

Safety Light Grid Orion2 Extended

Orion2 Extended is a compact light grid for access protection in muting applications.

The light grid has 2-4 beams and is intended for body detection.



Cost effective solution

Integrated muting function

Muting sensors are connected directly to the light grid, with no need for a remote muting module.

Minimized cabling

A local reset button can be connected directly to the light grid, eliminating the need for cable between the reset button and the electrical cabinet or for an extra control module.

External device monitoring

Each light grid can monitor the actuators without any extra control module (EDM function).



Easy to install

Alignment help

Alignment help and a wide angle within the limits of a Type 4 device facilitate installation.

Easy adjustment

Rotation brackets makes alignment easy.

Fast connection

M12 connectors speed up cabling.



Continuous operation

Protection in harsh environments

The housing is IP65 rated, and protective tubes and lens shields are available to provide further protection for the device in harsh environments.

Power and productivity
for a better world™

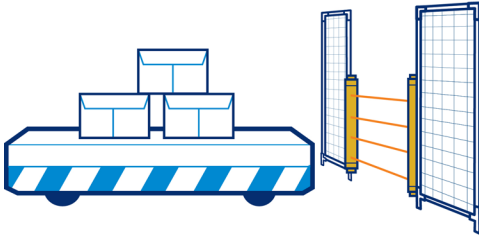


Features

Orion2 Extended

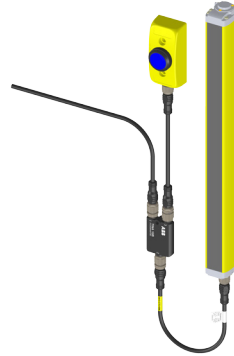
Muting

Orion2 Extended is intended for muting applications. By connecting muting sensors to the light guard, it can distinguish material from persons and allow the material to pass through an opening but not persons. Muting sensors and a connection box for muting are available to simplify the muting application.



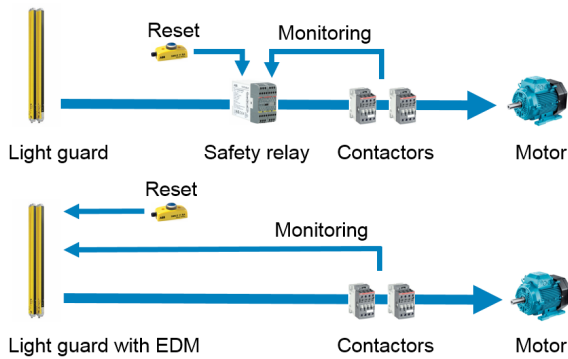
Local reset

A local reset button is connected directly to the light guard instead of the safety control module in the electrical cabinet. This saves safety relays/PLC inputs and minimizes cabling to the electrical cabinet. Clever accessories makes the connection easier.



EDM

External Device Monitoring is a feature allowing the light guard to supervise the actuators in simpler applications, eliminating the need for a safety relay or safety PLC.



Orion2 Extended, Light grid



2TLC17798FC001

Orion2 Extended

Ordering details

| Detection | Protected height mm | Type (Transmitter + receiver) | Order code |
|-----------|------------------------|----------------------------------|-----------------|
| Body | 500 (2 beams) | Orion2-4-K2-050-E | 2TLA022305R0000 |
| | 800 (3 beams) | Orion2-4-K3-080-E | 2TLA022305R0100 |
| | 900 (4 beams) | Orion2-4-K4-090-E | 2TLA022305R0200 |
| | 1200 (4 beams) | Orion2-4-K4-120-E | 2TLA022305R0300 |

Spare parts (delivered with products originally)

| Description | Type | Order code |
|---|-------------|-----------------|
| 4 standard brackets for Orion1 & Orion2 | JSM Orion01 | 2TLA022310R0000 |

Ordering information

Orion2 Extended cables



M12-C61

2TLC172981F0201



M12-CT132

2TLC17208W0201

Cables

| Description (letter refers to connection examples) | Length m | Angled connector | Type | Order code |
|--|-------------|------------------|-------------------------|-----------------|
| M12-5 male + female (a) | 1 | No | M12-C112 | 2TLA020056R2000 |
| | 3 | No | M12-C312 | 2TLA020056R2100 |
| | 6 | No | M12-C612 | 2TLA020056R2200 |
| | 10 | No | M12-C1012 | 2TLA020056R2300 |
| | 20 | No | M12-C2012 | 2TLA020056R2400 |
| M12-5 female single ended (b) | 6 | No | M12-C61 | 2TLA020056R0000 |
| | 6 | Yes | M12-C61 V | 2TLA020056R0100 |
| | 10 | No | M12-C101 | 2TLA020056R1000 |
| | 10 | Yes | M12-C101 V | 2TLA020056R1100 |
| M12-5 male single ended (c) | 6 | No | M12-C62 | 2TLA020056R0200 |
| | 10 | No | M12-C102 | 2TLA020056R1200 |
| M12-8 female single ended (d) | 6 | No | M12-C63 | 2TLA020056R3000 |
| | 10 | No | M12-C103 | 2TLA020056R4000 |
| | 20 | No | M12-C203 | 2TLA020056R4100 |
| M12-8 male + female (e, t ₁ , t ₂) | 1 | No | M12-C134 ¹ | 2TLA020056R5000 |
| | 3 | No | M12-C334 ¹ | 2TLA020056R5100 |
| M12-8 female - M12-5 male (t ₃) | 1 | No | M12-CT132 ² | 2TLA020060R0600 |
| M12-8 female to M12-8 male + M12-5 male | 2 x 0.2 | No | M12-CYMUTE ³ | 2TLA022316R0100 |

¹Used for the connection to Tina 10, M12 3D and M12-3R. Tina 10 can be connected directly to the light guard without cable, but will form an angle (i.e. not be aligned) with the light guard, which might be a problem if the light guard is mounted close to a wall/aluminum profile.

²M12-CT132 is used for the connection of Orion2 Extended to URAX-D1R.

³M12-CYMUTE is used to simplify the connection of 2 or 4 muting sensors with the help of the OMC1 connection box.

Ordering information

Orion2 Extended accessories



Orion Laser pointer

2TLC172816F0201



OMC1

2TLC172016V0201



Tina 10A

2TLC172477F0201



Smile 11RB

2TLC172367F0201

Accessories

| Description | Type | Order code |
|--|-------------------|-----------------|
| Orion Laser pointer | Orion Laser | 2TLA022310R5000 |
| 4 standard brackets for Orion1 & Orion2 | JSM Orion01 | 2TLA022310R0000 |
| 4 rotation brackets for Orion2 | JSM Orion04 | 2TLA022310R0200 |
| Kit for mounting of Orion1 & Orion2 in Stand (4 pieces) - For Orion2-4-K4-050 / 080 / 090-x | JSM Orion06 | 2TLA022310R0400 |
| Kit for mounting of Orion1 & Orion2 in Stand (6 pieces) - For Orion2-4-K4-120-x | JSM Orion07 | 2TLA022310R0500 |
| Orion Plate kit for adjustment of protective stand | Orion Stand Plate | 2TLA022312R5000 |
| Deviating mirror in stand | Orion1 Mirror* | |
| Protective stand | Orion Stand* | |
| Protective tube | Orion WET* | |
| Lens shield | Orion Shield* | |
| Connection box for two or four muting sensors | OMC1 | 2TLA022316R2000 |
| Retroreflex photoelectric sensor | Mute R2 | 2TLA022044R0500 |
| Reflector diameter 63 mm | Reflect 1 | 2TLA022044R2000 |
| Reflector diameter 82 mm | Reflect 2 | 2TLA022044R3000 |
| Smile reset button with NO contact | Smile 11 RA | 2TLA030053R0000 |
| Smile reset button with NO contact for Pluto | Smile 11 RB | 2TLA030053R0100 |
| Smile reset button with NC contact for Orion2 Base/Extended and Orion3 Extended | Smile R02 | 2TLA022316R3100 |
| Y-connector for series connection of the dynamic signal | M12-3A | 2TLA020055R0000 |
| Y-connector for connection of a Smile reset button to Orion | M12-3R | 2TLA022316R0000 |
| Y-connector for easy connection of a transmitter: | M12-3D | 2TLA020055R0300 |
| Adaptation unit OSSD to dynamic signal | Tina 10A | 2TLA020054R1200 |
| Adaptation unit OSSD to dynamic signal + connector for reset button | Tina 10B | 2TLA020054R1300 |
| Adaptation unit OSSD to dynamic signal + supply to the transmitter | Tina 10C | 2TLA020054R1600 |
| Safe AS-i input slave for OSSD, 3 non safe inputs and one reset input | Urax-D1R | 2TLA020072R0500 |

*These accessories are available in different sizes. More information on www.abb.com/jokabsafety.

How to choose correct reset button

| Local or global reset | Adaption to the dynamic signal* | Safety controle module | Type | Suitable connection accessories |
|--|---------------------------------|---|--------------|--|
| Local reset button connected to the light guard (Orion in manual reset mode) | Yes | Vital or Pluto | Smile 11R02 | OMC1: connection box for the muting sensors + local reset button Tina 10B: OSSD to dynamic signal + local reset button M12-3A: serial connection of the dynamic signal |
| | No | Any safety control module compatible with light guard | Smile 11R02 | M12-3R: Easy connection of a local reset button |
| Global reset button connected to the control module (Orion in automatic reset mode) | Yes | Vital | Smile 11RA | Tina 10A: OSSD to dynamic signal Tina 10C: OSSD to dynamic signal + supply to transmitter |
| | | Pluto | Smile 11RB | Tina 10A: OSSD to dynamic signal Tina 10C: OSSD to dynamic signal + supply to transmitter |
| | No | Any safety control module compatible with light guard | Smile 11RA** | - |

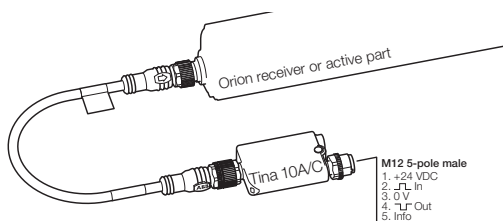
* The ABB Jokab safety dynamic signal offers the following advantages:

- Serial connection of safety devices while maintaining PLe/cat. 4, up to 25 Tina 10 per Vital and up to 5 Tina 10 per Pluto input.
- Only one safety input of the Pluto instead of two with the standard OSSD outputs.

** Smile 11RA has one NO contact, which is the most common for reset buttons. Please check what is requested for the chosen safety control module.

Connection examples

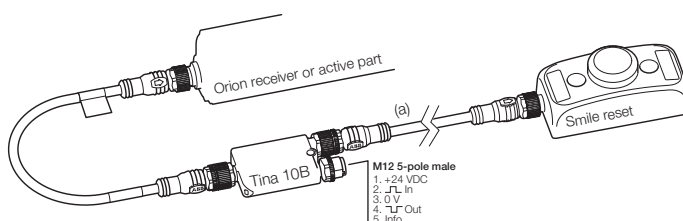
Orion with Tina 10A/C



Without local reset button

Connection to the ABB Jokab safety dynamic signal via Tina 10 A/C. To be used with Vital safety control module or Pluto safety PLC.

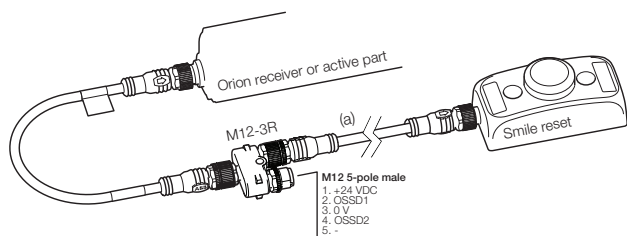
Reset to Orion with Tina 10B



With local reset button

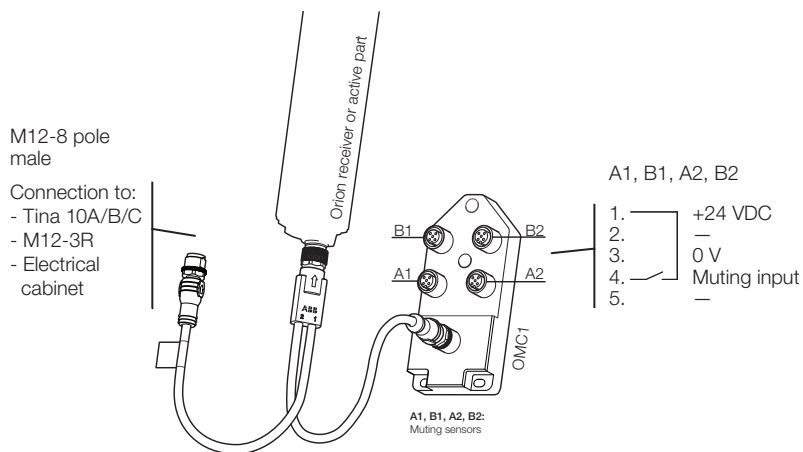
Connection to the ABB Jokab safety dynamic signal via Tina 10B. To be used with Vital safety control module or Pluto safety PLC.

Reset to Orion with M12-3R



Connection of a local reset button via M12-3R.

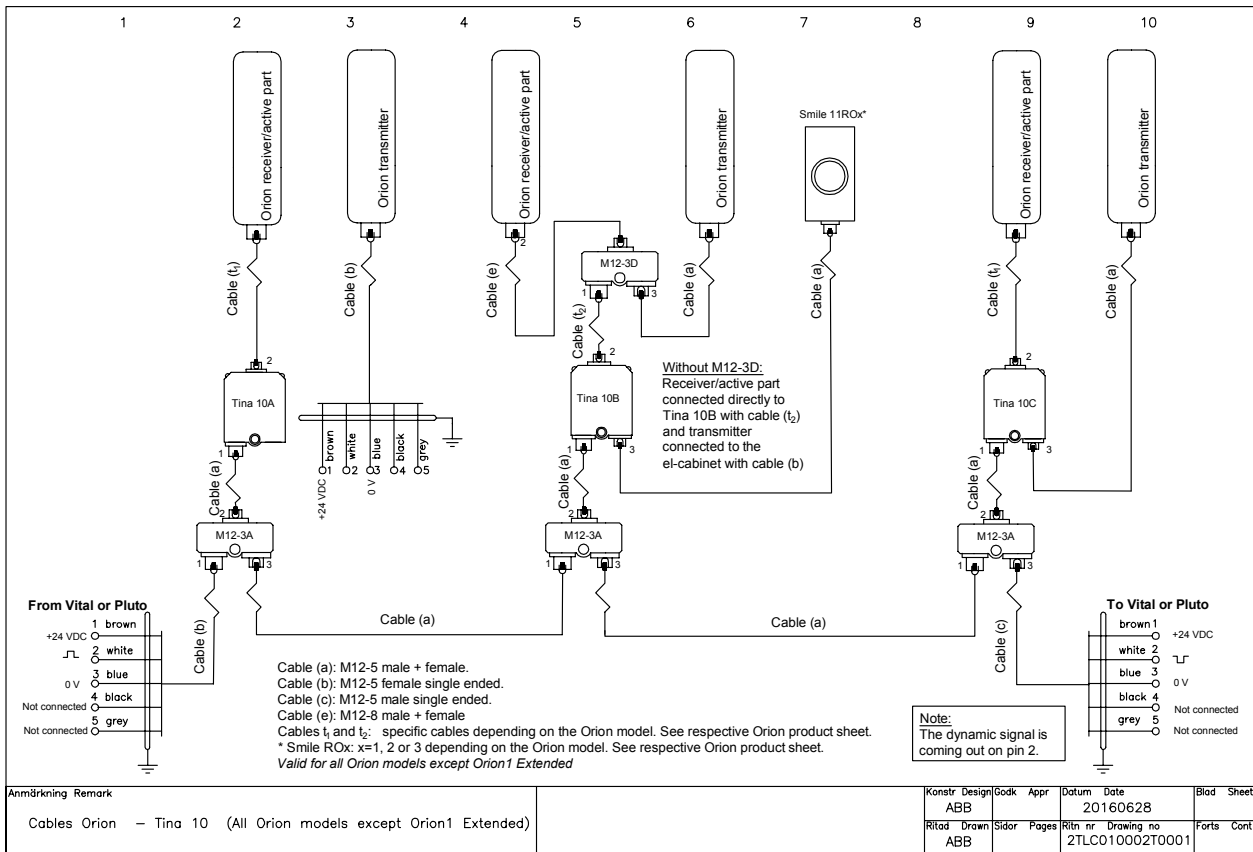
Connection of muting sensors with M12-CYMUTE and OMC1



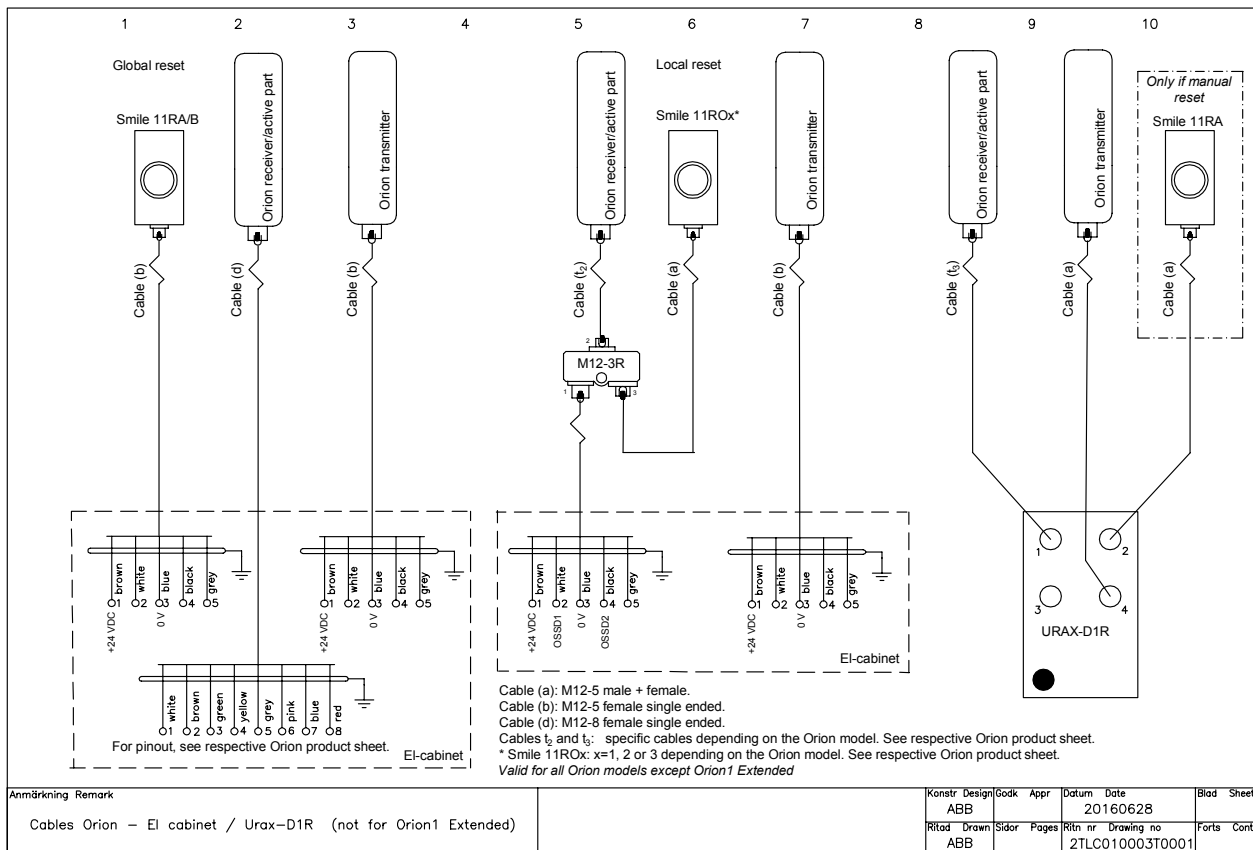
NB: Cable with M12-5 male + female connectors shall be used between muting sensors and OMC1 inputs A1, B1, A2, B2.

Connection examples

Cables Orion to Tina 10



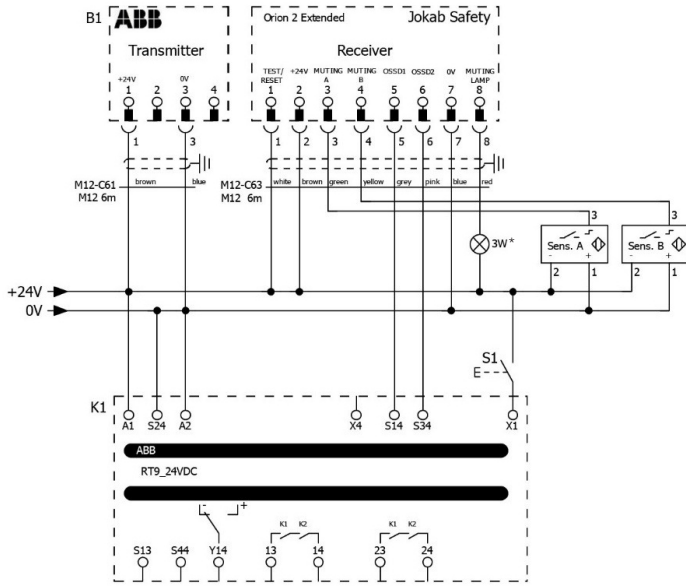
Cables Orion to electrical cabinet and Urax-D1R



Connection examples

Orion2 Extended with muting sensors

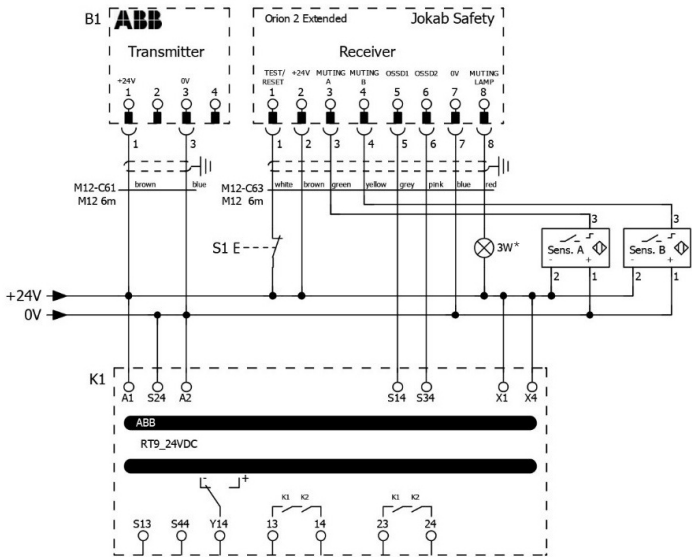
Orion2 Extended connected to a RT9 safety relay with global reset



Reset button connected to the safety relay. Configuration of the light guard (with the dip-switches):

- Automatic reset
- EDM deactivated

Orion2 Extended connected to a RT9 safety relay with local reset




Reset button connected to the light guard. Configuration of the light guard (with the dip-switches):

- Automatic reset
- EDM deactivated

*Since the device has an integrated muting lamp, it is optional to connect an external lamp on pin 8.

Technical data

| | |
|--------------------------------|---|
| Approvals |    |
| Functional safety data | |
| EN ISO 13849-1:2008 | PL e, Cat 4 |
| EN 61508-1..4:2010 | SIL3; PFH _D = 2.64 x10 ⁻⁹ ; HFT = 1; Mission time = 20 years |
| EN 62061:2005/A1:2013 | SIL CL 3 |
| Electrical data | |
| Power supply | +24 VDC ± 20 % (SELV/PELV) |
| Internal capacitance | 23 nF (Transmitter) / 120 nF (Receiver) |
| Power consumption, Transmitter | 0.5 W during normal operation |
| Power consumption, Receiver | 2 W during normal operation |
| Outputs | 2 PNP |
| Short-circuit protection | Max 1.4 A at 55°C, min 1.1 A at -10°C |
| Output current | 0.5 A max / output |
| Leakage current | < 1 mA |
| Capacitive load (pure) | 65 nF max at 25°C |
| Resistive load (pure) | 56 Ω min at +24 VDC |
| Current for external lamp | 20 mA min, 250 mA max |
| Response time | 2 and 3 beams: 14 ms; 4 beams: 16 ms |
| Connectors | M12-4 pole male on transmitter (compatible with female M12-5 pole) M12-8 pole male on receiver |
| Optical data | |
| Light emission (λ) | Infrared (880 nm) |
| Resolution | 315 - 515 mm |
| Operating distance | 0.5...50 m |
| Ambient light rejection | According to IEC-61496-2:2013 |
| Mechanical data | |
| Operating temperature | - 10...+ 55 °C |
| Storage temperature | -25...+ 70 °C |
| Humidity range | 15...95 % (no condensation) |
| Protection class | IP65 (EN 60529:2000) |
| Housing material | Painted aluminium |
| Cap material | PC Lexan 943A |
| Lens material | PMMA |
| Weight | 1.2 kg max / meter for each single unit |
| Connection Transmitter* | |
| Brown (1) | +24 VDC |
| White (2) | Not used |
| Blue (3) | 0 V |
| Black (4) | Not used |
| Grey (5) | Not used |
| Connection Receiver* | |
| White (1)** | Reset, Acknowledge, EDM |
| Brown (2) | +24 VDC |
| Green (3) | Muting sensor A |
| Yellow (4) | Muting sensor B |
| Grey (5) | OSSD1 |
| Pink (6) | OSSD2 |
| Blue (7) | 0 V |
| Red (8) | Muting lamp |

* Colors according to ABB Jokab Safety standard cables.

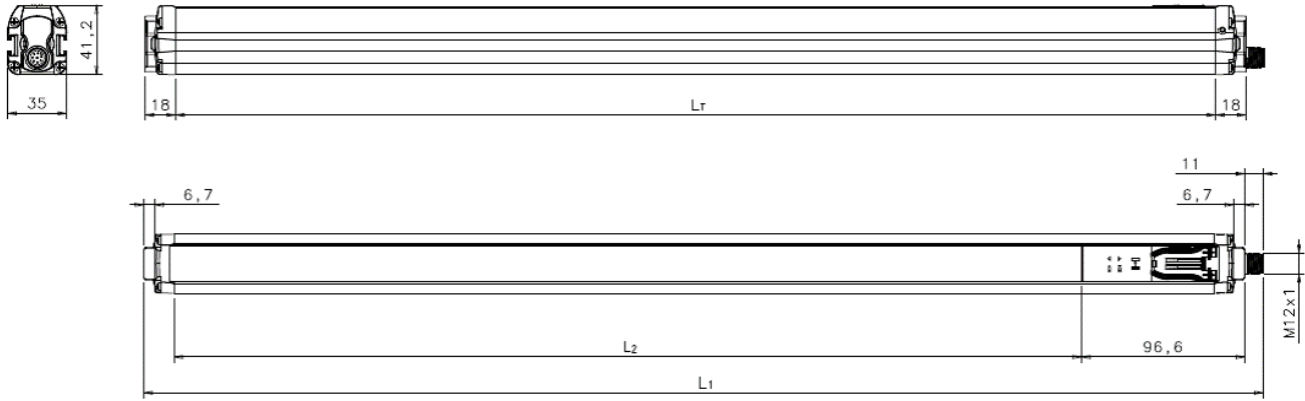
** See below for function selection.

Function selection with dip-switches

| Dip-switches | Function | ON (at delivery) | OFF |
|--------------|----------------|------------------|-----------|
| 1 and 5 | Muting timeout | 10 min | Infinite |
| 2 and 6 | Muting | T/X-muting | L-muting |
| 3 and 7 | EDM | Deactivated | Activated |
| 4 and 8 | Reset | Automatic | Manual |

Dimension drawings

Orion2 Extended



All dimensions in mm

Dimensions

| Type | L_r mm | L_1 mm | L_2 mm |
|-------------------|-------------|-------------|-------------|
| Orion2-4-K2-050-E | 617 | 664 | 538.4 |
| Orion2-4-K3-080-E | 917 | 964 | 838.4 |
| Orion2-4-K4-090-E | 1017 | 1064 | 938.4 |
| Orion2-4-K4-120-E | 1317 | 1364 | 1238.4 |

Contact us

ABB AB

Jokab Safety

Varlabergsvägen 11

SE-434 39 Kungsbacka

Tel. +46 (0) 21-32 50 00

www.abb.com/jokabsafety

Note

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents - in whole or in parts - is forbidden without prior written consent of ABB.

Copyright© 2016 ABB
All rights reserved



2TLC172055L0201