

Safety Light Curtain Orion1 Extended

Orion1 Extended is an easy to use light curtain with compact dimensions. It has two resolutions for detection of fingers and hands, and comes with advanced features like cascading, muting and blanking.

Light curtains are usually placed closed to the hazardous zone when repeated access to the machine is necessary, for example manually serviced machines.



Cost effective solution

Integrated muting function

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

No dead zones

The light beams cover all of the profile length, without the usual dead zones at the ends requiring extra mechanical guards.

Easy serial connection

Cascading with the standard units: no separate slave or master units.



Easy to install

Alignment help

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

Fast connection

Cables with M12 connectors speeds up connection.



Continuous operation

Reduced downtime

Extensive error indication reduces troubleshooting time.

Interference protection

Protection against mutual interference with coding.

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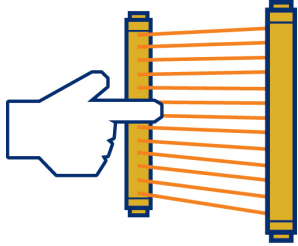
Application and features

Orion1 Extended

Choose the right resolution for your application

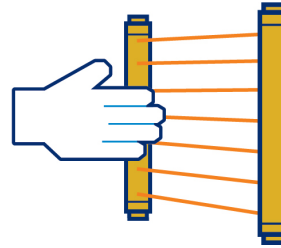
Finger detection

A 14 mm resolution is intended for finger detection when the light guard needs to be very close to the machine in order to give the operator a good view and easy accessibility to the machine. A 14 mm resolution enables an operating distance of 7 m.



Hand detection

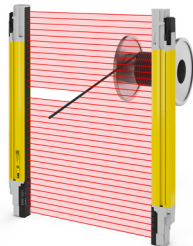
A 30 mm resolution is intended for hand detection and area protection and is a good compromise between cost and accessibility to the machine. A 30 mm resolution enables an operating distance of 20 m.



Features

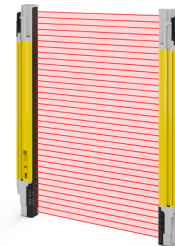
Blanking

The blanking function allows to define a number of beams that can be constantly interrupted without stopping the machine. In this way a fixed material or a cable is allowed in the protected field, but a hand interrupting an extra beam would stop the machine. With floating blanking, the object, for ex. the cable, can move within the protected field.



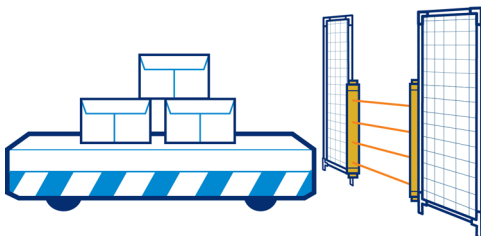
No dead zones

A special feature of Orion1 Extended is that the light beams cover all of the profile length, without any dead zones. This enables to place it inside openings, instead of having a larger light guard in front of an opening.



Muting

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.



Cascading

All Orion1 Extended units can be connected in series (cascaded) to easily create a suitable light curtain setup with no special units needed.



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.

Orion1 Extended, Light curtain



Ordering details

Resolution (Detection)	Protected height	Type (Transmitter + receiver)	Order code
mm	mm		
Finger (14)	300	Orion1-4-14-030-E	2TLA022301R0100
	450	Orion1-4-14-045-E	2TLA022301R0200
	600	Orion1-4-14-060-E	2TLA022301R0300
	750	Orion1-4-14-075-E	2TLA022301R0400
	900	Orion1-4-14-090-E	2TLA022301R0500
	1050	Orion1-4-14-105-E	2TLA022301R0600
	1200	Orion1-4-14-120-E	2TLA022301R0700
	1350	Orion1-4-14-135-E	2TLA022301R0800
	1500	Orion1-4-14-150-E	2TLA022301R0900
	1650	Orion1-4-14-165-E	2TLA022301R1000
Hand (30)	300	Orion1-4-30-030-E	2TLA022303R0100
	450	Orion1-4-30-045-E	2TLA022303R0200
	600	Orion1-4-30-060-E	2TLA022303R0300
	750	Orion1-4-30-075-E	2TLA022303R0400
	900	Orion1-4-30-090-E	2TLA022303R0500
	1050	Orion1-4-30-105-E	2TLA022303R0600
	1200	Orion1-4-30-120-E	2TLA022303R0700
	1350	Orion1-4-30-135-E	2TLA022303R0800
	1500	Orion1-4-30-150-E	2TLA022303R0900
	1650	Orion1-4-30-165-E	2TLA022303R1000
	1800	Orion1-4-30-180-E	2TLA022303R1100

Spare parts (delivered with products originally)

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

Ordering information

Accessories



OMC1

2TLC172016V0201



Orion Laser pointer

2TLC172816F0201

Accessories

Description	Type	Order code
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	2TLA030053R3000
Smile reset button with NO contact for Pluto	Smile 11 RB	2TLA030053R0100
Orion Test Piece 14 mm	Orion TP-14	2TLA022310R5200
Orion Test Piece 30 mm	Orion TP-30	2TLA022310R5300
Orion Laser pointer	Orion Laser	2TLA022310R5000
4 standard brackets for Orion1 & Orion2	JSM Orion01	2TLA022310R0000
Kit for mounting of Orion1 & Orion2 in Stand (4 pieces for lengths shorter than 1200 mm)	JSM Orion06	2TLA022310R0400
Kit for mounting of Orion1 & Orion2 in Stand (6 pieces for lengths of 1200 mm or more)	JSM Orion07	2TLA022310R0500
Kit for mounting of Orion1 Mirror in Stand	JSM Orion11	2TLA022310R0900
Orion Plate kit for adjustment of protective stand	Orion Stand Plate	2TLA022312R5000
Deviating mirror to be mounted in Orion Stand with 1 kit JSM Orion11	Orion1 Mirror*	
Protective stand	Orion Stand*	

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

Ordering information

Orion1 Extended specific cables



M12-C61

2TLA0172951F0201



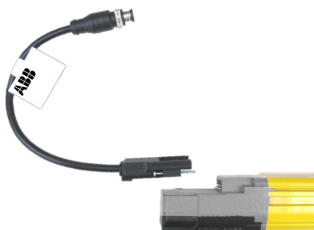
M12-C2012

2TLA0172935F0201

Cables

Muting to be used	Necessary transmitter /receiver cable	Suitable cable between transmitter/receiver cable and el-cabinet or other device	Angled connector	Length m	Type	Order code
Yes	Transmitter M12-C02PT2T	M12-5 female single ended, to el-cabinet for example	No	6	M12-C61	2TLA020056R0000
			Yes	6	M12-C61 V	2TLA020056R0100
			No	10	M12-C101	2TLA020056R1000
			Yes	10	M12-C61 V	2TLA020056R1100
			No	20	M12-C201	2TLA020056R1400
			Yes	20	M12-C201 V	2TLA020056R1500
	Receiver M12-C02PT62RM	M12-5 male + female, to OMC1 for example	No	1	M12-C112	2TLA020056R2000
			No	3	M12-C312	2TLA020056R2100
			No	6	M12-C612	2TLA020056R2200
			No	10	M12-C1012	2TLA020056R2300
			No	20	M12-C2012	2TLA020056R2400
			No	6	M12-C65	2TLA020056R7200
			No	10	M12-C105	2TLA020056R7300
			No	20	M12-C205	2TLA020056R7500
No	Transmitter M12-C02PT2T	M12-5 female single ended, to el-cabinet for example	No	6	M12-C61	2TLA020056R0000
			Yes	6	M12-C61 V	2TLA020056R0100
			No	10	M12-C101	2TLA020056R1000
			Yes	10	M12-C101 V	2TLA020056R1100
			No	20	M12-C201	2TLA020056R1400
			Yes	20	M12-C201 V	2TLA020056R1500
	Receiver M12-C02PT6RB	M12-12 female single ended, to el-cabinet for example	No	6	M12-C65	2TLA020056R7200
			No	10	M12-C105	2TLA020056R7300
			No	20	M12-C205	2TLA020056R7500
			No	6	M12-C65	2TLA020056R7200
			No	10	M12-C105	2TLA020056R7300
			No	20	M12-C205	2TLA020056R7500

Special cables for Orion1 Extended



M12-C02PT2T

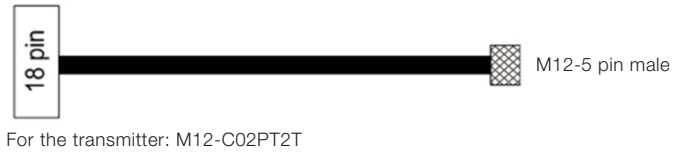
Description	Length m	Type	Order code
Transmitter cable for Orion1 Extended	0.2	M12-C02PT2T	2TLA022315R0100
Receiver cable for Orion1 Extended when no muting	0.2	M12-C02PT6RB	2TLA022315R0200
Receiver cable for Orion1 Extended when muting	0.2	M12-C02PT62RM	2TLA022315R0300
Cascade cable for Orion1 Extended	1	PT-C1PT	2TLA022315R1000
Cascade cable for Orion1 Extended	0.5	PT-C05PT	2TLA022315R1100
Cascade cable for Orion1 Extended	0.05	PT-C005PT	2TLA022315R1200

Transmitter/receiver cables Orion1 Extended

Colors of conductors in ABB Jokab Safety cables with M12 connectors (to be connected to transmitter/receiver cables)

Connection transmitter

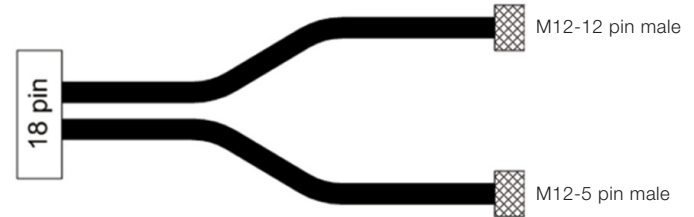
Brown (1)	+24 V
White (2)	Test
Blue (3)	0 V
Black (4)	Earth
Grey (5)	Not used



Connection receiver with muting cable M12-C02PT62RM

M12-12 connector

Brown (1)	+24 VDC
Blue (2)	0 V
White (3)	Reset/Acknowledge/Align
Green (4)	Override1
Pink (5)	OSSD2
Yellow (6)	EDM
Black (7)	Muting selection
Grey (8)	OSSD1
Red (9)	Override2
Violet (10)	Muting lamp
Grey-pink (11)	Override status
Red-blue (12)	Earth



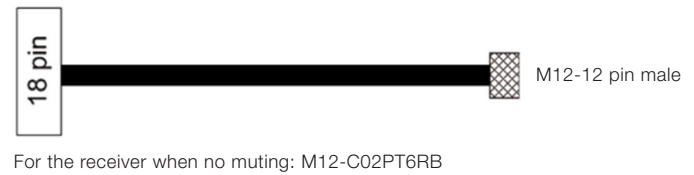
M12-5 connector

Brown (1)	+24 VDC
White (2)	Muting2
Blue (3)	0 V
Black (4)	Muting1
Grey (5)	No used




Connection receiver with blanking cable M12-C02PT6RB, to be used whenever muting is not necessary.

M12-12 connector

Brown (1)	+24 VDC
Blue (2)	0 V
White (3)	Reset/Acknowledge/Align
Green (4)	Teach in
Pink (5)	OSSD2
Yellow (6)	EDM
Black (7)	Not used
Grey (8)	OSSD1w
Red (9)	Tolerance
Violet (10)	Lamp
Grey-pink (11)	Not used
Red-blue (12)	Earth

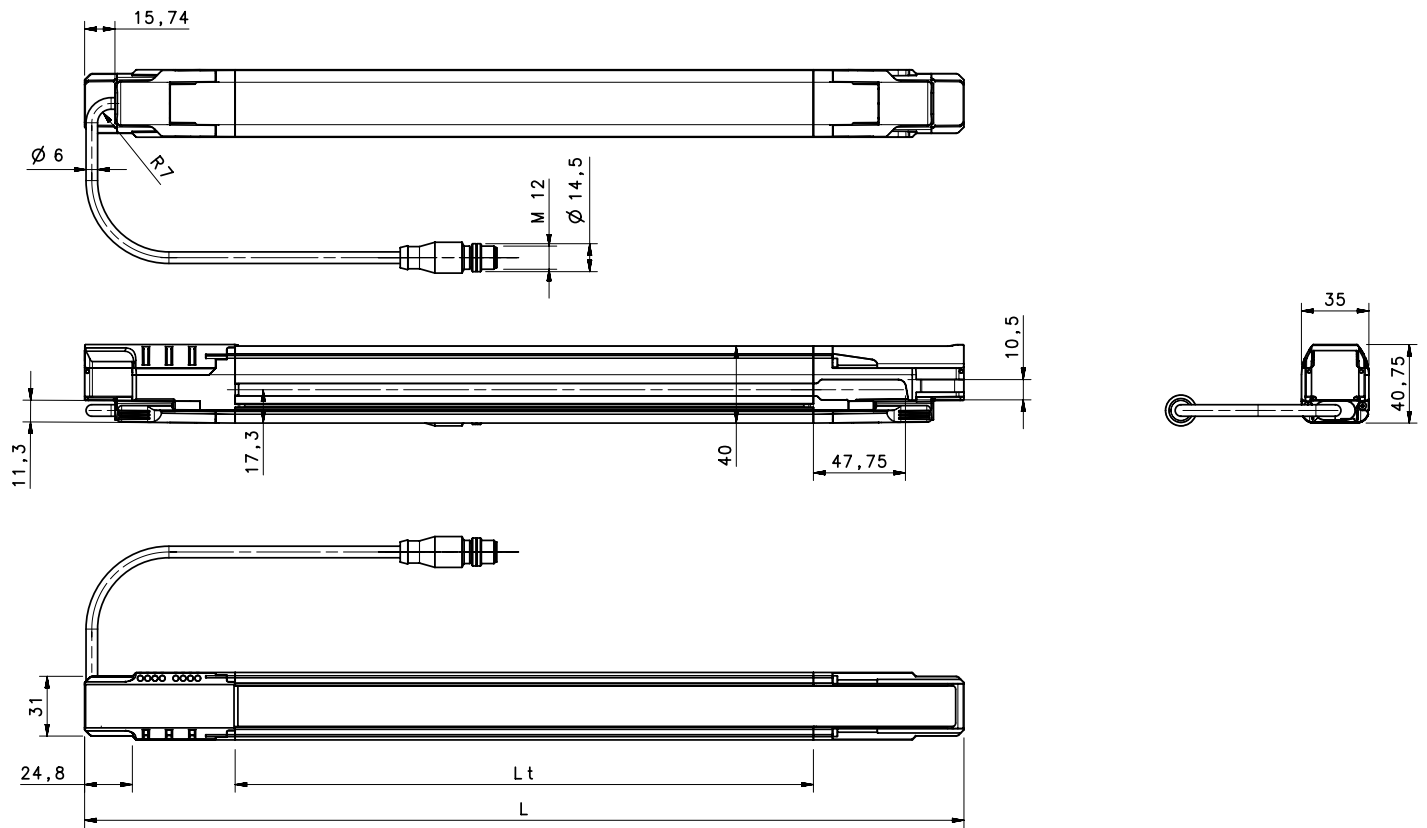


Technical data

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 %
Power consumption	
Transmitter	3 W max
Receiver	5 W max (without load)
Outputs	2 PNP
Short-circuit protection	1.4 A max
Output current	0.5 A max / output
Output voltage – ON	Vdd -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; 200 mA max
Cable length (for power supply)	50 m max
Optical data	
Light emission (λ)	Infrared, LED (950 nm)
Resolution	14 or 30 mm
Operating distance	0.2...20 m for 30 mm 0.2...7 m for 14 mm
Ambient light rejection	According to IEC-61496-2:2013
Mechanical data	
Operating temperature	0...+ 50 °C
Storage temperature	- 25...+ 70 °C
Humidity range	15...95 % (no condensation)
Protection class	IP65 (EN 60529:2000)
Weight	1.35 kg / meter for each single unit
Housing material	Painted aluminium (yellow RAL 1003)
Front glass material	PMMA
Cap material	PBT Valox 508
Function settings at delivery	
The functions are configured with push buttons on the units	No code Muting EDM enabled Automatic Reset T/X muting 10 min muting time-out Override trigger = level Long range

Dimension drawings

Orion1 Extended



All dimensions in mm

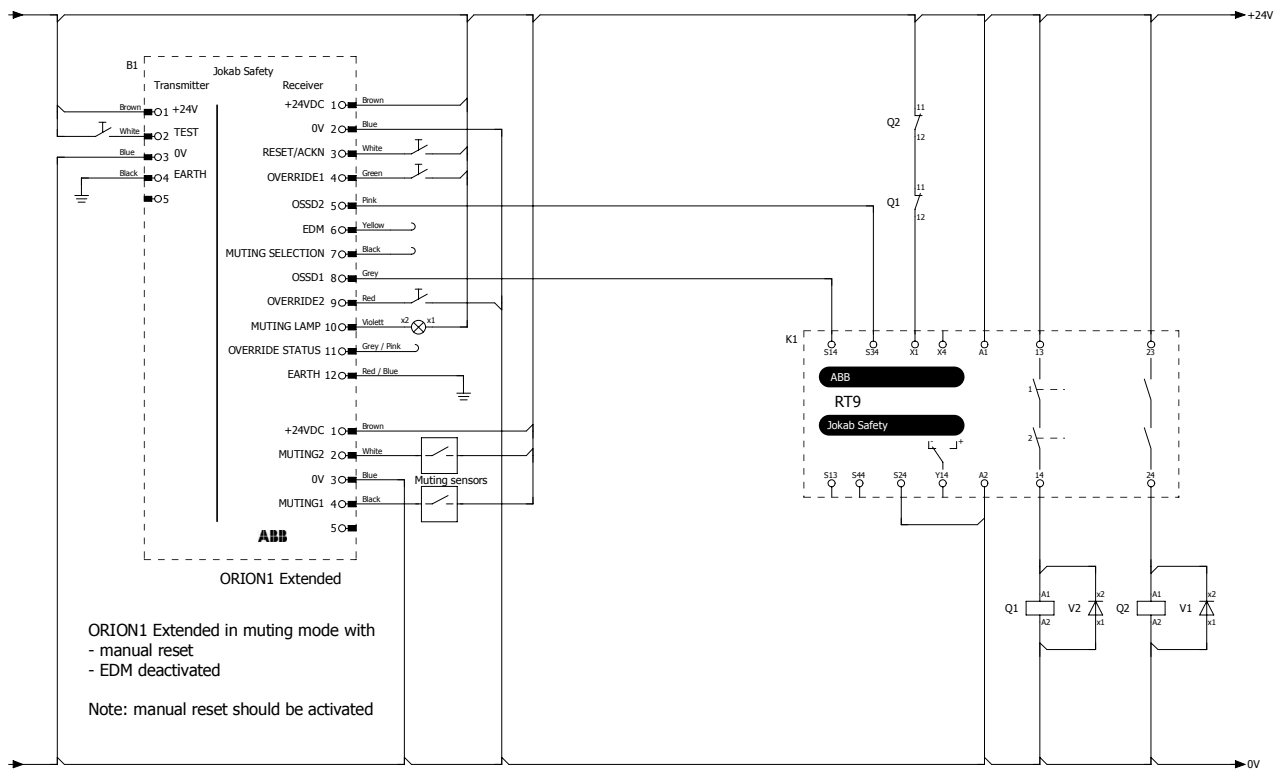
Dimensions

Type	Lt mm	L mm
Orion1-4-xx-030-E	300	306.3
Orion1-4-xx-045-E	450	456.3
Orion1-4-xx-060-E	600	606.3
Orion1-4-xx-075-E	750	756.3
Orion1-4-xx-090-E	900	906.3
Orion1-4-xx-105-E	1050	1056.3
Orion1-4-xx-120-E	1200	1206.3
Orion1-4-xx-135-E	1350	1356.3
Orion1-4-xx-150-E	1500	1506.3
Orion1-4-xx-165-E	1650	1656.3
Orion1-4-xx-180-E	1800	1806.3

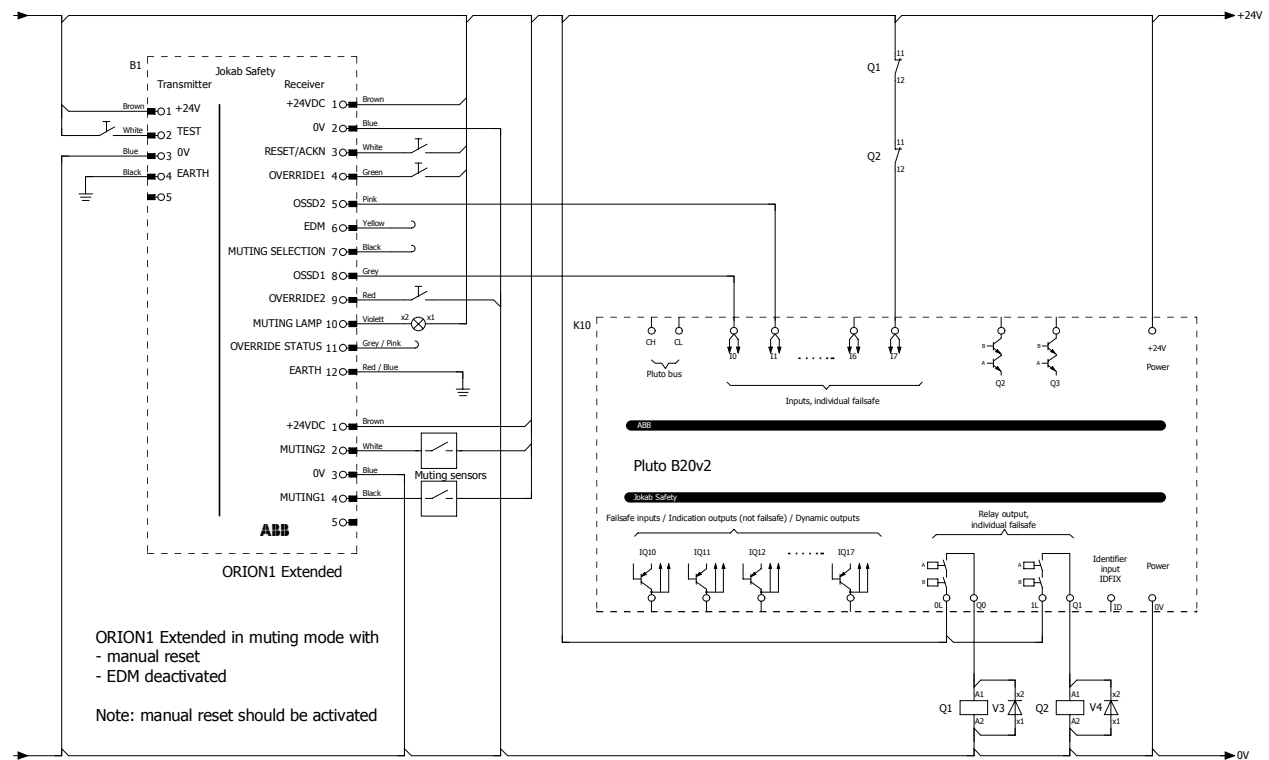
xx=Resolution (14 or 30 mm)

Connection examples

Connection of Orion1 Extended to a RT9 safety relay

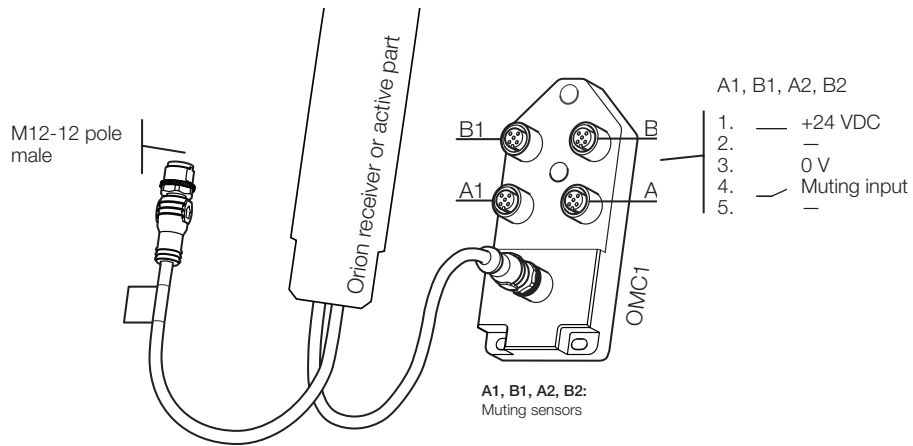


Connection of Orion1 Extended to a Pluto B20 safety PLC



Connection examples

Connection of the muting sensors with M12-C02PT62RM and OMC1



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

Contact us

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