Safety Light Grid
Orion2 Base

Orion2 Base is a compact light grid for access protection.

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

With an operating distance of 50 m between transmitter and receiver the light grid is suitable for applications with deviating mirrors.

Cost effective solution

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

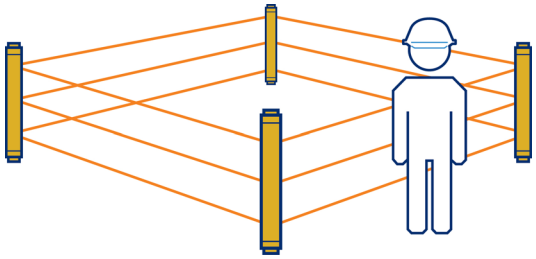
Protection in harsh environments
The housing is IP65 rated, and protective tubes and lens shields are available to provide further protection for the device in harsh environments.

Application and features
Orion2 Base

Application

Body detection over long distances

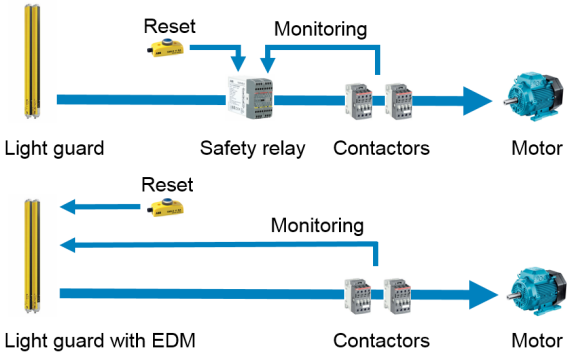
With 2-4 beams and a maximum operating distance of 50 m between transmitter and receiver, the light grid is intended for body detection and can be used with deviating mirrors to form a protective perimeter around a dangerous area.



Features

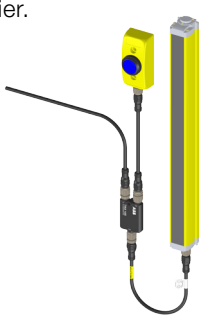
EDM

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.



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.



Orion2 Base, Light grid

Orion2 Base

Ordering details

Detection	Protected height mm	Type (Transmitter + receiver)	Order code
Body	500 (2 beams)	Orion2-4-K2-050-B	2TLA022304R0000
	800 (3 beams)	Orion2-4-K3-080-B	2TLA022304R0100
	900 (4 beams)	Orion2-4-K4-090-B	2TLA022304R0200
	1200 (4 beams)	Orion2-4-K4-120-B	2TLA022304R0300

Spare parts (delivered with products originally)

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

Ordering information
Orion2 Base cables

M12-C61

M12-CT132

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
	20	No	M12-C201	2TLA020056R1400
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

[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 Orion2 Base to URAX-D1R.

Ordering information
Orion2 Base accessories

2TLC172816F0201

Orion Laser pointer


2TLC172012W0201

M12-3R

2TLC172477F0201

Tina 10A

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*	
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 RO2	2TLA022316R3100
Y-connector for serial 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.

2TLC172367F0201

Smile 11RB

How to choose correct reset button

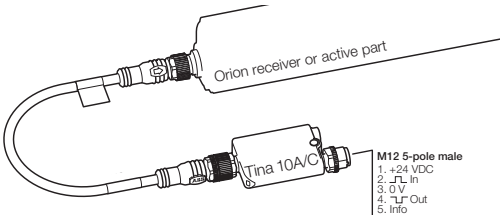
Local or global reset	Adaption to the dynamic signal*	Safety controle module	Type	Suitable connection accessories
Local reset button connected to the light guard (Orion in manual reset mode)	Yes	Vital or Pluto	Smile 11RO2	Tina 10B: OSSD to dynamic signal + local reset button M12-3A: serial connection of the dynamic signal
	No	Any safety control module compatible with light guard	Smile 11RO2	M12-3R: Easy connection of a local reset button
Global reset button connected to the control module or (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

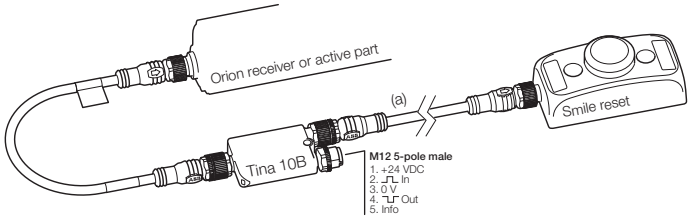
Orion with Tina 10A/C



Without local reset button

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

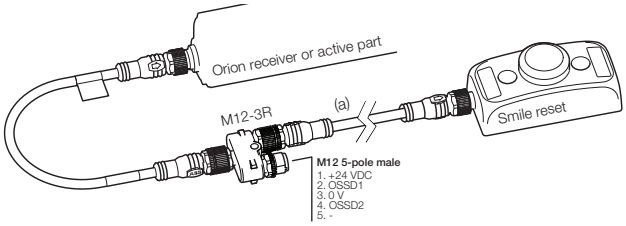
Reset to Orion with Tina 10B



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.

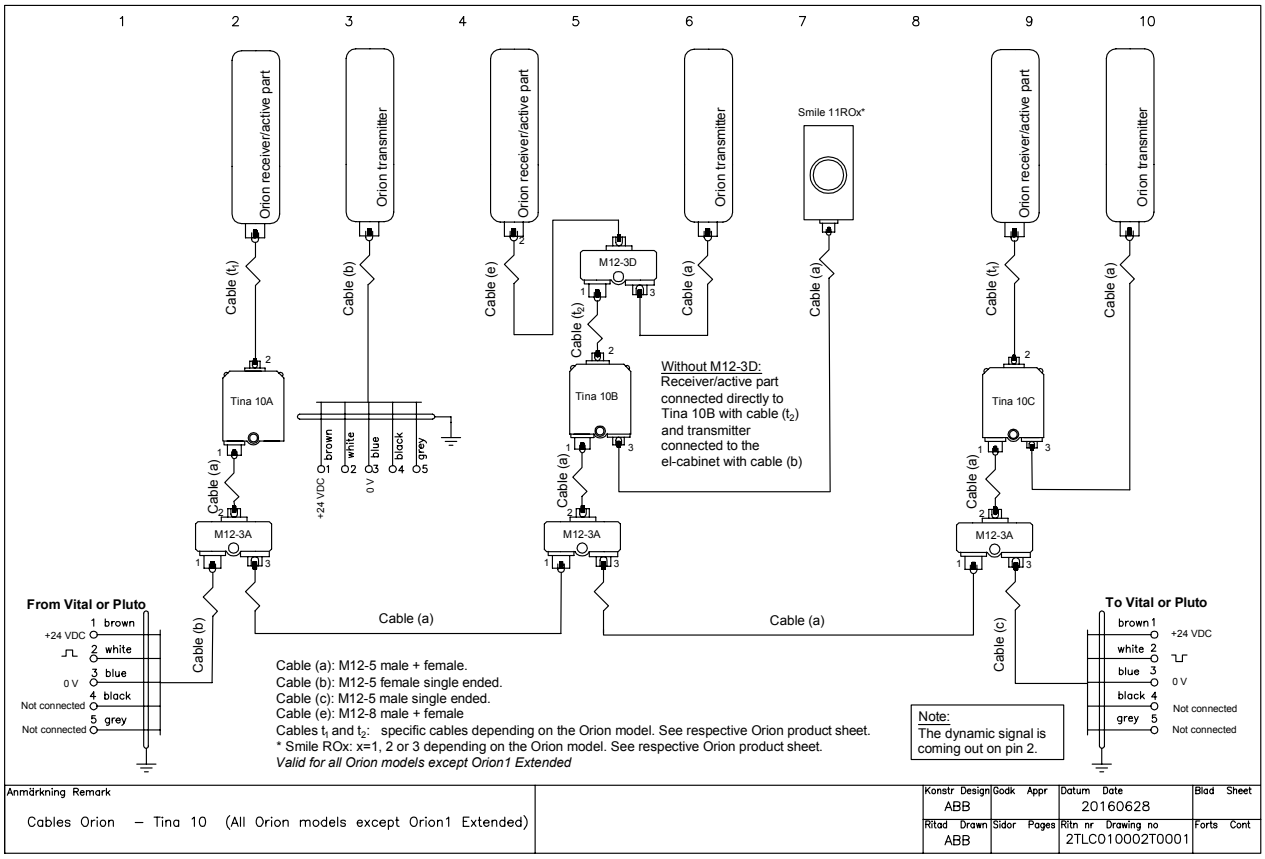
Reset to Orion with M12-3R



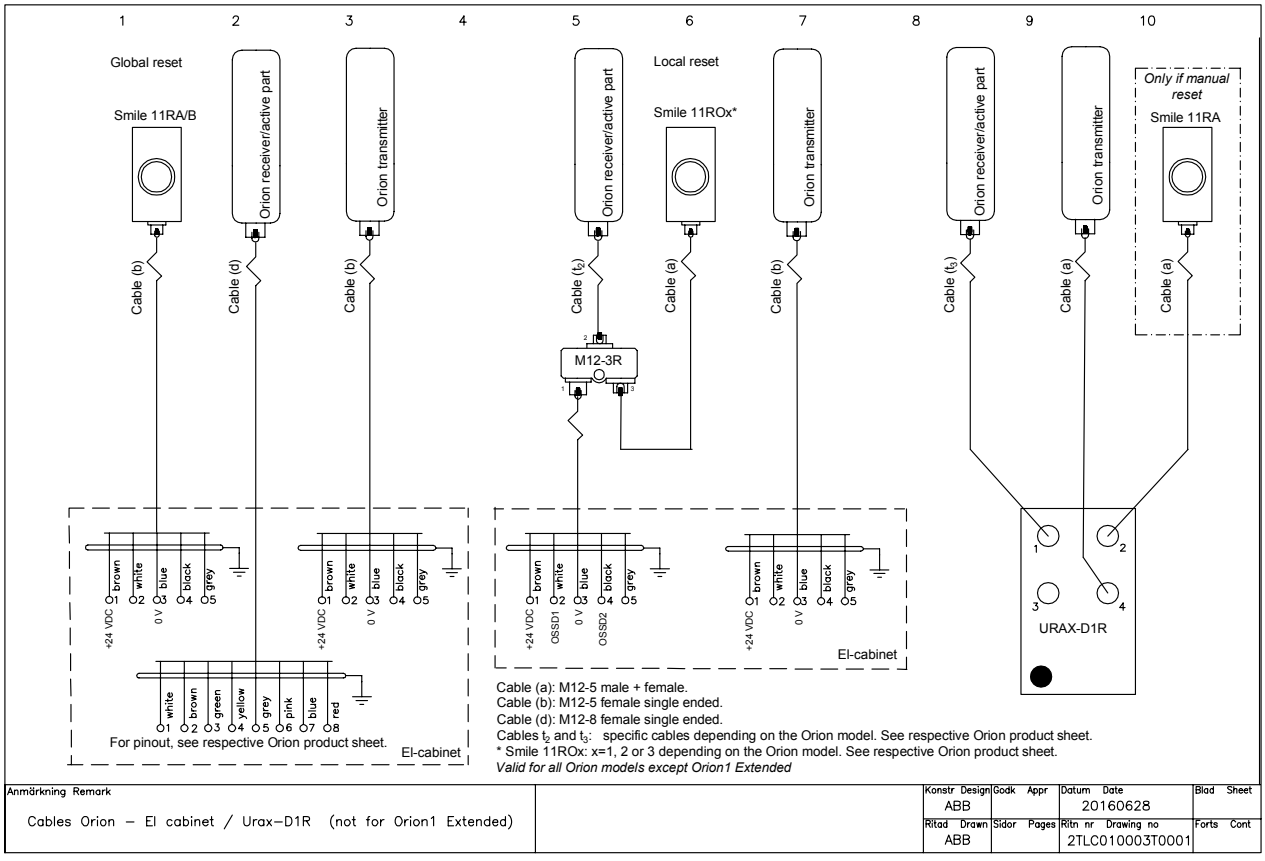
Connection of a local reset button via M12-3R.

Connection examples

Cables Orion to Tina 10

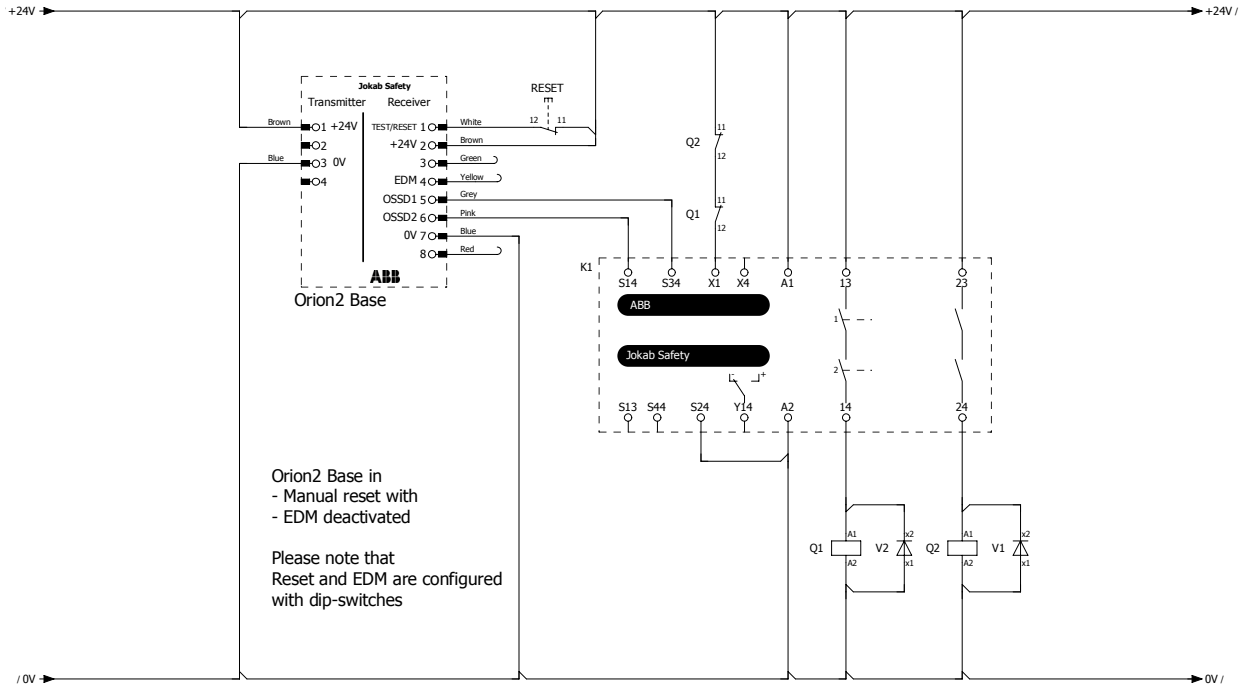


Cables Orion to electrical cabinet and Urax-D1R

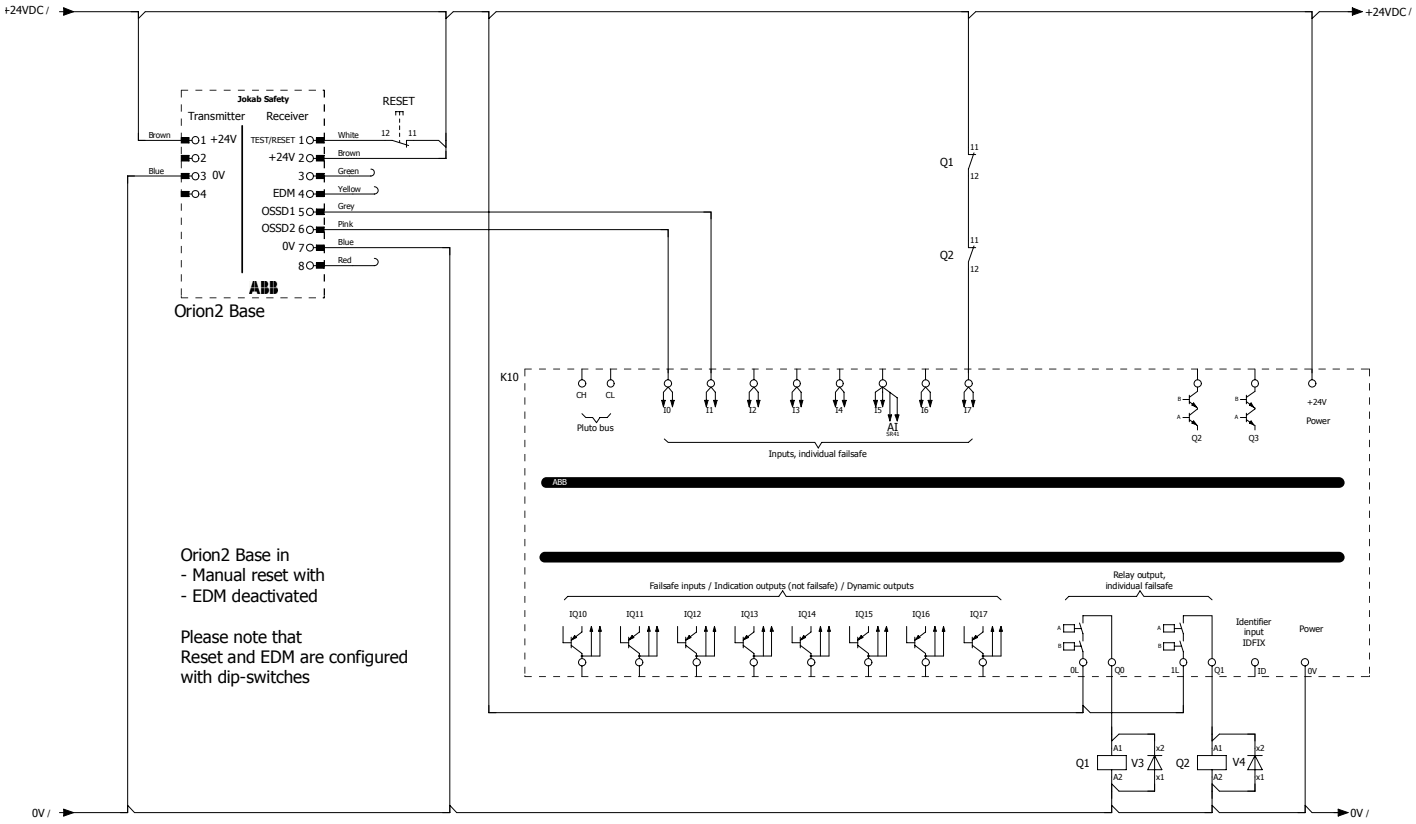


Connection examples

Connection of Orion2 Base to a RT9 safety relay



Connection of Orion2 Base to a Pluto B20 safety PLC



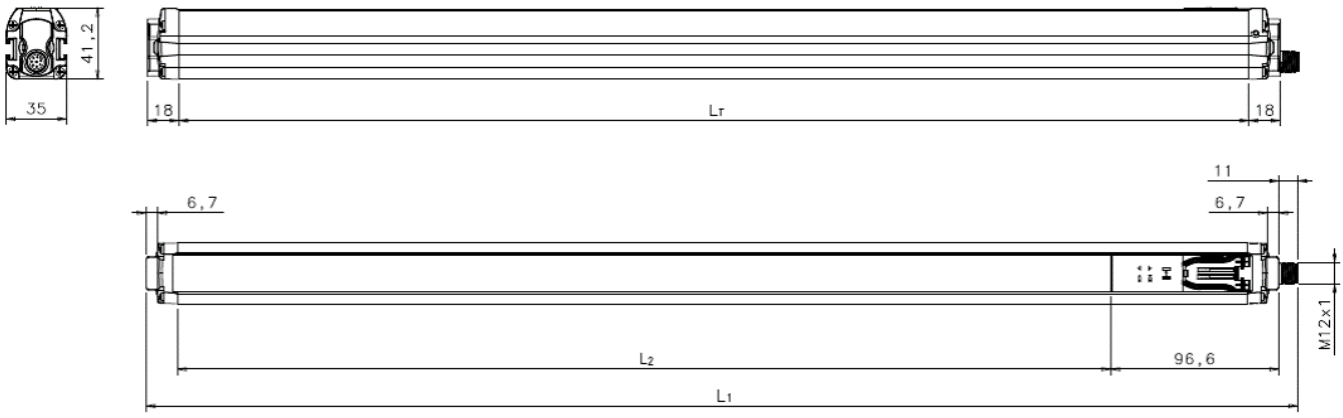
Technical data

Approvals	CE cULus LISTED TÜV
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	30 mA max. / 0.9W
Power consumption, Receiver	75 mA max. (without load) / 2.2 W
Cable length (for power supply)	50 m max with 50 nF capacitive load and +24 VDC
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
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 (yellow RAL 1003)
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)	Test/Reset – Automatic reset at delivery - Manual reset is selected with dip-switches.
Brown (2)	+24 VDC
Green (3)	Not used
Yellow (4)	EDM – EDM is deactivated at delivery and can be activated with dip-switches
Grey (5)	OSSD1
Pink (6)	OSSD2
Blue (7)	0 V
Red (8)	Not used

* Colors according to ABB Jokab Safety standard cables.

Dimension drawings

Orion2 Base



All dimensions in mm

Dimensions

Type	Lr 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

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2TLC172054L0201

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