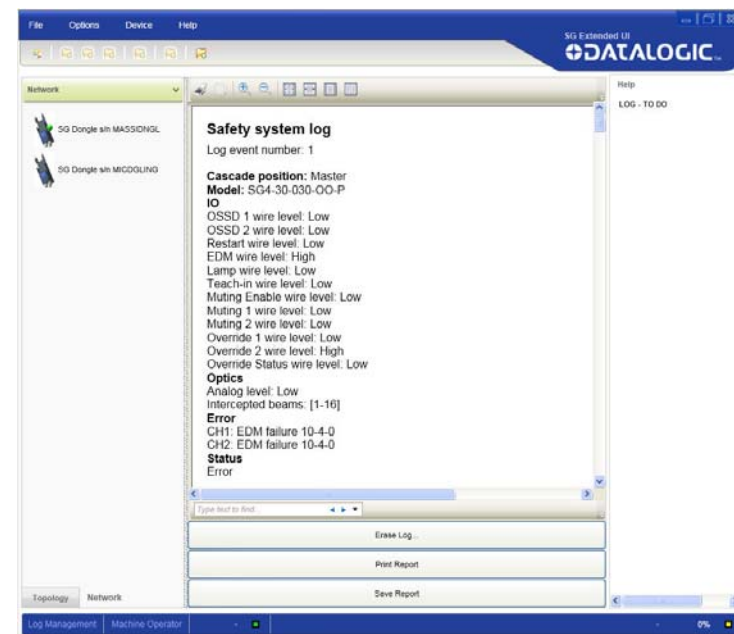
Connect SG4-Dongle to **Ethernet and Power** as shown in Connection section of this manual (cfr. SG4 Dongle Standalone Connection).

In SG4 UI Choose "Open Safety System Log form Device" to download and visualize all Logs stored in SG4 Dongle.



Select SG Dongle device to visualize the contained "Safety system log". A Safety system log contains

- A Safety system report with detailed configuration of loggeg SG4E System
- One or more log item with detailed error information.



#### ADVANCED USER INTERFACE

When connected to an SG4E Light Curtain in operations, SG4-Dongle shows detailed light curtain status information on 7-seg display. See "Diagnostics" Chapter of SG4E Manual for more details about UI messages.

#### FAILURE MESSAGES

F00	Failure on OSSDs
F01	Failure on Microprocessors
F02	Failure on Optics
F03	Failure on EDM
F04	Failure on Restart
F05	Communication Failure
F06	Failure on BCM configuration
F07	Failure on ACM configuration
F08	Failure on Muting Lamp

#### STATUS MESSAGES

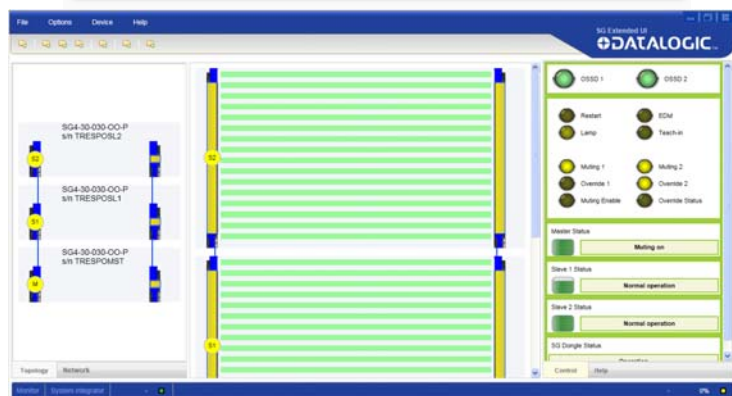
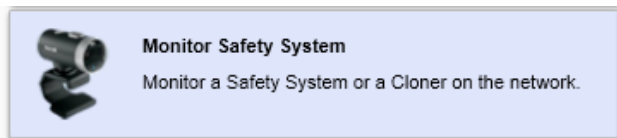
A	Light curtain in Alignment Mode, Correct Alignment
U	Light curtain in Alignment Mode, Not Aligned
U02	Light curtain in Alignment Mode, last beam not aligned
U01	Light curtain in Alignment Mode, first beam not aligned
U03	Light curtain in Alignment Mode, intermediate beam not aligned
I	Light curtain in Interlock, activate RESTART line
A0E	Advanced Configuration from SG Extended GUI running
H08	Muting function active
E08	Light curtain is ready to accept override request
O08	Override function active
S0E	Wrong input signal sequence on override request
S0b	Blanking zone constraints not respected
b0C	Blanking function active

## ON-LINE MONITORING AND CONFIGURATION

When connected to both SG4E Light Curtain in operations and Ethernet network, SG4-Dongle allows SG4 UI to directly connect SG4E Light Curtains. Both single unit and cascade Sg4E systems can be monitored and configured over Ethernet.  
See Connection section of this manual for correct connection of SG4-Dongle and SG4E Light Curtain.

### Monitoring

In SG4E UI Choose "Monitor Safety System" to begin monitoring an SG4E System with an SG-Dongle connected.

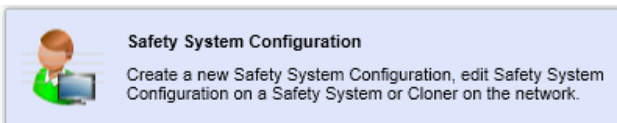


In monitoring section of SG4E UI user can obtain updated information about:

- Connected cascade topology
  - All beam status
  - Alignment level
  - OSSDs status
  - SG4E Inputs status
  - SG4E Outputs status
  - SG4E Working Mode (with detailed error information)
  - SG Dongle Status
- Monitoring is particularly useful for diagnosis and resolution of Light Curtain problems.

### Configuration

In SG4E UI Choose "Safety System Configuration" to begin on-line configuration of connected SG4E.

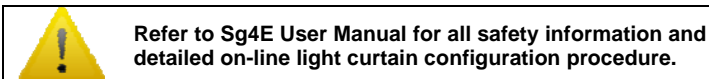


After device selection follow guided "1-2-3" Configuration Steps to:

- 1) Select all configuration parameters
- 2) Write new configuration on Light Curtain and obtain the "Safety System Configuration Report" required to test new configuration on Light Curtain.
- 3) Monitor Light Curtain operation before and after configuration.



Refer to Sg4E User Manual and Sg4E UI contextual help for further details about configuration procedure and parameters selection.



**Refer to Sg4E User Manual for all safety information and detailed on-line light curtain configuration procedure.**

## CONNECTION

### Connection on Light Curtain Head (Advanced user interface, cloning online monitoring and configuration)



Fig. 3 Connection on Light Curtain Head

SG4-Dongle can be connected to Light Curtain Head Main connector:

- Remove white plastic protective cap from SG4E main connector
- Insert SG4-Dongle as shown in Fig. 3
- Fasten SG4-Dongle screws
- Connect M12 12 Pole cable to SG4-Dongle
- Connect M12 5 Pole muting cable to SG4-Dongle if muting is used
- Connect 4 pole Ethernet cable if SG Extended GUI connection is used
- **Leave black caps on all unused connectors and assure they're tightly fastened**

Connector	Pin (color)	Muting	Blanking
	1 (brown)	24V	24V
	2 (blue)	0V	0V
	3 (white)	RESET/RESTART	RESET/RESTART
	4 (green)	OVERRIDE 1	TOLERANCE
	5 (pink)	OSSD2	OSSD2
	6 (yellow)	EDM	EDM
	7 (black)	MUTING DISABLE	TEACH IN
	8 (grey)	OSSD1	OSSD1
	9 (red)	OVERRIDE 2	N.C.
	10 (violet)	MUTING LAMP	BLANKING LAMP
	11 (grey-pink)	OVERRIDE STATUS	N.C.
	12 (red-blue)	EARTH	EARTH
	1 (brown)	24V - Out	Not used - leave black cap on!
	2 (white)	MUTING2	
	3 (blue)	0V - Out	
	4 (black)	MUTING1	
	Ethernet Connector Use Standard M12 D-coded Ethernet cable Leave black cap on when not used.		

### Connection on Light Curtain Tail (Advanced user interface, cloning online monitoring and configuration)

SG4-Dongle can be connected to Light Curtain tail back connector:

- Remove (unscrew) black terminator cap from SG4E back connector.
- Insert SG4-Dongle as shown in Fig. 4
- Fasten SG4-Dongle screws
- Connect 4 pole Ethernet cable if SG4 UI connection is used
- **Leave black caps on all unused connectors and assure they're tightly fastened.**

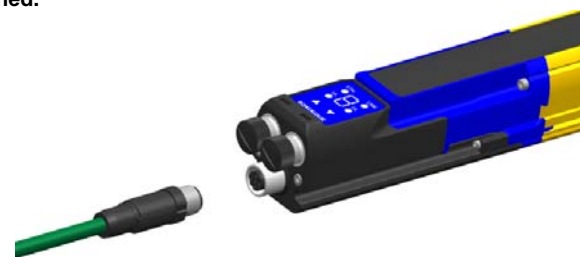


Fig. 4 Connection on Light Curtain Tail

### Connection on Cascade System

On SG4E Cascade systems SG4-Dongle can be connected either on **Master light curtain head** (as in Fig. 3) or on **last slave unit tail** (as in Fig. 4)

### Stand-alone SG4 Dongle Connection (offline configuration, report download, log download)

- Connect M12 12 Pole cable to SG4-Dongle
- Connect 4 pole Ethernet cable if SG Extended GUI connection is used
- **Standalone SG4 Dongle is not IP 65 compliant**

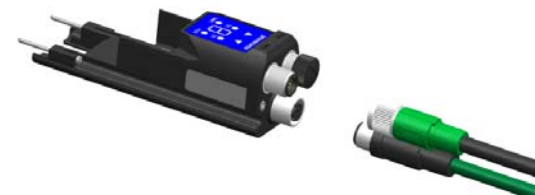


Fig. 5 Stand-alone connection

## TCP/IP CONFIGURATION

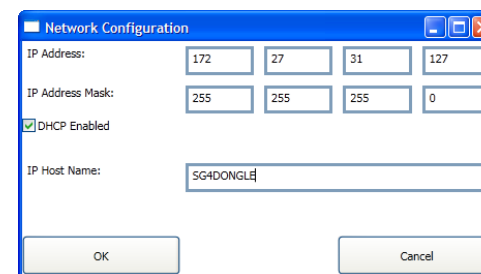
SG4 Dongle has DHCP client enabled by default. Then it's usually sufficient to connect SG4 Dongle to the plant network for SG Extended GUI to be able to connect.

If connecting to a single PC outside a network configure the TCP/IP parameters of the pc to match the following:

**IP: 172.27.101.210**

**Netmask: 255.255.0.0**

If necessary it's possible to change SG4 Dongle Network Configuration from SG Extended GUI in menu **Device -> Setting** after connecting SG4 Dongle.



## USER INTERFACE



	STATUS	INFORMATION
ETH		SG4 Dongle connected to Ethernet
		Ethernet connection not available
LINK		SG4 Dongle connected to SG Extended GUI
		SG Extended GUI not connected
UL		No report in SG4 Dongle memory
		Configuration Upload to Light Curtain in progress
		One or more Safety Report stored in SG4 Dongle.
DL		No downloaded configuration in SG4 Dongle memory
		Configuration Download from Light Curtain in progress
		Downloaded configuration stored in SG4 Dongle memory, ready for Upload.
		Press for more than 1.5s () to upload configuration stored in SG4 Dongle.
		Press for more than 4s () to erase Safety Reports in SG4 Dongle memory.
		Press for more than 1.5s () to download configuration from Light Curtain to SG4 Dongle.

## SG4 Dongle FAILURE MESSAGES

	Light Curtain Configuration Backup Failure
	Light Curtain Configuration Restore Failure, check configuration on SG4 Dongle is compatible with connected SG4E System.
	Light Curtain Configuration Backup Failure on Log Initialization
	Report Repository Full, download reports in SG Extended GUI.
	Failure on SG4 Dongle Factory Setting, contact Datalogic Automation
	Failure on TCP/IP Configuration, default restored
	Failure on Light Curtain Backup Repository, default restored.
	Failure on Report Repository, default restored.
	Failure on Log Repository, default restored

## TECHNICAL DATA

ELECTRICAL DATA	
Power supply (Vdd):	24 Vdc ± 20%
Unit current draw	0.1 A
Max distributed current	1.7A
Connections:	M12 12 pole M12 5 pole M12 ETH 4 pole
Cables length (for power supply):	18 (2x9) pole connector to Light Curtain 50 m. max

## MECHANICAL AND ENVIRONMENTAL DATA

Operating temperature:	-0...+ 55 °C
Storage temperature:	- 25...+ 70 °C
Humidity:	15...95 % (no condensation)
Mechanical protection:	IP 65 (EN 60529)
Vibrations:	Width 0.35 mm Frequency 10 ... 55 Hz 20 sweep per axis, 1octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10 G) 1,000 shocks per axis (EN 60068-2-29)
Housing material:	NANYA PBT 1400 G3

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We DATALOGIC AUTOMATION declare under our sole responsibility that these products are conform to the 2004/108/CE and successive amendments.

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