Safety Light Grid
Orion3 Extended

Orion3 Extended is a sturdy light grid for access protection in muting applications.

Only one of the parts needs power supply, since both transmitter and receiver are in the same active part. The other part is passive and contains mirrors to reflect the beams.

With 2-4 beams and an operating range of up to 8 m, it 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.

Less cabling
Only the active part needs connecting.

Continuous operation

Visible alignment level
Since the alignment level is displayed, the alignment can be improved before the occurrence of an unwanted stop.

Extensive error indication
Extensive error indication reduces troubleshooting time.

ABB

Applications and features
## Orion3 Extended

Application

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.
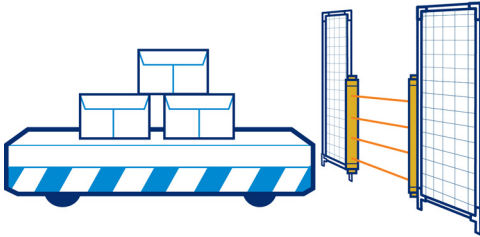
Features

Power on one side

Both transmitter and receiver are in one active part, and the other part is passive and contains mirrors. This simplifies installation and saves cables, making it easier to place in applications where cables need to be avoided.
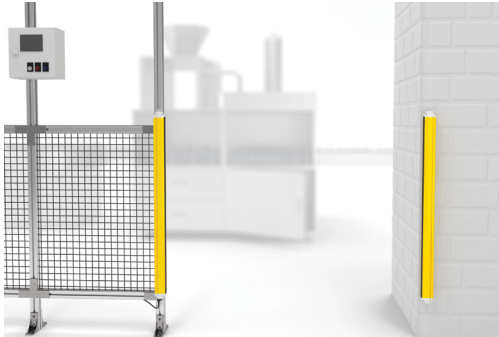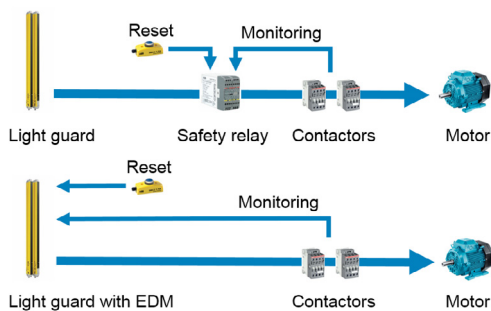

Sturdy profile for demanding applications

With its thicker and sturdier profile Orion3 is suitable for applications with tougher requirements.


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 programmable safety controller.

Local reset

A local reset button is connected directly to the light guard instead of to the safety control module in the electrical cabinet. This saves safety relays/PLC inputs and minimizes cabling to the electrical cabinet. Clever accessories make the connection easier.
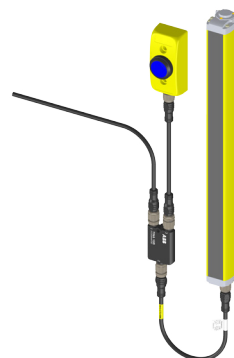
Ordering information
Orion3 Extended

Orion3 Extended

Ordering details

Detection	Protected height mm	Active or passive part	Type	Order code
Body	500 (2 beams)	Active part	Orion3-4-K1C-050-E	2TLA022307R0000
		Passive part	Orion3-4-M1C-050	2TLA022306R1000
	800 (3 beams)	Active part	Orion3-4-K2C-080-E	2TLA022307R0100
		Passive part	Orion3-4-M2C-080	2TLA022306R1100
	900 (4 beams)	Active part	Orion3-4-K2C-090-E	2TLA022307R0200
		Passive part	Orion3-4-M2C-090	2TLA022306R1300
	1200 (4 beams)	Active part	Orion3-4-K2C-120-E	2TLA022307R0300
		Passive part	Orion3-4-M2C-120	2TLA022306R1400

Please note that active and passive parts are ordered separately and both are necessary for Orion3 Extended to function.
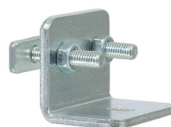
JSM Orion02

Spare parts (included when ordering Orion)

Description	Type	Order code
4 standard brackets for Orion3	JSM Orion02	2TLA022310R1000

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Accessories
Orion3 Extended

OMC1
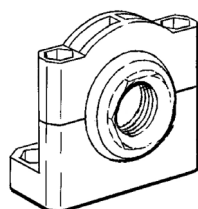
Mute R2

Reflect 2

JSM 64

Smile 11 RB

Tina 10B

Orion Laser pointer

Accessories

Connection accessories

Description	Type	Order code
Connection box for two or four muting sensors	OMC1	2TLA022316R2000
Retroreflex photoelectric sensor	Mute R2	2TLA022044R0500
Adjustable mounting bracket for M18 sensors (e.g. Mute R2 and Spot 10).	JSM 64	2TLA040007R0200
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 11RO2	2TLA022316R3100
Y-connector for series connection of DYNlink devices with M12-5 connectors, e.g. Eden	M12-3A	2TLA020055R0000
Y-connector for connection of a Smile reset button to Orion	M12-3R	2TLA022316R0000
Adaptation of OSSD to DYNlink. Two M12-5 connectors.	Tina 10A	2TLA020054R1200
Adaptation of OSSD to DYNlink with possibility to connect a local reset button. Three M12-5 connectors.	Tina 10B	2TLA020054R1300
Safe AS-i input slave for OSSD, 3 non safe inputs and one reset input	Urax-D1R	2TLA020072R0500

Mounting accessories

	Type	Order code
Orion Laser pointer	Orion Laser	2TLA022310R5000
Screw MC6S M5x12 to be used with T-nut JSM M5B for mounting Orion on Quick-Guard	Screw MC6S	2TLA041012R0200
JSM M5B Special T-nut M5 to be used with screw MC6S for mounting Orion on Quick-Guard	T-nut JSM M5B	2TLA040035R0400
4 rotation brackets for Orion3	JSM Orion05	2TLA022310R0300
Kit for mounting of Orion3 in Stand (4 pieces) - For a pair Orion3 - 050 / 080 / 090 (active + passive units)	JSM Orion08	2TLA022310R0600
For a pair Orion3 - 120 (Orion3-4-K2C-120 + Orion3-4-M2C-120)	JSM Orion09	2TLA022310R0700
Orion Plate kit for adjustment of protective stand	Orion Stand Plate	2TLA022312R5000
Deviating mirror in stand for Orion 2 and 3	Orion Mirror*	
Protective stand	Orion Stand*	
Protective tube	Orion WET*	
Lens shield	Orion Shield*	

*These accessories are available in different sizes.
For more information see:
Orion Mirror 2TLC172060L0201
Orion Stand 2TLC172059L0201
Orion WET 2TLC172061L0201
Orion Shield 2TLC172071L0201

For more information about the connection accessories, please see:
Orion connection accessories 2TLC172101L0201

How to choose correct reset button

Local or global reset	Adaption to the DYNlink solution*	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 11RO2	Tina 10B: OSSD to DYNlink + local reset button M12-3A: serial connection of DYNlink
	No	Any safety control module compatible with light guard	Smile 11RO2	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 11 RA	Tina 10A: OSSD to DYNlink Tina 10C: OSSD to DYNlink + supply to transmitter
		Pluto	Smile 11 RB	Tina 10A: OSSD to DYNlink Tina 10C: OSSD to DYNlink + supply to transmitter
	No	Any safety control module compatible with light guard	Smile 11 RA**	-

* The ABB Jokab safety DYNlink solution 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.

Cables
Orion3 Extended

M12-C61

M12-C61HE

M12-C334

Cable with connectors

Connector	Female/male	Length	Special feature	Type	Order code
M12-5	Female	6 m		M12-C61	2TLA020056R0000
			Harsh environment, halogen free	M12-C61HE	2TLA020056R8000
		10 m		M12-C101	2TLA020056R1000
			Harsh environment, halogen free	M12-C101HE	2TLA020056R8100
		20 m		M12-C201	2TLA020056R1400
	Female + male	0.3 m		M12-C0312	2TLA020056R5800
		0.06 m		M12-C00612	2TLA020056R6300
		1 m		M12-C112	2TLA020056R2000
		3 m		M12-C312	2TLA020056R2100
		6 m		M12-C612	2TLA020056R2200
		10 m		M12-C1012	2TLA020056R2300
		16 m		M12-C1612	2TLA020056R5400
		20 m		M12-C2012	2TLA020056R2400
M12-8	Female	6 m		M12-C63	2TLA020056R3000
		10 m		M12-C103	2TLA020056R4000
		20 m		M12-C203	2TLA020056R4100
	Female + male	0.06 m		M12-C00634[1]	2TLA020056R6400
		1 m		M12-C134[1]	2TLA020056R5000
		3 m		M12-C334[1]	2TLA020056R5100
		0.2		M12-CT132[2]	2TLA020060R0600
M12-8 female + M12-5 male	Female + male	1		M12-CYMUTE[3]	2TLA022316R0100

1) Used 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.

2) M12-CT132 is used for the connection of Orion3 Extended to URAX-D1R.

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

M12-C01

C5 cable

Separate cables and connectors

| Description	Type	Order code
Connectors		
M12-5 pole female, straight	M12-C01	2TLA020055R1000
M12-5 pole male, straight	M12-C02	2TLA020055R1100
M12-8 pole female, straight	M12-C03	2TLA020055R1600
M12-8 pole male, straight	M12-C04	2TLA020055R1700
Cable with 5 conductors		
10 m cable with 5 x 0.34 shielded conductors	C5 cable 10 m	2TLA020057R0001
50 m cable with 5 x 0.34 shielded conductors	C5 cable 50 m	2TLA020057R0005
100 m cable with 5 x 0.34 shielded conductors	C5 cable 100 m	2TLA020057R0010
200 m cable with 5 x 0.34 shielded conductors	C5 cable 200 m	2TLA020057R0020
500 m cable with 5 x 0.34 shielded conductors	C5 cable 500 m	2TLA020057R0050
Cable with 8 conductors		
50 m cable with 8 x 0.34 shielded conductors	C8 cable 50 m	2TLA020057R1005
100 m cable with 8 x 0.34 shielded conductors	C8 cable 100 m	2TLA020057R1010
200 m cable with 8 x 0.34 shielded conductors	C8 cable 200 m	2TLA020057R1020
500 m cable with 8 x 0.34 shielded conductors	C8 cable 500 m	2TLA020057R1050

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Connection examples
Orion3 Extended

Orion with Tina 10A/C

M12 5-pole male
1. +24 VDC
2. ⊓ In
3. 0 V
4. ⊔ Out
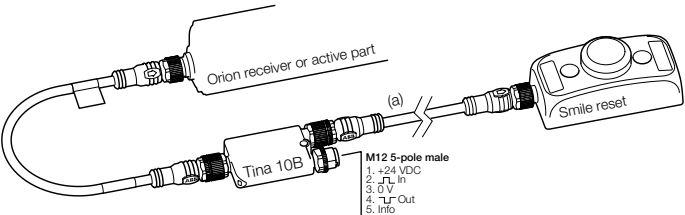5. Info
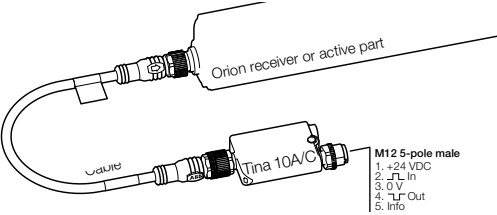
Without local reset button

Connection to the ABB Jokab Safety DYNlink signal via
Tina 10 A/C. To be used with Vital safety control module
or Pluto programmable safety controller.

Reset to Orion with Tina 10B

M12 5-pole male
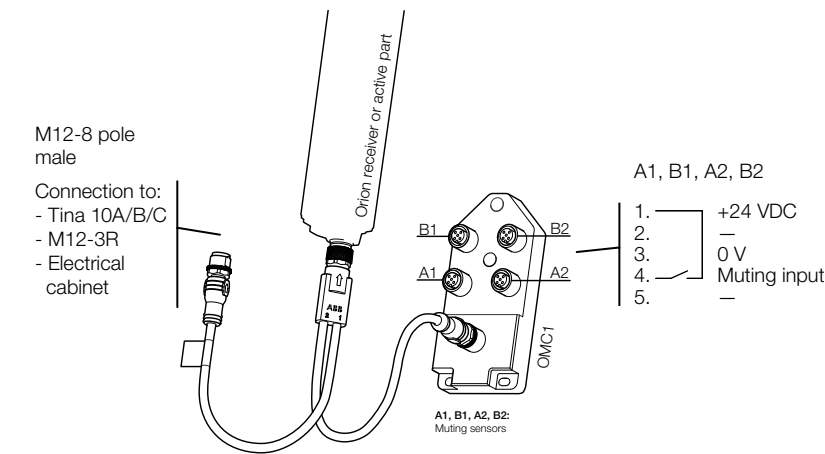1. +24 VDC
2. ⊓ In
3. 0 V
4. ⊔ Out
5. Info

With local reset button

Connection to the ABB Jokab Safety DYNlink signal via
Tina 10B. To be used with Vital safety control module or
Pluto programmable safety controller.

Reset to Orion with M12-3R

M12 5-pole male
1. +24 VDC
2. OSSD1
3. 0 V
4. OSSD2
5. -
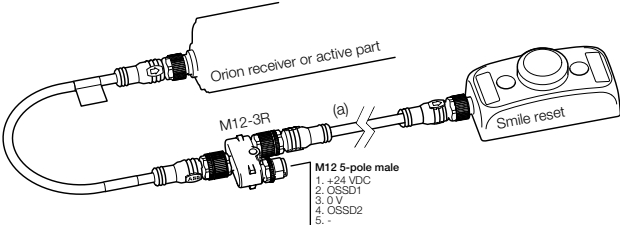
Connection of a local reset button via M12-3R.

Connection of muting sensors with M12-CYMUTE and OMC1

M12-8 pole
male

Connection to:
- Tina 10A/B/C
- M12-3R
- Electrical
  cabinet

A1, B1, A2, B2

1. ⌐ +24 VDC
2. —
3. ⌐ 0 V
4. ⌐ Muting input
5. —

A1, B1, A2, B2:
Muting sensors

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

Technical data
Orion3 Extended

Technical data

Approvals	
Conformity	CE 2006/42/EC - Machinery 2004/108/EC - EMC EN ISO 13849-1:2008, EN 62061:2005/A1:2013, EN 61496-1:2013, EN 61496-2, EN 61508-1:2010, EN 61508-2:2010, EN 61508-3:2010, EN 61508-4:2010
Functional safety data	
EN 61508:2010	SIL3, $PFH_D = 8.57 \times 10^{-9}$
EN 62061:2005+A1:2013	SILCL3, $PFH_D = 8.57 \times 10^{-9}$
EN ISO 13849-1:2008	PL e, Cat. 4, $PFH_D = 8.57 \times 10^{-9}$
Electrical data	
Power supply	+24 VDC ± 20 %
Power consumtion, Active unit	2.5 W max (without load)
Cable length (for power supply)	70 m max
Outputs	2 PNP
Short-circuit protection	1.4 A at 55°C
Output current	0.5 A max / output
Output voltage – ON	Power supply value less 1 V (min)
Output voltage – OFF	0.2 V max
Capacitive load	2.2 µF at +24 VDC max
Current for external lamp	20 mA min, 250 mA max
Response time	K1C-050: 11 ms, others: 12 ms
Connectors	M12-4 pole male on transmitter (compatible with M12-5 pole female)
Optical data	
Light emission (λ)	Infrared (860 nm)
Resolution	319.75 - 519.75 mm
Operating distance	0.5...8 m except K2C-090: 0.5..6.5 m
Ambient light rejection	According to IEC-61496-2:2013
Mechanical data	
Operating temperature	0...+ 55 °C
Storage temperature	- 25...+ 70 °C
Humidity range	15...95 % (no condensation)
Protection class	IP65 (EN 60529:2000)
Housing material	Painted aluminium
Lens material	PMMA
Cap material	PBT Valox 508
Weight	
Orion3-4-K1C-050-E	1.3 kg
Orion3-4-K2C-080-E	1.8 kg
Orion3-4-K2C-090-E	2.1 kg
Orion3-4-K2C-120-E	2.6 kg
Orion3-4-M1C-050 (passive)	1.2 kg
Orion3-4-M2C-080 (passive)	1.7 kg
Orion3-4-M2C-090 (passive)	1.9 kg
Orion3-4-M2C-120 (passive)	2.5 kg

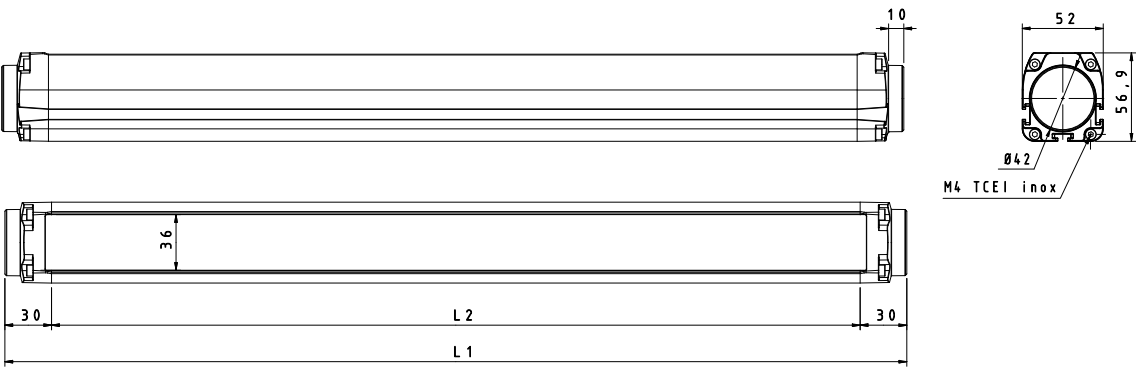**ABB** I Orion3 Extended   7

Dimension drawings
Orion3 Extended

Orion3 Extended
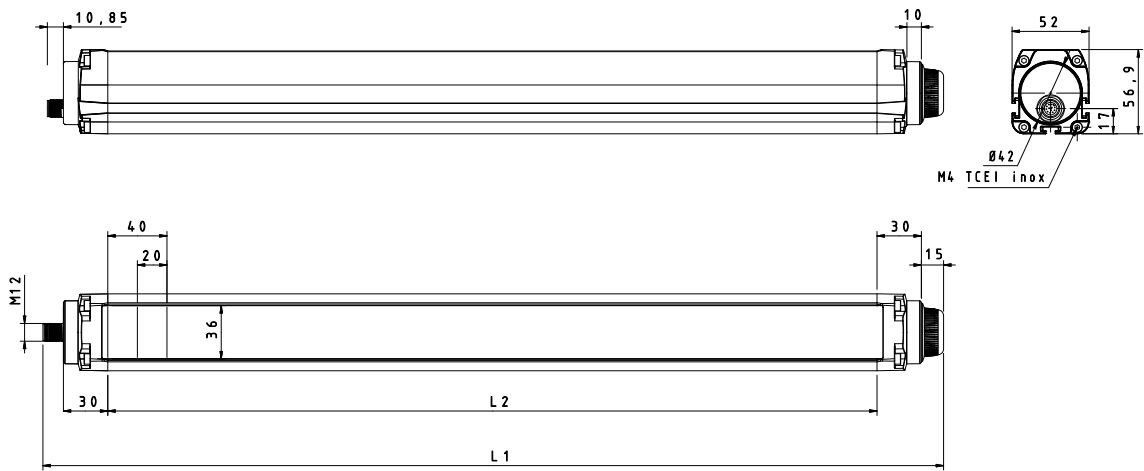
Active part - All dimensions in mm

Passive part - All dimensions in mm

Dimensions

L1 mm	L2 mm	Type
606.4	520.5	Orion3-4-K1C-050-E (active part)
906.4	820.5	Orion3-4-K2C-080-E (active part)
1006.4	920.5	Orion3-4-K2C-090-E (active part)
1306.4	1220.5	Orion3-4-K2C-120-E (active part)
580.5	520.5	Orion3-4-M1C-050 (passive part)
880.5	820.5	Orion3-4-M2C-080 (passive part)
980.5	920.5	Orion3-4-M2C-090 (passive part)
1280.5	1220.5	Orion3-4-M2C-090 (passive part)

Contact us

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