



SAFETINEX

**SAFETY LIGHT
CURTAINS,
SAFETY SENSORS
AND RELAYS**



**A
Swiss
Company**





CONTRINEX

SAFETINEX

SAFETY LIGHT CURTAINS, SAFETY SENSORS AND RELAYS

LIGHT CURTAIN HIGHLIGHTS

- ✓ Finger, Hand and Body Access resolutions
- ✓ Operating range from 0.25...50 m
- ✓ Protective heights from 142...1827 mm
- ✓ Category 2 or 4 according to EN/ISO 13849-1
- ✓ Certified TÜV, CE and UL
- ✓ IP 65 and IP 67
- ✓ Permanent autocontrol
- ✓ 2 channel selection
- ✓ Low power consumption

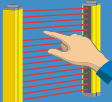
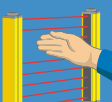

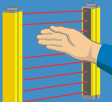
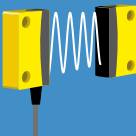
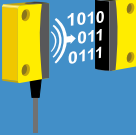

NEW

- ✓ Slim Type 2 safety light curtains
- ✓ Slim Type 4 safety light curtains with wireless configuration through Bluetooth®
- ✓ Magnetic and RFID safety sensors
- ✓ Signal filter



CONTRINEX

PROGRAM OVERVIEW

PRODUCT TYPE		RESOLUTION	HOUSING	CATEGORY	FEATURES	PAGE
LIGHT CURTAINS	BASIC	 14 mm	STANDARD	Cat. 4	<ul style="list-style-type: none"> ✓ Max. operating range 3.5 m ✓ Operating temperature -35 ... +60°C ✓ IP 65, IP 67 	p. 315-319
		 30 mm	STANDARD	Cat. 4	<ul style="list-style-type: none"> ✓ Max. operating range 12 m ✓ Operating temperature -35 ... +60°C ✓ IP 65, IP 67 	p. 321-325
			STANDARD	Cat. 2	<ul style="list-style-type: none"> ✓ Operating temperature 0 ... +50°C ✓ IP 65, IP 67 	p. 327-330
			SLIM	Cat. 2	<ul style="list-style-type: none"> ✓ No blind zone ✓ Flexible mounting and connection 	p. 333-336
		 300 mm 400 mm 500 mm	STANDARD	Cat. 4	<ul style="list-style-type: none"> ✓ Max. operating range 50 m ✓ Operating temperature -35 ... +60°C ✓ IP 65, IP 67 	p. 339-342
	EXTENDED	 30 mm	SLIM	Cat. 4	<ul style="list-style-type: none"> ✓ No blind zone ✓ Beam coding (3 channels), EDM, start and restart interlock configurable functions ✓ Wireless configuration through Bluetooth® 	p. 345-348
SAFETY SENSORS	MAGNETIC		36 mm x 26 mm x 13 mm	up to Cat. 4	<ul style="list-style-type: none"> ✓ Magnetically coded, ISO 14119 type 4 ✓ Detection through metal plate possible ✓ IP6K9K, Ecolab 	p. 351-353
			88 mm x 25 mm x 13 mm	up to Cat. 4	<ul style="list-style-type: none"> ✓ Magnetically coded, ISO 14119 type 4 ✓ Detection through metal plate possible ✓ IP6K9K, Ecolab 	p. 351-353
	RFID		36 mm x 26 mm x 13 mm	Cat. 4	<ul style="list-style-type: none"> ✓ RFID coded, ISO 14119 type 4 ✓ Cascadable up to 30 units ✓ EDM and diagnostic function 	p. 355-357
ACCESSORIES	RELAY		22.5 mm x 99 mm x 114.5 mm	Cat. 4	<ul style="list-style-type: none"> ✓ Performance Level (PL) e and category 4 according to EN/ISO 13849-1 ✓ Manual or automatic restart ✓ Short response time 	p. 359-361
	OTHERS					p. 362-367

ADVANTAGES OF SAFETINEX LIGHT CURTAINS

Safetinx safety light curtains offer the following advantages:

- Very short response time:
 - Finger protection Type 4 Basic (YBB): 5.2 to 43.6 ms
 - Hand protection Type 4 Basic (YBB): 5.2 to 24.4 ms
 - Hand protection Type 4 Extended (YBES): 5 to 14 ms*
 - Access control Type 4 Basic (YCA): 4.2 to 6.7 ms
 - Hand protection Type 2 Basic (YBB): 14 to 66 ms
 - Hand protection Type 2 Basic (YBBS): 6 to 29 ms
- Up to 50 m operating distance
- 2-channel selection minimizing safety relevant cross-talk between neighboring AOPDs (type 4 only)
- Fully compliant with industry standards and certified by internationally recognized organizations
- Devices with TÜV certification, either Type 4 with Performance Level e, or Type 2 with Performance Level c
- Beam synchronized, no need for wired connection between sender and receiver
- Short-circuit protected outputs and voltage-reversal protection
- Low power consumption
- Built-in alignment system and easy adjustment of the units thanks to the high flexibility of the Safetinx bracket
- Various connector versions to fit any application
- Robust aluminum housing coated with resistant finish
- Compact design: 42 mm x 48 mm or 26 mm x 26 mm housing profile
- Competitive price
- EDM and restart interlock (Extended types)
- Easy configuration through Bluetooth® (Extended types)

Furthermore, Safetinx light curtains and access control barriers have been designed to provide users with a comfortable work environment. Their use involves no additional unproductive movements and no waste of time. Users can freely access and move around the machine in complete safety.

* Provisional data

ADVANTAGES OF SAFETINEX SENSORS

Safetinx safety sensors offer the following advantages:

Magnetic and RFID types (YSM and YSR)

- Long switching distance for more installation flexibility, up to 18 mm
- Cat. 4 according to ISO 13849-1
- Type 4 coding according to ISO 14119
- Extremely compact size: 36 mm x 26 mm x 13 mm
- PVC cable or M12 pigtail connection
- Enclosure rating IP6K9K, ECOLAB® certified
- TÜV and UL certification

Magnetic types only (YSM)

- Frontal or 90° actuation
- Actuator can be mounted behind a stainless-steel plate
- Two sizes available: 36 mm x 26 mm x 13 mm; 88 mm x 25 mm x 13 mm

RFID types only (YSR)

- Serial connection (up to 30 devices)
- EDM (external device monitoring) and Feedback signal
- Random or teachable RFID code, Type 4 according to ISO 14119

INTRODUCTION

SAFETINEX SAFETY SYSTEMS

Safetinx products offer high-quality safeguarding solutions for both personnel and machinery. The range comprises light curtains of Type 2 or 4 according to the international standard ISO 13849. Resolution is suitable to protect hands (30 mm), fingers (14 mm) or full body (3 to 6 beams). A choice of standard or slim profile is available in various lengths up to almost 2 meters. Wireless configuration through Bluetooth® is available with Extended Type 4 devices.

The portfolio also comprises safety sensors with either a magnetic or RFID operating principle.

Safetinx products have been developed in compliance with the applicable international safety standards and have obtained the required product certification for use in the European Union, the United States of America and all other countries where the applicable IEC standards have been adopted. A complete range of Safetinx light curtains and access control barriers is offered for the highest safety requirements: safety category 4, PL e according to EN/ISO 13849-1, Type 4 according to IEC 61496-1 and -2. In addition, hand protection devices are available with a Type 2 safety rating (IEC 61496-1 and -2) which meet category 2, PL c according to EN/ISO 13849-1.

Safety sensors also meet the requirements of safety category 4 according to EN/ISO 13849-1. Their magnetic or RFID coding is rated type 4 according to EN/ISO 14119 and housings are ECOLAB® certified.

All Safetinx products have TÜV certification.

SAFEGUARDING FUNCTION

In all cases, the primary function of the protective device is to stop the machine before the hazardous point is reached and to prevent unintentional machine start-up. This function must comply with the category of the safety-related components of the machine.

LIGHT CURTAINS

Whenever a safety system around a danger zone is necessary, the first consideration is whether or not optical protection is suitable at all. For this to be the case, it must be possible for the machine control to be electrically influenced by means of the device's semiconductor output. Moreover, it must also be possible to instantly terminate or exit the hazardous process in every operating phase. Further, there must be no danger of injury due to heat, radiation or from materials or components ejected by the machine. If such danger exists, then either the optical system is not suitable, or the danger must be otherwise excluded by applying additional safety measures.

The selection of a specific safeguarding measure involves an evaluation of the hazard, in order to determine the applicable safety level and resolution of the protective device.

The resolution of the safety light curtain or access control barrier must be chosen according to the application and the required safeguarding function. It is defined as the minimum size of an object that can be reliably and safely detected at any position when placed in the protective field. The choice of a specific resolution depends on the part of the body which needs protection (finger, hand or whole body).

APPLICATION AREAS

The Safetinx YBB, YBBS and YBES ranges are best suited where finger and hand protection is required close to the hazardous area (point of operation). Depending on the application, a resolution of either 14 mm (finger protection) or 30 mm (hand protection) will be advisable. Safetinx YCA access control barriers, on the other hand, are suitable for the protection of people potentially entering a larger dangerous area.

Thanks to their Type 4, category 4, PL e safety level, Safetinx devices can be used on equipment requiring high protection reliability, such as machine tools, robots, hydraulic presses, automated stock management, weaving looms, etc.

If the result of the risk assessment allows their use, Type 2 devices (category 2, PL c) offer cost effective and safe solutions.



SAFETY SENSORS

For any machine requiring a fixed guard-door or cover, contactless safety sensors ensure reliable state monitoring (door open or closed). A magnetically or RFID-coded system (type 4 according to ISO 14119) makes them immune to mutual interference and highly resistant to tampering.

Sensors with magnetic coding can be mounted behind a stainless steel plate, which further reduces accessibility. Types with random or teachable RFID coding provide individual feedback and can be connected in series, allowing up to 30 sensors to connect with just one relay or controller.

For the monitoring of guard doors, hoods or covers, contactless safety sensors must be chosen with an appropriate coding technology (magnetic, RFID) to minimize the risk of tampering.

SAFEGUARDING FUNCTION

For any machine requiring a fixed guard-door or cover, Safetinx YSM and YSR contactless safety sensors provide state monitoring (door open or closed). The magnetic or RFID coding is classified as type 4 according to ISO 14119. Security level is Category 4 according to ISO 13849-1. The IP6K9K enclosure rating and ECOLAB® approval make the sensors suitable for washdown applications.

YSM types with magnetic coding are suitable for simple monitoring tasks, being very economic and easy to wire. It is also possible to mount the actuator behind a stainless steel plate.

YSR types with RFID coding are suitable for more complex tasks. Since each sensor can provide individual feedback, it is possible to identify which guard-doors are open and which are closed. YSR sensors can also be connected in series, allowing up to 30 sensors to connect with just one relay or controller. YSR types are therefore particularly suitable for applications using multiple sensors, such as long packaging or assembly lines. They are not sensitive to vibration and provide self-tested OSSD signals.



OPERATING PRINCIPLE OF LIGHT CURTAINS

Safetinx YBB, YBBS and YBES light curtains and YCA access control barriers operate with infrared beams. When the device detects a finger, a hand or a person entering the defined hazardous area, the protective equipment immediately stops the machine, or renders it harmless. When operating in manual restart mode, the reset button enabling the operator to restart the machine must be located outside the hazardous area. From there, the operator must have a full view of the hazardous area to make sure that nobody is in danger before restarting the machine.

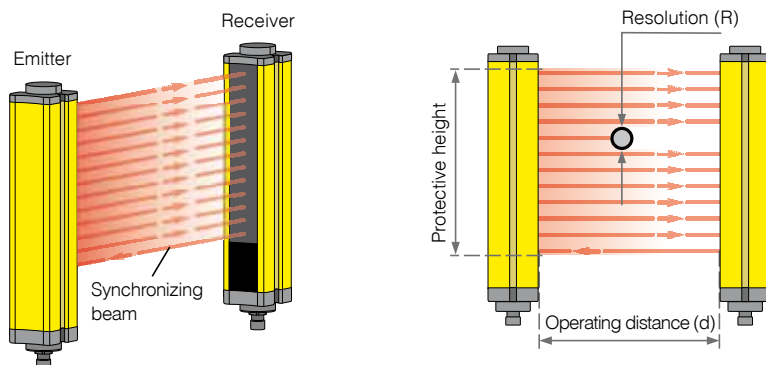
Safetinx light curtains and access control barriers are designed to ensure protection of operators working in hazardous areas. A high reliability is achieved by implementing a fail-safe system: devices are thus permanently self-controlled. An internal failure deactivates the output signals, as would an intrusion into the protective field.

Safetinx light curtains and access control barriers are active optoelectronic protective devices (AOPDs) that include a sender and a receiver unit between which coded infrared beams are sequentially exchanged. The receiver unit is connected to a safety relay which transmits signals to the machine control system. Synchronization between the sender and receiver devices is performed optically, i.e. wired connection between the two units is not necessary.

Reception of all beams activates the two independently generated semiconductor outputs (OSSDs) of the receiver unit. The interruption of one or more beams deactivates the outputs within the response time of the AOPD. Any internal fault is detected by the device's permanent self-control function and has the same result as an intrusion into the protective field.

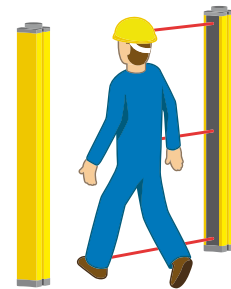
AOPD DETECTION CAPABILITY

The light curtain or barrier detection capability (or resolution) is the sum of the distance between two adjacent beams and their combined diameters. The choice for a specific resolution depends on the part of the body which needs protection (finger, hand, whole body).



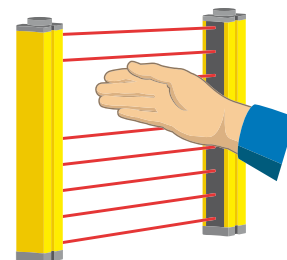
SELF PROTECTED OUTPUTS

Both OSSD1 and OSSD2 are self-protected and actively monitored PNP outputs. Both outputs are controlled by independent current-monitored high-side switches. Thanks to continuous monitoring, any short-circuit between an output and the power supply or ground is detected within the response time, leading to the deactivation of the other output. Similarly, a cross-circuit between the two outputs is also detected and both OSSDs are deactivated within the specified response time. The OSSD outputs are switched off and remain in that state as long as the fault remains.



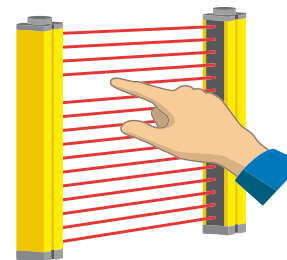
Access control

Beam separation > 30 mm



Hand protection

Beam resolution 30 mm



Finger protection

Beam resolution 14 mm

OPERATING PRINCIPLE OF SAFETY SENSORS

Safetinex YSM and YSR safety sensors comprise two parts: a main module and an actuator. They communicate with a contactless system of either magnetic or RFID coding. When the system detects that a guard door, hood or cover is open, the protective equipment immediately stops the machine, or renders it harmless.

YSM magnetic safety sensors use a coded magnet as an actuator and two reed contacts to open or close communication. Unlike light curtains, these sensors do not have OSSD outputs with self-check. They act simply as contactors that open or close depending on the presence or absence of a magnet. It is therefore necessary to apply power to the reed contacts.

YSR RFID safety sensors use an RFID tag as an actuator and a read and write module (RWM) as a contactor. These sensors have self-checking OSSD outputs, similar to light curtains. They are therefore connected in the same way as light curtains to a relay or controller. The RFID tag can be universally and randomly coded or can be teachable, which means the user pairs it with an RWM at first use to create a unique combination.





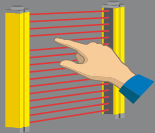


LIGHT CURTAINS BASIC

FINGER PROTECTION TYPE 4

MAIN FEATURES

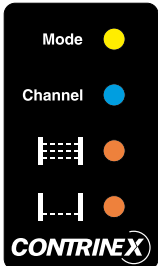
- ✓ Resolution: 14 mm
- ✓ Operating range: 0.25 ... 3.5 m
- ✓ Protective height: 142 ... 1690 mm
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ IP 65, IP 67 with operating temperatures as low as -35°C (-31°F)
- ✓ Housing profile 42 mm x 48 mm
- ✓ 2-channel selection
- ✓ Optical synchronization
- ✓ Permanent autocontrol



FINGER PROTECTION

LEDS

LED indicators on the YBB **sender** unit



Mode:

Yellow when test mode is active

Channel:

Blue when channel 1 is selected

Purple when channel 2 is selected

Alignment (full):

Steady orange when the screen is not fully aligned

Blinking orange when the first third of the screen is aligned

Off when screen is fully aligned

Alignment (low beam):

Steady orange when the lowest beam is not aligned

Blinking orange when the lowest beam is aligned

Off when screen is fully aligned

LED indicators on the YBB **receiver** unit



Power:

Green when power is ON

Channel:

Blue when channel 1 is selected

Purple when channel 2 is selected

Status ON:

Green when OSSD outputs are ON

Status OFF:

Red when OSSD outputs are OFF

TECHNICAL DATA

Dimensions	42 mm x 48 mm x Ht
Resolution	14 mm
Protective height	142 ... 1690 mm
Supply voltage range	24 VDC \pm 20 %
Current consumption sender	50 mA max. / 1.5 W max.
Current consumption receiver (excl. load)	160 mA max. / 4.7 W max.
Output current	0.2 A max. per output
Safety level (EN/ISO 13849-1)	Category 4, PLe
Safety type (IEC 61496-1 and -2)	Type 4
Protection class (IEC 61140)	III
Ambient temperature range	-35 ... +60°C (-31 ... +140°F)
Storage temperature range	-40 ... +70°C (-40 ... +158°F)
Degree of protection (EN 60529)	IP 65 + IP 67
Housing material	Aluminum
Material of optical parts	PMMA
Operating range	0.25 ... 3.5 m
Sender wavelength	IR 950 nm

HOUSING

Aluminum profile 42 mm x 48 mm with dual fixing groove.

ELECTRONIC PROTECTION

Safetinx light curtains are self-protected against overloads and short-circuits. They can also withstand short high-voltage overloads.

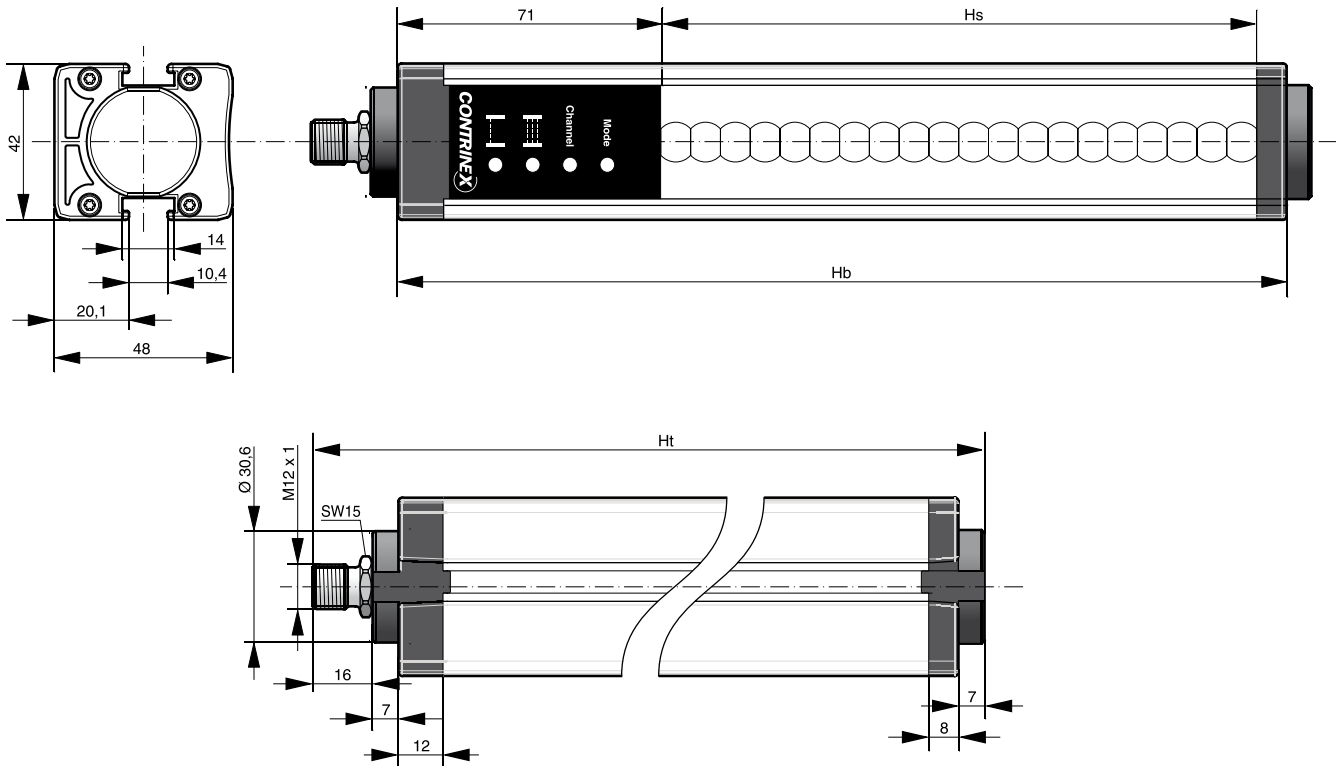
CONNECTION

Safetinx light curtains with M12 5-pole connector are standard.

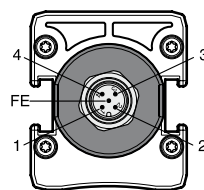
DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website www.contrinex.com or ordered free of charge from our distributors.

DIMENSIONS

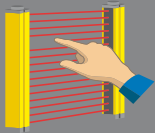


PIN ASSIGNMENT



M12 connector

ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER		PINS/WIRES ON RECEIVER	
		M12 CONNECTOR	CABLE	M12 CONNECTOR	CABLE
Supply voltage	24 VDC for channel 1 / 0 V for channel 2	1	brown	1	brown
Supply voltage	0 V for channel 1 / 24 VDC for channel 2	3	blue	3	blue
Test mode	0 V: test active / 24 V: test inactive	4	black	-	-
Output	OSSD1	-	-	2	white
Output	OSSD2	-	-	4	black
Functional earth	Shield	FE	gray	FE	gray



FINGER PROTECTION



TYPE-SPECIFIC DATA

Type	0150	0250	0400
Total height (Ht) [mm]	251	380	509
Housing height (Hb) [mm]	221	350	479
Protective height (Hs) [mm]	142	271	400
Number of beams	17	33	49
Current consumption [mA]	135	140	145
Response time [ms]	5.2	8.4	11.6

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-14S4-0150-G012	YBB-14S4-0250-G012	YBB-14S4-0400-G012
	Receiver	YBB-14R4-0150-G012	YBB-14R4-0250-G012	YBB-14R4-0400-G012
	Kit (sender + receiver)	YBB-14K4-0150-G012	YBB-14K4-0250-G012	YBB-14K4-0400-G012

TYPE-SPECIFIC DATA

Type	1000	1200	1300
Total height (Ht) [mm]	1154	1283	1412
Housing height (Hb) [mm]	1124	1253	1382
Protective height (Hs) [mm]	1045	1174	1303
Number of beams	129	145	161
Current consumption [mA]	175	185	190
Response time [ms]	27.6	30.8	34

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-14S4-1000-G012	YBB-14S4-1200-G012	YBB-14S4-1300-G012
	Receiver	YBB-14R4-1000-G012	YBB-14R4-1200-G012	YBB-14R4-1300-G012
	Kit (sender + receiver)	YBB-14K4-1000-G012	YBB-14K4-1200-G012	YBB-14K4-1300-G012



0500	0700	0800	0900
638	767	896	1025
608	737	866	995
529	658	787	916
65	81	97	113
150	160	165	170
14.8	18	21.2	24.4

YBB-14S4-0500-G012	YBB-14S4-0700-G012	YBB-14S4-0800-G012	YBB-14S4-0900-G012
YBB-14R4-0500-G012	YBB-14R4-0700-G012	YBB-14R4-0800-G012	YBB-14R4-0900-G012
YBB-14K4-0500-G012	YBB-14K4-0700-G012	YBB-14K4-0800-G012	YBB-14K4-0900-G012

1400	1600	1700
1541	1670	1799
1511	1640	1769
1432	1561	1690
177	193	209
195	200	210
37.2	40.4	43.6

YBB-14S4-1400-G012	YBB-14S4-1600-G012	YBB-14S4-1700-G012
YBB-14R4-1400-G012	YBB-14R4-1600-G012	YBB-14R4-1700-G012
YBB-14K4-1400-G012	YBB-14K4-1600-G012	YBB-14K4-1700-G012





CONTRINEX SAFETINE X

CONTRINEX

Power

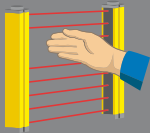
Channel

LIGHT CURTAINS BASIC

HAND PROTECTION TYPE 4

MAIN FEATURES

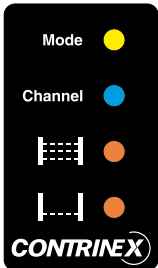
- ✓ Resolution: 30 mm
- ✓ Operating range: 0.25 ... 12 m
- ✓ Protective height: 279 ... 1827 mm
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ IP 65, IP 67 with operating temperatures as low as -35°C (-31°F)
- ✓ Housing profile 42 mm x 48 mm
- ✓ 2-channel selection
- ✓ Optical synchronization
- ✓ Permanent autocontrol



HAND PROTECTION

LEDS

LED indicators on the YBB **sender** unit



Mode:

Yellow when test mode is active

Channel:

Blue when channel 1 is selected

Purple when channel 2 is selected

Alignment (full):

Steady orange when the screen is not fully aligned

Blinking orange when the first third of the screen is aligned

Off when screen is fully aligned

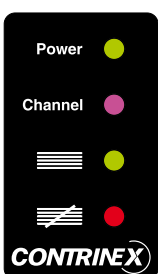
Alignment (low beam):

Steady orange when the lowest beam is not aligned

Blinking orange when the lowest beam is aligned

Off when screen is fully aligned

LED indicators on the YBB **receiver** unit



Power:

Green when power is ON

Channel:

Blue when channel 1 is selected

Purple when channel 2 is selected

Status ON:

Green when OSSD outputs are ON

Status OFF:

Red when OSSD outputs are OFF

TECHNICAL DATA

Dimensions	42 mm x 48 mm x Ht
Resolution	30 mm
Protective height	279 ... 1827 mm
Supply voltage range	24 VDC ± 20 %
Current consumption sender	45 mA max. / 1.5 W max.
Current consumption receiver (excl. load)	130 mA max. / 4.7 W max.
Output current	0.2 A max. per output
Safety level (EN/ISO 13849-1)	Category 4, PLe
Safety type (IEC 61496-1 and -2)	Type 4
Protection class (IEC 61140)	III
Ambient temperature range	-35 ... +60°C (-31 ... +140°F)
Storage temperature range	-40 ... +70°C (-40 ... +158°F)
Degree of protection (EN 60529)	IP 65 + IP 67
Housing material	Aluminum
Material of optical parts	PMMA
Operating range	0.25 ... 12 m
Sender wavelength	IR 850 nm

HOUSING

Aluminum profile 42 mm x 48 mm with dual fixing groove.

ELECTRONIC PROTECTION

Safetinx light curtains are self-protected against overloads and short-circuits. They can also withstand short high-voltage overloads.

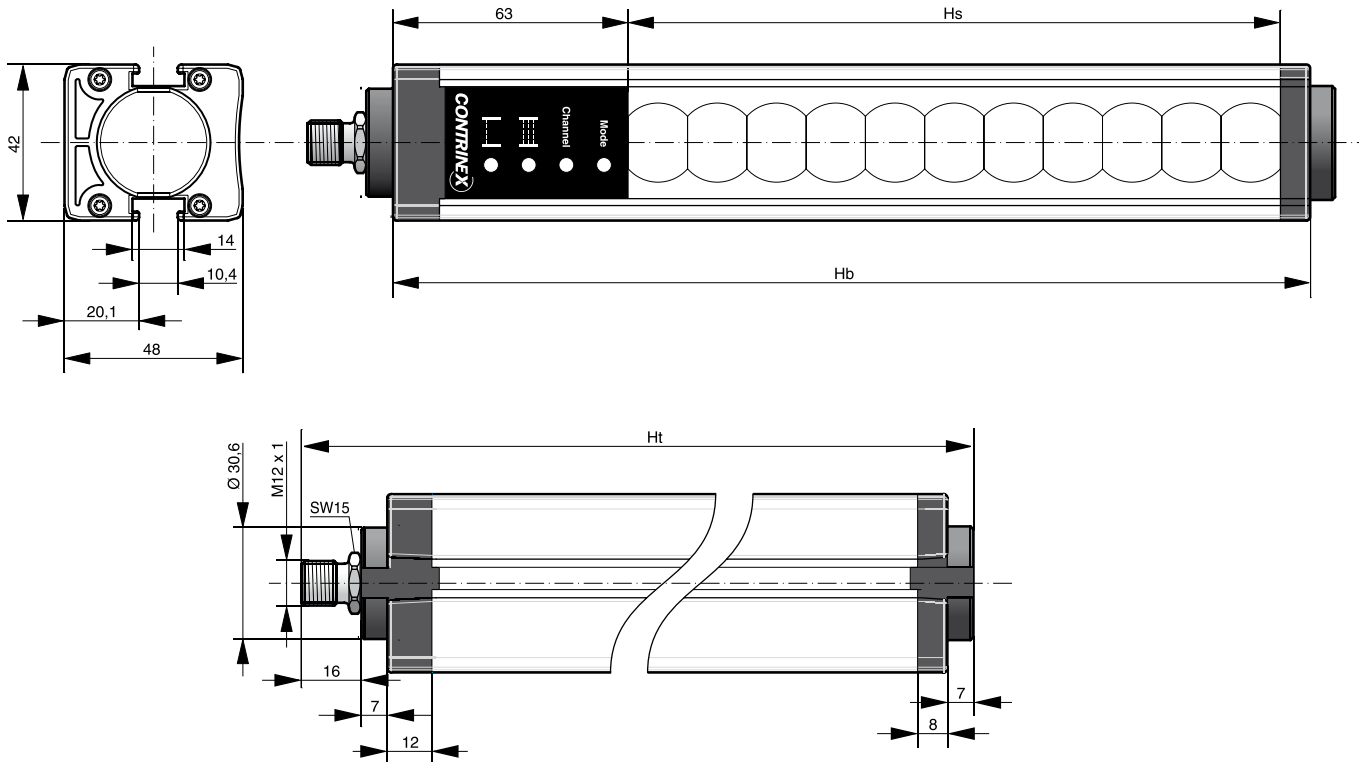
CONNECTION

Safetinx light curtains with M12 5-pole connector are standard.

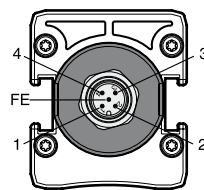
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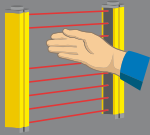


PIN ASSIGNMENT



M12 connector

ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER		PINS/WIRES ON RECEIVER	
		M12 CONNECTOR	CABLE	M12 CONNECTOR	CABLE
Supply voltage	24 VDC for channel 1 / 0 V for channel 2	1	brown	1	brown
Supply voltage	0 V for channel 1 / 24 VDC for channel 2	3	blue	3	blue
Test mode	0 V: test active / 24 V: test inactive	4	black	-	-
Output	OSSD1	-	-	2	white
Output	OSSD2	-	-	4	black
Functional earth	Shield	FE	gray	FE	gray



HAND PROTECTION



TYPE-SPECIFIC DATA

Type	0250	0400	0500
Total height (Ht) [mm]	380	509	638
Housing height (Hb) [mm]	350	479	608
Protective height (Hs) [mm]	279	408	537
Number of beams	17	25	33
Current consumption [mA]	125	130	130
Response time [ms]	5.2	6.8	8.4

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-30S4-0250-G012	YBB-30S4-0400-G012	YBB-30S4-0500-G012
	Receiver	YBB-30R4-0250-G012	YBB-30R4-0400-G012	YBB-30R4-0500-G012
	Kit (sender + receiver)	YBB-30K4-0250-G012	YBB-30K4-0400-G012	YBB-30K4-0500-G012

TYPE-SPECIFIC DATA

Type	1200	1300	1400
Total height (Ht) [mm]	1283	1412	1541
Housing height (Hb) [mm]	1253	1382	1511
Protective height (Hs) [mm]	1182	1311	1440
Number of beams	73	81	89
Current consumption [mA]	150	155	160
Response time [ms]	16.4	18	19.6

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-30S4-1200-G012	YBB-30S4-1300-G012	YBB-30S4-1400-G012
	Receiver	YBB-30R4-1200-G012	YBB-30R4-1300-G012	YBB-30R4-1400-G012
	Kit (sender + receiver)	YBB-30K4-1200-G012	YBB-30K4-1300-G012	YBB-30K4-1400-G012



0700767
737
666
41
135
10**0800**896
866
795
49
140
11.6**0900**1025
995
924
57
140
13.2**1000**1154
1124
1053
65
145
14.8YBB-30S4-0700-G012
YBB-30R4-0700-G012
YBB-30K4-0700-G012YBB-30S4-0800-G012
YBB-30R4-0800-G012
YBB-30K4-0800-G012YBB-30S4-0900-G012
YBB-30R4-0900-G012
YBB-30K4-0900-G012YBB-30S4-1000-G012
YBB-30R4-1000-G012
YBB-30K4-1000-G012**1600**1670
1640
1569
97
160
21.2**1700**1799
1769
1698
105
165
22.8**1800**1928
1898
1827
113
170
24.4YBB-30S4-1600-G012
YBB-30R4-1600-G012
YBB-30K4-1600-G012YBB-30S4-1700-G012
YBB-30R4-1700-G012
YBB-30K4-1700-G012YBB-30S4-1800-G012
YBB-30R4-1800-G012
YBB-30K4-1800-G012



TEST

ALIGN

POWER

CONTRINEX

TEST

ALIGN

POWER

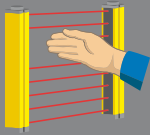
CONTRINEX

LIGHT CURTAINS BASIC

HAND PROTECTION TYPE 2

MAIN FEATURES

- ✓ Resolution: 30 mm
- ✓ Operating range: 0.25 ... 12 m
- ✓ Protective height: 150 ... 1827 mm
- ✓ Category 2, PL c according to EN/ISO 13849-1
- ✓ Type 2 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE
- ✓ Housing profile 42 mm x 48 mm
- ✓ Enclosure rating IP 65, IP 67
- ✓ Optical synchronization
- ✓ Permanent autocontrol



HAND PROTECTION

LEDS

LED indicators on the YBB **sender** unit



Test:

Yellow when intrusion simulation is active
Off when there is no intrusion simulation

Alignment:

Steady orange when the lowest beam is not aligned

Quick blinking orange when the lowest beam is aligned

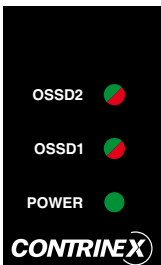
Blinking orange when at least 6 beams are aligned

Off when screen is fully aligned

Power:

Green when power is ON

LED indicators on the YBB **receiver** unit



OSSD2:

Green when OSSD2 is ON
Red when OSSD2 is OFF

OSSD1:

Green when OSSD1 is ON
Red when OSSD1 is OFF

Power:

Green when power is ON

TECHNICAL DATA

Dimensions	42 mm x 48 mm x Ht
Resolution	30 mm
Protective height	150 ... 1827 mm
Supply voltage range	24 VDC \pm 20 %
Current consumption sender	27 mA max. / 0.8 W max.
Current consumption receiver (excl. load)	58 mA max. / 1.7 W max.
Output current	0.2 A max. per output
Safety level (EN/ISO 13849-1)	Category 2, PLc
Safety type (IEC 61496-1 and -2)	Type 2
Protection class (IEC 61140)	III
Ambient temperature range	0 ... +50°C (+32 ... +122°F)
Storage temperature range	-25 ... +70°C (-13 ... +158°F)
Degree of protection (EN 60529)	IP 65 + IP 67
Housing material	Aluminum
Material of optical parts	PMMA
Operating range	0.25 ... 12 m
Sender wavelength	IR 850 nm

HOUSING

Aluminum profile 42 mm x 48 mm with dual fixing groove.

ELECTRONIC PROTECTION

Safetinx light curtains are self-protected against overloads and short-circuits. They can also withstand short high-voltage overloads.

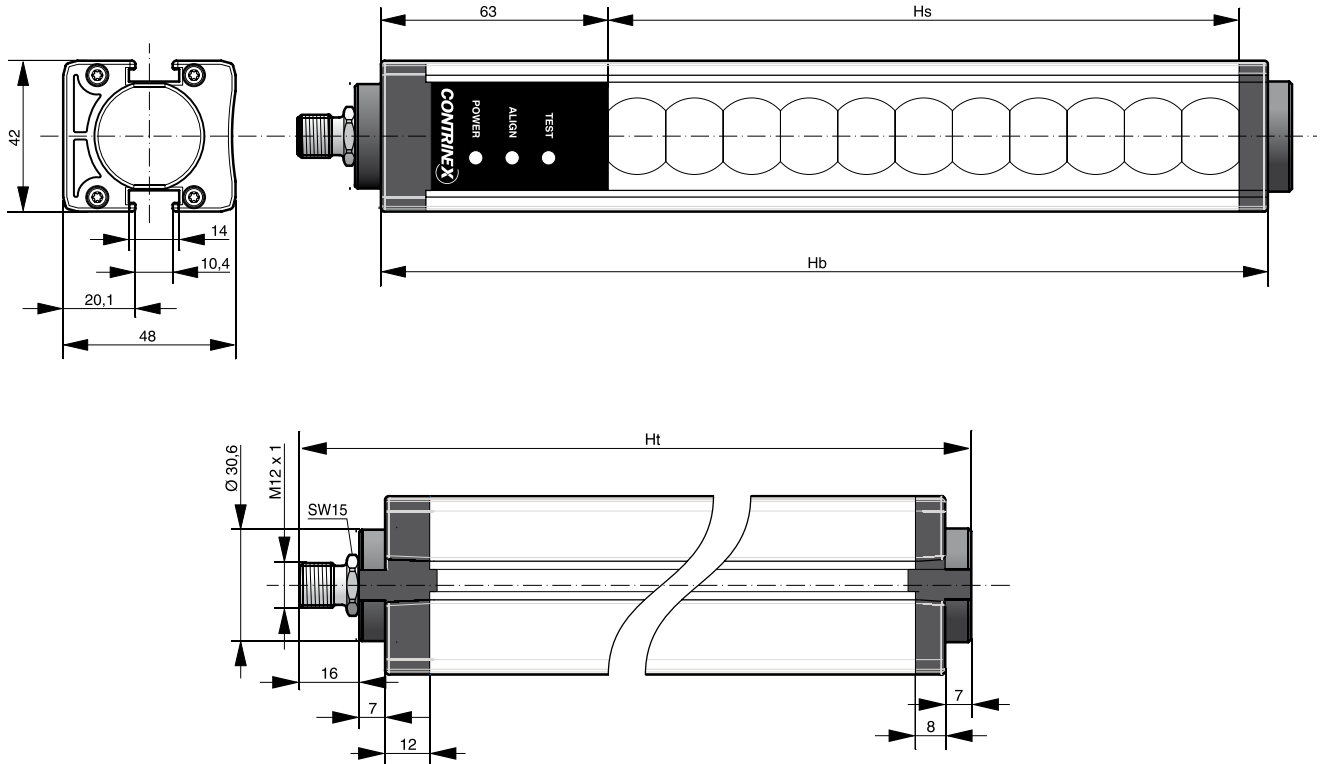
CONNECTION

Safetinx light curtains are connected via a standard M12 5-pole connector.

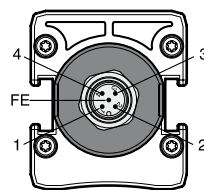
DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website www.contrinex.com or ordered free of charge from our distributors.

DIMENSIONS

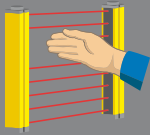


PIN ASSIGNMENT



M12 connector

ASSIGNMENT	FUNCTION	PINS ON SENDER		PINS ON RECEIVER	
		M12 CONNECTOR	CABLE	M12 CONNECTOR	CABLE
Supply voltage	24 VDC	1	brown	1	brown
Supply voltage	0 V	3	blue	3	blue
Test mode	0 V: test active / 24 V: test inactive	4	black	-	-
Output	OSSD1	-	-	2	white
Output	OSSD2	-	-	4	black
Functional earth	Shield	FE	gray	FE	gray



HAND PROTECTION



TYPE-SPECIFIC DATA

Type	0150	0250	0400	0500
Total height (Ht) [mm]	251	380	509	638
Housing height (Hb) [mm]	221	350	479	608
Protective height (Hs) [mm]	150	279	408	537
Number of beams	9	17	25	33
Current consumption [mA]	70	74	77	79
Response time [ms]	14	18	22	26

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-30S2-0150-G012	YBB-30S2-0250-G012	YBB-30S2-0400-G012	YBB-30S2-0500-G012
	Receiver	YBB-30R2-0150-G012	YBB-30R2-0250-G012	YBB-30R2-0400-G012	YBB-30R2-0500-G012
	Kit (sender + receiver)	YBB-30K2-0150-G012	YBB-30K2-0250-G012	YBB-30K2-0400-G012	YBB-30K2-0500-G012

TYPE-SPECIFIC DATA

Type	0700	0800	0900	1000
Total height (Ht) [mm]	767	896	1025	1154
Housing height (Hb) [mm]	737	866	995	1124
Protective height (Hs) [mm]	666	795	924	1053
Number of beams	41	49	57	65
Current consumption [mA]	80	81	81	82
Response time [ms]	30	34	38	42

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-30S2-0700-G012	YBB-30S2-0800-G012	YBB-30S2-0900-G012	YBB-30S2-1000-G012
	Receiver	YBB-30R2-0700-G012	YBB-30R2-0800-G012	YBB-30R2-0900-G012	YBB-30R2-1000-G012
	Kit (sender + receiver)	YBB-30K2-0700-G012	YBB-30K2-0800-G012	YBB-30K2-0900-G012	YBB-30K2-1000-G012

TYPE-SPECIFIC DATA

Type	1200	1300	1400	1600
Total height (Ht) [mm]	1283	1412	1541	1670
Housing height (Hb) [mm]	1253	1382	1511	1640
Protective height (Hs) [mm]	1182	1311	1440	1569
Number of beams	73	81	89	97
Current consumption [mA]	83	83	84	84
Response time [ms]	46	50	54	58

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-30S2-1200-G012	YBB-30S2-1300-G012	YBB-30S2-1400-G012	YBB-30S2-1600-G012
	Receiver	YBB-30R2-1200-G012	YBB-30R2-1300-G012	YBB-30R2-1400-G012	YBB-30R2-1600-G012
	Kit (sender + receiver)	YBB-30K2-1200-G012	YBB-30K2-1300-G012	YBB-30K2-1400-G012	YBB-30K2-1600-G012

TYPE-SPECIFIC DATA

Type	1700	1800		
Total height (Ht) [mm]	1799	1928		
Housing height (Hb) [mm]	1769	1898		
Protective height (Hs) [mm]	1698	1827		
Number of beams	105	113		
Current consumption [mA]	85	85		
Response time [ms]	62	66		

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBB-30S2-1700-G012	YBB-30S2-1800-G012		
	Receiver	YBB-30R2-1700-G012	YBB-30R2-1800-G012		
	Kit (sender + receiver)	YBB-30K2-1700-G012	YBB-30K2-1800-G012		





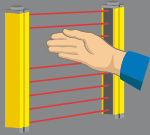


LIGHT CURTAINS BASIC

HAND PROTECTION TYPE 2 SLIM

MAIN FEATURES

- ✓ Resolution: 30 mm
- ✓ Operating range: 0.25 ... 8 m
- ✓ Protective height: 170 ... 1610 mm
- ✓ No blind zone
- ✓ Category 2, PL c according to EN/ISO 13849-1
- ✓ Type 2 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE
- ✓ Enclosure rating IP 65
- ✓ Housing profile 26 mm x 26 mm
- ✓ Optical synchronization
- ✓ Permanent autocontrol



HAND PROTECTION

LEDS

LED indicators on the YBBS **sender** unit



Test:

Yellow when intrusion simulation is active
Off when there is no intrusion simulation

Alignment:

Steady orange when the lowest beam is not aligned

Quick blinking orange when the lowest beam is aligned

Slow blinking orange when at least 6 beams are aligned

OFF when screen is fully aligned

Power:

Green when power is ON

LED indicators on the YBBS **receiver** unit



OSSD2:

Green when OSSD2 is ON

Red when OSSD2 is OFF

OSSD1:

Green when OSSD1 is ON

Red when OSSD1 is OFF

Power:

Green when power is ON

TECHNICAL DATA

Dimensions	26 mm x 26 mm x Ht
Resolution	30 mm
Protective height	170 ... 1610 mm
Supply voltage range	24 VDC \pm 20 %
Current consumption sender	42 mA max. / 1.2 W max.
Current consumption receiver (excl. load)	29 mA max. / 0.8 W max.
Output current	max. 400 mA per output (at 50°C / 122°F)
Safety level (EN/ISO 13849-1)	Category 2, PLc
Safety type (IEC 61496-1 and -2)	Type 2
Protection class (IEC 61140)	III
Ambient temperature range	0 ... +55°C (+32 ... +131°F)
Storage temperature range	-25 ... +70°C (-13 ... +158°F)
Degree of protection (EN 60529)	IP 65
Housing material	Aluminum profile, PC front screen
Material of optical parts	PMMA
Operating range	0.25 ... 8 m
Sender wavelength	IR 850 nm

HOUSING

Aluminum profile 26 mm x 26 mm with dual fixing groove.

ELECTRONIC PROTECTION

Safetinx light curtains are self-protected against overloads and short-circuits. They can also withstand short high-voltage overloads.

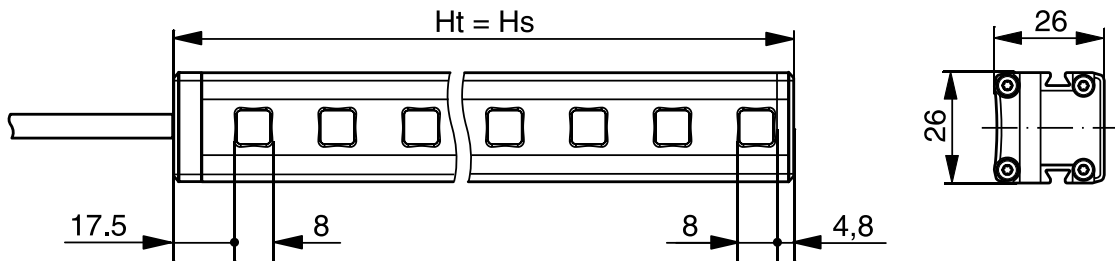
CONNECTION

Safetinx light curtains are connected via a standard M12 5-pole pigtail.

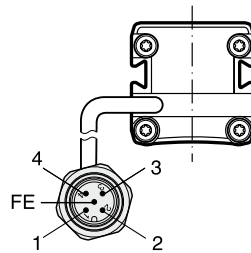
DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website www.contrinex.com or ordered free of charge from our distributors.

DIMENSIONS

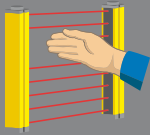


PIN ASSIGNMENT



M12 pigtail

ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER		PINS/WIRES ON RECEIVER	
		M12	OPEN CABLE	M12	OPEN CABLE
Supply voltage	24 VDC	1	brown	1	brown
Supply voltage	0 V	3	blue	3	blue
Test mode	0 V: test active 24 V: test inactive	4	black	-	-
Output	OSSD1	-	-	2	white
Output	OSSD2	-	-	4	black
Functional earth	Shield	FE	gray	FE	gray



HAND PROTECTION



TYPE-SPECIFIC DATA

Type	0170	0330	0490	0650
Total height (Ht) [mm]	170	330	490	650
Protective height (Hs) [mm]	170	330	490	650
Number of beams	8	16	24	32
Current consumption [mA]	42	49	54	57
Response time [ms]	6	9	11	14

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBBS-30S2-0170-P012	YBBS-30S2-0330-P012	YBBS-30S2-0490-P012	YBBS-30S2-0650-P012
	Receiver	YBBS-30R2-0170-P012	YBBS-30R2-0330-P012	YBBS-30R2-0490-P012	YBBS-30R2-0650-P012
	Kit (sender + receiver)	YBBS-30K2-0170-P012	YBBS-30K2-0330-P012	YBBS-30K2-0490-P012	YBBS-30K2-0650-P012

TYPE-SPECIFIC DATA

Type	0810	0970	1130	1290
Total height (Ht) [mm]	810	970	1130	1290
Protective height (Hs) [mm]	810	970	1130	1290
Number of beams	40	48	56	64
Current consumption [mA]	61	63	65	67
Response time [ms]	16	19	21	24

PART REFERENCE (BOLD: PREFERRED TYPES)

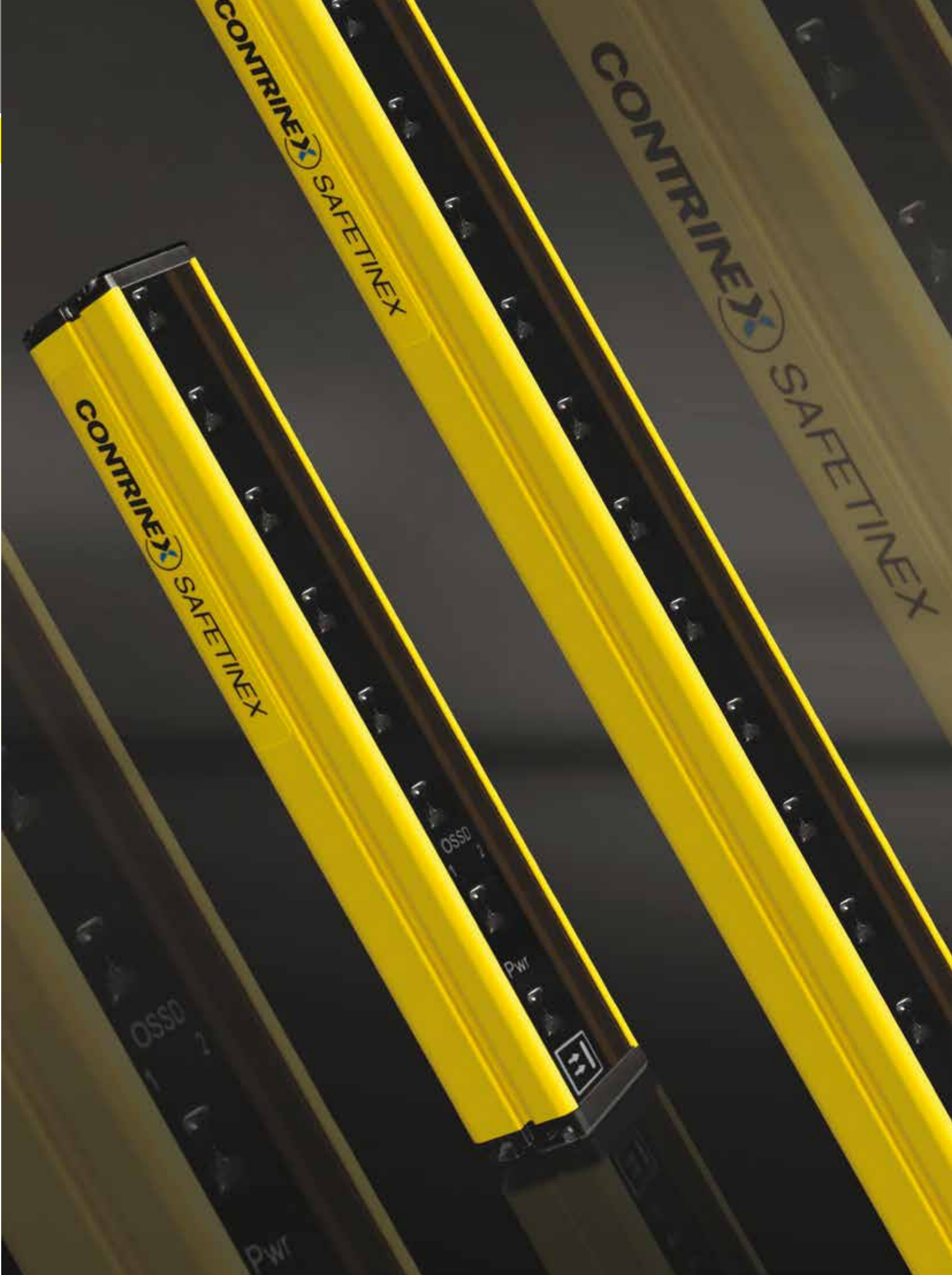
PNP / Connector M12	Sender	YBBS-30S2-0810-P012	YBBS-30S2-0970-P012	YBBS-30S2-1130-P012	YBBS-30S2-1290-P012
	Receiver	YBBS-30R2-0810-P012	YBBS-30R2-0970-P012	YBBS-30R2-1130-P012	YBBS-30R2-1290-P012
	Kit (sender + receiver)	YBBS-30K2-0810-P012	YBBS-30K2-0970-P012	YBBS-30K2-1130-P012	YBBS-30K2-1290-P012

TYPE-SPECIFIC DATA

Type	1450	1610		
Total height (Ht) [mm]	1450	1610		
Protective height (Hs) [mm]	1450	1610		
Number of beams	72	80		
Current consumption [mA]	68	71		
Response time [ms]	26	29		

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBBS-30S2-1450-P012	YBBS-30S2-1610-P012		
	Receiver	YBBS-30R2-1450-P012	YBBS-30R2-1610-P012		
	Kit (sender + receiver)	YBBS-30K2-1450-P012	YBBS-30K2-1610-P012		





BARRIERS BASIC

ACCESS CONTROL TYPE 4

MAIN FEATURES

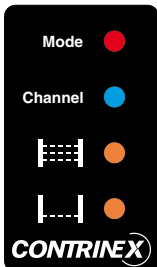
- ✓ Beam gap: 300, 400 or 500 mm (3 to 6 beams)
- ✓ Operating range: 1 ... 15 m or 10 ... 50 m (can be configured)
- ✓ Protective height: 832 ... 1532 mm
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ IP 65, IP 67 with operating temperatures as low as -35°C (-31°F)
- ✓ Housing profile 42 mm x 48 mm
- ✓ 2-channel selection
- ✓ Optical synchronization
- ✓ Permanent autocontrol



ACCESS CONTROL

LEDS

LED indicators on the YCA **sender** unit



Mode:

Off when max. operating range 15 m
 Blue when max. operating range 50 m
 Red or purple in case of wiring error

Channel:

Blue when channel 1 selected
 Purple when channel 2 selected

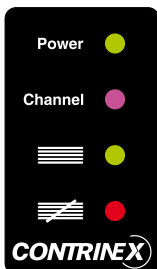
Alignment (full):

Steady orange when screen not fully aligned
 Blinking orange when first third of screen aligned
 Off when screen is fully aligned

Alignment (low beam):

Steady orange when lowest beam not aligned
 Blinking orange when lowest beam aligned
 Off when screen fully aligned

LED indicators on the YCA **receiver** unit



Power:

Green when power ON

Channel:

Blue when channel 1 selected
 Purple when channel 2 selected

Status ON:

Green when OSSD outputs ON

Status OFF:

Red when OSSD outputs OFF

TECHNICAL DATA

Dimensions	42 mm x 48 mm x Ht
Beam gap	300, 400 or 500 mm (3 to 6 beams)
Protective height	832 ... 1532 mm
Supply voltage range	24 VDC ± 15%
Current consumption sender	35 mA max. / 1.0 W max.
Current consumption receiver (excl. load)	75 mA max. / 2.2 W max.
Output current	0.2 A max. per output
Safety level (EN/ISO 13849-1)	Category 4, PLe
Safety type (IEC 61496-1 and -2)	Type 4
Protection class (IEC 61140)	III
Ambient temperature range	-35 ... +60°C (-31 ... +140°F)
Storage temperature range	-40 ... +70°C (-40 ... +158°F)
Degree of protection (EN 60529)	IP 65 + IP 67
Housing material	Aluminum
Material of optical parts	PMMA
Operating range	1 ... 15 m / 10 ... 50 m (can be configured)
Sender wavelength	IR 850 nm

HOUSING

Aluminum profile 42 mm x 48 mm with dual fixing groove.

CONFIGURATION OF OPERATING RANGE

Depending on wiring, the maximum operating range can be fixed to either 50 m or 15 m.

ELECTRONIC PROTECTION

Safetinex access control barriers are self-protected against overloads and short-circuits. They can also withstand short high-voltage overloads.

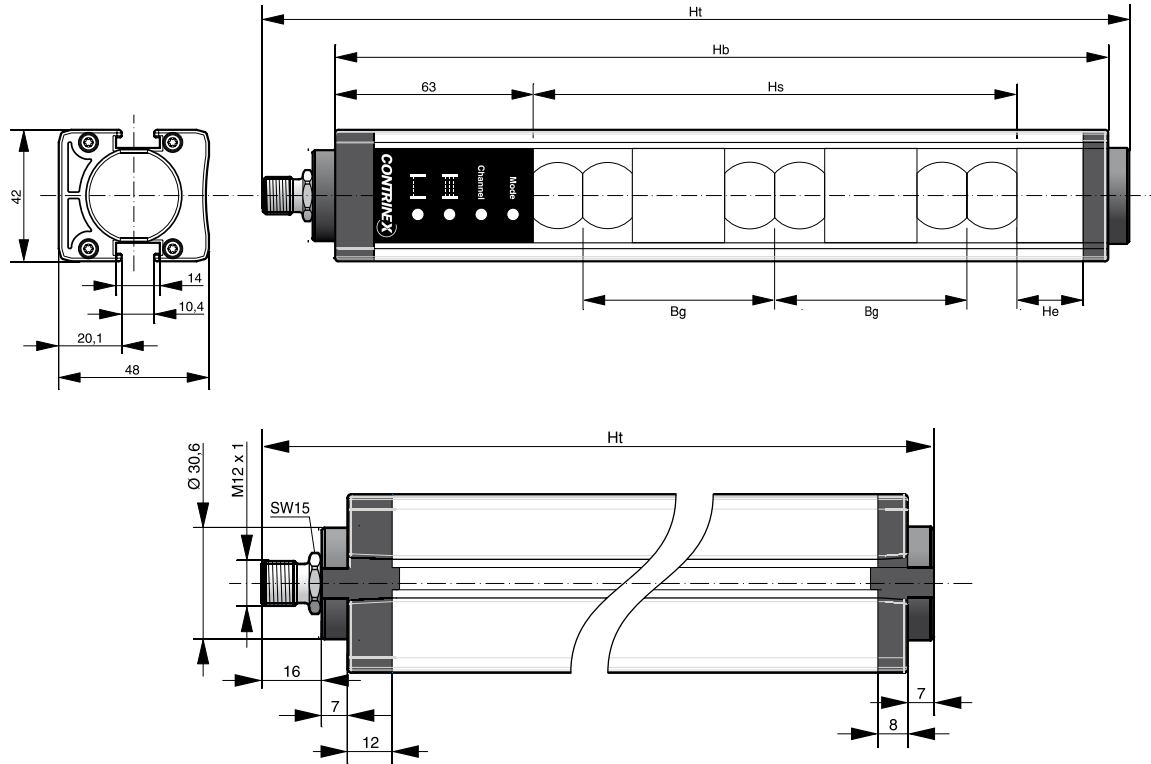
CONNECTION

Safetinex light curtains with M12 5-pole connector are standard.

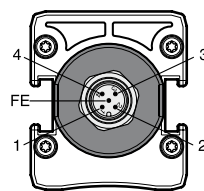
DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website www.contrinex.com or ordered free of charge from our distributors.

DIMENSIONS



PIN ASSIGNMENT



M12 connector

ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER		PINS/WIRES ON RECEIVER	
		M12 CONNECTOR	CABLE	M12 CONNECTOR	CABLE
Supply voltage	24 VDC for channel 1 / 0 V for channel 2	1	brown	1	brown
Supply voltage	0 V for channel 1 / 24 VDC for channel 2	3	blue	3	blue
Operating range selection	24 V: operating range 10 ... 50 m 0 V: operating range 1 ... 15 m	4	black	-	-
Operating range selection	0 V: operating range 10 ... 50 m 24 V: operating range 1 ... 15 m	2	white	-	-
Output	OSSD1	-	-	2	white
Output	OSSD2	-	-	4	black
Functional earth	Shield	FE	gray	FE	gray



ACCESS CONTROL



TYPE-SPECIFIC DATA

	4	5	6
Number of beams	4	5	6
Beam gap (Bg) [mm]	300	300	300
Total height (Ht) [mm]	1154	1412	1670
Housing height (Hb) [mm]	1124	1382	1640
Protective height (Hs) [mm]	932	1232	1532
Height extension (He) [mm]	121	79	37
Current consumption [mA]	110	110	110
Response time [ms]	5.0	5.9	6.7

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	Receiver	Kit (sender + receiver)
	YCA-50S4-4300-G012	YCA-50R4-4300-G012	YCA-50K4-4300-G012
	YCA-50S4-5300-G012	YCA-50R4-5300-G012	YCA-50K4-5300-G012
	YCA-50S4-6300-G012	YCA-50R4-6300-G012	YCA-50K4-6300-G012

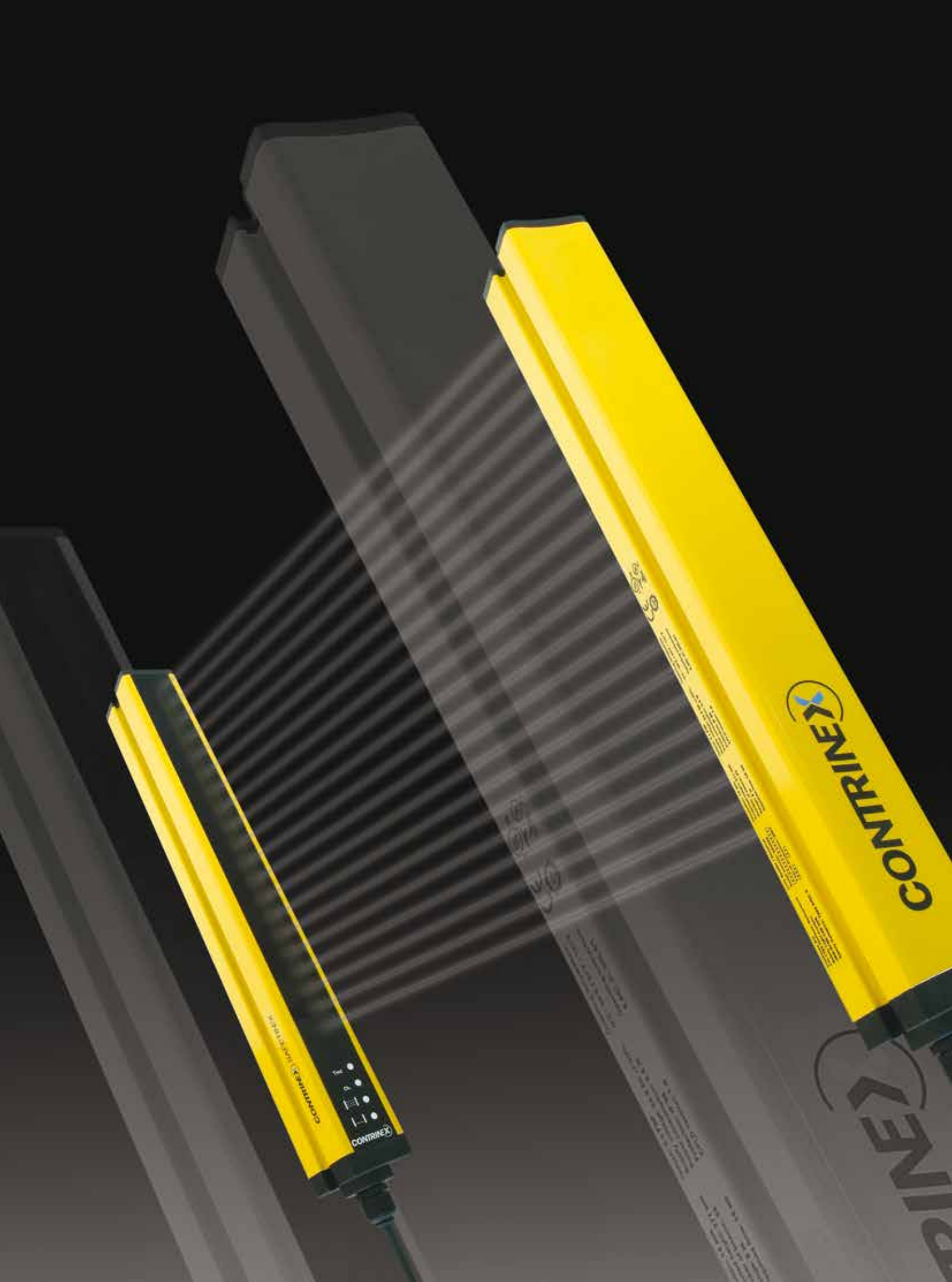
TYPE-SPECIFIC DATA

	3	4	3
Number of beams	3	4	3
Beam gap (Bg) [mm]	400	400	500
Total height (Ht) [mm]	1025	1412	1154
Housing height (Hb) [mm]	995	1382	1124
Protective height (Hs) [mm]	832	1232	1032
Height extension (He) [mm]	92	79	21
Current consumption [mA]	110	110	110
Response time [ms]	4.2	5.0	4.2

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	Receiver	Kit (sender + receiver)
	YCA-50S4-3400-G012	YCA-50R4-3400-G012	YCA-50K4-3400-G012
	YCA-50S4-4400-G012	YCA-50R4-4400-G012	YCA-50K4-4400-G012
	YCA-50S4-3500-G012	YCA-50R4-3500-G012	YCA-50K4-3500-G012









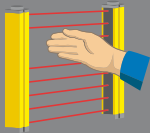
LIGHT CURTAINS EXTENDED

HAND PROTECTION TYPE 4 SLIM

MAIN FEATURES

- ✓ Resolution: 30 mm
- ✓ Operating range: 0.25 ... 10 m*
- ✓ Protective height: 170 ... 1610 mm
- ✓ Wireless configuration through Bluetooth®
- ✓ No blind zone
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ SIL 3 according to IEC 61508
- ✓ Certified TÜV, CE and UL**
- ✓ Enclosure rating IP 65
- ✓ Housing profile 26 mm x 26 mm
- ✓ Beam coding (3 channels), EDM, start and restart interlock configurable functions
- ✓ Optical synchronization
- ✓ Permanent autocontrol

* Provisional data ** Pending



HAND PROTECTION

LEDS

LED indicators on the YBES **sender** unit



Bluetooth®:

Blue when communication through Bluetooth® is enabled

Quick blinking blue when data are exchanged (1 Hz)

OFF when communication through Bluetooth® is disabled

Beam coding:

Purple when "Beam Coding #1" option is enabled

Yellow when "Beam Coding #2" option is enabled

Cyan when "Beam Coding #3" option is enabled

Test:

Yellow when intrusion simulation is enabled

OFF when there is no intrusion simulation

LED indicators on the YBES **receiver** unit



OSSD:

Green when both OSSD1 and OSSD2 are ON

Red when both OSSD1 and OSSD2 are OFF

Interlock:

Yellow when light curtain is waiting for restart/start

OFF when restart/start is initiated or when automatic restart is configured

Bluetooth®:

Blue when communication through Bluetooth® is enabled

Blinking blue when data are exchanged (1 Hz)

OFF when communication through Bluetooth® is disabled

TECHNICAL DATA

Dimensions	26 mm x 26 mm x Ht
Resolution	30 mm
Protective height	170 ... 1610 mm
Supply voltage range	24 VDC ± 20 %
Current consumption sender	tbd
Current consumption receiver (excl. load)	tbd
Output current	max. 400 mA per output (at 50°C / 122°F)
Safety level (EN/ISO 13849-1)	Category 4, PL _e
Safety type (IEC 61496-1 and -2)	Type 4
Protection class (IEC 61140)	III
Ambient temperature range	0 ... +55°C (+32 ... +131°F)
Storage temperature range	-25 ... +70°C (-13 ... +158°F)
Degree of protection (EN 60529)	IP 65
Housing material	Aluminum profile, PC front screen
Material of optical parts	PMMA
Operating range	0.25 ... 10 m*
Sender wavelength	IR 850 nm

* Provisional data

HOUSING

Aluminum profile 26 mm x 26 mm with dual fixing groove.

ELECTRONIC PROTECTION

Safetinx light curtains are self-protected against overloads and short-circuits. They can also withstand short high-voltage overloads.

CONNECTION

Safetinx light curtains with M12 5-pole (sender) and M12-8 pole (receiver) pigtail are standard.

DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website www.contrinex.com or ordered free of charge from our distributors.

Alignment:

Steady orange when no beam is aligned

Blinking orange when less of total beam number are aligned (frequency about 1 Hz)

OFF when all beams are fully aligned

EDM:

Orange when EDM is enabled

OFF when EDM is disabled

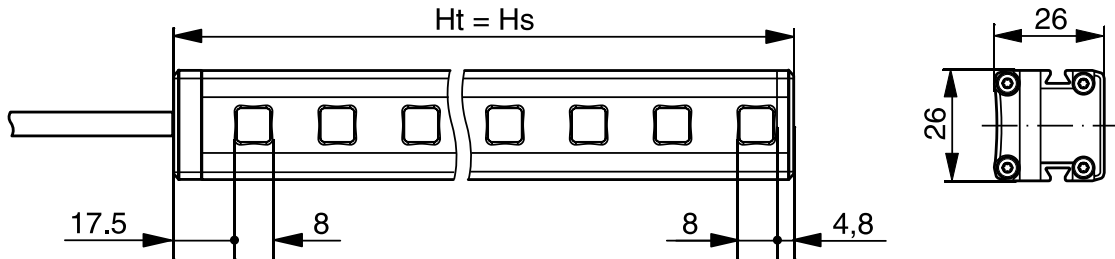
Beam Coding:

Purple when "Beam Coding #1" option is enabled

Yellow when "Beam Coding #2" option is enabled

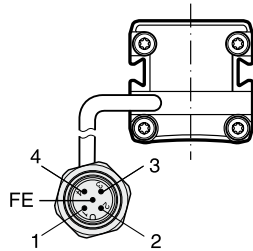
Cyan when "Beam Coding #3" option is enabled

DIMENSIONS



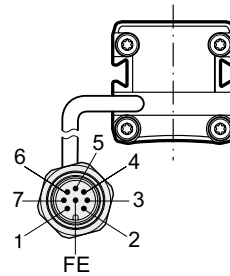
PIN ASSIGNMENT

Sender



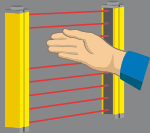
M12 pigtail, 5 pins

Receiver



M12 pigtail, 8 pins

ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER		PINS/WIRES ON RECEIVER	
		M12	OPEN CABLE	M12	OPEN CABLE
Supply voltage	24 VDC	1	brown	2	brown
Supply voltage	0 V	3	blue	7	blue
Test mode	24 V: test inactive 0 V: test active	4	black	-	-
Output	OSSD1	-	-	5	grey
Output	OSSD2	-	-	6	pink
Functional earth	Shield	FE	gray	FE	red
EDM	EDM input	-	-	4	yellow
Restart Interlock	Input for restart button	-	-	1	white
Not used	-	2	white	3	green



HAND PROTECTION



TYPE-SPECIFIC DATA

Type	0170	0330	0490
Total height (Ht) [mm]	170	330	490
Protective height (Hs) [mm]	170	330	490
Number of beams	8	16	24
Current consumption [mA]	tbd	tbd	tbd
Response time [ms]	5	6	7

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBES-30S4-0170-P012	YBES-30S4-0330-P012	YBES-30S4-0490-P012
	Receiver	YBES-30R4-0170-P012	YBES-30R4-0330-P012	YBES-30R4-0490-P012
	Kit (sender + receiver)	YBES-30K4-0170-P012	YBES-30K4-0330-P012	YBES-30K4-0490-P012

TYPE-SPECIFIC DATA

Type	0650	0810	0970
Total height (Ht) [mm]	650	810	970
Protective height (Hs) [mm]	650	810	970
Number of beams	32	40	48
Current consumption [mA]	tbd	tbd	tbd
Response time [ms]	8	9	10

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBES-30S4-0650-P012	YBES-30S4-0810-P012	YBES-30S4-0970-P012
	Receiver	YBES-30R4-0650-P012	YBES-30R4-0810-P012	YBES-30R4-0970-P012
	Kit (sender + receiver)	YBES-30K4-0650-P012	YBES-30K4-0810-P012	YBES-30K4-0970-P012

TYPE-SPECIFIC DATA

Type	1130	1290	1450
Total height (Ht) [mm]	1130	1290	1450
Protective height (Hs) [mm]	1130	1290	1450
Number of beams	56	64	72
Current consumption [mA]	tbd	tbd	tbd
Response time [ms]	11	12	13

PART REFERENCE (BOLD: PREFERRED TYPES)

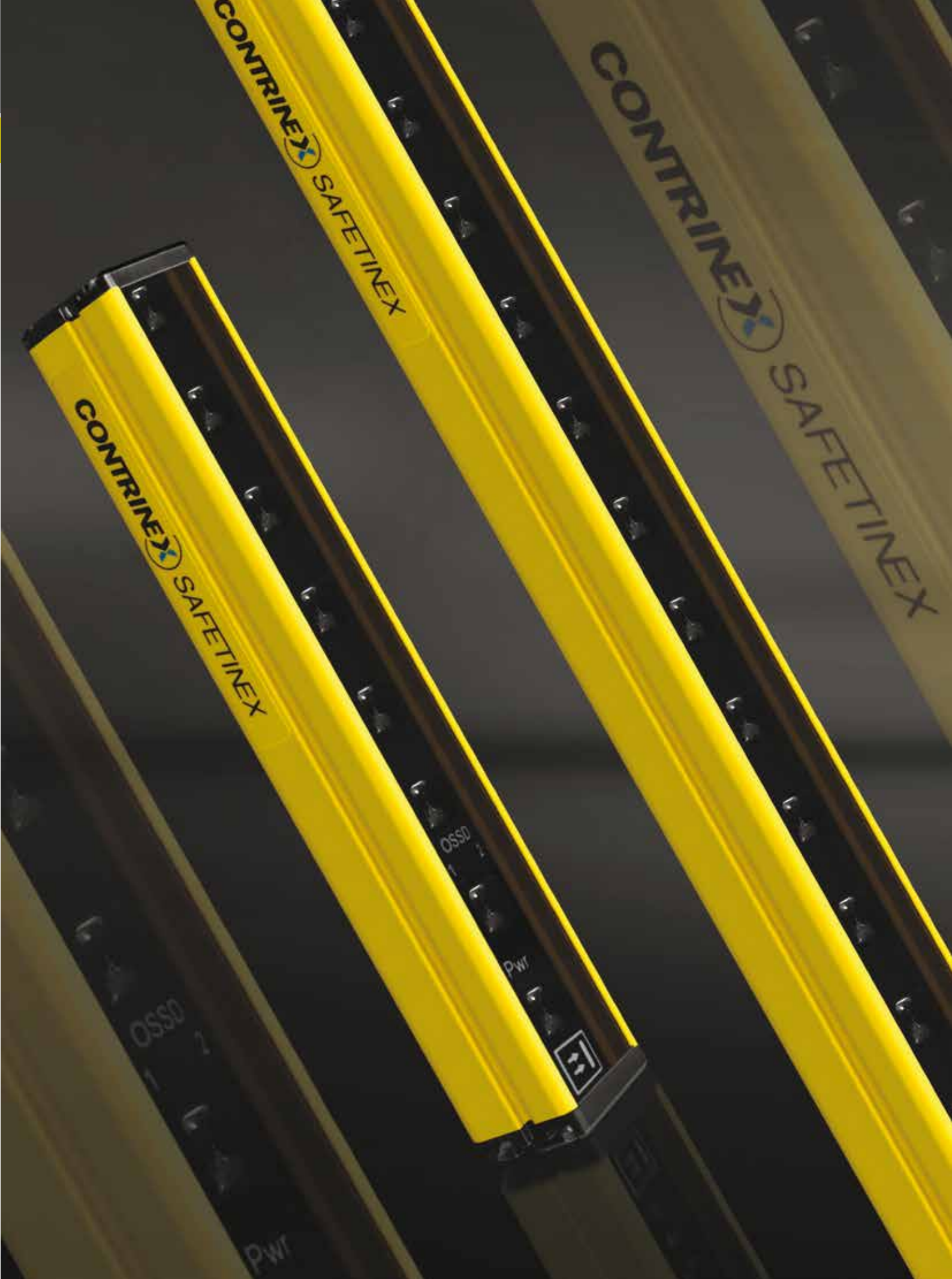
PNP / Connector M12	Sender	YBES-30S4-1130-P012	YBES-30S4-1290-P012	YBES-30S4-1450-P012
	Receiver	YBES-30R4-1130-P012	YBES-30R4-1290-P012	YBES-30R4-1450-P012
	Kit (sender + receiver)	YBES-30K4-1130-P012	YBES-30K4-1290-P012	YBES-30K4-1450-P012

TYPE-SPECIFIC DATA

Type	1610		
Total height (Ht) [mm]	1610		
Protective height (Hs) [mm]	1610		
Number of beams	80		
Current consumption [mA]	tbd		
Response time [ms]	14		

PART REFERENCE (BOLD: PREFERRED TYPES)

PNP / Connector M12	Sender	YBES-30S4-1610-P012		
	Receiver	YBES-30R4-1610-P012		
	Kit (sender + receiver)	YBES-30K4-1610-P012		



CONTRINEX SAFETINEX

CONTRINEX SAFETINEX

CONTRINEX SAFETINEX

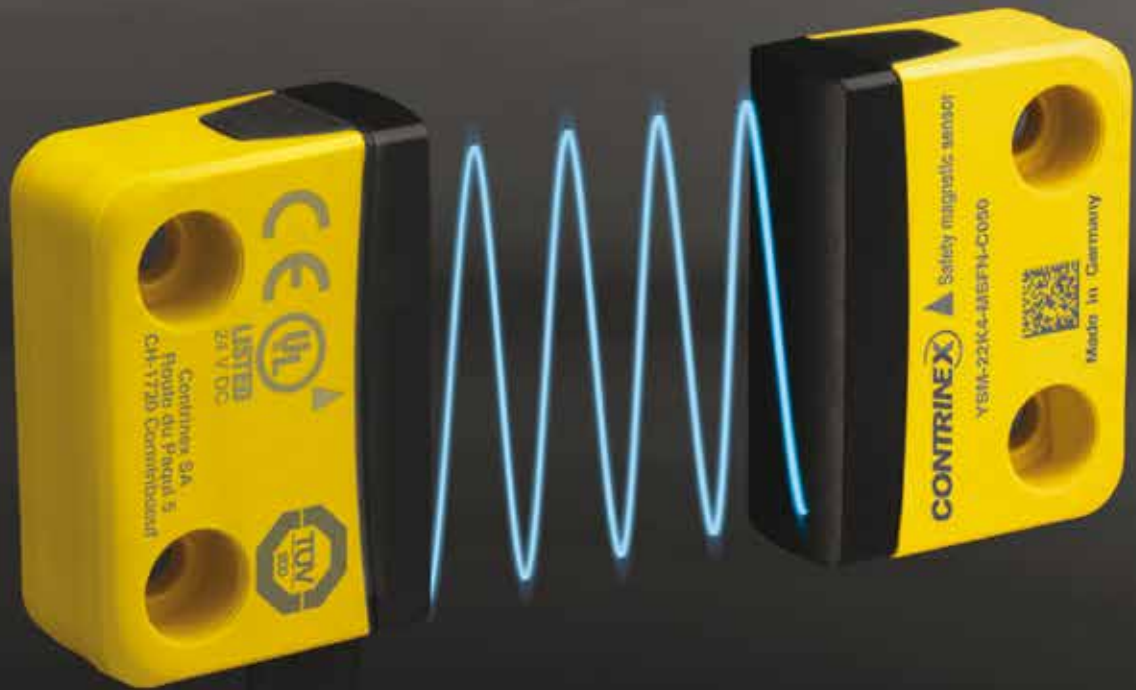
OSSD

Pwr



OSSD

Pwr

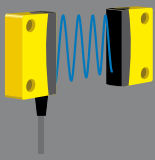


SENSORS

NON-CONTACT MAGNETICALLY CODED

MAIN FEATURES

- ✓ Safety sensor with frontal or 90° actuation
- ✓ Magnetically coded, ISO 14119 type 4
- ✓ Up to category 4, PL e according to EN/ISO 13849-1
- ✓ Operating distance up to 18 mm
- ✓ PVC cable or M12 pigtail connection
- ✓ Sizes 36 mm x 26 mm x 13 mm and 88 mm x 25 mm x 13 mm
- ✓ Certified TÜV, CE and UL
- ✓ IP6K9K, Ecolab



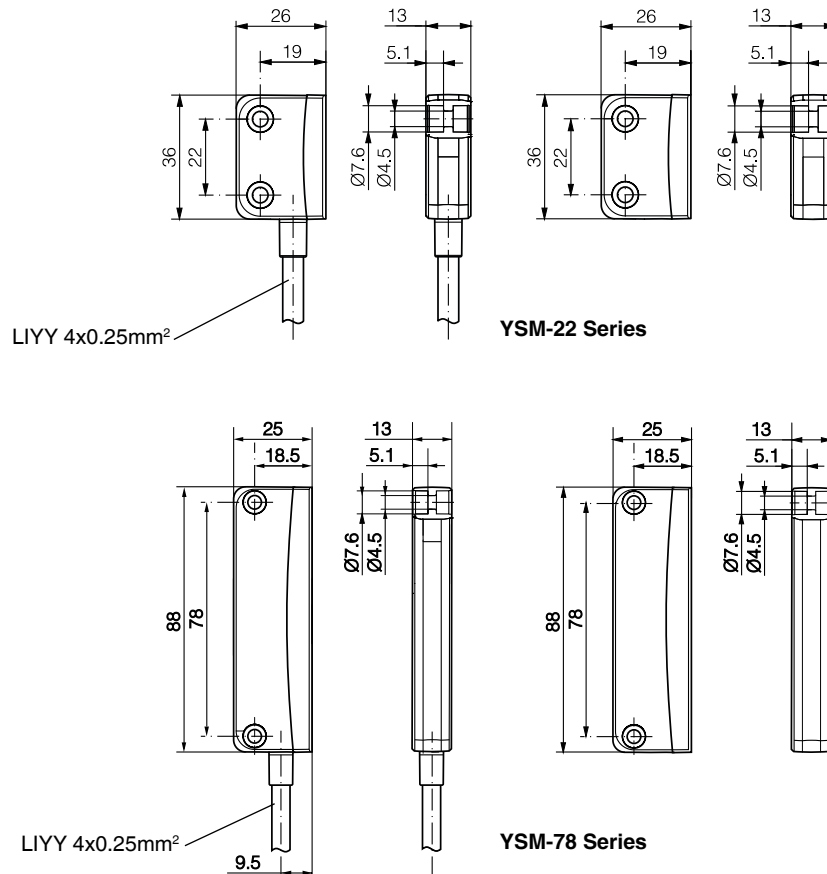
MAGNETIC SENSORS

TECHNICAL DATA

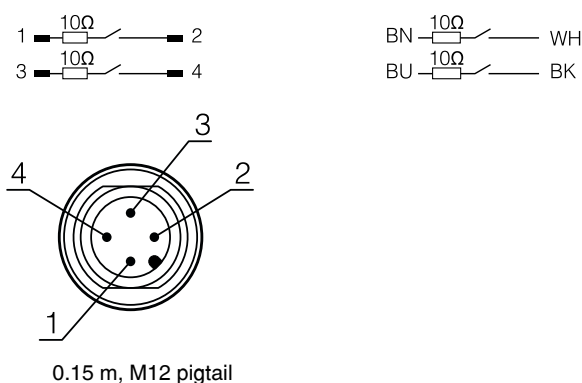
Supply voltage range	24 VDC \pm 20 %
Load current	max 200 mA (-25°C...+80°C)
Safe switch on distance S_{ao}	4 or 8 mm
Safe switch off distance S_{ar}	10, 17 or 18 mm
Dimensions	36 mm x 26 mm x 13 mm (YSM-22 series) 88 mm x 25 mm x 13 mm (YSM-78 series)
Output	2x NO Reed contact
Minimum air gap S_{omin}	0.5 mm
Ambient temperature range	-25 ... +80°C (-13 ... +176°F)
Storage temperature range	-25 ... +80°C (-13 ... +176°F)
Enclosure rating	IP 67 (EN 60529) and IP 6K9K (ISO 20653)
Housing material	PBT yellow, PC black
Connection	5 m PVC cable 4 x 0,25 mm ² or 0.15 m PVC pigtail with M12 4-pins connector
Safety level*	Cat.4 / PL e (EN ISO 13849-1) SIL _{CL} 3 (IEC/EN 62061) SIL 3 (IEC/EN 61508)
Content in each bag	Sensor and actuator (kit)

* Short circuit recognition through differing voltages or pulsed signals required

DIMENSIONS



PIN ASSIGNMENT



ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER	
		M12	OPEN CABLE
Supply voltage	24 VDC	1	brown
Supply voltage	24 VDC	3	blue
Output	NO contact 1	2	white
Output	NO contact 2	4	black



YSM-22 SERIES

Part reference	Dimensions [mm]	Sao	Sar	Actuation	Hysteresis	Connection
YSM-22K4-MSFN-C050	36 x 26 x 13	4 mm	10 mm	Frontal	1.5 mm	PVC, 5 m, 4 wire
YSM-22K4-MEFN-C050	36 x 26 x 13	8 mm	17 mm	Frontal	2.5 mm	PVC, 5 m, 4 wire
YSM-22K4-MSAN-C050	36 x 26 x 13	4 mm	10 mm	90°	1.5 mm	PVC, 5 m, 4 wire
YSM-22K4-MEAN-C050	36 x 26 x 13	8 mm	17 mm	90°	2.5 mm	PVC, 5 m, 4 wire
YSM-22K4-MSFN-P012	36 x 26 x 13	4 mm	10 mm	Frontal	1.5 mm	PVC, 0.15 m + M12 4-pin
YSM-22K4-MEFN-P012	36 x 26 x 13	8 mm	17 mm	Frontal	2.5 mm	PVC, 0.15 m + M12 4-pin
YSM-22K4-MSAN-P012	36 x 26 x 13	4 mm	10 mm	90°	1.5 mm	PVC, 0.15 m + M12 4-pin
YSM-22K4-MEAN-P012	36 x 26 x 13	8 mm	17 mm	90°	2.5 mm	PVC, 0.15 m + M12 4-pin

YSM-78 SERIES

Part reference	Dimensions [mm]	Sao	Sar	Actuation	Hysteresis	Connection
YSM-78K4-MEFN-C050	88 x 25 x 13	8 mm	18 mm	Frontal	3.5 mm	PVC, 5 m, 4 wire
YSM-78K4-MEAN-C050	88 x 25 x 13	8 mm	18 mm	90°	3.5 mm	PVC, 5 m, 4 wire
YSM-78K4-MEFN-P012	88 x 25 x 13	8 mm	18 mm	Frontal	3.5 mm	PVC, 0.15 m + M12 4-pin
YSM-78K4-MEAN-P012	88 x 25 x 13	8 mm	18 mm	90°	3.5 mm	PVC, 0.15 m + M12 4-pin

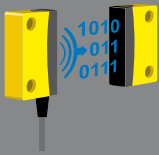


SENSORS

NON-CONTACT RFID CODED

MAIN FEATURES

- ✓ Safety sensor with RFID coding (random or teachable) ISO 14119 type 4
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Operating distance up to 18 mm
- ✓ PVC cable or M12 pigtail connection
- ✓ Compact size 36 mm x 26 mm x 13 mm
- ✓ Cascadable up to 30 units
- ✓ EDM and diagnostic function
- ✓ Certified TÜV, CE and UL
- ✓ IP6K9K, Ecolab

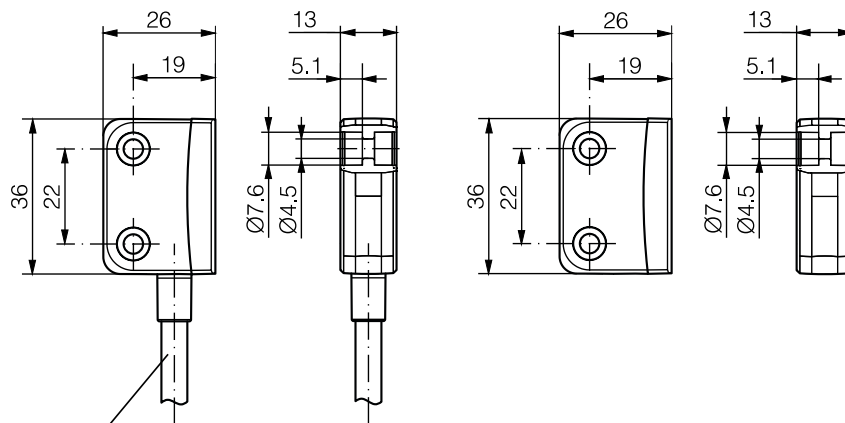


RFID SENSORS

TECHNICAL DATA

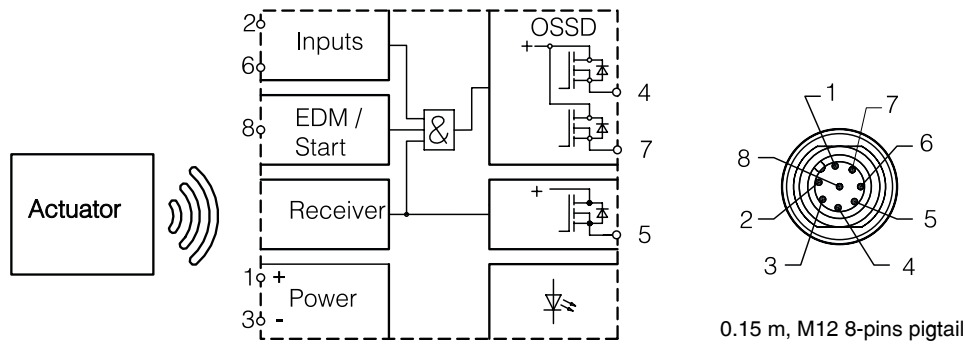
Supply voltage range	24 VDC \pm 10 %
Load current	max 400 mA (-25°C...+70°C)
Safe switch on distance Sao	8 mm
Safe switch off distance Sar	18 mm
Dimensions	36 mm x 26 mm x 13 mm
Output	2x OSSD
Ambient temperature range	-25 ... +70°C (-13 ... +158°F)
Storage temperature range	-25 ... +70°C (-13 ... +158°F)
Enclosure rating	IP 67 (EN 60529) and IP 6K9K (ISO 20653)
Housing material	PBT yellow, PC black
Connection	5 m PVC cable 8 x 0,25 mm ² or 0.15 m PVC pigtail with M12 8-pins connector
Safety level	Cat.4 / PL e (EN ISO 13849-1) SIL _{cl} 3 (IEC/EN 62061) SIL 3 (IEC/EN 61508)
Content in each bag	Sensor and actuator (kit)

DIMENSIONS



LIYY 8 x 0.25 mm²

PIN ASSIGNMENT



ASSIGNMENT	FUNCTION	PINS/WIRES ON SENDER	
		M12	OPEN CABLE
Supply voltage	24 VDC	1 (white)	brown
Input	Safety input 1	2 (brown)	white
Supply voltage	GND	3 (green)	blue
Output	OSSD 1	4 (yellow)	black
Output	Diagnostic	5 (grey)	grey
Input	Safety input 2	6 (pink)	pink
Output	OSSD 2	7 (blue)	violet
Input	EDM	8 (red)	orange



YSR-22 SERIES

Part reference	Dimensions [mm]	Sao	Sar	Actuation	Connection
YSR-22K4-RESE-C050	36 x 26 x 13	8 mm	18 mm	Random code	PVC, 5 m, 4 wire
YSR-22K4-TESE-C050	36 x 26 x 13	8 mm	18 mm	Teachable code	PVC, 5 m, 4 wire
YSR-22K4-RESE-P012	36 x 26 x 13	8 mm	18 mm	Random code	PVC, 0.15 m, M12 8-pins
YSR-22K4-TESE-P012	36 x 26 x 13	8 mm	18 mm	Teachable code	PVC, 0.15 m, M12 8-pins



SAFETY

RELAY

MAIN FEATURES

- ✓ For safety light curtains, access control barriers, sensors and emergency stop buttons
- ✓ Safety Integrity Level (SIL) 3 according to IEC/EN 61508
- ✓ Claimed Level (SIL CL) 3 according to IEC/EN 62061
- ✓ Performance Level (PL) e and category 4 according to EN/ISO 13849-1
- ✓ Safety category 4 according to EN 954-1
- ✓ Certified TÜV, CE and UL
- ✓ Outputs:
 - ✓ 3 N.O. safety contacts
 - ✓ 1 N.C. monitoring contact
- ✓ Manual or automatic restart
- ✓ LED indicator for channel 1, 2 and power supply
- ✓ 22.5 mm wide, DIN-rail-mountable housing

RELAY



YRB-4EML-31S

APPLICATION AREA

This safety relay is a SIL 3, PL e and category 4 device, designed for the protection of people and machines. It can be used in applications together with:

- Electro-sensitive protective equipment type 4 or type 2 (light curtains and access control barriers)
- Magnetic and RFID sensors
- Emergency stop button

TECHNICAL DATA

INPUT DATA

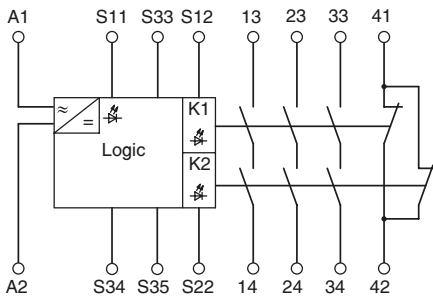
Nominal input voltage U_N	24 V AC/DC
Input voltage range (factor)	0.85 ... 1.1
Typical input current	150 mA AC / 70 mA DC
Voltage at input/start and feedback circuit	approx. 24 V DC
Typical response time	25 ms (manual start) / 100 ms (automatic start)
Typical release time	10 ms
Recovery time	1 s
Operating voltage display	Green LED
Status display	Green LED
Protective circuit	Fuse PTC resistor

OUTPUT DATA

Contact type	3 enabling current paths / 1 signaling current path
Contact material	AgSnO ₂ , + 0.2 μm Au
Minimum switching voltage	15 V AC/DC
Maximum switching voltage	250 V AC/DC
Limiting continuous current	6 A
Maximum inrush current	6 A
Inrush current, minimum	25 mA
Sq. Total current	72 A ² ($I_{TH}^2 = I_1^2 + I_2^2 + I_3^2$) (see data sheet)
Interrupting rating (ohmic load) max.	144 W (24 V DC, τ = 0 ms) 288 W (48 V DC, τ = 0 ms) 77 W (110 V DC, τ = 0 ms) 88 W (220 V DC, τ = 0 ms) 1500 VA (250 V AC, τ = 0 ms)
Maximum interrupting rating (inductive load)	48 W (24 V DC, τ = 40 ms) 40 W (48 V DC, τ = 40 ms) 35 W (110 V DC, τ = 40 ms) 33 W (220 V DC, τ = 40 ms)

GENERAL DATA

Relay type	Electromechanically forcibly guided, dust-proof relay
Nominal operating mode	100% operating factor
Degree of protection	IP 20
Min. degree of protection of inst. location	IP 54
Mounting position	any
Mounting type	DIN rail mounting



Relay block diagram

Air and creepage distances between the power circuits	DIN EN 50178/VDE 0160
Rated insulation voltage	250 V
Rated surge voltage / insulation	4 kV / basic insulation (safe isolation, reinforced insulation, and 6 kV between A1- A2 / logic / enabling and signaling current paths)
Pollution degree	2
Surge voltage category	III

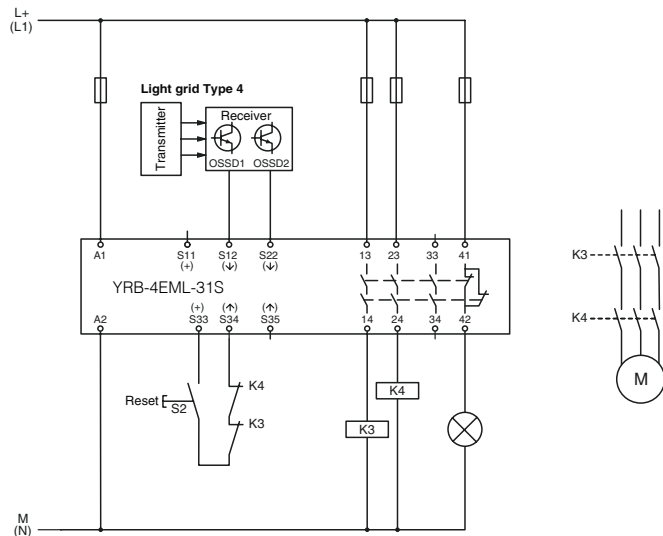
PART REFERENCE

Safety relay	YRB-4EML-31S
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MANUAL/AUTOMATIC RESTART MODE (LIGHT CURTAINS/SAFETY SENSORS)

Two-channel light grid monitoring (cross-circuit detection via light grid)

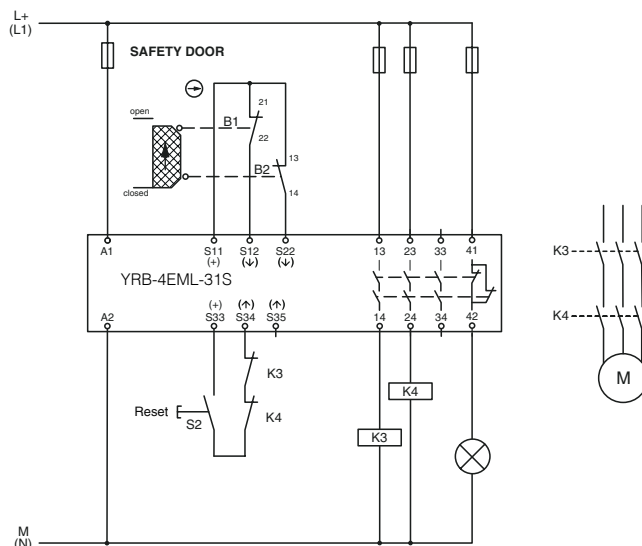
- Manual activation
- Automatic activation with jumper at S33-S35
- Suitable up to category 4, PL e (EN ISO 13849-1), SILCL 3 (EN 62061)



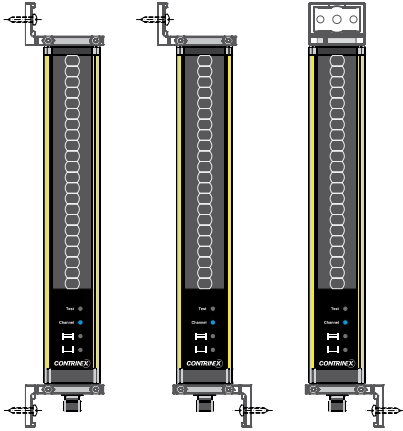
AUTOMATIC/MANUAL RESTART MODE (SAFETY SENSORS)

Two-channel safety door monitoring without cross-circuit detection, with monitored reset button

- Manual activation
- Automatic activation with jumper at S33-S35
- Suitable up to category 3, PL d (EN ISO 13849-1), SILCL 2 (EN 62061)



ACCESSORIES



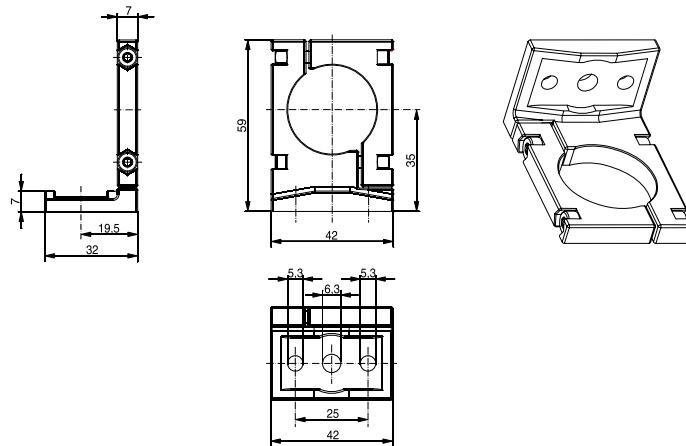
TOP/BOTTOM MOUNTING BRACKET FOR YBB & YCA

Synthetic swivel mounting bracket

A pair of YXW-0001-000 mounting brackets is supplied with each light curtain or access control barrier unit.

DIMENSIONS

TOP/BOTTOM MOUNTING BRACKETS



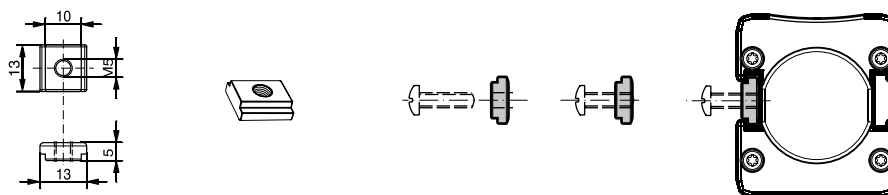
PART REFERENCE

Top/bottom mounting brackets, synthetic (pair)

YXW-0001-000

DIMENSIONS

SLIDING T-NUTS FOR SIDE MOUNTING



PART REFERENCE

T-nuts for side mounting, metal (pair)

YXW-0003-000

ACCESSORIES

MOUNTING BRACKETS FOR YBBS & YBES

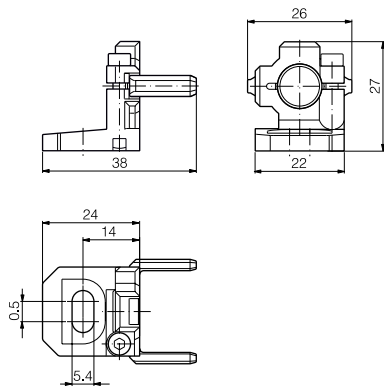
- Synthetic or metal mounting bracket
- Easy-to-use

A pair of YXW-0005-000 mounting brackets is supplied with each light curtain.

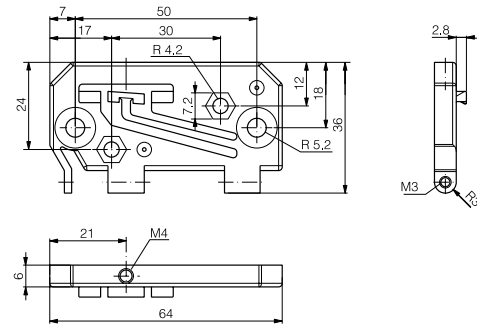


DIMENSIONS

TOP/BOTTOM MOUNTING BRACKETS



SIDE MOUNTING BRACKETS



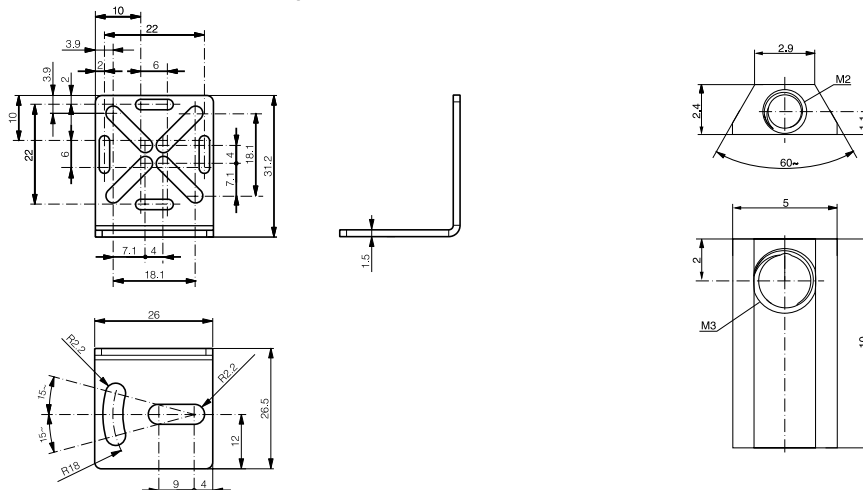
PART REFERENCE

Top/bottom mounting brackets, synthetic (pair)
Side mounting brackets, metal (pair)

YXW-0005-000
YXW-0006-000

DIMENSIONS

SIDE/END MOUNTING BRACKETS



PART REFERENCE

Side/end mounting brackets, metal (pair)

YXW-0007-000

Inductive

Photoelectric

Safety

RFID

Connectivity

Accessories

Glossary

Index

SAFETY FILTER



Pin assignment female



Pin assignment male

MAIN FEATURES

- Suitable for safety light curtain
- Plug & play solution, easy to use

TECHNICAL DATA

Material	PUR
Weight	20 g
Enclosure rating	IP 65
Connection	M12, 5 pins (1x socket, 1x plug)

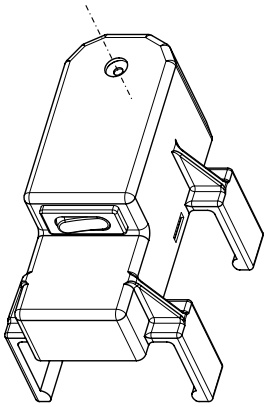
PART REFERENCE

Safety filter	YXF-0001-000
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SAFETY FILTER



LASER ALIGNMENT TOOL



MAIN FEATURES

- Easily clippable onto Safetindex YBB and YCA devices
- Range: up to 50 m
- Output power < 1 mW (class 2)
- Standard AA batteries

TECHNICAL DATA

Laser module optical output power	< 1 mW (class 2)
Laser beam spot size at 10m	< 10 mm
Range	≤ 50 m
Housing material	PA with 30% fiberglass
Dimensions	80 mm x 48 mm x 56 mm

PART REFERENCE

Laser alignment tool	YXL-0001-000
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LASER ALIGNMENT TOOL



Inductive

Photoelectric

Safety

RFID

Connectivity

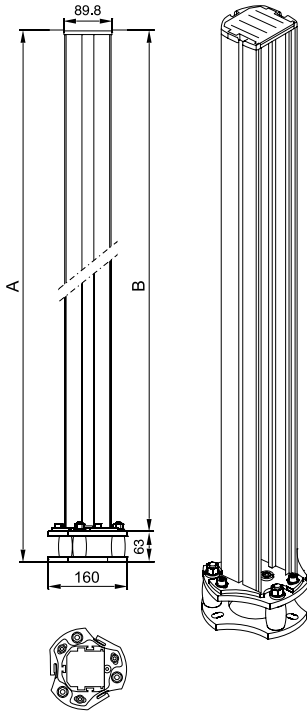
Accessories

Glossary

Index

DEVICE COLUMNS

DIMENSIONS



DEVICE COLUMNS FOR LIGHT CURTAINS AND ACCESS CONTROL BARRIERS

- Robust protective profile, attractive design
- Special spring elements automatically reset position in case of mechanical impact
- Complete assembly kit for both device and floor mounting included
- Easy to mount: vertical and axial adjustments can be quickly completed in just a few steps

APPLICATION AREA

Free-standing floor mounting for safety light curtains and access control barriers, such as Safetinx YBB and YCA models

TECHNICAL DATA

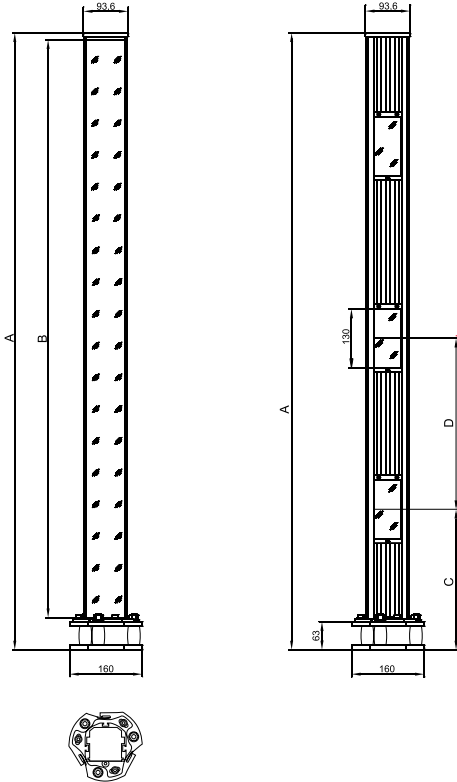
Housing	Aluminum profile and steel floor plates
Surface	Powder-varnished, yellow (RAL 1021)

PART REFERENCE

Device column	Total height (A) [mm]	Housing height (B) [mm]	Suitable for
YXC-1060-F00	1060	977	YBB-####-0150-#### to YBB-####-0800-####
YXC-1360-F00	1360	1277	YBB-####-0900-####, YBB-####-1000-####, YCA-####-3400-####, YCA-####-4300-####
YXC-1660-F00	1660	1577	YBB-####-1200-#### to YBB-####-1400-####, YCA-####-3500-####, YCA-####-5300-####, YCA-####-4400-####
YXC-1960-F00	1960	1877	YBB-####-1600-####, YBB-####-1700-####, YCA-####-6300-####

MIRROR COLUMNS

DIMENSIONS



MIRROR COLUMNS FOR LIGHT CURTAINS AND ACCESS CONTROL BARRIERS

- Robust protective profile, attractive design
- **Special spring elements automatically reset position in case of mechanical impact**
- Complete assembly kit for both device and floor mounting included
- Easy to mount: vertical and axial adjustments can be quickly completed in just a few steps
- Single mirror or exchangeable and separately adjustable individual mirrors in accordance with EN 999

APPLICATION AREA

The mirror columns YXC-####-M## are used for the beam deflection of safety light curtains and access control barriers, such as Safetinex YBB and YCA models, in order to achieve multi-sided safeguarding of danger zones, while eliminating the need for additional light curtains or access control barriers. Spring elements at the base of the column provide for automatic reset following mechanical impact.

YXC-####-M11 models feature a single large mirror and are therefore suitable for use with light curtains as well as access control barriers. YXC-1360-M23, on the other hand, features 3 or 4 smaller mirrors and may consequently only be used with access control barriers.

TECHNICAL DATA

Housing
Surface

Aluminum profile and steel floor plates
Powder-varnished, yellow (RAL 1021)

PART REFERENCE

Single-mirror column	Total height (A) [mm]	Mirror height (B) [mm]	Multi-mirror column	Total height (A) [mm]	Beam gap (D) [mm]	Height lowest beam (C) [mm]
YXC-1060-M11	1060	974	YXC-1360-M23	1360	2 x 400	300
YXC-1360-M11	1360	1274				
YXC-1660-M11	1660	1574				
YXC-1960-M11	1960	1874				

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SAFETY PRODUCTS

LIGHT CURTAINS AND SAFETY SENSORS

YBB-30S4-0800-G012

SAFETY PRODUCT

Y

PRODUCT TYPE

Basic standard barrier (light curtain)	BB
Access control barrier (light curtain)	CA
Basic slim barrier	BBS
Extended slim barrier	BES
Magnetic sensor	SM
RFID sensor	SR

ADDITIONAL INFORMATION

Resolution (YBB)	
14 mm (finger)	14
30 mm (hand)	30
Operating distance (YCA)	
50 m	50
Hole spacing (YSM, YSR)	
22 mm	22
78 mm	78

MODULE

Receiver	R
Sender	S
Kit (sender + receiver)	K
Reed sensor	R
Read - write RFID sensor	L
Actuator	A

CONNECTION TYPE

Cable, 5 m, PVC	C050
M12 connector, 5 pins	G012
M12 Pigtail, 0.3 m, 5 or 8 pins	P012

ADDITIONAL INFORMATION

Light curtain	
Protective height rounded in mm	####
Coding (safety sensor)	
Random RFID	R###
Teachable RFID	T###
Magnetic	M###
Distance (safety sensor)	
Standard	#S##
Extended	#E##
Actuation (safety sensor)	
Frontal	##F#
90°	##A#
All sides	##S#
Options (safety sensor)	
No option	N
Restart button	R
EDM	E
with LED	L

CATEGORY

Category 2	2
Category 4	4

Part reference	Chapter/page	Part reference	Chapter/page	Part reference	Chapter/page
YBB-14K4-0150-G012	3/318	YBB-30K2-1300-G012	3/330	YBES-30K4-0810-P012	3/348
YBB-14K4-0250-G012	3/318	YBB-30K2-1400-G012	3/330	YBES-30K4-0970-P012	3/348
YBB-14K4-0400-G012	3/318	YBB-30K2-1600-G012	3/330	YBES-30K4-1130-P012	3/348
YBB-14K4-0500-G012	3/319	YBB-30K2-1700-G012	3/330	YBES-30K4-1290-P012	3/348
YBB-14K4-0700-G012	3/319	YBB-30K2-1800-G012	3/330	YBES-30K4-1450-P012	3/348
YBB-14K4-0800-G012	3/319	YBB-30K4-0250-G012	3/324	YBES-30K4-1610-P012	3/348
YBB-14K4-0900-G012	3/319	YBB-30K4-0400-G012	3/324	YBBS-30K2-0170-P012	3/336
YBB-14K4-1000-G012	3/318	YBB-30K4-0500-G012	3/324	YBBS-30K2-0330-P012	3/336
YBB-14K4-1200-G012	3/318	YBB-30K4-0700-G012	3/325	YBBS-30K2-0490-P012	3/336
YBB-14K4-1300-G012	3/318	YBB-30K4-0800-G012	3/325	YBBS-30K2-0650-P012	3/336
YBB-14K4-1400-G012	3/319	YBB-30K4-0900-G012	3/325	YBBS-30K2-0810-P012	3/336
YBB-14K4-1600-G012	3/319	YBB-30K4-1000-G012	3/325	YBBS-30K2-0970-P012	3/336
YBB-14K4-1700-G012	3/319	YBB-30K4-1200-G012	3/324	YBBS-30K2-1130-P012	3/336
YBB-30K2-0150-G012	3/330	YBB-30K4-1300-G012	3/324	YBBS-30K2-1290-P012	3/336
YBB-30K2-0250-G012	3/330	YBB-30K4-1400-G012	3/324	YBBS-30K2-1450-P012	3/336
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YBB-30K2-0500-G012	3/330	YBB-30K4-1700-G012	3/325	YCA-50K4-3400-G012	3/342
YBB-30K2-0700-G012	3/330	YBB-30K4-1800-G012	3/325	YCA-50K4-3500-G012	3/342
YBB-30K2-0800-G012	3/330	YBES-30K4-0170-P012	3/348	YCA-50K4-4300-G012	3/342
YBB-30K2-0900-G012	3/330	YBES-30K4-0330-P012	3/348	YCA-50K4-4400-G012	3/342
YBB-30K2-1000-G012	3/330	YBES-30K4-0490-P012	3/348	YCA-50K4-5300-G012	3/342
YBB-30K2-1200-G012	3/330	YBES-30K4-0650-P012	3/348	YCA-50K4-6300-G012	3/342

SAFETY PRODUCTS

LIGHT CURTAINS AND SAFETY SENSORS

<i>Part reference</i>	<i>Chapter/page</i>
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YSM-22K4-MEAN-P012	3/353
YSM-22K4-MEFN-C050	3/353
YSM-22K4-MEFN-P012	3/353
YSM-22K4-MSAN-C050	3/353
YSM-22K4-MSAN-P012	3/353
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YSM-22K4-MSFN-P012	3/353
YSM-78K4-MEAN-C050	3/353
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YSR-22K4-RESE-C050	3/357
YSR-22K4-RESE-P012	3/357
YSR-22K4-TESE-C050	3/357
YSR-22K4-TESE-P012	3/357

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SAFETY PRODUCTS

SAFETY ACCESSORIES

YRB-4EML-241

SAFETY PRODUCT	Y		MIRROR / DEVICE COLUMN	
PRODUCT TYPE			Device (protection) column	F00
Basic relay	RB		Single mirror column	M11
Light curtain column	XC		3 mirror column	M23
Laser alignment tool	XL		4 mirror column	M24
Mounting brackets	XW		STANDARD ACCESSORIES	000
Filter	XF		RELAY	
Spacer	XS		2 channels, type 4, width 22.5 mm	31S
ADDITIONAL INFORMATION			2 channels, type 4, width 45 mm	242
Relay (YRB)				
Standard functions, 3 NO, 1NC contacts	4EML			
Muting functions, 3 NO contacts	0330			
Column (YXC)				
Column height in mm (e.g. 1060 mm)	1060			
Laser alignment tool (YXL)				
Standard <1 mW (class 2)	0001			
Filter (YXF)				
Standard filter	0001			
Spacer (YXS)				
For YSM-22 series	2200			
For YSM-78 series	7800			
Mounting brackets (YXW)				
Top/bottom brackets (YBB/YCA)	0001			
Sliding T-nuts (YBB/YCA)	0003			
Top/bottom brackets (YBBS/YBES)	0005			
Side brackets (YBBS/YBES)	0006			
Side/end brackets (YBBS/YBES)	0007			

Part reference Chapter/page

YRB-4EML-31S	3/361
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YXC-1060-M11	3/367
YXC-1360-F00	3/366
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YXC-1660-F00	3/366
YXC-1960-F00	3/366
YXC-1660-M11	3/367
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YXF-0001-000	3/364
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YXW-0001-000	3/362
YXW-0003-000	3/362
YXW-0005-000	3/363
YXW-0006-000	3/363
YXW-0007-000	3/363