SAFETY

SG EXTENDED

SG2 MUTING & SG4 EXTENDED SERIES

The new **SG EXTENDED** safety light curtain series represents the ultimate innovation step of SG family.
SG EXTENDED are FULLY INTEGRATED safety light curtains that perfectly combine the SAFEasy concept with applicative flexibility, reliability and performance.
TOTALLY ZERO DEAD ZONE is the distinctive characteristic of all the models from 300 mm to 1800 mm of controlled and overall height
SG EXTENDED series guarantees full application coverage thanks to the following versions :

  SG2 MUTING: Type 2 30 mm resolution with integrated Muting function for all packaging and material handling applications

  SG4 EXTENDED: Type 4 14 and 30 mm resolution with integrated and configurable Cascade, Muting and Blanking functions all in the same part number.
Integrated functions are selectable and configurable in 2 different ways :

  Basic Configuration Mode (BCM) : push buttons located on both TX and RX allow the user to configure the device in a very easy and quick way;

  Advanced Configuration Mode (ACM) : a GUI interface on PC communicate to the barrier through Ethernet and lead the customer through the configuration process step by step.

Type 2 | Type 4 | Type 4
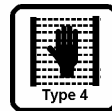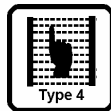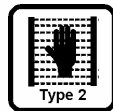
HIGHLIGHTS

- Type 2 And Type 4
- 14 And 30Mm Resolution
- Zero Dead Zone
- Up To 20 M Operating Distance
- 300...1800 Mm Controlled Height
- Basic Configuration Mode (Bcm) Through Push-Buttons
- Advanced Configuration Mode (Acm) Through Gui
- CASCADE (No Differentiation Between Master And Slave Models)
- Integrated MUTING Function
- Integrated BLANKING Function
- Accessory Dongle For:
    - Configuration Cloning
    - Ethernet (Tcp/Ip connection)
    - Remote Monitoring
    - Remote Programming

APPLICATIONS

Extreme flexibility together with high performances make **SG EXTENDED** ideal solution for the following applications :
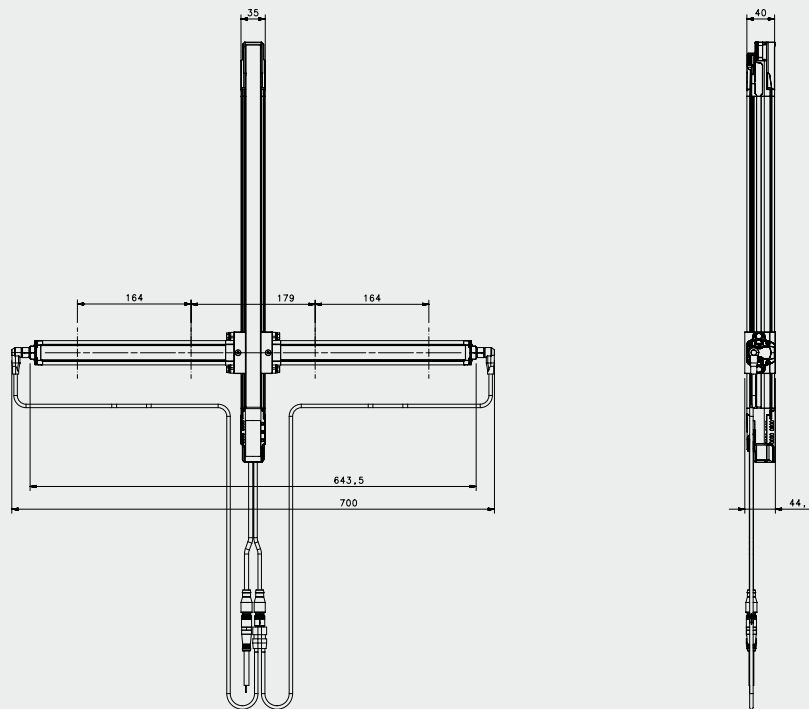
Automotive | Packaging | Metalworking

Woodworking | Electronics

Safety Light Curtains

FINGER & HAND PROTECTION

◆DATALOGIC

The extremely compact size of SG EXTENDED together with the TOTALLY ZERO DEAD ZONE are distinctive characteristic in automation shopfloor for a safety light curtains

- Compact housing
- Standard M12 connectors
- Ethernet communication
- 2 PNP/NPN configurable OSSD outputs
- 8 signalling LEDs
- Alignment level bar-graph on both TX and RX unit
- 3 push-buttons on TX and RX unit for programming

DIMENSIONS

MODEL	LT [MM]	L [MM]
SGy-xx-030-00-#	150	306,3
SGy-xx-045-00-#	300	456,3
SGy-xx-060-00-#	450	606,3
SGy-xx-075-00-#	600	756,3
SGy-xx-090-00-#	750	906,3
SGy-xx-105-00-#	900	1056,3
SGy-xx-120-00-#	1050	1206,3
SGy-xx-135-00-#	1200	1356,3
SGy-xx-150-00-#	1350	1506,3
SGy-xx-165-00-#	1500	1656,3
SGy-xx-180-00-#	1650	1806,3

y= 2 for SG2 MUTING and 4 for SG4 EXTENDED
xx= 30 mm for SG2 MUTING
    14 and 30 mm SG4 EXTENDED
#= W for SG2 MUTING and P for SG4 EXTENDED

INDICATORS

In the left side of user control panel (on both units of light curtains) an 8 leds user interface helps customer to control and check the state of the light curtain, for alignment mode, normal operation and for troubleshooting activity. User interface allows the user to understand which is the configuration set with the push buttons.
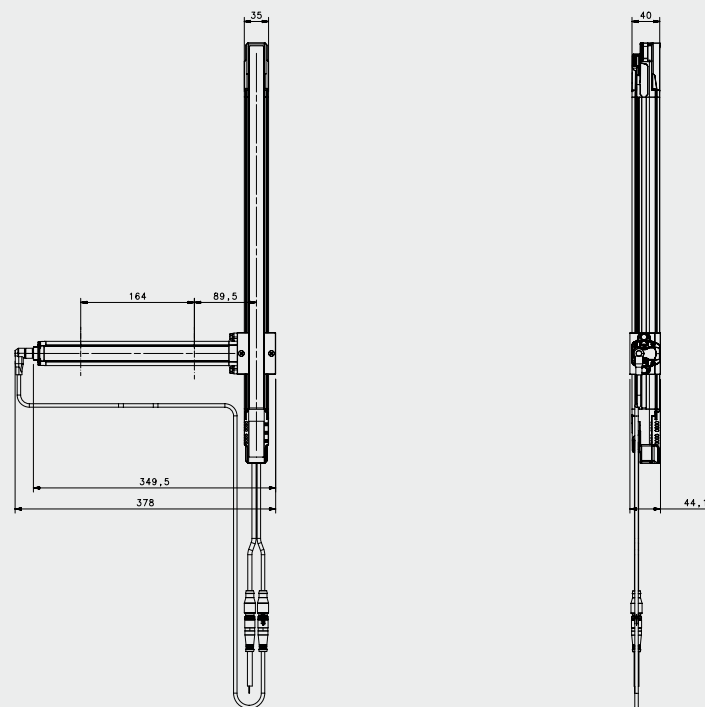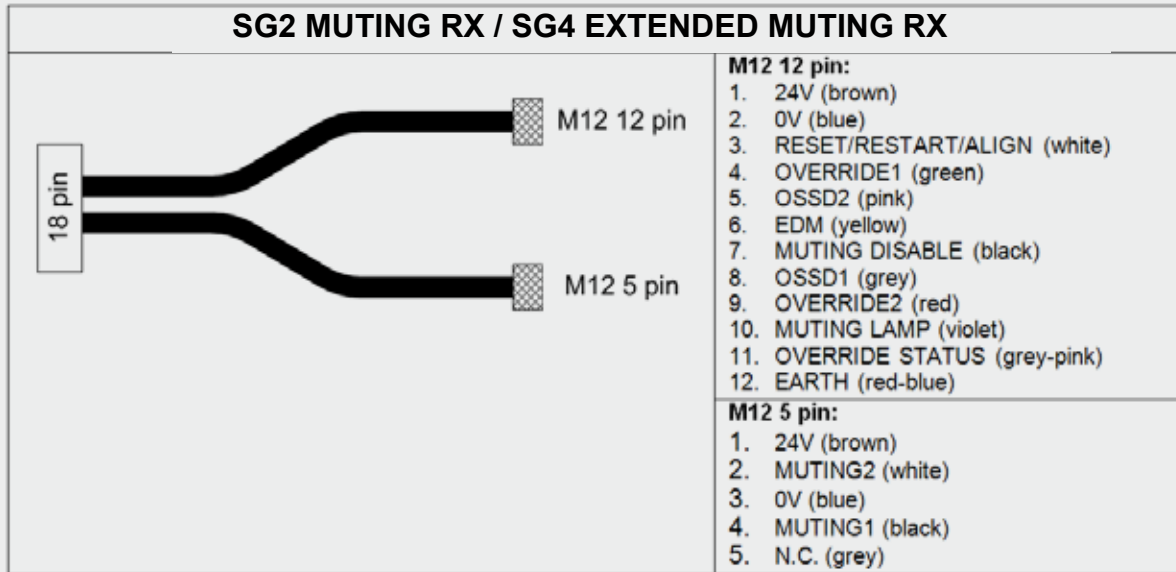
OVERALL DIMENSIONS WITH T MUTING ARMS

OVERALL DIMENSIONS WITH L MUTING ARM

CONNECTIONS

SG2 MUTING RX / SG4 EXTENDED MUTING RX

M12 12 pin

M12 5 pin

M12 12 pin:
1. 24V (brown)
2. 0V (blue)
3. RESET/RESTART/ALIGN (white)
4. OVERRIDE1 (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. MUTING DISABLE (black)
8. OSSD1 (grey)
9. OVERRIDE2 (red)
10. MUTING LAMP (violet)
11. OVERRIDE STATUS (grey-pink)
12. EARTH (red-blue)

M12 5 pin:
1. 24V (brown)
2. MUTING2 (white)
3. 0V (blue)
4. MUTING1 (black)
5. N.C. (grey)

SG4 EXTENDED Blanking RX

M12 12 pin

M12 12 pin:
1. 24V (brown)
2. 0V (blue)
3. RESET/RESTART/ALIGN (white)
4. TEACH IN (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. N.C. (black)
8. OSSD1 (grey)
9. TOLERANCE (red)
10. LAMP (violet)
11. N.C. (grey-pink)
12. EARTH (red-blue)

SG2 MUTING TX / SG4 EXTENDED TX

M12 5 pin

M12 5 pin:
1. 24V (brown)
2. TEST (white)
3. 0V (blue)
4. EARTH (black)
5. REDUCTION RANGE (grey)

M12 Connectors pin-out

12 pin	5 pin

CONNECTIONS

SG2 MUTING RX / SG4 EXTENDED MUTING RX

LINE	LAYOUT CONNECTION
RESET	IN line — N.O. 24Vdc
RESTART	IN line — N.O. 24Vdc
OVERRIDE 1	IN line — N.O. 24Vdc
OVERRIDE 2	IN line — N.O.
EDM	REFER TO USER MANUAL SECTION 7.4
MUTING DISABLE	IN line — N.O. 24Vdc
OSSD1 / OSSD 2	OSSDs — 0V
OVERRIDE STATUS	OSSDs — 0V
MUTING LAMP	24Vdc ⊗ LAMP
MUTING1/MUTING2	IN line — N.O. 24Vdc

SG4 EXTENDED BLANKING RX

LINE	LAYOUT CONNECTION
RESET	IN line — N.O. 24Vdc
RESTART	IN line — N.O. 24Vdc
TEACH IN	IN line — N.O. 24Vdc
TOLERANCE	IN line — N.O. 24Vdc
EDM	REFER TO USER MANUAL SECTION 7.4
OSSD1 / OSSD 2	OSSDs — 0V
BLANKING LAMP	24Vdc ⊗ LAMP
AUX OUTPUT	OUT line — 0V

SG2 MUTING TX / SG4 EXTENDED TX

LINE	LAYOUT CONNECTION
TEST	IN line — N.O. 24Vdc
REDUCTION RANGE	IN line — N.O. 24Vdc

TECHNICAL DATA

	SG2 MUTING	SG4 EXTENDED
Electrical Data		
Power supply (Vdd):	24 Vdc ± 20%	24 Vdc ± 20%
Emitter consumption (TX):	3 W max	3 W max
Receiver consumption (RX):	5 W max (without load)	5 W max (without load)
Outputs:	2 PNP outputs short-circuit protection (1.4 A @55°C)	2 PNP / NPN configurable outputs short-circuit protection (1.4 A @55°C)
Output current:	0.5 A max / each output	0.5 A max / each output
Output voltage - ON min:	Vdd -1 V min	Vdd -1 V min
Output voltage - OFF max:	0.2 V	0.2 V
Output capacitive load:	2.2 uF @24Vdc max	2.2 uF @24Vdc max
Response time:	See section "MODEL TABLE SELECTION"	See section "MODEL TABLE SELECTION"
Recovery time:	100 ms typical	100 ms typical
Protected height:	from 300 mm to1800 mm See section "MODEL TABLE SELECTION"	from 300 mm to1800 mm See section "MODEL TABLE SELECTION"
Safety category:	Type 2 (ref. EN 61496-1)	Type 4 (ref. EN 61496-1)
Auxiliary functions:	Reset, Restart selection, EDM, Test, Muting, Partial Muting, Range reduction	Reset, Restart selection, Alignment, EDM, Test, Muting, Partial Muting, Override, Coding, Range reduction, Fixed Blanking, Floating Blanking, Cascade, PNP / NPN output, GUI programming
Electrical protection:	Class I / Class III	Class I / Class III
Connections:	TX : M12 5 poles RX : M12 12 poles + M12 5 poles	TX : M12 5 poles RX : ▪ M12 12 poles + M12 5 poles for Muting applications ▪ M12 12 poles for Blanking applications
Cable length (for power supply):	50m. max.	50m. max.
Pollution degree	2	2
Optical Data		
Emitting light:	Infrared LED (950 nm wavelength)	Infrared LED (950 nm wavelength)
Resolution:	30 mm	14 mm 30 mm
N° of beams:	See section "MODEL TABLE SELECTION"	See section "MODEL TABLE SELECTION"
Operating distance:	0.2...20 m / 0.2...12 m	0.2...7 m / 0.2...4 m for 14 mm resolution 0.2...20 m / 0.2...12 m for 30 mm resolution
Ambient light rejection:	IEC 61496-2	IEC 61496-2
Mechanical and environmental data		
Operating temperature:	0...50°C	0...50°C
Storage temperature:	-25...+ 70 °C	-25...+ 70 °C
Temperature class:	T6	T6
Humidity:	15...95 % (no condensation)	15...95 % (no condensation)
Water protection grade:	IP 65 (EN 60529)	IP 65 (EN 60529)
Vibration:	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave / min (EN 60068-2-6)	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave / min (EN 60068-2-6)
Shock resistance:	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)	Painted aluminium (yellow RAL 1003)
Caps material:	PBT Valox 508 (pantone 072-CVC)	PBT Valox 508 (pantone 072-CVC)
Front glass material:	PMMA	PMMA
Connectors:	M12	M12

RELIABILITY PARAMETERS

	SG2 MUTING	SG4 EXTENDED
PL (Ref. EN ISO 13849-1)	d	e
CAT (Ref. EN 954-1)	2	4
SIL (Ref. EN IEC 61508)	2	3
SIL CL (Ref. EN IEC 62061)	2	3
PFHD – Probability of Danger Failure (1/h)	1,04E-08	2,64E-09
T1 – Life Time (Years)	20	20
MTTFD - Mean Time to Danger Failure (Years)	273	444
DC – Diagnostic Coverage (%)	97,50%	98,80%
SFF – Safe Failure Fraction (%)	98,40%	99,30%
HFT – Hardware Fault Tolerance	0	1

MODEL SELECTION TABLE

SG2 MUTING					
DESCRIPTION	PROTECTED HEIGHT [MM]	BEAMS N.	RESPONSE TIME [MSEC]	RESOLUTION [MM]	CODE
SG2-30-030-00-W	300	16	13	30	957801700
SG2-30-045-00-W	450	24	14	30	957801710
SG2-30-060-00-W	600	32	15	30	957801720
SG2-30-075-00-W	750	40	16	30	957801730
SG2-30-090-00-W	900	48	17	30	957801740
SG2-30-105-00-W	1050	56	18	30	957801750
SG2-30-120-00-W	1200	64	19	30	957801760
SG2-30-135-00-W	1350	72	19	30	957801770
SG2-30-150-00-W	1500	80	20	30	957801780
SG2-30-165-00-W	1650	88	21	30	957801790
SG2-30-180-00-W	1800	96	22	30	957801800

SG4 EXTENDED						
DESCRIPTION	PROTECTED HEIGHT [MM]	BEAMS N.	RESPONSE TIME [MSEC]	RESPONSE TIME WITH CODE (MSEC)	RESOLUTION [MM]	CODE
SG4-14-030-00-P	300	32	15	20	14	957901240
SG4-14-045-00-P	450	48	17	25	14	957901250
SG4-14-060-00-P	600	64	19	29	14	957901260
SG4-14-075-00-P	750	80	20	34	14	957901270
SG4-14-090-00-P	900	96	22	38	14	957901280
SG4-14-105-00-P	1050	112	24	43	14	957901290
SG4-14-120-00-P	1200	128	26	47	14	957901300
SG4-14-135-00-P	1350	144	27	52	14	957901310
SG4-14-150-00-P	1500	160	29	56	14	957901320
SG4-14-165-00-P	1650	176	31	61	14	957901330
SG4-14-180-00-P	1800	192	33	65	14	957901340

SG4 EXTENDED						
DESCRIPTION	PROTECTED HEIGHT [MM]	BEAMS N.	RESPONSE TIME [MSEC]	RESPONSE TIME WITH CODE (MSEC)	RESOLUTION [MM]	CODE
SG4-30-030-00-P	300	16	13	16	30	957901350
SG4-30-045-00-P	450	24	14	18	30	957901360
SG4-30-060-00-P	600	32	15	20	30	957901370
SG4-30-075-00-P	750	40	16	23	30	957901380
SG4-30-090-00-P	900	48	17	25	30	957901390
SG4-30-105-00-P	1050	56	18	27	30	957901400
SG4-30-120-00-P	1200	64	19	29	30	957901410
SG4-30-135-00-P	1350	72	19	32	30	957901420
SG4-30-150-00-P	1500	80	20	34	30	957901430
SG4-30-165-00-P	1650	88	21	36	30	957901440
SG4-30-180-00-P	1800	96	22	38	30	957901450

SG4-EXTENDED CASCADE RESPONSE TIME

With the following formulas (and referring to the response time reported in the following tables) the user can calculate the response time of every cascade configuration:

- no code: $T_{Cascade}$ [msec] = $T_{Master} + T_{Slave\ 1}\ [+\ T_{Slave\ 2}] + 7,5$
- with code: $T_{Cascade}$ [msec] = $T_{Master\ AIC} + T_{Slave\ 1\ AIC}\ [+\ T_{Slave\ 2\ AIC}] + 7,5$

DESCRIPTION	MASTER RESPONSE TIME WITHOUT CODE (MSEC) T_{MASTER}	SLAVE RESPONSE TIME WITHOUT CODE (MSEC) T_{SLAVE}	MASTER RESPONSE TIME WITH CODE (MSEC) $T_{MASTER\ AIC}$	SLAVE RESPONSE TIME WITH CODE (MSEC) $T_{SLAVE\ AIC}$
SG4-14-030-00-P	13,7	13,7	19,1	19,1
SG4-14-045-00-P	15,4	15,4	23,6	23,6
SG4-14-060-00-P	17,2	17,2	28,1	28,1
SG4-14-075-00-P	18,9	18,9	32,6	32,6
SG4-14-090-00-P	20,7	20,7	37,1	37,1
SG4-14-105-00-P	22,4	22,4	41,6	41,6
SG4-14-120-00-P	24,2	24,2	46,0	46
SG4-14-135-00-P	26,0	–	50,5	–
SG4-14-150-00-P	27,7	–	55,0	–
SG4-14-165-00-P	29,5	–	59,5	–
SG4-14-180-00-P	31,2	–	64,0	–

DESCRIPTION	MASTER RESPONSE TIME WITHOUT CODE (MSEC) T_{MASTER}	SLAVE RESPONSE TIME WITHOUT CODE (MSEC) T_{SLAVE}	MASTER RESPONSE TIME WITH CODE (MSEC) $T_{MASTER\ AIC}$	SLAVE RESPONSE TIME WITH CODE (MSEC) $T_{SLAVE\ AIC}$
SG4-30-030-00-P	11,9	11,9	14,6	15
SG4-30-045-00-P	12,8	12,8	16,8	17
SG4-30-060-00-P	13,7	13,7	19,1	19
SG4-30-075-00-P	14,5	14,5	21,3	21
SG4-30-090-00-P	15,4	15,4	23,6	24
SG4-30-105-00-P	16,3	16,3	25,8	26
SG4-30-120-00-P	17,2	17,2	28,1	28
SG4-30-135-00-P	18,0	–	30,3	–
SG4-30-150-00-P	18,9	–	32,6	–
SG4-30-165-00-P	19,8	–	34,8	–
SG4-30-180-00-P	20,7	–	37,1	–

MUTING ARMS

Muting arms for SG4 EXTENDED and SG2 MUTING are available in 2 versions: with retroretroreflex sensors and with emitter-receiver sensors. SG4 EXTENDED and SG2 MUTING are designed, on both emitter and receiver, for mounting of both tipology of Muting arms.
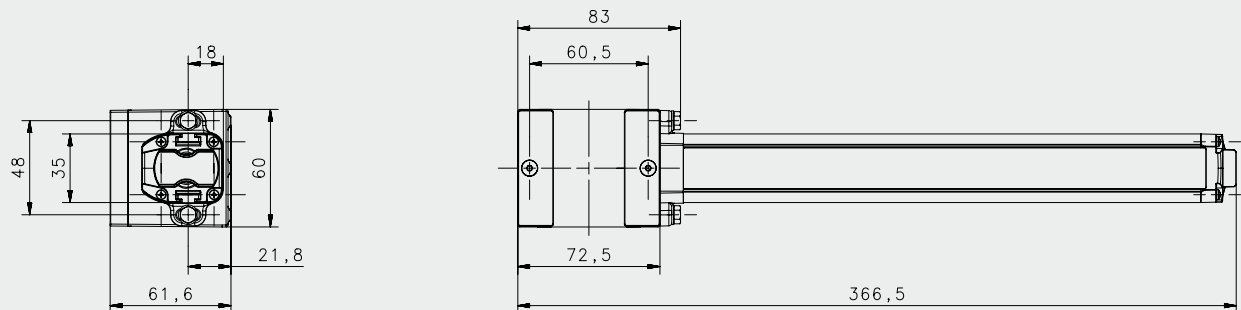Following drawings show L-Muting Arms and T-Muting Arms dimensions.

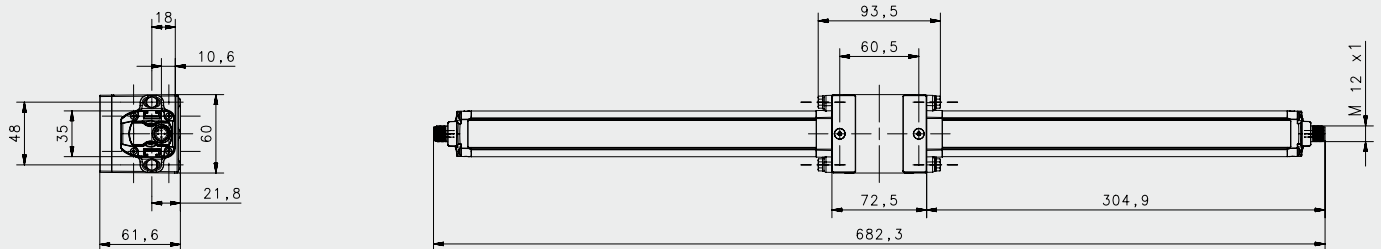## L-MUTING ARMS AND T-MUTING ARMS DIMENSIONS

L MUTING ARM ACTIVE SIDE
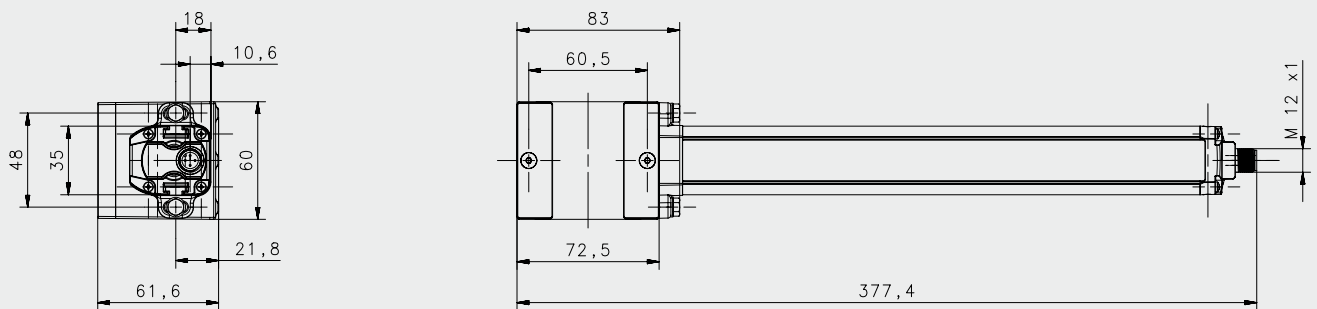
L MUTING ARM PASSIVE SIDE

T MUTING ARM ACTIVE SIDE

Safety Light Curtains
FINGER & HAND PROTECTION

◆DATALOGIC

SOFTWARE PC

- **A** Home
- **B** Toolbar
- **C** Task selection area
- **D** Help online
- **E** Status Bar

Step 1: Configuration

Configuration step allows the user to edit the functions parameters of the safety light curtain.
This step will be selected, by default, when you first access the Configuration window.

NOTE

The Step 1 Configuration button will be active only if the current logged user is a Systems Integrator. A Maintainer or a Machine User cannot modify the safety configuration parameters.

Step 2: Programming

Programming step is aimed to view and accept the new configuration report before saving it to the safety light curtain.
This Step is enabled only when connected to a SG Dongle or a SG4 EXTENDED Safety System.

Step 3: Monitoring

Monitoring step is to check the final behavior of the safety system after configuration. The Step 3 Monitoring enables you monitor a safety system to test a new configuration.

Safety Light Curtains

FINGER & HAND PROTECTION

MAXIMUM SIMPLICITY

Scan for Devices
This function finds all the devices connected to the network.

Help

A Help is available for each step, supplying useful suggestions on the options available.

Topology

The Topology area, selected by default, displays the graphical representation of the configuration of the Safety Light Curtain in the current configuration operation. The System can be a real or virtual Safety System composed in the Selection screen.

REPORT MANAGEMENT

Use this option to connect to a Cloner device and view, print, save, or erase the Safety System configuration reports stored on the Cloner itself.
A report is a list of parameters that represent a configuration that is generally saved on a safety system.

LOG MANAGEMENT

Use this option to connect to a logger device and view, print, save or erase the Safety System log stored on the logger.

Note: A logger is a Safety Device or a Cloner, e.g. SG Dongle, which can store the Safety System log. It is a collection of Safety System states. The log stores the state each device when particular events occur during the Safety System operation.

Safety Light Curtains
FINGER & HAND PROTECTION

◇DATALOGIC
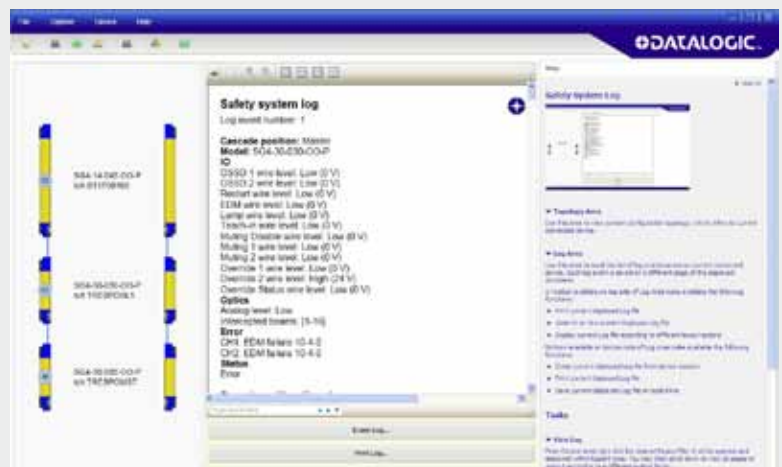
EXCELLENT FLEXIBILITY

Monitoraggio
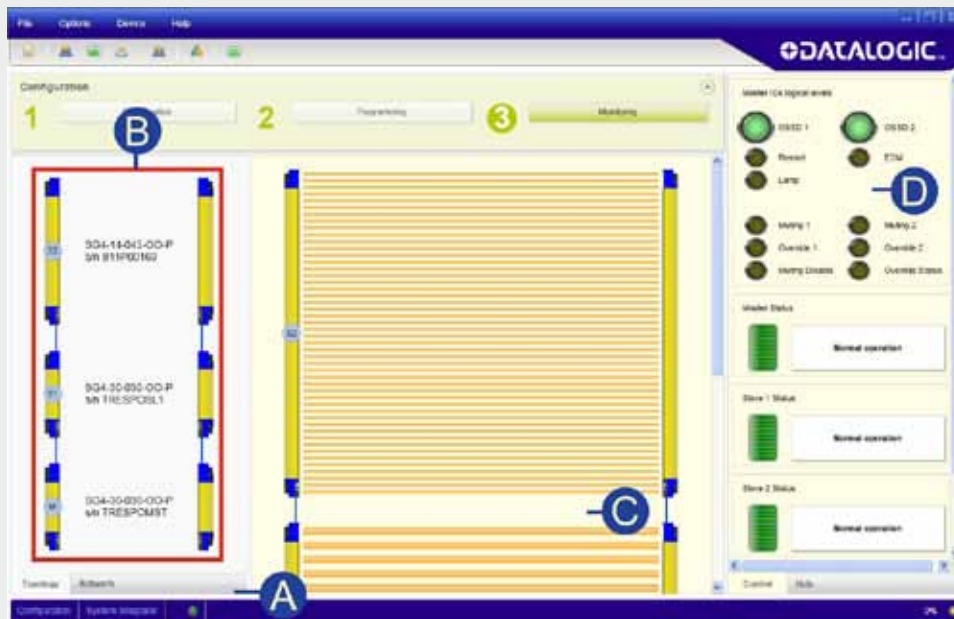
Connect to the remote Safety Systems or Cloner through the Ethernet connection and monitor their present or working status.

A Network Area: Displays the list of Safety devices present on the Local Area Network. It is a read only area.

B Topology Area: Displays the structure of the current connected SG4 EXTENDED light curtains cascade if SG Dongle is connected to a cascade, or the SG Dongle when only SG Dongle is connected.

C Protected Area: Displays the current status of the protected area by listing light curtain beams. You may check current status by verifying all beams are displayed.

D Control Area: Displays the level of the OSSDs and current status of the inputs and the outputs on the M12 connectors of the SG Dongle; it also gives information about the operation status of master, slaves and SG Dongle.

The bottom part displays the status of each component of the cascade connection. That is the status of the master and one or more slaves.

SG4 DONGLE ETHERNET ADAPTOR

The SG4 DONGLE makes the system flexible and addressable allowing remote monitoring and remote programming: product assistance becomes much easier.

- CONFIGURATION CLONING
- ETHERNET (TCP/IP) CONNECTION
- REMOTE MONITORING
- REMOTE PROGRAMMING

FUNCTIONS

Operation functions and parameters configuration can be performed in two different ways:

Basic Configuration Mode (BCM):
Let the user select among basic functions / basic parameters with the help of push buttons and led user interface (**available on both SG2 MUTING and SG4 EXTENDED**)
Advanced Configuration Mode (ACM):
Let the user select among advanced functions / advanced parameters with the help of a PC Software GUI interface (**available only for SG4 EXTENDED**)

BCM

A user interface of 8 leds and 3 protected push buttons lets the user operate basic configuration.
The user must use the provided special tool (see below) to activate push buttons thus accidental access to safety configuration is avoided.
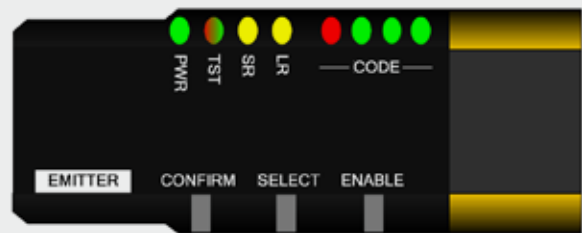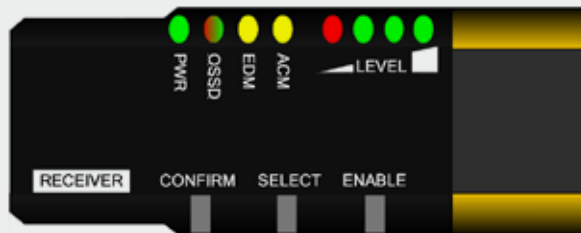
Basic configuration steps:
In the right side of user control panel (on both units of the light curtain) a setting interface composed by 3 push buttons is present; the purpose of the interface is to let the user set light curtain locally and without use of PC graphic user interface.
Setting interface is composed by a CONFIRM push button used to enter in BCM and to confirm the selected configuration, a SELECT push button used to roll by different functions and an ENABLE push button to activate/deactivate the current function.
Please refer to the quick installation guide for necessary BCM configuration steps.

When an Advanced Configuration is already set on ESPE (configuration by SG4-GUI PC User Interface) ACM LED on RX unit's ON. Then a button pressure on Step 2 causes ESPE configuration failure lockout to prevent unauthorized advanced configuration changes.

SG2-MUTING RX

Function	Led #	Setting (default in bold)	LED Status 1 2 3 4 5 6 7 8	Zone
Partial Muting	2 - 3	Zone A		
		Zone A+B		
		Zone A+B+C		
		Zone **A+B+C+D**		
		Zone B		
		Zone C		
EDM	4	**Enabled**		
		Disabled		
Restart Mode	5	**Auto**		
		Manual		
Muting direction	6	**T (bidirectional)**		
		L (monodirectional)		
Muting Time-out	7	**10 min**		
		Inf.		
Override sensor	8	**Level**		
		Edge		

SG4 EXTENDED RX

RX Function list in Muting (default) operation Mode (Led3 ON Yellow)

Function	Led #	Setting (default in bold)	Led Status 1 2 3 4 5 6 7 8
Coding	2	Code 1	LED2 red
		Code 2	LED2 green
		No Code	LED2 off
Muting/Blanking Selection	3	**Muting**	LED3 yellow
		Blanking	LED3 off
EDM	4	**Enabled**	LED4 yellow
		Disabled	LED4 off
Restart mode	5	**Auto**	LED5 red
		Manual	LED5 off
Muting Direction	6	**T (bidirectional)**	LED6 green
		L (monodirectional)	LED6 off
Muting Timeout	7	**10 min**	LED7 green
		Inf.	LED7 off
Override Trigger	8	**Level**	LED8 green
		Edge	LED8 off

Function list in Blanking operation Mode (Led3 OFF)

Function	Led #	Setting (default in bold)	Led Status 1 2 3 4 5 6 7 8
Coding	2	Code 1	LED2 red
		Code 2	LED2 green
		No Code	LED2 off
Muting/Blanking Selection	3	Muting	LED3 yellow
		Blanking	LED3 off
EDM	4	**Enabled**	LED4 yellow
		Disabled	LED4 off
Restart mode	5	**Auto**	LED5 red
		Manual	LED5 off
Floating Blanking Selection	6-7	**Floating Blanking Disabled**	LED6 green, LED7 green
		Floating Blanking 1 beam	LED6 green, LED7 off
		Floating Blanking 2 beams	LED6 off, LED7 green
		Reduced Res 4 beams	LED6 off, LED7 off
Fixed blanking selection	8	**1 Fixed Blanking Zone**	LED8 green
		2 Fixed Blanking Zones	LED8 off
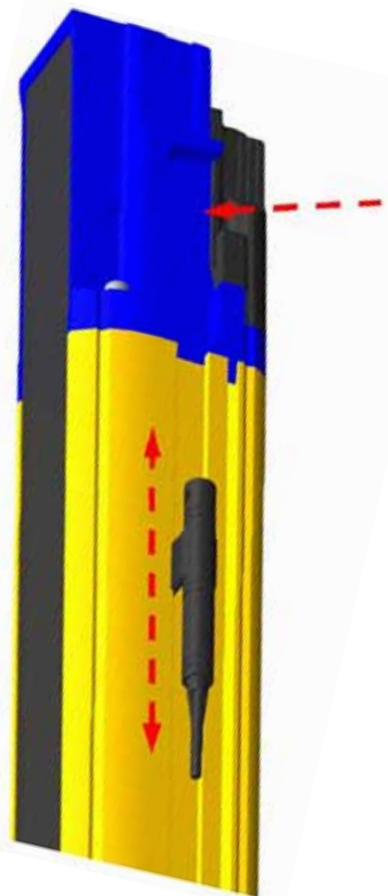
SG4 EXTENDED TX

Tx Function list

Function	Led #	Setting (default in bold)	Led Status 1 2 3 4 5 6 7 8
Coding	2	Code 1	LED2 red
		Code 2	LED2 green
		No Code	LED2 off
Range Selection	3	**Long**	LED3 yellow
		Short	LED3 off

FUNCTIONS

SG4 EXTENDED RX ACM		
COMMON FUNCTIONS		
Control	**Functioning**	**ACM Configuration**
Muting / Blanking mode	This function allows the user to define the light curtain mode.	Muting / Blanking selection — Muting — Muting / Blanking
Restart	The restart mode allows the user to define how the light curtain returns in a Normal Operation condition.	Restart selection — AUTO — AUTO / MANUAL
EDM	The External Device Monitoring (EDM) function controls external relays or contactors by verifying the OSSDs status.	EDM mode selection — ON — OFF / ON
Reduction range	This function allows the user to select the maximum operating distance at which the curtains can be mounted.	Operating range selection — LONG — LONG / SHORT
Anti-Interference Coding	The coding function allows the ESPE to remain in normal operation also when an interference condition with an other ESPE occurs, and in particular when the TX of the first light curtain radiates in the direction of the RX of the second light curtain.	Code selection — DISABLED — DISABLED / CODE 1 / CODE 2
PNP / NPN OSSD output	The PNP/NPN function allows the user to inform the light curtain on how the OSSDs are connected.	OSSDs mode selection — PNP — PNP / NPN

RIGHTS MANAGEMENT

There are 3 different kinds of operator that can use the GUI with 3 different levels of authorizations.
- **System Integrator:** has all the possible authorizations and can set every configuration on the GUI
- **Maintainer:** can upload the configurations (saved on the GUI) on the light curtain and use the GUI for monitoring the system, but he can't create new configurations
- **Machine Operator:** uses the GUI only for monitoring the system
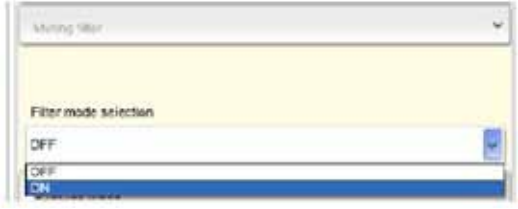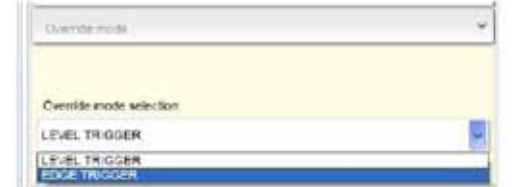
User login

User: System Integrator — Machine Operator / Maintainer / System Integrator

Password:

OK   Cancel
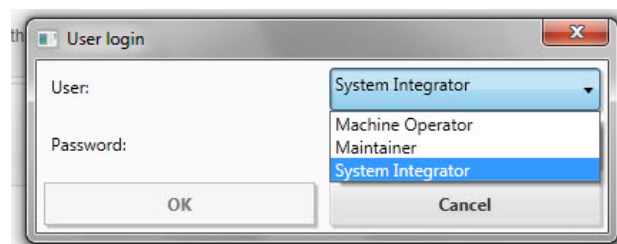
PASSWORDS: each product has FACTORY passwords for each user that are reported on Instruction Manual. After the first access, each user's PASSWORD can be changed and personalized.

FUNCTIONS - MUTING

In this section are listed all the functionalities related with MUTING that can be selected through SG4 EXTENDED GUI. For detailed explanation of each function and corresponding Time Diagrams please refer to Instruction manual and GUI software HELP.

CONTROL	FUNCTIONING	ACM CONFIGURATION
Muting direction	The DEVICE can be used with both bidirectional 'T' or unidirectional 'L' type muting.	
Muting Activation Time T12	Time T12 needed from Muting 1 and Muting 2 signals activation for starting the Muting. **Values: from 1 to 16 secs**	
L Muting Deactivation Time TMoff	When Muiting 1 signal becomes OFF the device starts a countdown before stopping the muting. This countdown lasts a time related to the Muting Activation Time T12 by a multiplier. **Values: from 1 to 16**	
Muting duration (Muting TimeOut)	Muting timeout is a time that defines the maximum duration of muting function; after the timeout the muting ends. **Values: from 10 to 1080 min infinitive (∞)**	
Muting Filter	The muting filter is a filter on muting inputs; low–high or high–low transitions of MUTING signals are considered valid only if maintained for a time (Tf) greater than 100 msec. **Values: ON (100 msec) or OFF**	
Override Mode	It's possible to configure the trigger of override inputs: Level or Edge. **Values: LEVEL or EDGE**	
Override Timeout	Override timeout is the maximum duration of override. **Values: from 1 to 256 min**	
Override Restart	This kind of selection can be achieved only if the light curtain is in Manual Restart; the user can select the type of Override Restart. **Values: Normal or Auto**	

FUNCTIONS - PARTIAL MUTING

It's possible to configure the type of muting: total or partial. Partial muting can be useful in those applications in which the user wants to limit the muting function effects to selected zones only.

In ACM Configuration the user can select a maximum of **5 muting zones**, each defined with the following parameters:

- *Position:* first beam of muting zone (starting from user display cap)
- *Dimension:* number of beams of muting zone
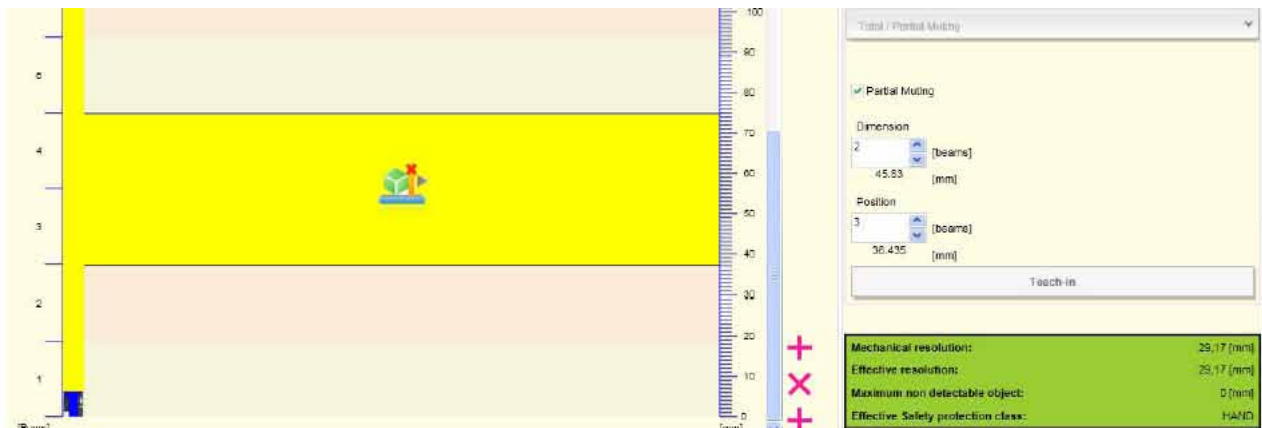
Check 'Partial Muting" to enable function	
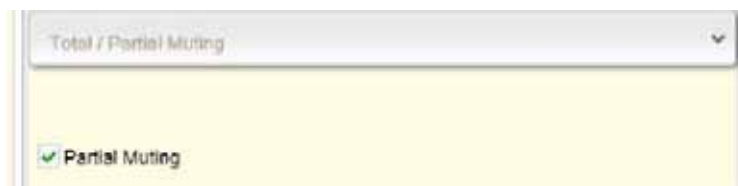
Click '+" button to add a new muting zone, X to remove a selected one		Click 'Teach-In" button to acquire an object positioned inside the controlled area as a new muting zone	

Choose correct parameters for selected zone. Both Dimension and Position are set in beams unit, equivalent measures in mm are exposed by GUI.	
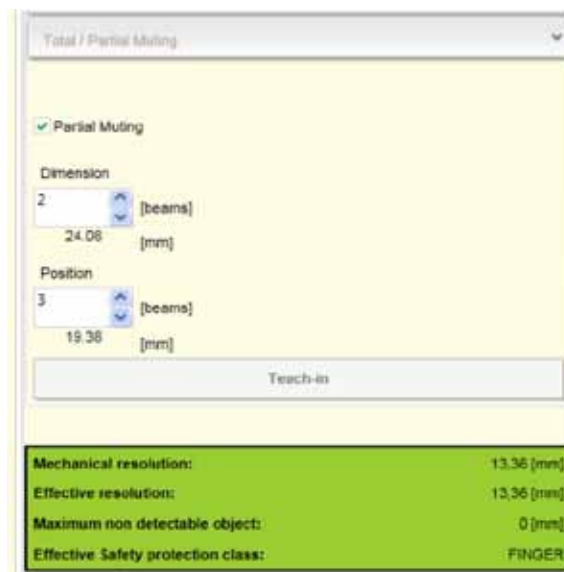
FUNCTIONS - BLANKING

Questa sezione elenca tutte le funzioni relative al BLANKING che possono essere selezionate tramite la GUI della SG4 EXTENDED. Per informazioni dettagliate su ciascuna funzione e sulle corrispondenti tempistiche, fare riferimento al manuale di istruzioni e alla funzione AIUTO della GUI. L'operatore può aggiungere fino a 5 zone di diversi **TIPI DI BLANKING.**

Fare clic sul pulsante '+" per aggiungere una nuova zona di muting, X per rimuovere una zona già selezionata.		Fare clic sul pulsante 'Teach-In" per acquisire un oggetto posizionato all'interno dell'area controllata come nuova zona di muting.

Blanking fisso
Il blanking fisso permette di occupare una parte fissa dell'area controllata (per esempio un certo numero di raggi), mentre tutti gli altri raggi funzionano in modo normale.
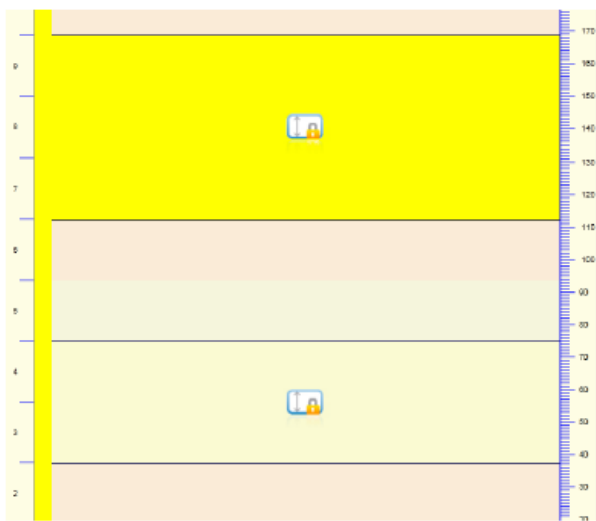
Blanking fisso con tolleranza aumentata
Si tratta di un blanking fisso con tolleranza solo su un lato dell'area di blanking. Pertanto, l'utente deve scegliere 'tolleranza superiore" o 'tolleranza inferiore".
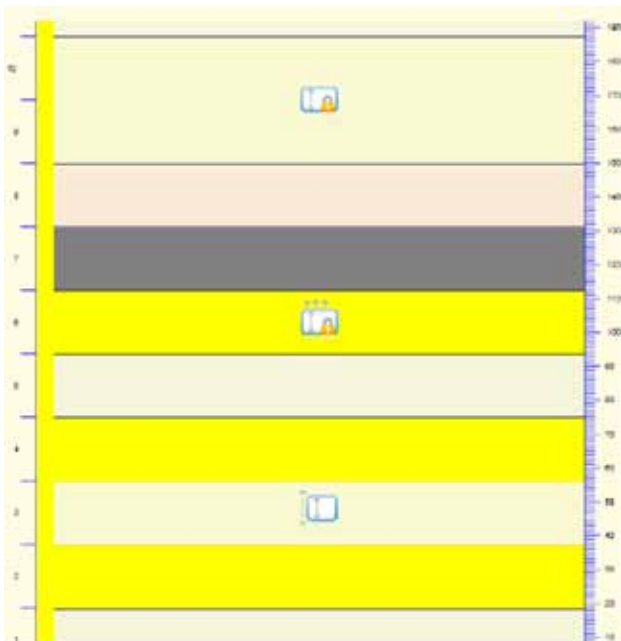
FLOATING BLANKING WITH TOTAL SURVEILLANCE
Floating objects can move up or down intercepting different beams while moving; the objects can't overlap nor change relative posit
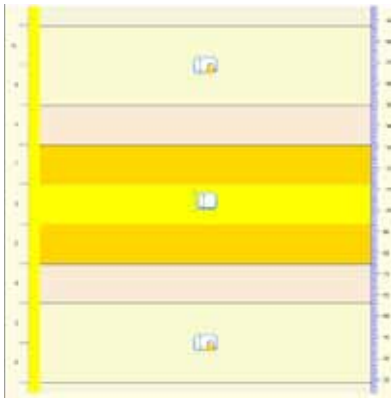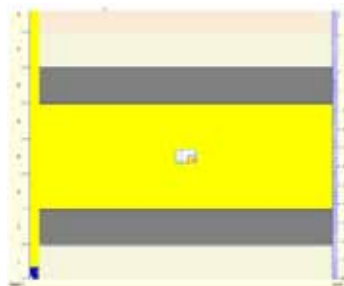

FLOATING BLANKING WITH PARTIAL SURVEILLANCE
Floating objects can move up or down intercepting different beams while moving; they can even get out of the protected area or intercept a number of beams minor than the configured one.
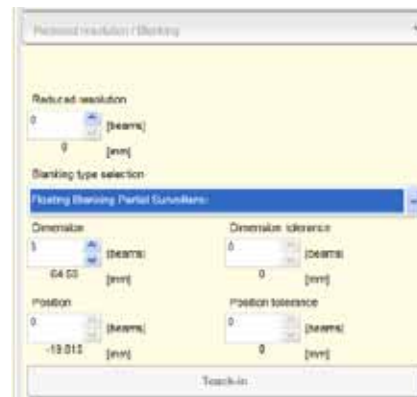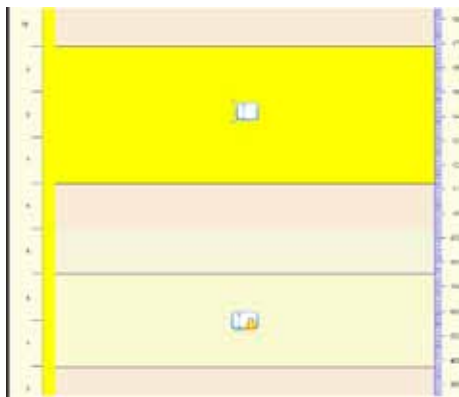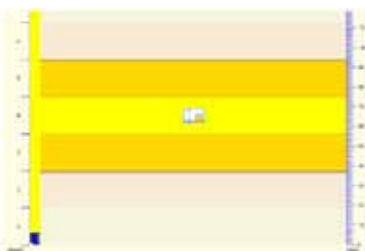

Tolerance
There are 2 types of tolerance: position and dimension.

|	
Dimension Tolerance It indicates how many beams the object can be smaller than the number fixed by the value Dimension.	
Position Tolerance It indicates the number of beams in blanking zone that can be intercepted above and below the blanking zone without making the OSSDs switch off.	

Reduced Resolution

Reduced Resolution is a particular kind of floating blanking in which more than one object can intercept each a defined number of beams with the device remaining in normal operation.
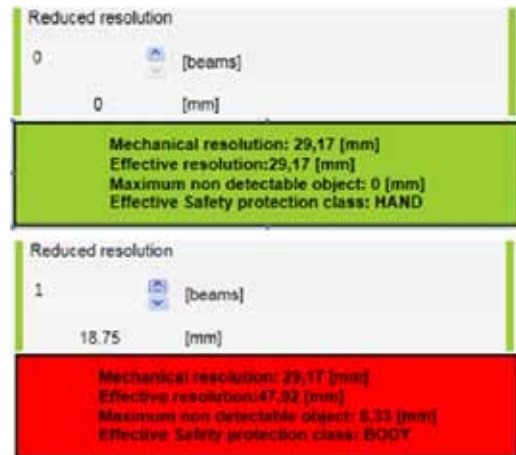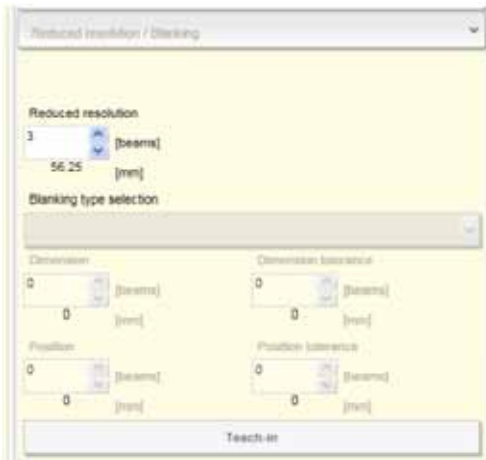
FUNCTIONS - CASCADE

SG4 EXTENDED allows to connect in a cascade configuration up to 3 units (1 Master and 2 Slaves). It means a maximum of 160 beams for 30 mm resolution models and a maximum of 320 beams for 14mm resolution models. The maximum length of the master unit is 1800mm and the maximum length of each slave is 1200mm.

Response Time
Please Refer to SG4 EXTENDED CASCADE RESPONSE TIME section of this document.

MASTER and SLAVE configuration
A safe auto-recognition procedure at startup is implemented; it automatically detects cascade topology and correctly address units.
In order to allow auto-recognition it's mandatory to connect the termination cap (supplied on kit) on the tail connector of last cascade unit, in both transmitter and receiver units.

RESET TO FACTORY SETTINGS

This feature can be achieved both through BCM and ACM.

- **BCM:** press and keep pressed CONFIRM button for at least 9 sec but less than 30 sec. otherwise the light curtin goes in lockout failure.

- **ACM:** press ERASE CONFIGURATION Button on Device Selection section of GUI after a connected device has been selected
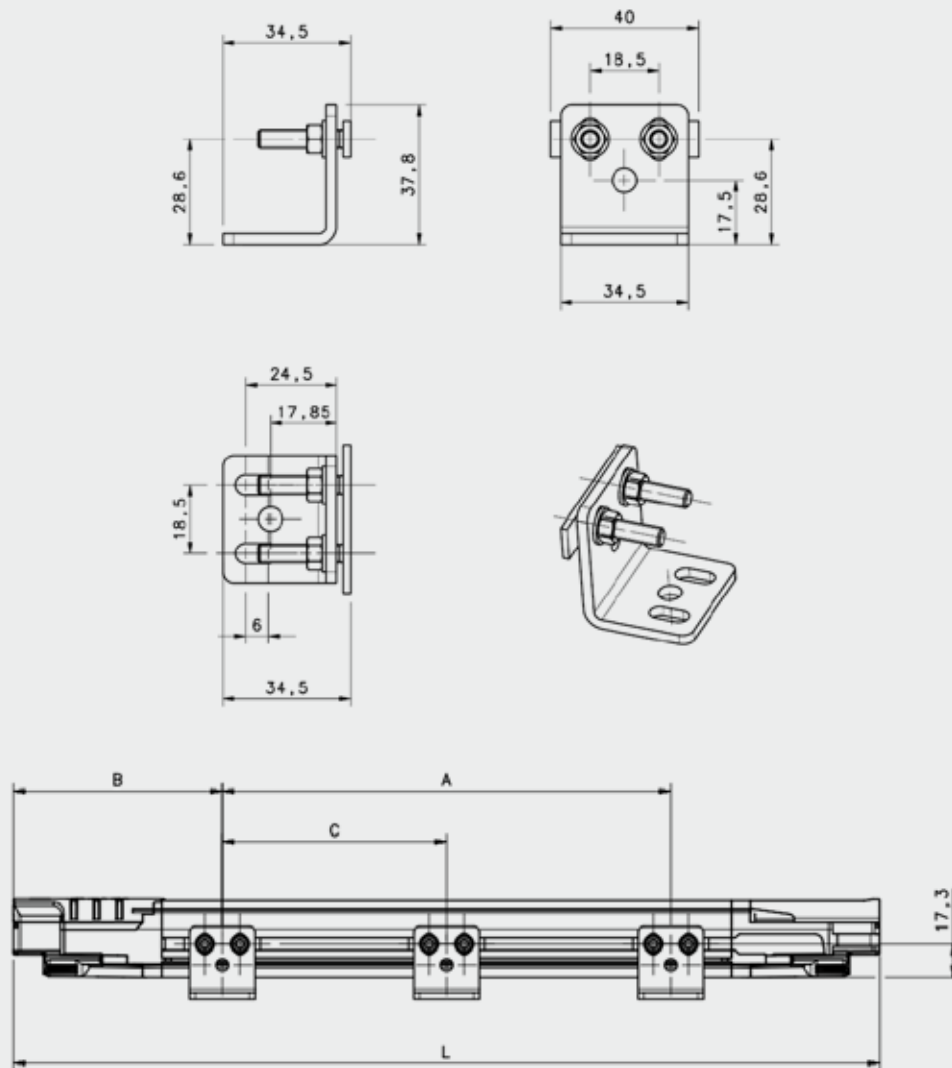

Erase configuration...

NOTE: Factory reset will erase both BCM and ACM configurations.

OUTFITS

ANGLED FIXING BRACKET (WITH THREADED PINS METALLIC INSERT)

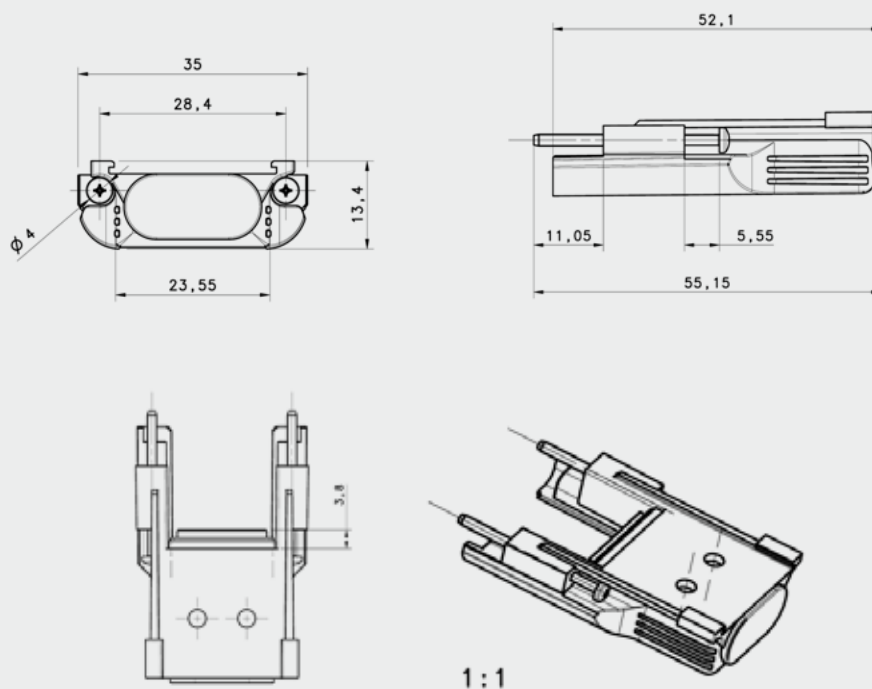| DESCRIPTION	L[mm]	A [mm]	B [mm]	C [mm]
SGy-xx-030-OO-#	306.3	86.3	110	–
SGy-xx-045-OO-#	456.3	236.3	110	–
SGy-xx-060-OO-#	606.2	306.2	150	–
SGy-xx-075-OO-#	756.2	406.2	175	–
SGy-xx-090-OO-#	906.1	506.1	200	–
SGy-xx-105-OO-#	1056.1	606.1	225	–
SGy-xx-120-OO-#	1206	966	150	453
SGy-xx-135-OO-#	1356	1066	175	503
SGy-xx-150-OO-#	1505.9	1166	200	553
SGy-xx-165-OO-#	1655.9	1266	225	603
SGy-xx-180-OO-#	1805.8	1366	250	652.9

Legend:
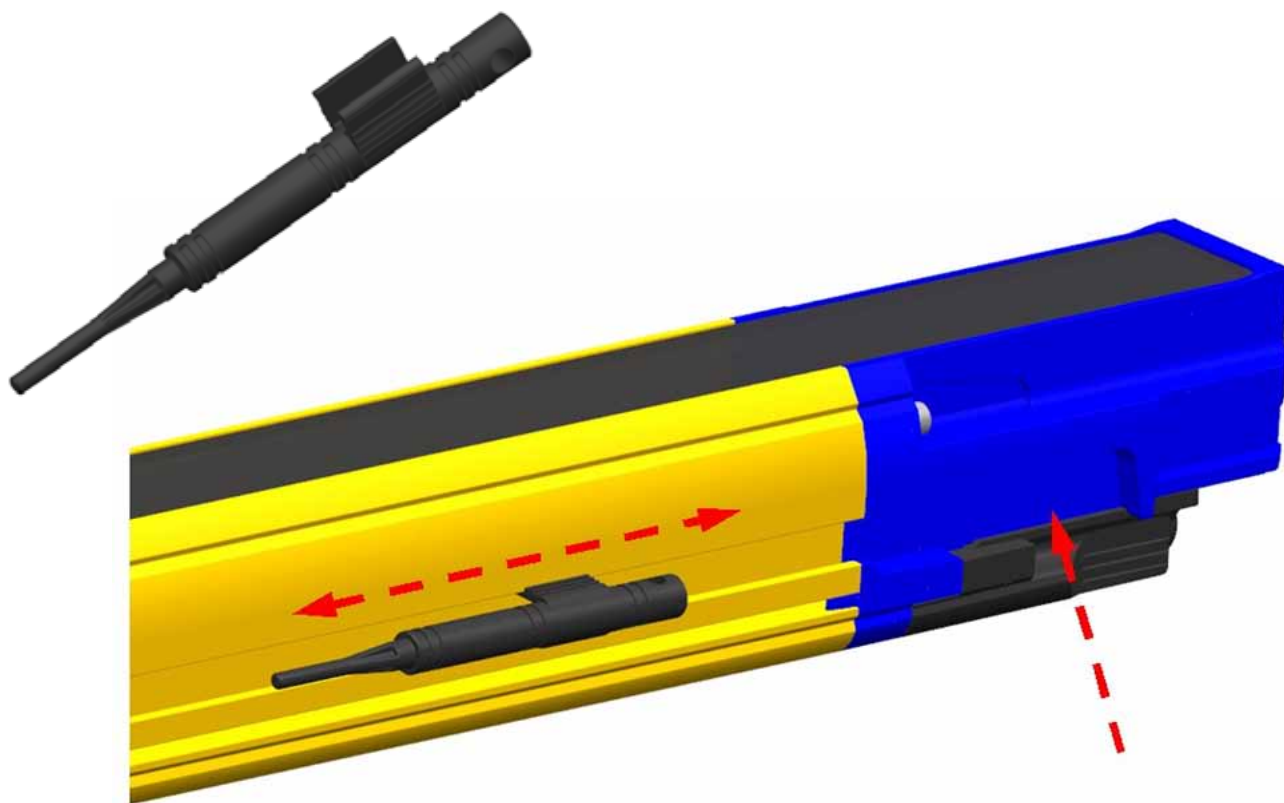y= 2 for SG2 MUTING and 4 for SG4 EXTENDED
xx= 30 mm for SG2 MUTING
    14 and 30 mm SG4 EXTENDED
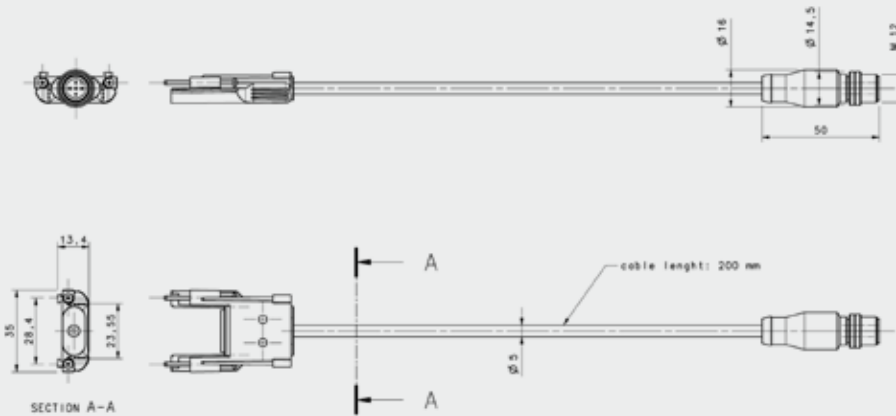#= W for SG2 MUTING and P for SG4 EXTENDED

TERMINATOR CAP

PROGRAMMING TOOL FOR BCM

ACCESSORY SELECTION AND ORDER INFORMATION

CASCADE BRACKET

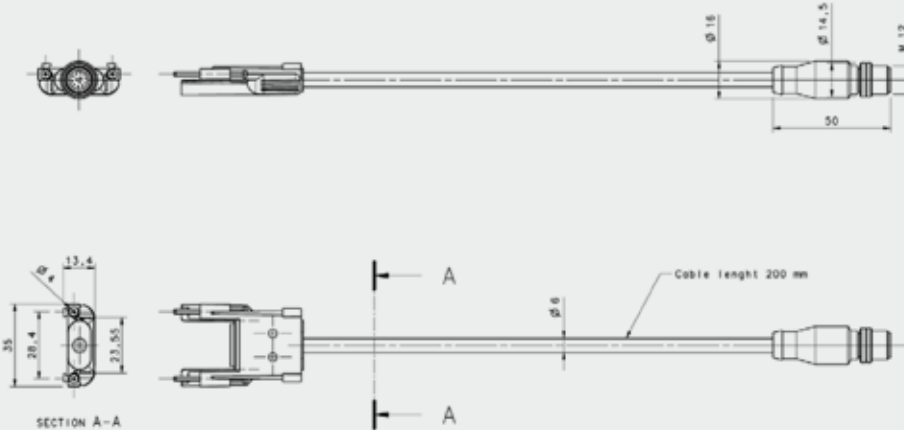| MODEL	DESCRIPTION	CODE
ST-KCASCADE-SG EXTENDED	ST-KCASCADE-SG EXTENDED	95ASE2110

TX PIG-TAIL

This is the Pig-Tail cable that must be always used for TX UNIT of both SG2 MUTING and SG4 EXTENDED. It has a 18 poles socket in one side and a M12 5 poles in the other

RX BLANKING PIG-TAIL

This is the Pig-Tail cable that must be used for RX UNIT of SG4 EXTENDED when you configure it in BLANKING MODE and DON'T USE SG4 DONGLE. It has a 18 poles socket in one side and a M12 12 poles in the other

RX MUTING PIG-TAIL
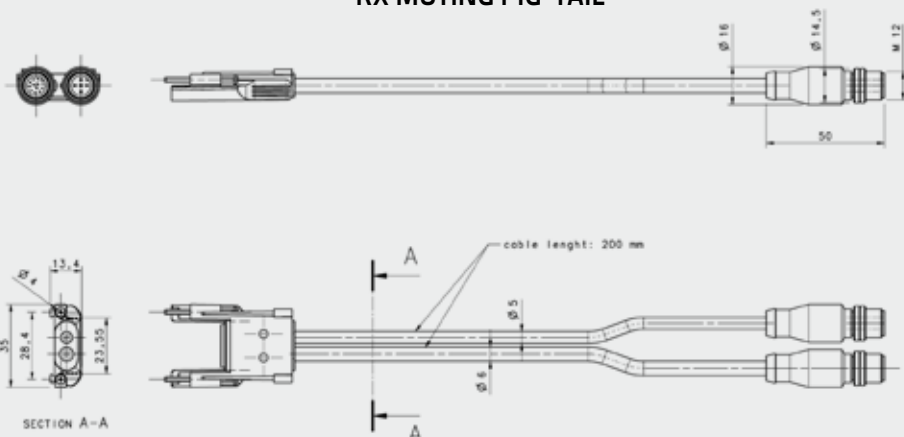
This is the Pig-Tail cable that must be always used for RX UNIT of SG2 MUTING and SG4 EXTENDED when you configure it in MUTING MODE and DON'T USE SG4 DONGLE. It has a 18 poles socket in one side and a M12 5 poles plus M12 12 poles in the other.

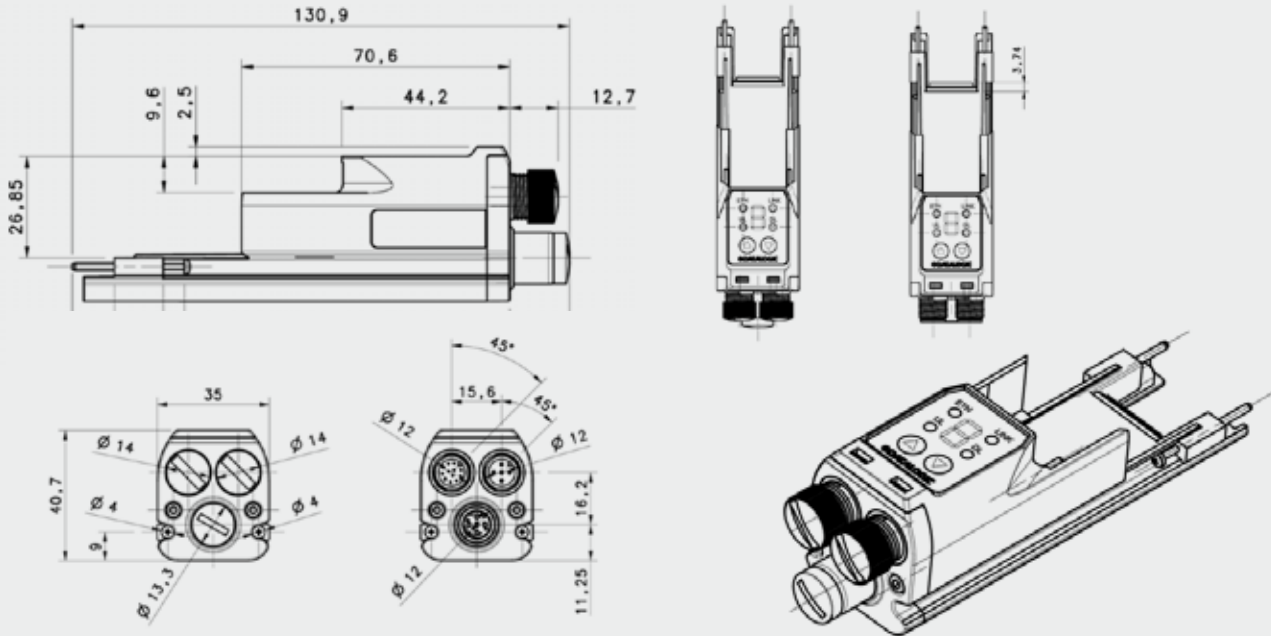| MODEL	DESCRIPTION	CODE
CS-G1-50-B-002	CS-G1-50-B-002 SG EXTENDED TX 0,2m	95A252820
CS-G1-70-B-002	CS-G1-70-B-002 SG EXTENDED BLANK RX 0,2m	95A252830
CS-R1-75-B-002	CS-R1-75-B-002 SG EXTENDED MUTING RX 0,2	95A252810

CASCADE CABLES
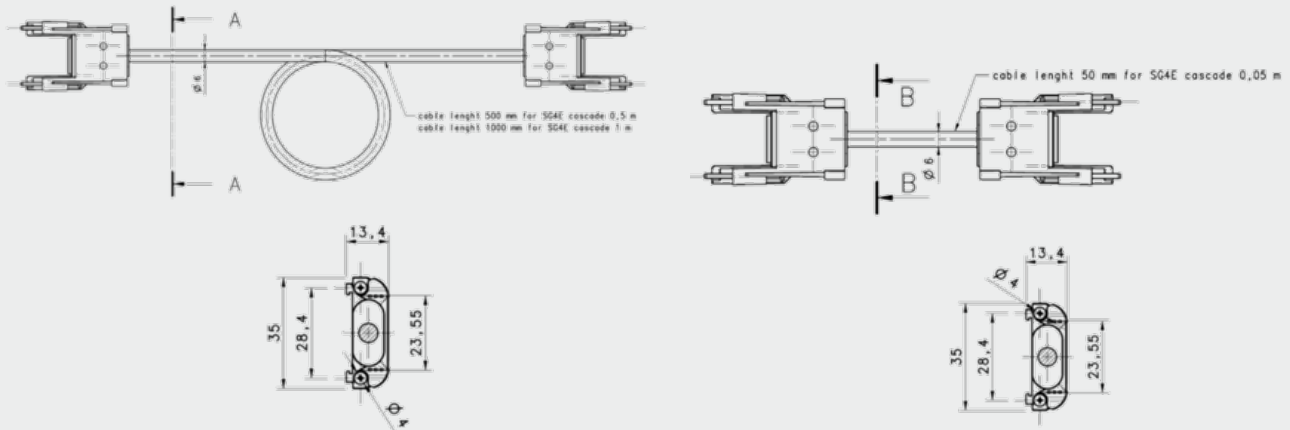
This is the Pig-Tail cable that must be always used for connecting 2 RX units and 2 TX units of SG4 EXTENDED in a CASCADE configuration.
It has a 18 poles socket on both sides.
3 different lengths are available:

- 50 mm
- 500 mm
- 1000 mm

MODEL	DESCRIPTION	CODE
CS-F1-80-B-01	CS-F1-80-B-01 SG EXTENDED CASCADE 1m	95A252840
CS-F1-80-B-005	CS-F1-80-B-005 SG EXTENDED CASCADE 0,5m	95A252850
CS-F1-80-B-0005	CS-F1-80-B-0005SG EXTENDED CASCADE 0,05m	95A252860

SG4-DONGLE ETHERNET ADAPTOR

MODEL	DESCRIPTION	CODE
SG4-DONGLE	SG4-DONGLE ETHERNET ADAPTOR	95ASE2080

MODEL	DESCRIPTION	CODE
SG-DM 150	Deviating mirror version 150 mm	95ASE1670
SG-DM 600	Deviating mirror version 600 mm	95ASE1680
SG-DM 900	Deviating mirror version 900 mm	95ASE1690
SG-DM 1200	Deviating mirror version 1200 mm	95ASE1700
SG-DM 1650	Deviating mirror version 1650 mm	95ASE1710
SG-DM 1900	Deviating mirror version 1900 mm	95ASE1720
SE-S 800	Column and floor stand H= 800 mm	95ACC1730
SE-S 1000	Column and floor stand H= 1000 mm	95ACC1740
SE-S 1200	Column and floor stand H= 1200 mm	95ACC1750
SE-S 1500	Column and floor stand H= 1500 mm	95ACC1760
SE-S 1800	Column and floor stand H= 1800 mm	95ACC1770
SG-PSB 600	SG-PSB 600 PROTECTIVE STAND H=600mm	95ASE2240
SG-PSB 1000	SG-PSB 1000 PROTECTIVE STAND H=1000mm	95ASE2250
SG-PSB 1200	SG-PSB 1000 PROTECTIVE STAND H=1200mm	95ASE2260
SG-PSB 1650	SG-PSB 1000 PROTECTIVE STAND H=1650mm	95ASE2270
SG-PSB 1900	SG-PSB 1000 PROTECTIVE STAND H=1900mm	95ASE2280
SG-P	SG-P PLATE KIT FOR PROTECTIVE STANDS	95ASE2290
TP-14	TP-14 test piece Ø 14mm L = 300mm	95ACC1630
TP-30	TP-30 test piece Ø 30mm L = 300mm	95ACC1650
SG-LP	Laser pointer	95ASE5590
CS-A1-03-U-03	5-pole M12 cable (axial) 3 m	95ASE1170
CS-A1-03-U-05	5-pole M12 cable (axial) 5 m	95ASE1180
CS-A1-03-U-10	5-pole M12 cable (axial) 10 m	95ASE1190
CS-A1-03-U-15	5-pole M12 cable (axial) 15 m	95ASE1200
CS-A1-03-U-25	5-pole M12 cable (axial) 25 m	95ASE1210
CS-A1-03-U-50	5-pole M12 cable (axial) 50m	95A252700
CS-A1-06-U-03	8-pole M12 cable (axial) 3 m	95ASE1220
CS-A1-06-U-05	8-pole M12 cable (axial) 5 m	95ASE1230
CS-A1-06-U-10	8-pole M12 cable (axial) 10 m	95ASE1240
CS-A1-06-U-15	8-pole M12 cable (axial) 15 m	95ASE1250
CS-A1-06-U-25	8-pole M12 cable (axial) 25 m	95ASE1260
CS-A1-06-U-50	8-pole M12 cable (axial) 50 m	95A252710
CS-A1-10-U-03	12-pole M12 cable (axial) 3 m	95A252720
CS-A1-10-U-05	12-pole M12 cable (axial) 5 m	95A252730
CS-A1-10-U-10	12-pole M12 cable (axial) 10 m	95A252740
CS-A1-10-U-15	12-pole M12 cable (axial) 15 m	95A252750
CS-A1-10-U-25	12-pole M12 cable (axial) 25 m	95A252760
CS-A1-10-U-50	12-pole M12 cable (axial) 50 m	95A252770
SG-AS-ARM V2	Active sensor single arm	95ASE1841
SG-PR-ARM V2	Passive reflector single arm	95ASE1851
SG-L-ARMS V2	"L" Muting arms kit	95ASE1861
SG-T-ARMS V2	"T" Muting arms kit	95ASE1871
SG-CB-C	Muting C Bracket Compact Kit	95ASE1930
LMS	Muting lamp	95ASE1830
LMS-1	Modular Muting lamp	95ACC1990
LMS-2	Muting lamp - horizontal mounting	95ACC2000
LMS-3	Muting lamp - vertical mounting	95ACC2010
SU-LMS-1A	Basic module for LMS-1	95ACC2020
SU-LMS-1B	Tower module for LMS-1	95ACC2030
CV-Y1-02-B-007	M12 4-pole cable 0.7m for "T" Muting	95ACC2560
CV-L1-02-B-007	M12 4-pole cable 0.7m for "L" Muting	95ACC2570
SE-SR2	Type 4 Safety Relay 3NO 1NC	95ACC6170
CS ME-03VU24-Y14	EDM Relay Box	95ASE1270

note 1: With RRX Muting arms the overall operating distance is reduced to 3 meters.