

Safety Light Curtain Orion1 Base

Orion1 Base is an easy to use light curtain with compact dimensions and two resolutions for detection of fingers and hands.

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

Light curtains can also be used to limit work zones inside the hazardous zone and be mounted horizontally for area protection.



Cost effective solution

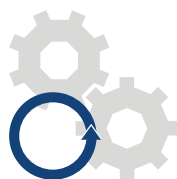
No more functions than necessary
Orion1 Base comes with a minimum of advanced functionalities to save cost.

Minimized cabling

A local reset button can be connected directly to the light curtain. In this way there is no need for a cable between the reset button and the electrical cabinet or for an extra control module.

External device monitoring

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



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.

Protection against harsh environment

Protective tubes and lens shields protect the devices in harsh environments.



Easy to install

Easy to align

Alignment help and a wide angle within the limits of a Type 4 device facilitate alignment. Rotation brackets also simplify alignment..

Easy to connect

M12 connectors speed up cabling.

Power and productivity
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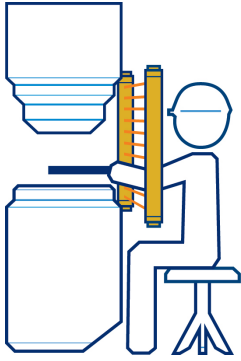
Application and features

Orion1 Base

Two main applications

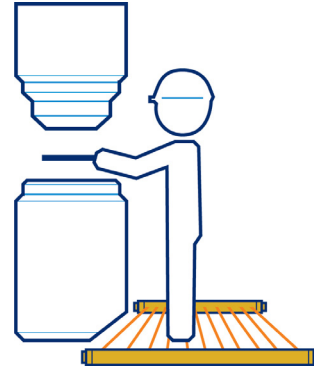
Vertical mounting

When using standard vertical mounting the light guard can be placed close to the hazard zone. This is suitable for applications where repeated access to the machine is necessary, e.g. manually serviced machines.



Horizontal mounting

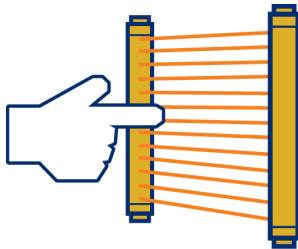
Horizontal mounting is mainly used for area protection and limitation of work zones.



Choose the right resolution for your application

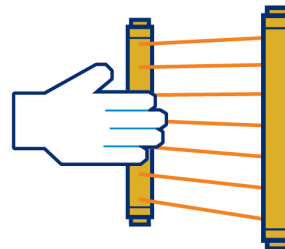
Finger detection

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 6 m.



Hand detection

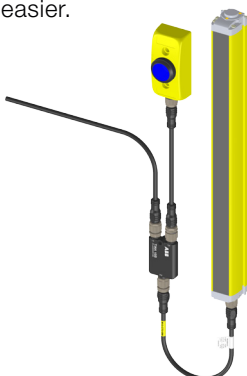
A 30 mm resolution is intended for hand detection and area protection and is a good compromise between cost and accessibility to the machine. A 30 mm resolution enables an operating distance of 19 m.



Special features

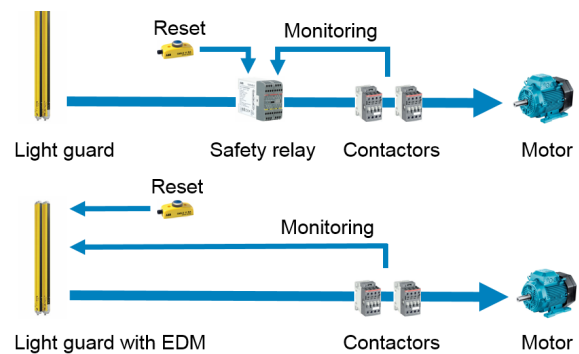
Local reset

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 Base, Light curtain



Ordering details

Detection (Resolution)	Protected height	Type (Transmitter + receiver)	Order code	
mm	mm			
Finger (14)	150	Orion1-4-14-015-B	2TLA022300R0000	
	300	Orion1-4-14-030-B	2TLA022300R0100	
	450	Orion1-4-14-045-B	2TLA022300R0200	
	600	Orion1-4-14-060-B	2TLA022300R0300	
	750	Orion1-4-14-075-B	2TLA022300R0400	
	900	Orion1-4-14-090-B	2TLA020056R3000	
	1050	Orion1-4-14-105-B	2TLA020056R4000	
	1200	Orion1-4-14-120-B	2TLA020056R4100	
	1350	Orion1-4-14-135-B	2TLA022300R0800	
	1500	Orion1-4-14-150-B	2TLA022300R0900	
	1650	Orion1-4-14-165-B	2TLA022300R1000	
	1800	Orion1-4-14-180-B	2TLA022300R1100	
	Hand (30)	150	Orion1-4-30-015-B	2TLA022302R0000
		300	Orion1-4-30-030-B	2TLA022302R0100
450		Orion1-4-30-045-B	2TLA022302R0200	
600		Orion1-4-30-060-B	2TLA022302R0300	
750		Orion1-4-30-075-B	2TLA022302R0400	
900		Orion1-4-30-090-B	2TLA022302R0500	
1050		Orion1-4-30-105-B	2TLA022302R0600	
1200		Orion1-4-30-120-B	2TLA022302R0700	
1350		Orion1-4-30-135-B	2TLA022302R0800	
1500		Orion1-4-30-150-B	2TLA022302R0900	
1650		Orion1-4-30-165-B	2TLA022302R1000	
1800		Orion1-4-30-180-B	2TLA022302R1100	

Spare parts (delivered with products originally)

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

Ordering information

Orion1 Base cables

Cables



M12-C61

2TLC172951F0201



M12-CTO1BA

2TLC172002V0201

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)	1	No	M12-C134	2TLA020056R5000
	3	No	M12-C334	2TLA020056R5100
M12-8 male + female (t ₁)	0.2	No	M12-CTO1BA ¹	2TLA022315R3000
M12-8 male + female (t ₂)	0.2	No	M12-CTO1BM ²	2TLA022315R3100
M12-8 female - M12-5 male (t ₃)	1	No	M12-CTURAX-01B ³	2TLA022315R3300

¹M12-CTO1BA can be used for:

- connection of Orion1 Base to Tina 10A/C
- replacement of Focus II in automatic reset with Orion in automatic reset.

The EDM function* should be deactivated in all cases.

²M12-CTO1BM can be used for:

- connection of Orion1 Base to Tina 10B or M12-3R for use of a local reset button, for example Smile 11ROx
- replacement of Focus II in manual reset with Orion in manual reset.

The EDM function* should be deactivated in all cases.

³M12-CTURAX-01B is used for:

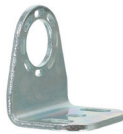
- the connection of Orion1 Base to URAX-D1R.

The light guard is automatically configured in automatic reset and the EDM function* should be deactivated.

* EDM function: see page 2

Ordering information

Accessories



JSM Orion03

2TLC17275R0201



M12-3R

2TLC172012A0201



Smile11RB

2TLC17286R0201



Tina 10A

2TLC17247R0201

Accessories

Description	Type	Order code
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 rotation brackets for Orion1 Base	JSM Orion03	2TLA022310R0100
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*	
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 NO contact for Orion1 Base	Smile RO1	2TLA022316R3000
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.

How to choose correct reset button




Local or global reset	Adaption to the dynamic signal*	Safety control module	Type	Useful connection accessories
Local reset button connected to the light guard (Orion in manual reset mode)	Yes	Vital or Pluto	Smile 11RO1	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 11RO1	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.

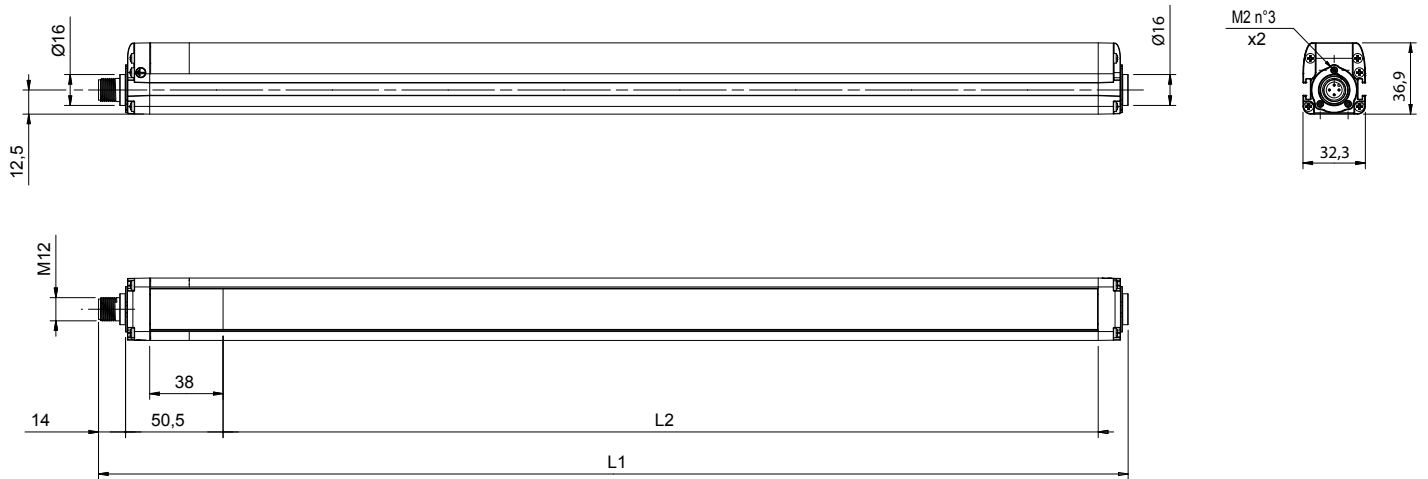
Technical data

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	1.5 W max
Power consumption, receiver	4 W max (without load)
Outputs	2 PNP
Short-circuit protection	1.4 A max
Output current	0.5 A max / output
Output voltage – ON	V _{dd} - 1 V min
Output voltage – OFF	0.2 V max
Capacitive load	2.2 µF at +24 VDC max
Cable length (for power supply)	50 m max
Connectors	M12-4 pole male on transmitter (compatible with M12-5 pole female) M12-8 pole male on receiver
Optical data	
Light emission (λ)	Infrared, LED (950 nm)
Resolution	14 or 30 mm
Operating distance	0.2...19 m for 30 mm 0.2...6 m for 14 mm
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)
Weight	1.3 kg / meter for each single unit
Housing material	Painted aluminium (yellow RAL 1003)
Front glass material	PMMA
Cap material	PC MAKROLON
Connection Transmitter*	
Brown (1)	+24 VDC
White (2)	Test
Blue (3)	0 V
Black (4)	Not used
Grey (5)	Not used
Connection Receiver*	
White (1)	Reset/Acknowledge
Brown (2)	+24 VDC
Green (3)	EDM selection - Must be connected to +24 VDC to deactivate EDM
Yellow (4)	EDM
Grey (5)	OSSD1
Pink (6)	OSSD2
Blue (7)	0 V
Red (8)	Reset mode selection: connect to pin 5 for automatic reset or to pin 6 for manual reset

*Colors according to ABB Jokab Safety standard cables.

Dimension drawings

Orion1 Base



All dimensions in mm

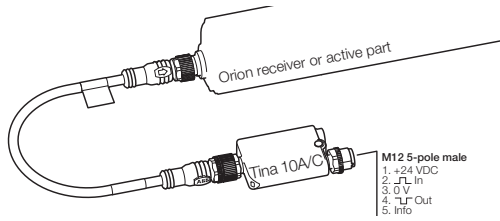
Dimensions

Type	Protected height mm	L1 mm	L2 mm
Orion1-4-xx-015-B	150	233.3	153.3
Orion1-4-xx-045-B	300	383.2	303.2
Orion1-4-xx-045-B	450	533.2	453.3
Orion1-4-xx-060-B	600	683.3	603.2
Orion1-4-xx-075-B	750	833.2	753.3
Orion1-4-xx-090-B	900	983.2	903.2
Orion1-4-xx-105-B	1050	1133.2	1053.2
Orion1-4-xx-120-B	1200	1283.2	1203.3
Orion1-4-xx-135-B	1350	1433.2	1353.2
Orion1-4-xx-150-B	1500	1583.3	1503.3
Orion1-4-xx-165-B	1650	1733.3	1653.3
Orion1-4-xx-180-B	1800	1883.3	1803.3

xx=Resolution

Connection examples

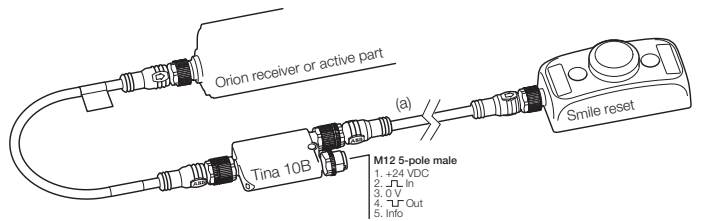
Orion with Tina 10A/C



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.

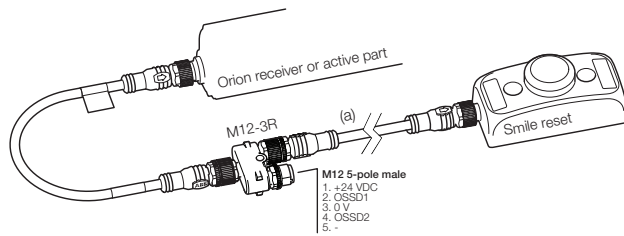
Reset to Orion with Tina 10B



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.

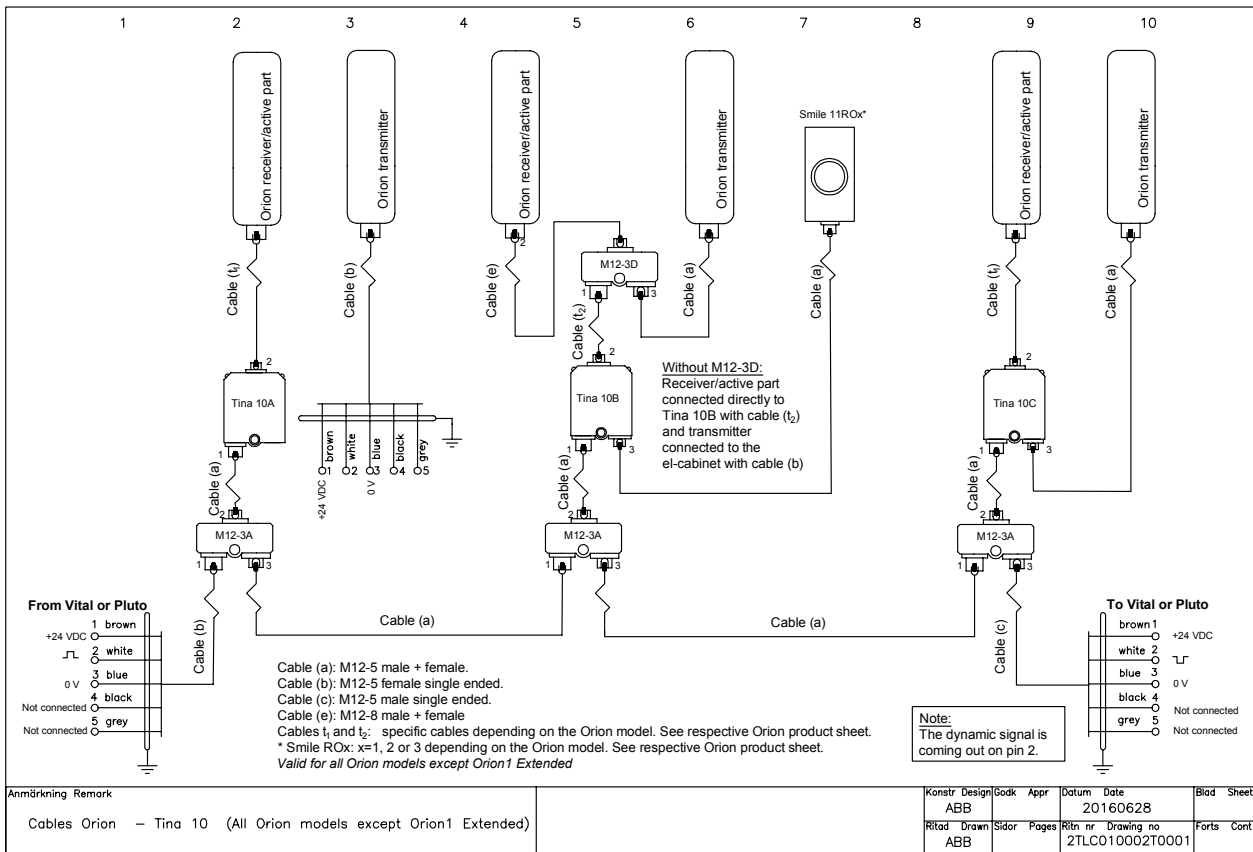
Reset to Orion with M12-3R



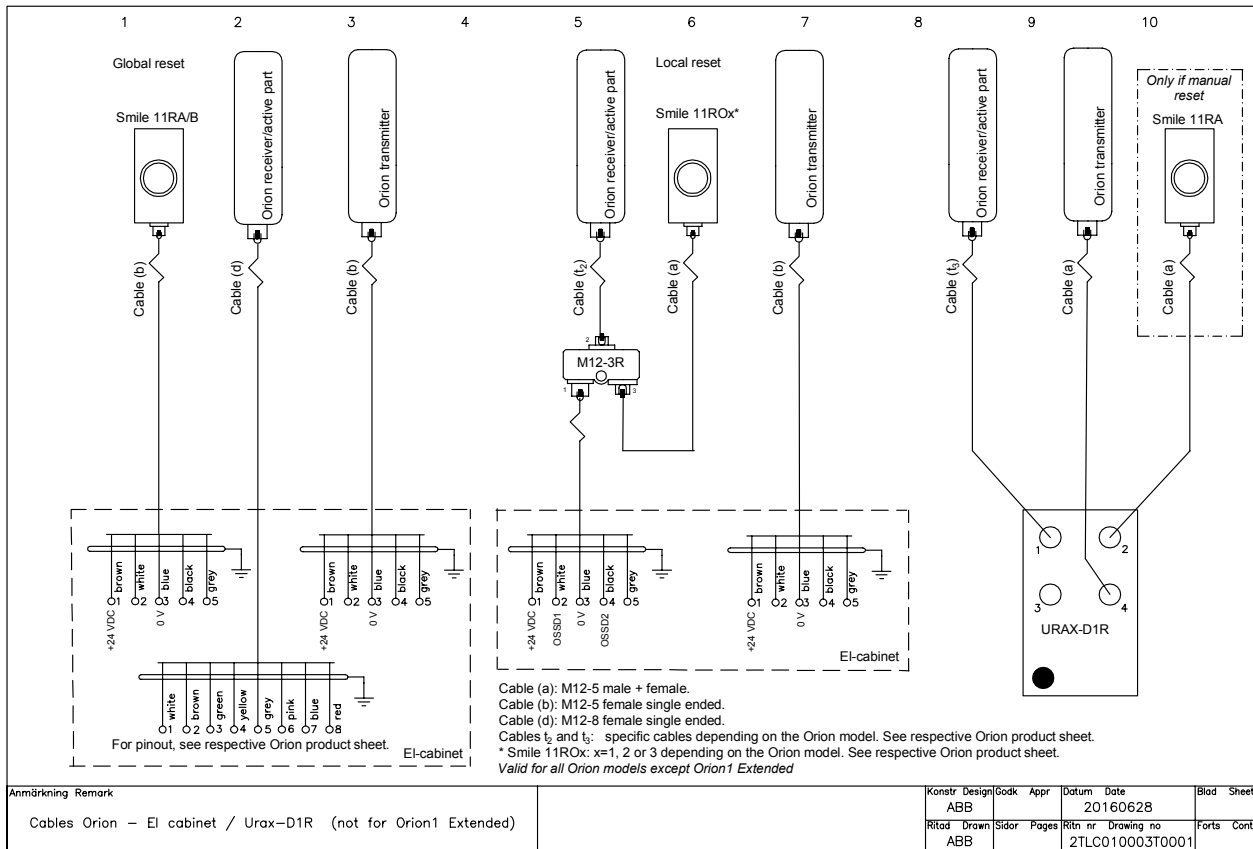
Connection of a local reset button via M12-3R.

Connection examples

Cables Orion to Tina 10

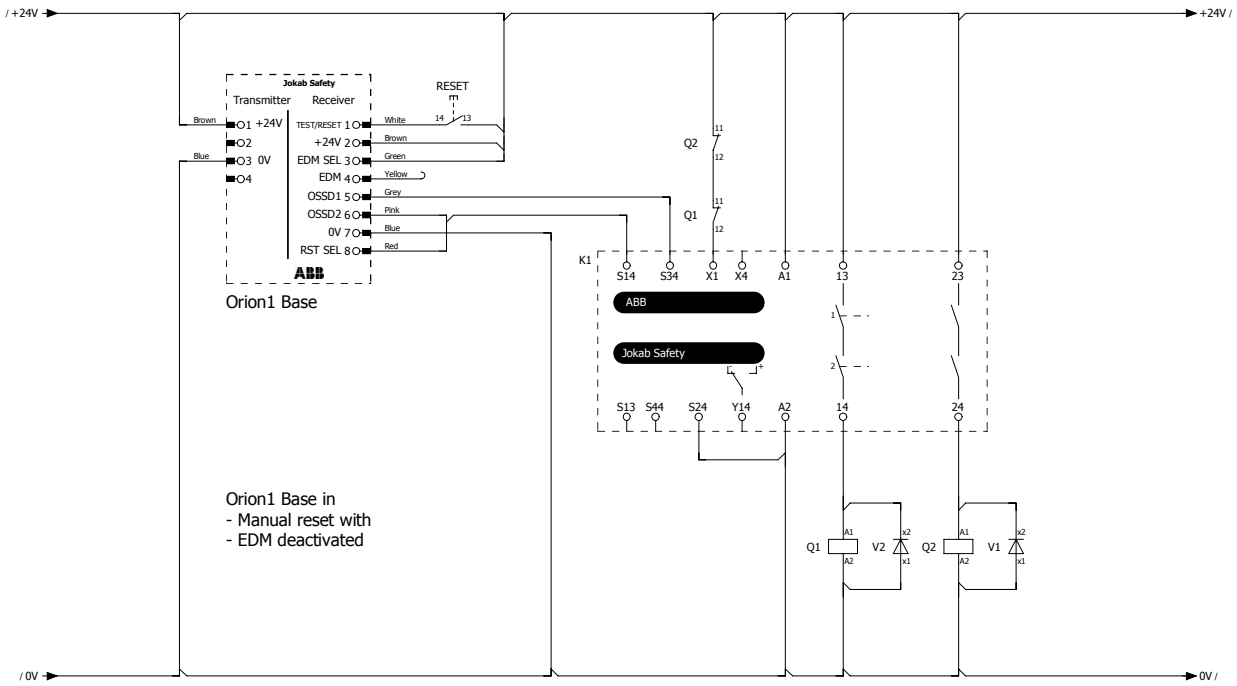


Cables Orion to electrical cabinet and Urax-D1R



Connection examples

Connection of Orion1 Base to a RT9 safety relay



Connection of Orion1 Base to a Pluto B20 safety PLC

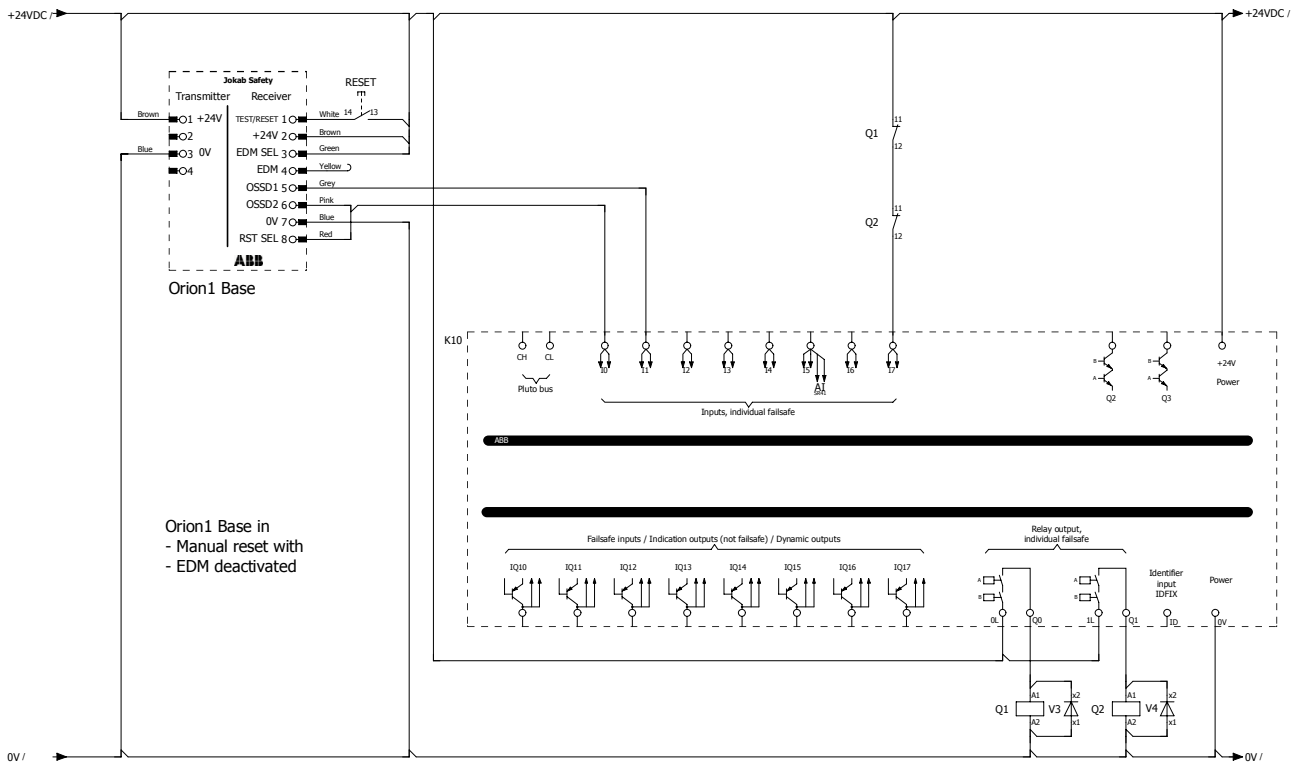


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