

# Safety Light Curtain

## Orion1 Extended

### Approvals:



### Application:

- For finger and hand detection
- When the light guard should be close to the hazardous zone
- When muting or blanking are necessary
- When several devices should be connected in series (cascading)
- When space is an issue (no dead zone)

### Features:

- Finger and hand detection
- 7 m and 20 m operating distances (finger and hand detection)
- Compact dimensions
- Local reset and EDM
- Muting and Blanking
- Cascading
- No dead zone



The Orion1 Extended light curtains are used for finger or hand detection, usually quite close to the dangerous machine, when advanced functions like muting or cascading are necessary.

#### Easy to use

- Muting sensors are connected directly to the light curtain, with no need for a remote extra muting module.
- No dead zone: the resolution is guaranteed along the whole length of the light curtain with no need for extra mechanical guard.
- Cascading with the standard units, no separate slave or master units.

#### Faster installation

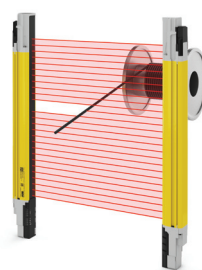
- Alignment help and a wide angle within the limits of a Type 4 device facilitate alignment.
- M12 connectors speed up cabling.

#### Less downtime

- Since the alignment level is displayed on the unit, the alignment can be improved before an unwanted stop occurs.
- Coding protects against mutual interferences.
- Extensive error indication reduces troubleshooting time.
- Protective tubes and lens shields protect the devices in harsh environments.



**Muting:** the machine stops when a person goes through but not when the cases go through.



**Floating blanking:** a hand through the detection zone will stop the machine and the moving wire will not.

## Technical data

<b>Functional Safety Data</b>	
EN ISO 13849-1:2008	PL e, Cat 4
EN 61508-1..4:2010	SIL3; PFH <sub>d</sub> = 2.64 x10 <sup>-9</sup> ; HFT = 1; Mission time = 20 years
EN 62061:2005/A1:2013	SIL CL 3
<b>Power supply</b>	+24 VDC ± 20 %
<b>Power consumption</b>	
Transmitter	3 W max
Receiver	5 W max (without load)
<b>Outputs</b>	
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
<b>Current for external lamp</b>	20 mA min; 300 mA max
<b>Connectors with specific cables</b>	
	Transmitter with M12-C02PT2T: M12-5 pole male connector
	Receiver with M12-C02PT6RB: M12-12 pole male connector
	Receiver with M12-C02PT62RM: M12-12 pole male connector + M12-5 pole male connector
<b>Cable length (for power supply)</b>	50 m max
<b>Light emission (λ)</b>	Infrared, LED (950 nm)
<b>Resolution</b>	14 - 30 mm
<b>Operating distance</b>	0.2...20 m for 30 mm 0.2...7 m for 14 mm
<b>Ambient light rejection</b>	According to IEC-61496-2:2013
<b>Operating temperature</b>	0...+ 50 °C
<b>Storage temperature</b>	- 25...+ 70 °C
<b>Humidity range</b>	15...95 % (no condensation)
<b>Protection class</b>	IP65 (EN 60529:2000)
<b>Weight</b>	1.35 kg / meter for each single unit
<b>Housing material</b>	Painted aluminium (yellow RAL 1003)
<b>Front side material</b>	PMMA
<b>Cap material</b>	PBT Valox 508

### Function settings at delivery

The functions are configured with push-buttons on the units.

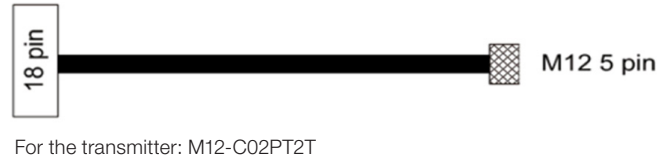
No code  
Muting  
**EDM enabled**  
**Automatic Reset**  
T/X muting  
10 min muting time-out  
Override trigger = level  
  
Long range

\* Two specific cables must be ordered with Orion1 Extended, one for the transmitter and one for the receiver. See next page.

## Connection

### Connection transmitter

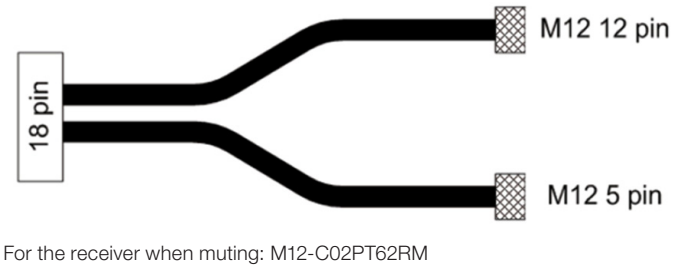
Brown (1)	+ 24 VDC
White (2)	Test
Blue (3)	0 V
Black (4)	Earth
Grey (5)	<i>Not used</i>



### 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



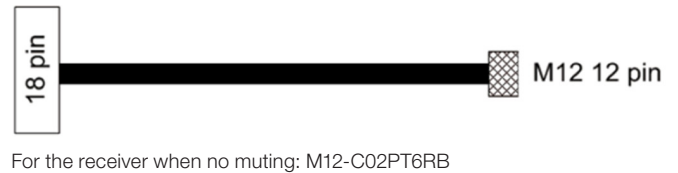
#### M12-5 connector

Brown (1)	+ 24 VDC
White (2)	Muting2
Blue (3)	0 V
Black (4)	Muting1
Grey (5)	<i>Not used</i>

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

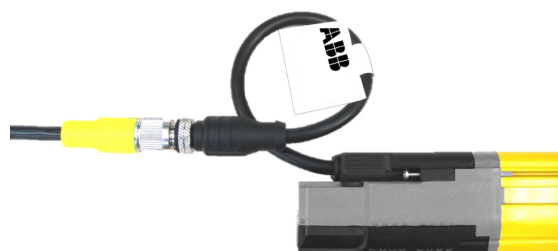
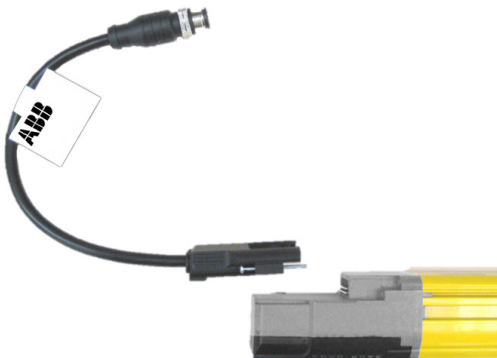
#### M12-12 connector

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)	<i>Not used</i>
Grey (8)	OSSD1
Red (9)	Tolerance
Violet (10)	Lamp
Grey-pink (11)	<i>Not used</i>
Red-blue (12)	Earth



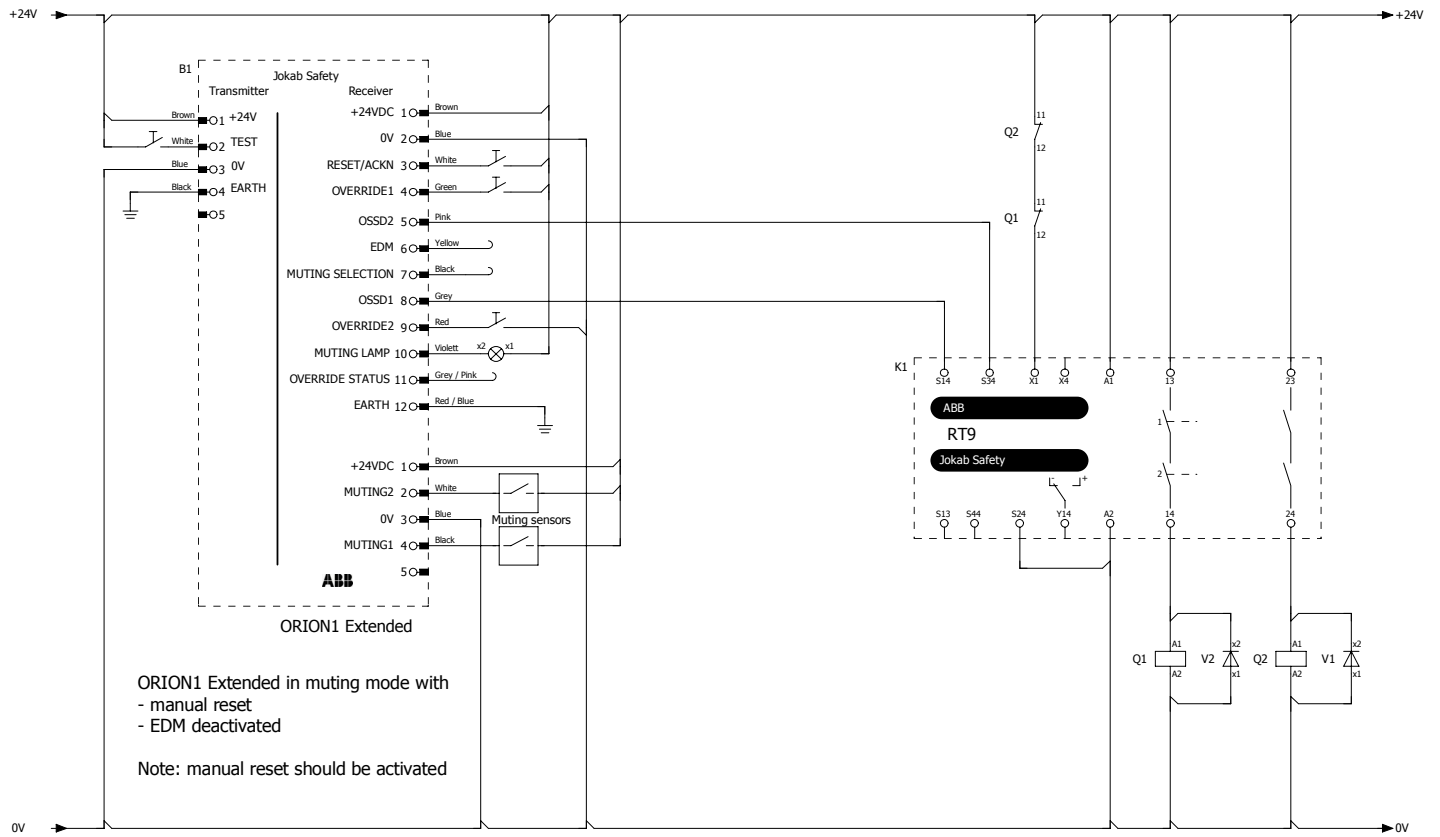
\* Colors according to ABB Jokab Safety standard cables

Two specific cables must be ordered with Orion1 Extended, one for the transmitter and one for the receiver.

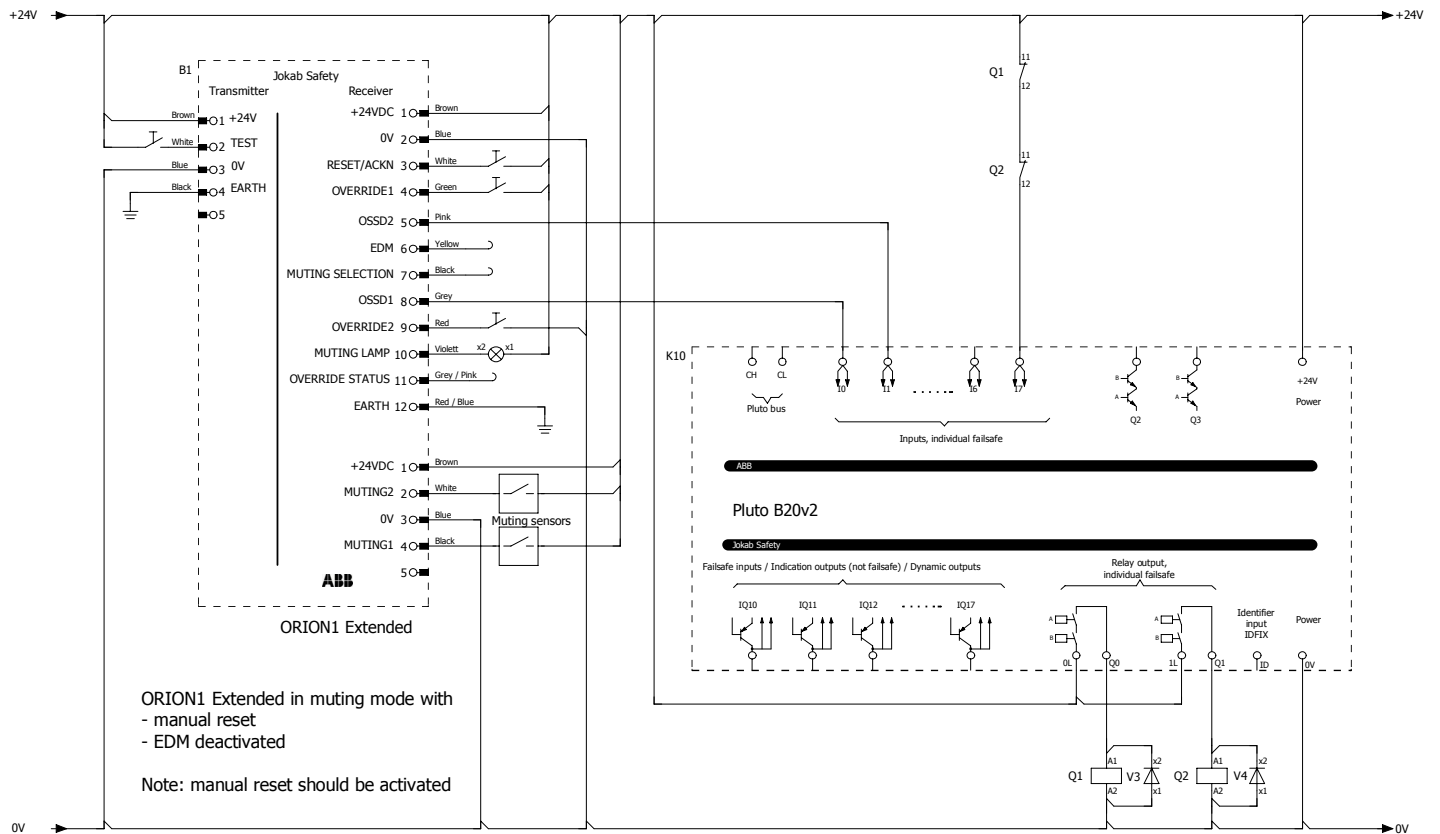


# Connection examples

## Connection to a RT9 safety relay



## Connection to a Pluto B20 Safety PLC



## Models and ordering information

Orion1-4-14-030-E	2TLA022301R0100	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 300 mm
Orion1-4-14-045-E	2TLA022301R0200	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 450 mm
Orion1-4-14-060-E	2TLA022301R0300	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 600 mm
Orion1-4-14-075-E	2TLA022301R0400	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 750 mm
Orion1-4-14-090-E	2TLA022301R0500	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 900 mm
Orion1-4-14-105-E	2TLA022301R0600	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 1050 mm
Orion1-4-14-120-E	2TLA022301R0700	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 1200 mm
Orion1-4-14-135-E	2TLA022301R0800	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 1350 mm
Orion1-4-14-150-E	2TLA022301R0900	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 1500 mm
Orion1-4-14-165-E	2TLA022301R1000	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 1650 mm
Orion1-4-14-180-E	2TLA022301R1100	Orion1 Extended Transmitter + Receiver - R = 14 mm - H = 1800 mm
Orion1-4-30-030-E	2TLA022303R0100	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 300 mm
Orion1-4-30-045-E	2TLA022303R0200	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 450 mm
Orion1-4-30-060-E	2TLA022303R0300	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 600 mm
Orion1-4-30-075-E	2TLA022303R0400	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 750 mm
Orion1-4-30-090-E	2TLA022303R0500	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 900 mm
Orion1-4-30-105-E	2TLA022303R0600	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 1050 mm
Orion1-4-30-120-E	2TLA022303R0700	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 1200 mm
Orion1-4-30-135-E	2TLA022303R0800	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 1350 mm
Orion1-4-30-150-E	2TLA022303R0900	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 1500 mm
Orion1-4-30-165-E	2TLA022303R1000	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 1650 mm
Orion1-4-30-180-E	2TLA022303R1100	Orion1 Extended Transmitter + Receiver - R = 30 mm - H = 1800 mm

## Cables

M12-C02PT2T	2TLA022315R0100	Transmitter cable for Orion1 Extended
M12-C02PT6RB	2TLA022315R0200	Receiver cable for Orion1 Extended when no muting
M12-C02PT62RM	2TLA022315R0300	Receiver cable for Orion1 Extended when muting
PT-C1PT	2TLA022315R1000	Cascade cable for Orion1 Extended, 1 m
PT-C05PT	2TLA022315R1100	Cascade cable for Orion1 Extended, 0.5 m
PT-C005PT	2TLA022315R1200	Cascade cable for Orion1 Extended, 0.05 m
M12-C61	2TLA020056R0000	Straight M12-5 female connector with 6 m shielded cable
M12-C101	2TLA020056R1000	Straight M12-5 female connector with 10 m shielded cable
M12-C201	2TLA020056R1400	Straight M12-5 female connector with 20 m shielded cable
M12-C65	2TLA020056R7200	Straight M12-12 female connector with 6 m shielded cable
M12-C105	2TLA020056R7300	Straight M12-12 female connector with 10 m shielded cable
M12-C205	2TLA020056R7500	Straight M12-12 female connector with 20 m shielded cable

## Spare parts (delivered with products originally)

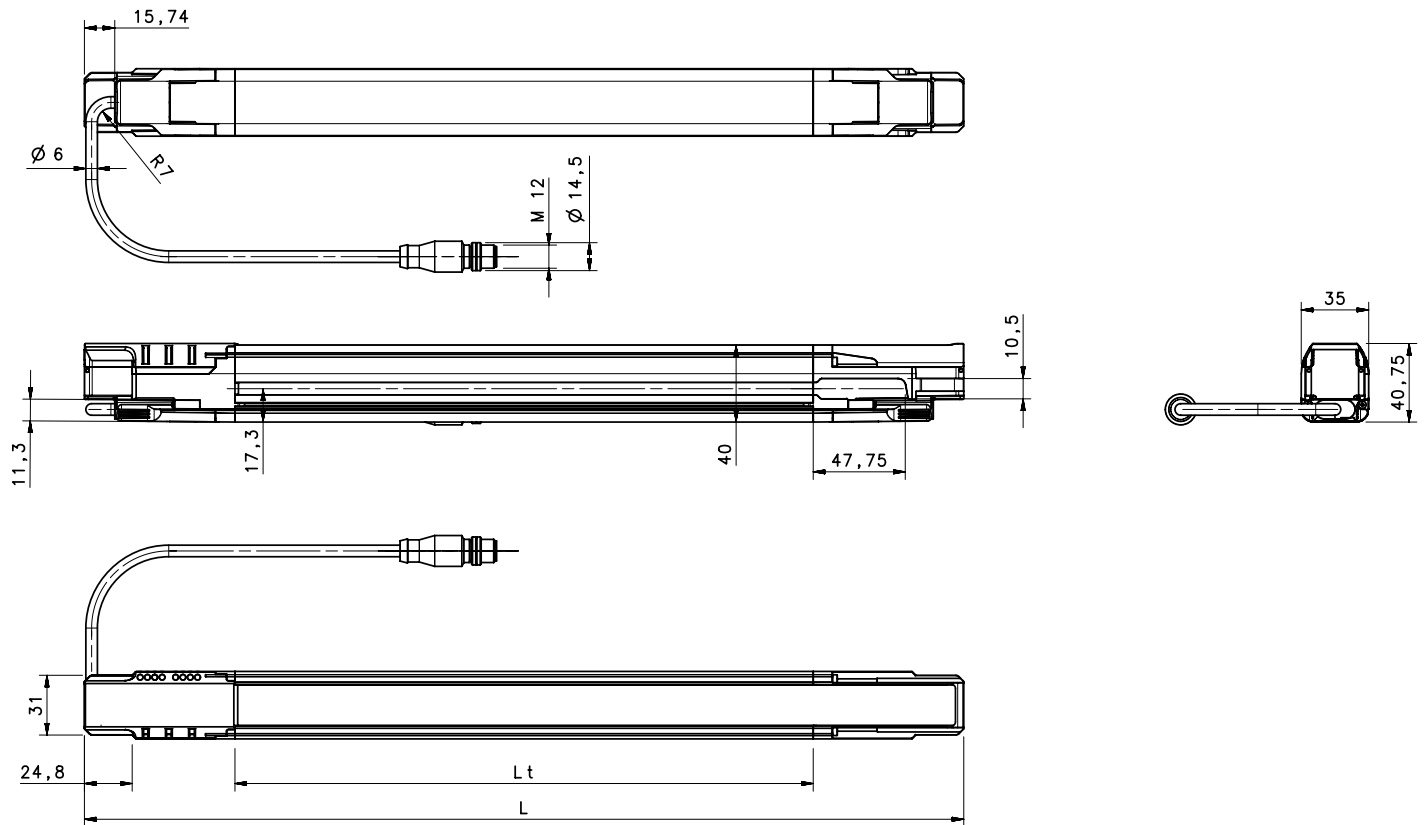
JSM Orion01	2TLA022310R0000	4 standard brackets for Orion1 & Orion2
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## Accessories

Orion TP-14	2TLA022310R5200	Orion Test Piece 14 mm
Orion TP-30	2TLA022310R5300	Orion Test Piece 30 mm
Orion Laser	2TLA022310R5000	Orion Laser pointer
JSM Orion01	2TLA022310R0000	4 standard brackets for Orion1 & Orion2
JSM Orion06	2TLA022310R0400	Kit for mounting of Orion1 & Orion2 in Stand (4 pieces)
JSM Orion07	2TLA022310R0500	Kit for mounting of Orion1 & Orion2 in Stand (6 pieces)
JSM Orion11	2TLA022310R0900	Kit for mounting of Orion1 Mirror in Stand
Orion Stand Plate	2TLA022312R5000	Orion Plate kit for adjustment of protective stand
Orion1 Mirror*		Deviating mirror to be mounted in Orion Stand with 1 kit JSM Orion11
Orion Stand*		Protective stand

\* These accessories are available in different sizes. More information on [www.abb.com/jokabsafety](http://www.abb.com/jokabsafety).

# Dimensions



All dimensions in millimeters

Model	Lt (mm)	L (mm)
Orion1-4-xx-030-E	150	306.30
Orion1-4-xx-045-E	300	456.30
Orion1-4-xx-060-E	450	606.30
Orion1-4-xx-075-E	600	756.30
Orion1-4-xx-090-E	750	906.30
Orion1-4-xx-105-E	900	1056.30
Orion1-4-xx-120-E	1050	1206.30
Orion1-4-xx-135-E	1200	1356.30
Orion1-4-xx-150-E	1350	1506.30
Orion1-4-xx-165-E	1500	1656.30
Orion1-4-xx-180-E	1650	1806.30

xx = Resolution (14 - 30 mm)

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