

# Safetinex

## Safety light curtains and access control barriers



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Finger protection Type 4

Hand protection Type 4

Access control Type 4

Hand protection Type 2 **NEW**

Safety relays

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# INTRODUCTION

## CONTRINEX

- ✓ Technology leading manufacturer of inductive and photoelectric sensors as well as Safety and RFID systems
- ✓ World market leader for miniature sensors, sensors with long operating distance and devices for particularly demanding operating conditions
- ✓ Represented in over 60 countries worldwide, headquarters in Switzerland
- ✓ Production sites in Switzerland, Hungary (since 1995), China (since 2003) and Brazil (since 2009)
- ✓ 14 own subsidiaries in all major markets
- ✓ More than 500 employees worldwide



Contrinex Headquarters, Switzerland

## SAFETINEX SAFETY SYSTEMS

The Safetinex product line produced by Contrinex offers high-quality safeguarding solutions for both personnel and machinery. The range comprises highly sensitive Type-4 devices for finger, hand and access protection in various lengths.

The safety portfolio now also comprises a complete range of hand protection devices in various lengths for Type 2, category 2, PL c, SIL 1 applications.

Safetinex 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 Safetinex 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 and SIL 1 according to IEC 61508. All Safetinex products have successfully obtained the highly rated TÜV certification.

## ACTIVE OPTOELECTRONIC PROTECTIVE DEVICES (AOPD)

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.

# SAFEGUARDING FUNCTION

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). 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.

# OPERATING PRINCIPLE

The Safetinex YBB 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.

Safetinex 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.

# APPLICATION AREAS

The Safetinex YBB range is 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. Safetinex 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, Safetinex 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, SIL 1) offer cost effective and safe solutions.







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**FINGER PROTECTION TYPE 4**

12-17

**HAND PROTECTION TYPE 4**

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**ACCESS CONTROL TYPE 4**

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**HAND PROTECTION TYPE 2**

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**SAFETY RELAYS**

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**ACCESSORIES**

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**LASER ALIGNMENT TOOL**

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**CABLE CONNECTORS**

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**DEVICE & MIRROR COLUMNS**

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CONTRINEX

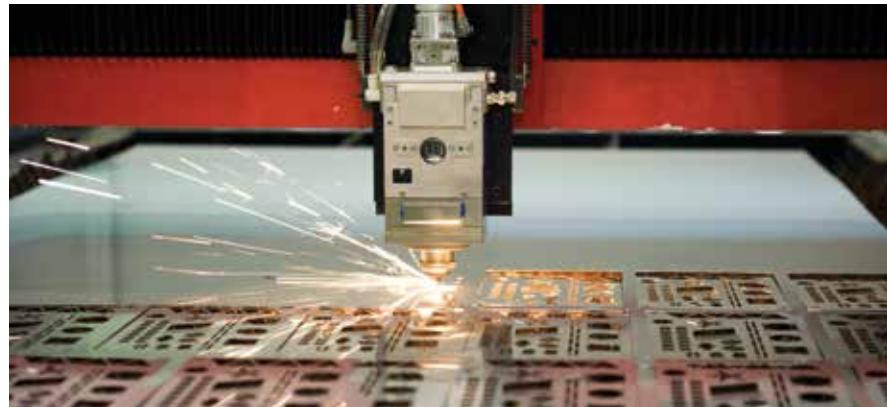
# APPLICATIONS

## LASER CUTTING MACHINES WITH MOVING TABLES

Laser cutters with fast moving tables holding the working pieces represent a risk to machine operators. A safety light curtain can be considered to prevent people from reaching into or entering the ongoing process. In case of intrusion during a potentially dangerous phase, table movement can be stopped promptly.

With a Type 4, category 4, PL e safety light curtain, the protection is very effective. In addition, a direct view onto the working process is possible with no physical barriers that complicate access to the machine or finished parts.

- ✓ Various protective heights up to 1827 mm
- ✓ Quick response time allows installation close to the working process
- ✓ Mirror columns available for multi-side protection



## PICK-AND-PLACE ROBOTS

Many pick and place tasks are performed with the help of small robots, which represent a hazard to staff. With the use of a Type 4, category 4, PL e safety light curtain, the robot arm movements can simply be stopped if an operator reaches into the process during operation. This then protects very effectively both the operator and the machinery.

- ✓ Safe solution
- ✓ Robust mechanical design
- ✓ Operating distance up to 12 m

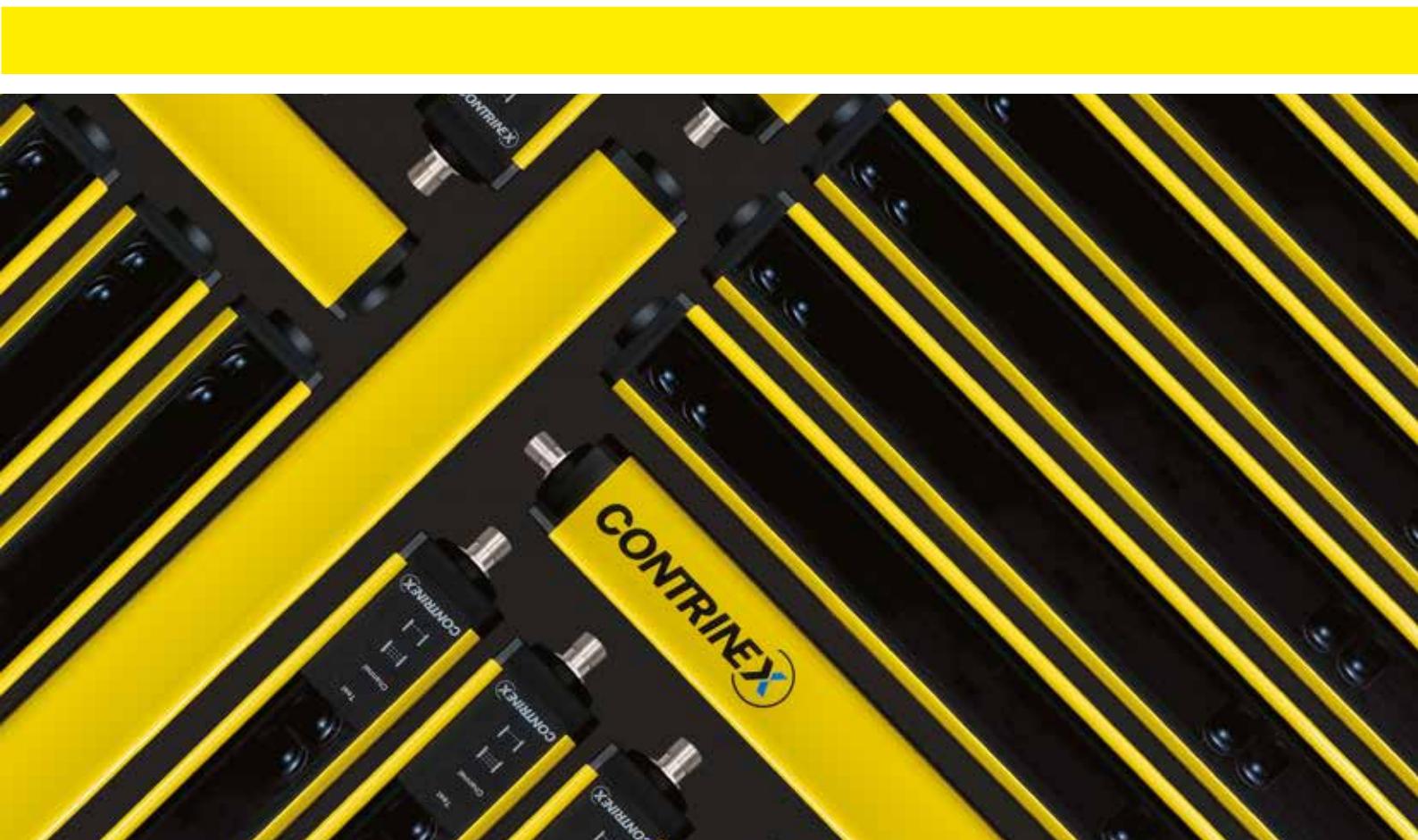
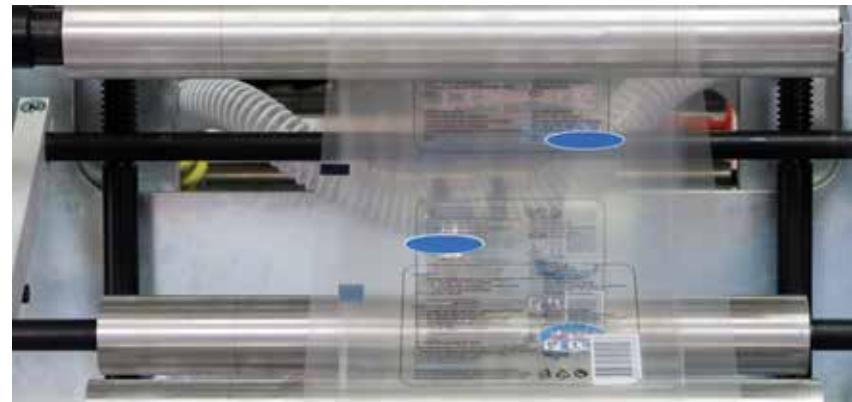


## PACKAGING MACHINES

For the operators of fully automated packaging machines, the hazard involved is mostly slight.

If the result of the risk assessment allows the use of a Type 2, category 2, PL c, SIL 1 safety light curtain, a protected machine opening can be used to interrupt the conveyor or material feeding as well as the packaging process itself as soon as an operator reaches into the protective field of the light curtain. Furthermore, the same installation can be used to detect a material jam or products that have tipped over.

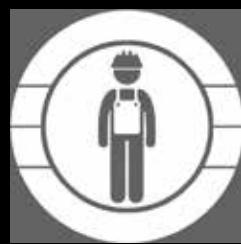
- ✓ Simple wiring with standard M12 connectors
- ✓ Protection degree IP 67
- ✓ Easy-to-use mounting brackets included



# PROGRAM OVERVIEW

| OPERATING RANGE                          | TYPE 4   | TYPE 2   |
|--|----------|----------|
| <b>FINGER PROTECTION</b>                 |          |          |
| Operating range: 0.25 ... 3.5 m          | p. 12-17 |          |
| <b>HAND PROTECTION</b>                   |          |          |
| Operating range: 0.25 ... 12 m           | p. 18-23 | p. 30-35 |
| <b>ACCESS CONTROL</b>                    |          |          |
| Operating range: 1 ... 15 or 10 ... 50 m | p. 24-29 |          |
| <b>RELAYS</b>                            |          |          |
|  | p. 36-42 |          |
| <b>ACCESSORIES</b>                       |          |          |
|  | p. 43-47 | p. 43-47 |





# TECHNOLOGY

## THE SAFETINEX PRODUCT RANGE INCLUDES:



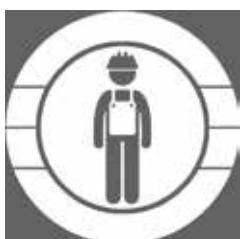
### SAFETINEX YBB TYPE 4 FOR FINGER PROTECTION

- Safety light curtain with 14 mm resolution
- Protective height from 142 mm to 1690 mm
- Operating range up to 3.5 m
- Cable version : 2, 5 and 10 m PUR-UL shielded cable
- M12 or M26 connector version
- Pigtail version (0.2 m PUR-UL shielded cable, M12 connector)



### SAFETINEX YBB TYPE 4 FOR HAND PROTECTION

- Safety light curtain with 30 mm resolution
- Protective height from 279 mm to 1827 mm
- Operating range up to 12 m
- Cable version : 2, 5 and 10 m PUR-UL shielded cable
- M12 or M26 connector version
- Pigtail version (0.2 m PUR-UL shielded cable, M12 connector)



### SAFETINEX YCA TYPE 4 FOR ACCESS CONTROL

- Safety access control barriers with beam gap of 300, 400 or 500 mm
- Protective height from 832 mm to 1532 mm
- Operating range: 1 ... 15 m / 10 ... 50 m (can be configured)
- Cable version: 2, 5 and 10 m PUR-UL shielded cable
- M12 or M26 connector version
- Pigtail version (0.2 m PUR-UL shielded cable, M12 connector)



### SAFETINEX YBB TYPE 2 FOR HAND PROTECTION

- Safety light curtain with 30 mm resolution
- Protective height from 150 mm to 1827 mm
- Operating range up to 12 m
- M12 connector

Each component is housed in a rugged aluminum profile fitted with two lateral sliding grooves.

The Safetinex product range is complemented by a range of accessories.

## AVANTAGES OF THE SAFETINEX RANGE

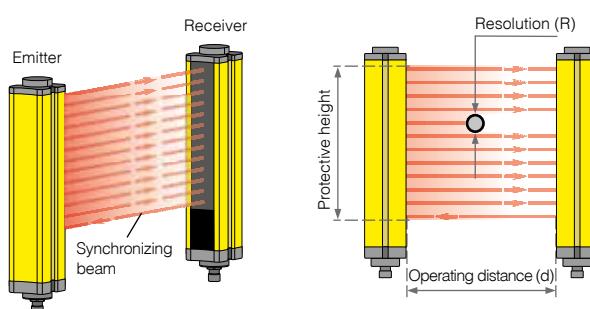
Safetinex safety devices offer the following advantages:

- Very short response time:
  - Finger protection Type 4: 5.2 to 43.6 ms
  - Hand protection Type 4: 5.2 to 24.4 ms
  - Access control Type 4: 4.2 to 6.7 ms
  - Hand protection Type 2: 14 to 66 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 Safetinex bracket
- Various connector versions to fit any application
- Robust aluminum housing coated with resistant finish
- Compact design: 42 x 48 mm housing profile
- Competitive price

Furthermore, Safetinex 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.

## OPERATING PRINCIPLE

Safetinex light curtains and access control barriers are optoelectronic safety devices 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.



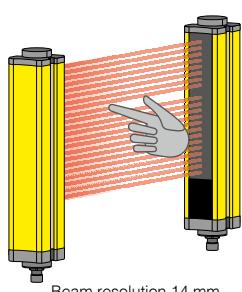
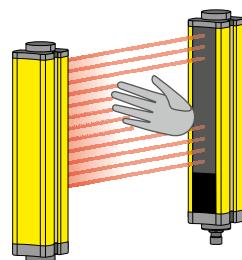
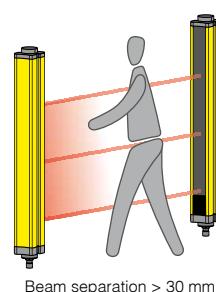
Reception of all beams activates the two independently generated semiconductor outputs (OSSDs) of the receiver unit. The interruption of one or more beams deactivates the outputs within the response time of the AOPD. Any internal fault is detected by the device's permanent self-control function and has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

## 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.

## AOPD DETECTION CAPABILITY

The light curtain or barrier detection capability (or resolution) depends on the distance between the centerlines of each beam emitted by the sender. The choice for a specific resolution depends on the part of the body which needs protection (finger, hand, whole body).





A yellow and black striped light curtain device, likely a safety sensor, is positioned in the top left corner of the image, partially cut off by the edge.

# LIGHT CURTAINS

## FINGER PROTECTION TYPE 4

### MAIN FEATURES

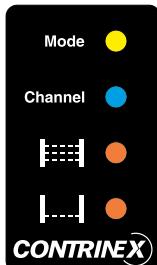
- ✓ Resolution: 14 mm
- ✓ Operating range: 0.25 ... 3.5 m
- ✓ Protective height: 142 ... 1690 mm
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ IP 65, IP 67 with operating temperatures as low as -35°C (-31°F)
- ✓ 2-channel 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 x 48 x Ht mm                |
| Resolution                                | 14 mm                          |
| Protective height                         | 142 ... 1690 mm                |
| Supply voltage range                      | 24 VDC ± 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 x 48 mm with dual fixing groove.

## ELECTRONIC PROTECTION

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

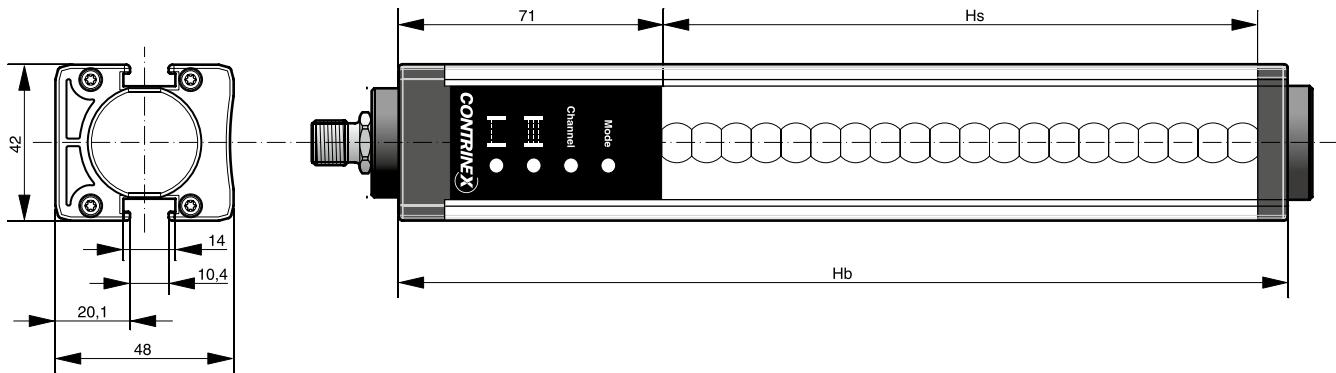
## CONNECTION

Safetinex light curtains with M12 5-pole connector are standard, M26 connector versions are also available. Versions with PUR cable, 2 m, 5 m or 10 m long, are available on request.

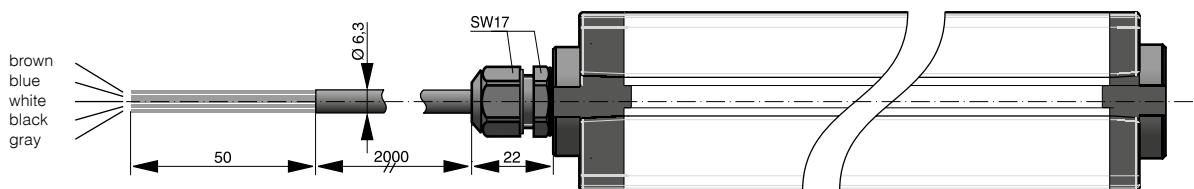
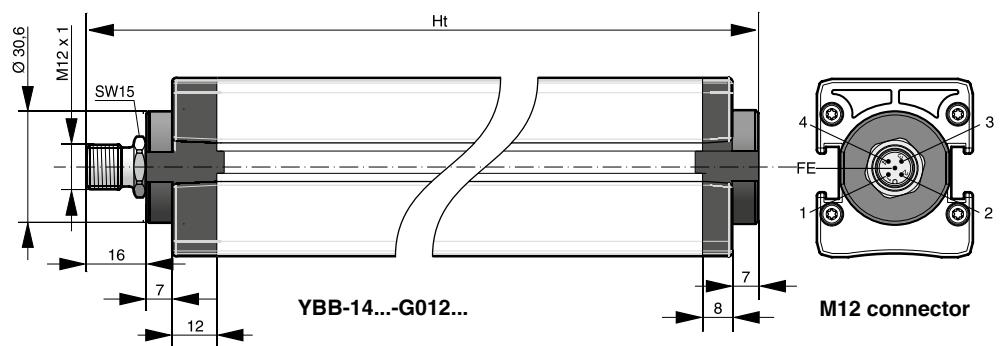
## DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website [www.contrinex.com](http://www.contrinex.com) or ordered free of charge from our distributors.

## DIMENSIONS



## PIN ASSIGNMENT



YBB-14...-D020...

Cable

| 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   | <b>YBB-14S4-0150-G012</b> | <b>YBB-14S4-0250-G012</b> | <b>YBB-14S4-0400-G012</b> |
|                      | Receiver | <b>YBB-14R4-0150-G012</b> | <b>YBB-14R4-0250-G012</b> | <b>YBB-14R4-0400-G012</b> |
| PNP / PUR-cable 2 m  | Sender   | YBB-14S4-0150-D020        | YBB-14S4-0250-D020        | YBB-14S4-0400-D020        |
|                      | Receiver | YBB-14R4-0150-D020        | YBB-14R4-0250-D020        | YBB-14R4-0400-D020        |
| PNP / PUR-cable 5 m  | Sender   | YBB-14S4-0150-D050        | YBB-14S4-0250-D050        | YBB-14S4-0400-D050        |
|                      | Receiver | YBB-14R4-0150-D050        | YBB-14R4-0250-D050        | YBB-14R4-0400-D050        |
| PNP / PUR-cable 10 m | Sender   | YBB-14S4-0150-D100        | YBB-14S4-0250-D100        | YBB-14S4-0400-D100        |
|                      | Receiver | YBB-14R4-0150-D100        | YBB-14R4-0250-D100        | YBB-14R4-0400-D100        |

## 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   | <b>YBB-14S4-1000-G012</b> | <b>YBB-14S4-1200-G012</b> | <b>YBB-14S4-1300-G012</b> |
|                      | Receiver | <b>YBB-14R4-1000-G012</b> | <b>YBB-14R4-1200-G012</b> | <b>YBB-14R4-1300-G012</b> |
| PNP / PUR-cable 2 m  | Sender   | YBB-14S4-1000-D020        | YBB-14S4-1200-D020        | YBB-14S4-1300-D020        |
|                      | Receiver | YBB-14R4-1000-D020        | YBB-14R4-1200-D020        | YBB-14R4-1300-D020        |
| PNP / PUR-cable 5 m  | Sender   | YBB-14S4-1000-D050        | YBB-14S4-1200-D050        | YBB-14S4-1300-D050        |
|                      | Receiver | YBB-14R4-1000-D050        | YBB-14R4-1200-D050        | YBB-14R4-1300-D050        |
| PNP / PUR-cable 10 m | Sender   | YBB-14S4-1000-D100        | YBB-14S4-1200-D100        | YBB-14S4-1300-D100        |
|                      | Receiver | YBB-14R4-1000-D100        | YBB-14R4-1200-D100        | YBB-14R4-1300-D100        |

\* Total height given with M12 connector. For cable version, add 6 mm.



| 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 |

| <b>YBB-14S4-0500-G012</b> | <b>YBB-14S4-0700-G012</b> | <b>YBB-14S4-0800-G012</b> | <b>YBB-14S4-0900-G012</b> |
|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>YBB-14R4-0500-G012</b> | <b>YBB-14R4-0700-G012</b> | <b>YBB-14R4-0800-G012</b> | <b>YBB-14R4-0900-G012</b> |
| YBB-14S4-0500-D020        | YBB-14S4-0700-D020        | YBB-14S4-0800-D020        | YBB-14S4-0900-D020        |
| YBB-14R4-0500-D020        | YBB-14R4-0700-D020        | YBB-14R4-0800-D020        | YBB-14R4-0900-D020        |
| YBB-14S4-0500-D050        | YBB-14S4-0700-D050        | YBB-14S4-0800-D050        | YBB-14S4-0900-D050        |
| YBB-14R4-0500-D050        | YBB-14R4-0700-D050        | YBB-14R4-0800-D050        | YBB-14R4-0900-D050        |
| YBB-14S4-0500-D100        | YBB-14S4-0700-D100        | YBB-14S4-0800-D100        | YBB-14S4-0900-D100        |
| YBB-14R4-0500-D100        | YBB-14R4-0700-D100        | YBB-14R4-0800-D100        | YBB-14R4-0900-D100        |

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

| <b>YBB-14S4-1400-G012</b> | <b>YBB-14S4-1600-G012</b> | <b>YBB-14S4-1700-G012</b> |
|---------------------------|---------------------------|---------------------------|
| <b>YBB-14R4-1400-G012</b> | <b>YBB-14R4-1600-G012</b> | <b>YBB-14R4-1700-G012</b> |
| YBB-14S4-1400-D020        | YBB-14S4-1600-D020        | YBB-14S4-1700-D020        |
| YBB-14R4-1400-D020        | YBB-14R4-1600-D020        | YBB-14R4-1700-D020        |
| YBB-14S4-1400-D050        | YBB-14S4-1600-D050        | YBB-14S4-1700-D050        |
| YBB-14R4-1400-D050        | YBB-14R4-1600-D050        | YBB-14R4-1700-D050        |
| YBB-14S4-1400-D100        | YBB-14S4-1600-D100        | YBB-14S4-1700-D100        |
| YBB-14R4-1400-D100        | YBB-14R4-1600-D100        | YBB-14R4-1700-D100        |



CONTRINEX SAFETINEX

CONTRINEX

Channel

Power

# LIGHT CURTAINS

## HAND PROTECTION TYPE 4

### MAIN FEATURES

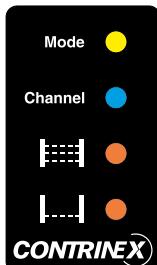
- ✓ Resolution: 30 mm
- ✓ Operating range: 0.25 ... 12 m
- ✓ Protective height: 279 ... 1827 mm
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ IP 65, IP 67 with operating temperatures as low as -35°C (-31°F)
- ✓ 2-channel selection
- ✓ 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 x 48 x Ht mm                |
| 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, PL e               |
| 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 880 nm                      |

## HOUSING

Aluminum profile 42 x 48 mm with dual fixing groove.

## ELECTRONIC PROTECTION

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

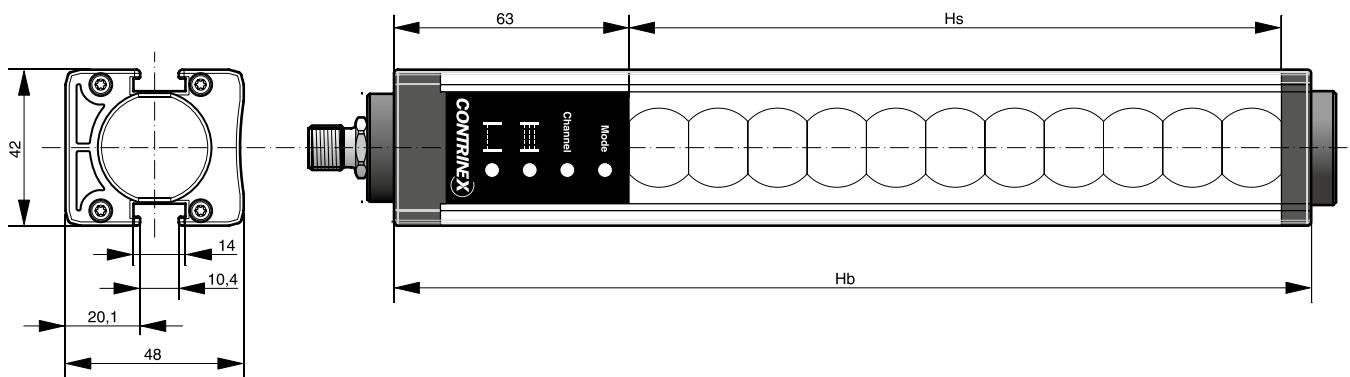
## CONNECTION

Safetinex light curtains with M12 5-pole connector are standard, M26 connector versions are also available. Versions with PUR cable, 2 m, 5 m or 10 m long, are available on request.

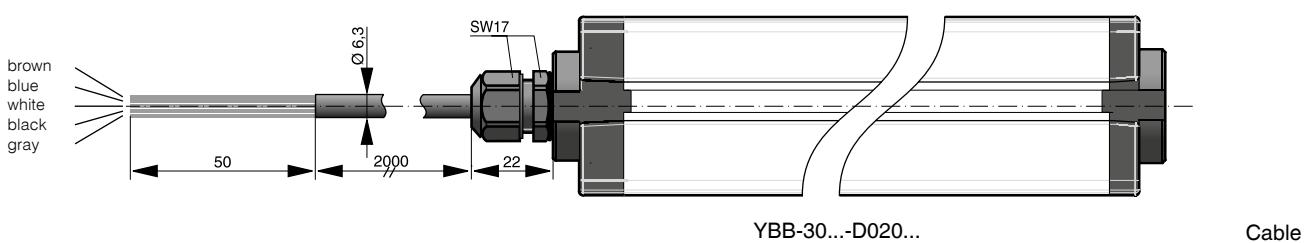
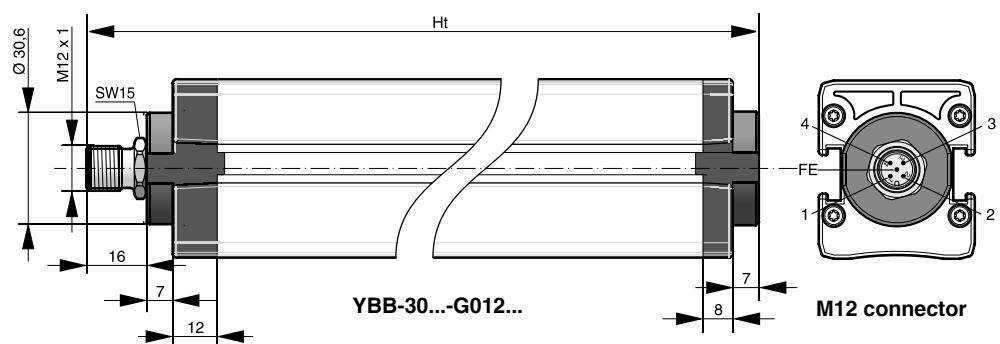
## DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website [www.contrinex.com](http://www.contrinex.com) or ordered free of charge from our distributors.

## DIMENSIONS



## PIN ASSIGNMENT



brown  
blue  
white  
black  
gray

YBB-30...-D020...

Cable

| 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   | <b>YBB-30S4-0250-G012</b> | <b>YBB-30S4-0400-G012</b> | <b>YBB-30S4-0500-G012</b> |
|                      | Receiver | <b>YBB-30R4-0250-G012</b> | <b>YBB-30R4-0400-G012</b> | <b>YBB-30R4-0500-G012</b> |
| PNP / PUR-cable 2 m  | Sender   | YBB-30S4-0250-D020        | YBB-30S4-0400-D020        | YBB-30S4-0500-D020        |
|                      | Receiver | YBB-30R4-0250-D020        | YBB-30R4-0400-D020        | YBB-30R4-0500-D020        |
| PNP / PUR-cable 5 m  | Sender   | YBB-30S4-0250-D050        | YBB-30S4-0400-D050        | YBB-30S4-0500-D050        |
|                      | Receiver | YBB-30R4-0250-D050        | YBB-30R4-0400-D050        | YBB-30R4-0500-D050        |
| PNP / PUR-cable 10 m | Sender   | YBB-30S4-0250-D100        | YBB-30S4-0400-D100        | YBB-30S4-0500-D100        |
|                      | Receiver | YBB-30R4-0250-D100        | YBB-30R4-0400-D100        | YBB-30R4-0500-D100        |

## 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   | <b>YBB-30S4-1200-G012</b> | <b>YBB-30S4-1300-G012</b> | <b>YBB-30S4-1400-G012</b> |
|                      | Receiver | <b>YBB-30R4-1200-G012</b> | <b>YBB-30R4-1300-G012</b> | <b>YBB-30R4-1400-G012</b> |
| PNP / PUR-cable 2 m  | Sender   | YBB-30S4-1200-D020        | YBB-30S4-1300-D020        | YBB-30S4-1400-D020        |
|                      | Receiver | YBB-30R4-1200-D020        | YBB-30R4-1300-D020        | YBB-30R4-1400-D020        |
| PNP / PUR-cable 5 m  | Sender   | YBB-30S4-1200-D050        | YBB-30S4-1300-D050        | YBB-30S4-1400-D050        |
|                      | Receiver | YBB-30R4-1200-D050        | YBB-30R4-1300-D050        | YBB-30R4-1400-D050        |
| PNP / PUR-cable 10 m | Sender   | YBB-30S4-1200-D100        | YBB-30S4-1300-D100        | YBB-30S4-1400-D100        |
|                      | Receiver | YBB-30R4-1200-D100        | YBB-30R4-1300-D100        | YBB-30R4-1400-D100        |

\* Total height given with M12 connector. For cable version, add 6 mm.



| 0700 | 0800 | 0900 | 1000 |
|------|------|------|------|
| 767  | 896  | 1025 | 1154 |
| 737  | 866  | 995  | 1124 |
| 666  | 795  | 924  | 1053 |
| 41   | 49   | 57   | 65   |
| 135  | 140  | 140  | 145  |
| 10   | 11.6 | 13.2 | 14.8 |

| <b>YBB-30S4-0700-G012</b> | <b>YBB-30S4-0800-G012</b> | <b>YBB-30S4-0900-G012</b> | <b>YBB-30S4-1000-G012</b> |
|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>YBB-30R4-0700-G012</b> | <b>YBB-30R4-0800-G012</b> | <b>YBB-30R4-0900-G012</b> | <b>YBB-30R4-1000-G012</b> |
| YBB-30S4-0700-D020        | YBB-30S4-0800-D020        | YBB-30S4-0900-D020        | YBB-30S4-1000-D020        |
| YBB-30R4-0700-D020        | YBB-30R4-0800-D020        | YBB-30R4-0900-D020        | YBB-30R4-1000-D020        |
| YBB-30S4-0700-D050        | YBB-30S4-0800-D050        | YBB-30S4-0900-D050        | YBB-30S4-1000-D050        |
| YBB-30R4-0700-D050        | YBB-30R4-0800-D050        | YBB-30R4-0900-D050        | YBB-30R4-1000-D050        |
| YBB-30S4-0700-D100        | YBB-30S4-0800-D100        | YBB-30S4-0900-D100        | YBB-30S4-1000-D100        |
| YBB-30R4-0700-D100        | YBB-30R4-0800-D100        | YBB-30R4-0900-D100        | YBB-30R4-1000-D100        |

| 1600 | 1700 | 1800 |
|------|------|------|
| 1670 | 1799 | 1928 |
| 1640 | 1769 | 1898 |
| 1569 | 1698 | 1827 |
| 97   | 105  | 113  |
| 160  | 165  | 170  |
| 21.2 | 22.8 | 24.4 |

| <b>YBB-30S4-1600-G012</b> | <b>YBB-30S4-1700-G012</b> | <b>YBB-30S4-1800-G012</b> |
|---------------------------|---------------------------|---------------------------|
| <b>YBB-30R4-1600-G012</b> | <b>YBB-30R4-1700-G012</b> | <b>YBB-30R4-1800-G012</b> |
| YBB-30S4-1600-D020        | YBB-30S4-1700-D020        | YBB-30S4-1800-D020        |
| YBB-30R4-1600-D020        | YBB-30R4-1700-D020        | YBB-30R4-1800-D020        |
| YBB-30S4-1600-D050        | YBB-30S4-1700-D050        | YBB-30S4-1800-D050        |
| YBB-30R4-1600-D050        | YBB-30R4-1700-D050        | YBB-30R4-1800-D050        |
| YBB-30S4-1600-D100        | YBB-30S4-1700-D100        | YBB-30S4-1800-D100        |
| YBB-30R4-1600-D100        | YBB-30R4-1700-D100        | YBB-30R4-1800-D100        |





# BARRIERS

## ACCESS CONTROL TYPE 4

### MAIN FEATURES

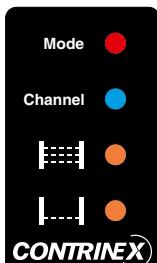
- ✓ Beam gap: 300, 400 or 500 mm (3 to 6 beams)
- ✓ Operating range: 1 ... 15 m or 10 ... 50 m (can be configured)
- ✓ Protective height: 832 ... 1532 mm
- ✓ Category 4, PL e according to EN/ISO 13849-1
- ✓ Type 4 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ IP 65, IP 67 with operating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



# ACCESS CONTROL

## LEDS

LED indicators on the YCA **sender** unit



### Mode:

Off when max. operating range 15m  
Blue when max. operating range 50m

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 x 48 x Ht mm                              |
| 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 880 nm                                    |

## HOUSING

Aluminum profile 42 x 48 mm with dual fixing groove.

## CONFIGURATION OF OPERATING RANGE

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

## ELECTRONIC PROTECTION

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

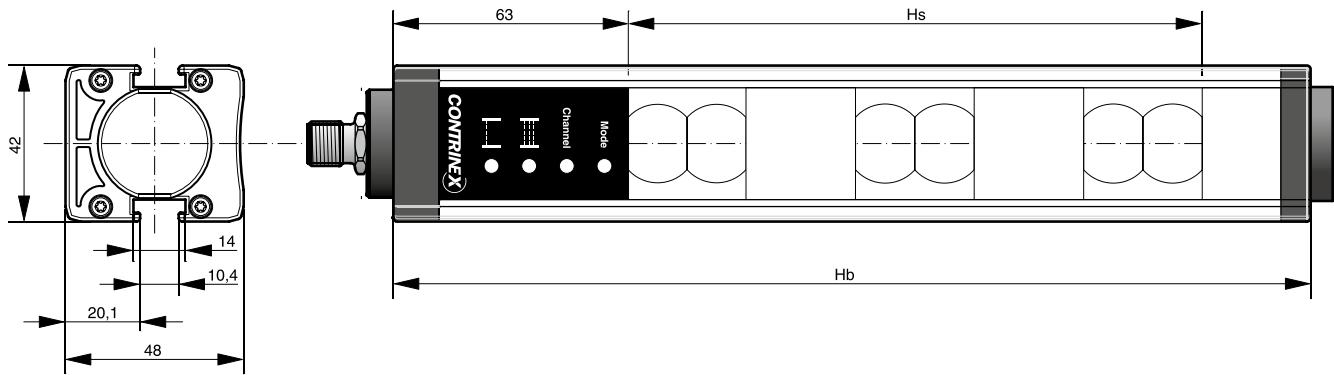
## CONNECTION

Safetinex light curtains with M12 5-pole connector are standard, M26 connector versions are also available. Versions with PUR cable, 2 m, 5 m or 10 m long, are available on request.

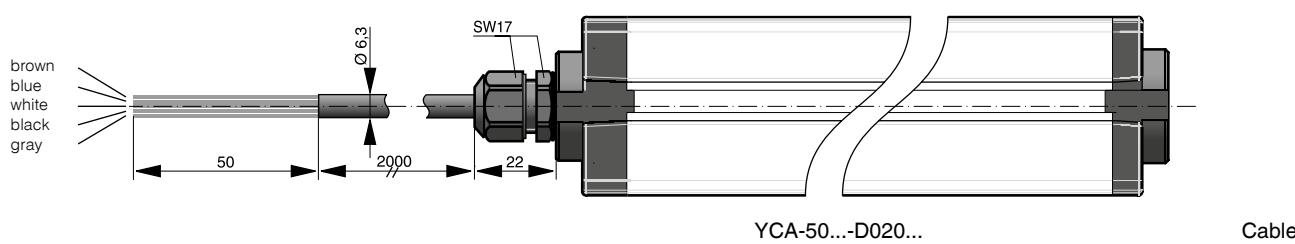
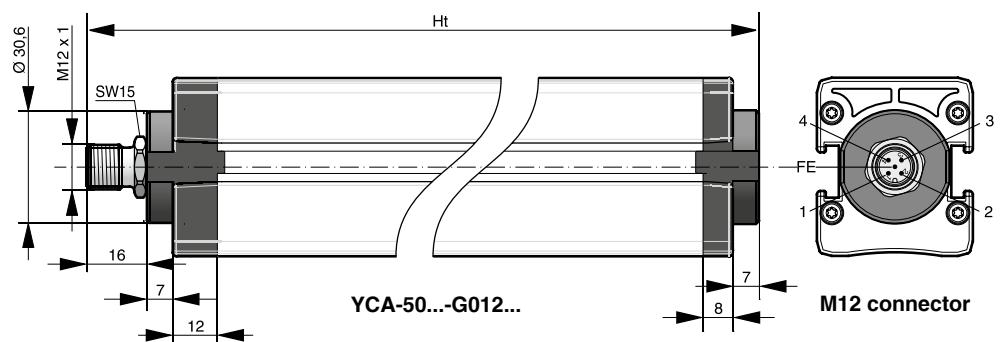
## DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website [www.contrinex.com](http://www.contrinex.com) or ordered free of charge from our distributors.

## DIMENSIONS



## PIN ASSIGNMENT



| 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<br>0 V: operating range 1 ... 15 m | 4                    | black | -                      | -     |
| Operating range selection | 0 V: operating range 10 ... 50 m<br>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

| Number of beams             | 4          | 5          | 6          |
|-----------------------------|------------|------------|------------|
| Beam gap (Bg) [mm]          | <b>300</b> | <b>300</b> | <b>300</b> |
| 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   | <b>YCA-50S4-4300-G012</b> | <b>YCA-50S4-5300-G012</b> | <b>YCA-50S4-6300-G012</b> |
|                      | Receiver | <b>YCA-50R4-4300-G012</b> | <b>YCA-50R4-5300-G012</b> | <b>YCA-50R4-6300-G012</b> |
| PNP / PUR-cable 2 m  | Sender   | YCA-50S4-4300-D020        | YCA-50S4-5300-D020        | YCA-50S4-6300-D020        |
|                      | Receiver | YCA-50R4-4300-D020        | YCA-50R4-5300-D020        | YCA-50R4-6300-D020        |
| PNP / PUR-cable 5 m  | Sender   | YCA-50S4-4300-D050        | YCA-50S4-5300-D050        | YCA-50S4-6300-D050        |
|                      | Receiver | YCA-50R4-4300-D050        | YCA-50R4-5300-D050        | YCA-50R4-6300-D050        |
| PNP / PUR-cable 10 m | Sender   | YCA-50S4-4300-D100        | YCA-50S4-5300-D100        | YCA-50S4-6300-D100        |
|                      | Receiver | YCA-50R4-4300-D100        | YCA-50R4-5300-D100        | YCA-50R4-6300-D100        |

## TYPE-SPECIFIC DATA

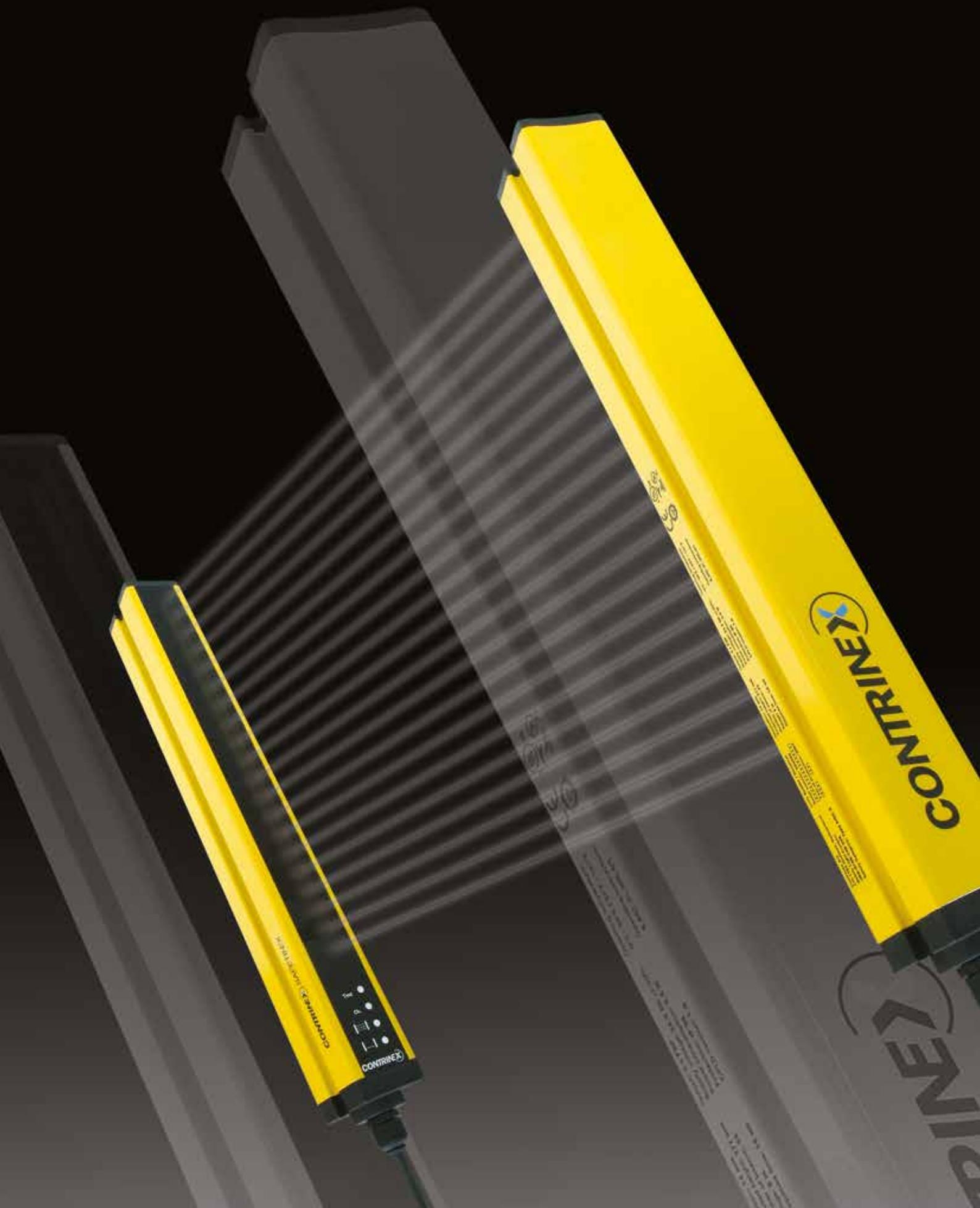
| Number of beams             | 3          | 4          | 3          |
|-----------------------------|------------|------------|------------|
| Beam gap (Bg) [mm]          | <b>400</b> | <b>400</b> | <b>500</b> |
| Total height (Ht) [mm] *    | 1025       | 1412       | 1154       |
| Housing height (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   | <b>YCA-50S4-3400-G012</b> | <b>YCA-50S4-4400-G012</b> | <b>YCA-50S4-3500-G012</b> |
|                      | Receiver | <b>YCA-50R4-3400-G012</b> | <b>YCA-50R4-4400-G012</b> | <b>YCA-50R4-3500-G012</b> |
| PNP / PUR-cable 2 m  | Sender   | YCA-50S4-3400-D020        | YCA-50S4-4400-D020        | YCA-50S4-3500-D020        |
|                      | Receiver | YCA-50R4-3400-D020        | YCA-50R4-4400-D020        | YCA-50R4-3500-D020        |
| PNP / PUR-cable 5 m  | Sender   | YCA-50S4-3400-D050        | YCA-50S4-4400-D050        | YCA-50S4-3500-D050        |
|                      | Receiver | YCA-50R4-3400-D050        | YCA-50R4-4400-D050        | YCA-50R4-3500-D050        |
| PNP / PUR-cable 10 m | Sender   | YCA-50S4-3400-D100        | YCA-50S4-4400-D100        | YCA-50S4-3500-D100        |
|                      | Receiver | YCA-50R4-3400-D100        | YCA-50R4-4400-D100        | YCA-50R4-3500-D100        |

\* Total height given with M12 connector. For cable version, add 6 mm.







# LIGHT CURTAINS

## HAND PROTECTION TYPE 2

### MAIN FEATURES

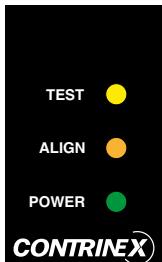
- ✓ Resolution: 30 mm
- ✓ Operating range: 0.25 ... 12 m
- ✓ Protective height: 150 ... 1827 mm
- ✓ Category 2, PL c according to EN/ISO 13849-1
- ✓ Type 2 according to IEC 61496-1 and -2
- ✓ Certified TÜV, CE and UL
- ✓ Optical synchronization
- ✓ Permanent autocontrol



# 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

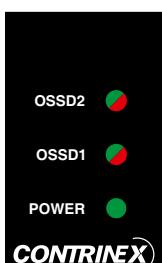
### Power:

Green when power is ON

## TECHNICAL DATA

|   |                                |
|---|--------------------------------|
| Dimensions                                | 42 x 48 x Ht mm                |
| Resolution                                | 30 mm                          |
| Protective height                         | 150 ... 1827 mm                |
| Supply voltage range                      | 24 VDC ± 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 880 nm                      |

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

## HOUSING

Aluminum profile 42 x 48 mm with dual fixing groove.

## ELECTRONIC PROTECTION

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

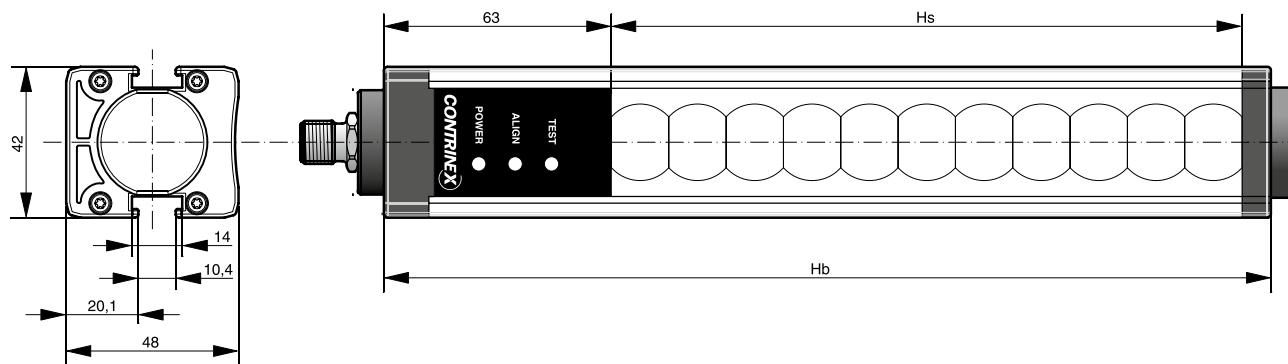
## CONNECTION

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

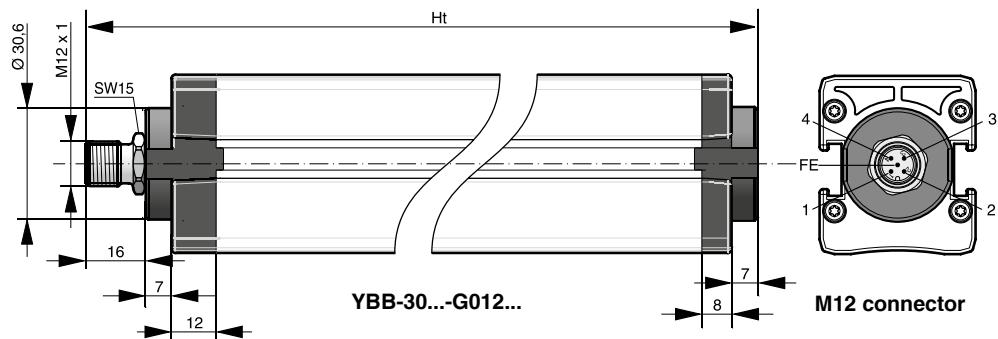
## DOCUMENTATION

Detailed data sheets for these products can be found on the Contrinex website [www.contrinex.com](http://www.contrinex.com) or ordered free of charge from our distributors.

## DIMENSIONS



## PIN ASSIGNMENT



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



# 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

|                     |          |                           |                           |                           |                           |
|---------------------|----------|---------------------------|---------------------------|---------------------------|---------------------------|
| PNP / Connector M12 | Sender   | <b>YBB-30S2-0150-G012</b> | <b>YBB-30S2-0250-G012</b> | <b>YBB-30S2-0400-G012</b> | <b>YBB-30S2-0500-G012</b> |
|                     | Receiver | <b>YBB-30R2-0150-G012</b> | <b>YBB-30R2-0250-G012</b> | <b>YBB-30R2-0400-G012</b> | <b>YBB-30R2-0500-G012</b> |

## 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

|                     |          |                           |                           |                           |                           |
|---------------------|----------|---------------------------|---------------------------|---------------------------|---------------------------|
| PNP / Connector M12 | Sender   | <b>YBB-30S2-0700-G012</b> | <b>YBB-30S2-0800-G012</b> | <b>YBB-30S2-0900-G012</b> | <b>YBB-30S2-1000-G012</b> |
|                     | Receiver | <b>YBB-30R2-0700-G012</b> | <b>YBB-30R2-0800-G012</b> | <b>YBB-30R2-0900-G012</b> | <b>YBB-30R2-1000-G012</b> |

## 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

|                     |          |                           |                           |                           |                           |
|---------------------|----------|---------------------------|---------------------------|---------------------------|---------------------------|
| PNP / Connector M12 | Sender   | <b>YBB-30S2-1200-G012</b> | <b>YBB-30S2-1300-G012</b> | <b>YBB-30S2-1400-G012</b> | <b>YBB-30S2-1600-G012</b> |
|                     | Receiver | <b>YBB-30R2-1200-G012</b> | <b>YBB-30R2-1300-G012</b> | <b>YBB-30R2-1400-G012</b> | <b>YBB-30R2-1600-G012</b> |

## TYPE-SPECIFIC DATA

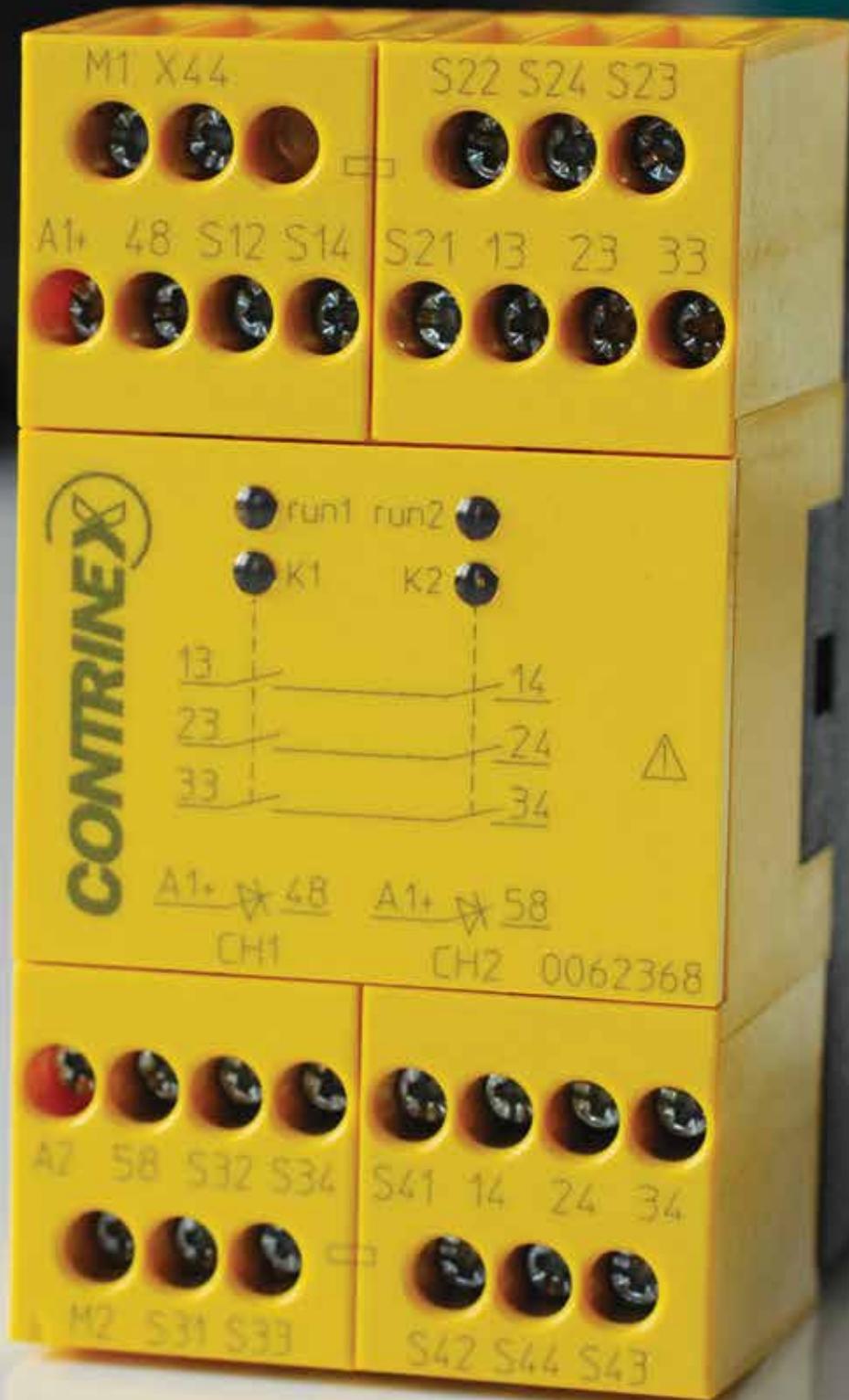
| Type                        | 1700 | 1800 |  |  |
|-----------------------------|------|------|--|--|
| Total height (Ht) [mm]*     | 1799 | 1928 |  |  |
| Housing height (Hb) [mm]    | 1769 | 1898 |  |  |
| Protective height (Hs) [mm] | 1698 | 1827 |  |  |
| Number of beams             | 105  | 113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

## PART REFERENCE

|                     |          |                           |                           |  |
|---------------------|----------|---------------------------|---------------------------|--|
| PNP / Connector M12 | Sender   | <b>YBB-30S2-1700-G012</b> | <b>YBB-30S2-1800-G012</b> |  |
|                     | Receiver | <b>YBB-30R2-1700-G012</b> | <b>YBB-30R2-1800-G012</b> |  |

\* Total height given with M12 connector





# SAFETY

# RELAYS

## MAIN FEATURES

- ✓ For safety light curtains and access control barriers with symmetric (such as Safetinex YBB and YCA models) or asymmetric outputs
- ✓ 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

## SAFETY RELAY

- ✓ 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

## MULTI-FUNCTIONAL RELAY

- ✓ Outputs: - 3 x N.O. safety contacts  
- 2 semiconductor outputs, short-circuit and overload protected
- ✓ Wire-break detection on AOPD input
- ✓ Under- and overvoltage detection and indication
- ✓ Reaction time: max. 30 ms
- ✓ LED indicators for RUN operation, channel 1/2
- ✓ 45 mm wide, DIN-rail-mountable housing

# RELAY



**YRB-0131-241**

## 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)

## TECHNICAL DATA

### INPUT

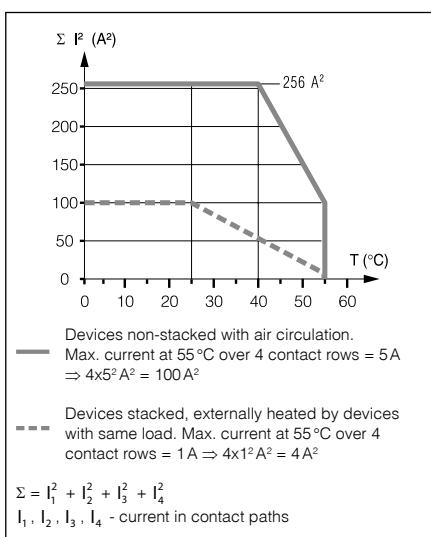
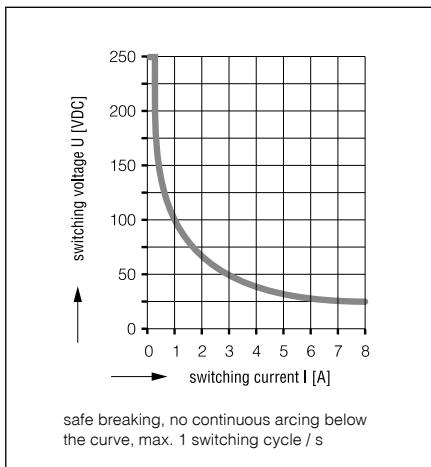
|  |                   |
|--|-------------------|
| Nominal voltage $U_N$                            | 24 VDC            |
| Voltage range                                    | 0.9 ... 1.1 $U_N$ |
| Nominal consumption                              | DC approx. 1.7 W  |
| Min. off-time                                    | 250 ms            |
| Control voltage on S11 at $U_N$                  | 22.5 VDC          |
| Control current typ. over S12, S22               | 35 mA at $U_N$    |
| Min. voltage on S12, S22 when relay is activated | 21 VDC            |
| Short-circuit protection                         | Internal PTC      |
| Overvoltage protection                           | Internal VDR      |

### OUTPUT

|  |   |                                 |
|--|---|---------------------------------|
| Contacts   | 3 N.O. safety contacts<br>1 N.C. contact <b>WARNING! N.C. contact can only be used for monitoring</b> |                                 |
| Operating delay (typ.) at $U_N$ :                  | manual restart<br>automatic restart   |                                 |
| Release delay (typ.) at $U_N$ :                    | disconnecting supply<br>disconnecting S12, S22  |                                 |
| Contact type                                       | positively driven   |                                 |
| Nominal output voltage                             | 250 VAC (DC: see Diagram 1)   |                                 |
| Switching of low loads<br>(contact 5 $\mu$ Au)     | $\geq$ 100 mV<br>$\geq$ 1 mA  |                                 |
| Thermal current $I_{th}$                           | max. 8 A per contact (see Diagram 2)  |                                 |
| Switching capacity (according to IEC/EN 60947-5-1) |   |                                 |
| to AC 15:  | N.O. contacts   | 3 A / 230 VAC                   |
|  | N.C. contacts   | 2 A / 230 VAC                   |
| to DC 13:  | N.O. contacts   | 4 A / 24 VDC                    |
|  | N.C. contacts   | 4 A / 24 VDC                    |
| to DC 13:  | N.O. contacts   | 8 A / 24 VDC $> 25 \times 10^3$ |
|  |   | ON: 0.4 s      OFF: 9.6 s       |

### GENERAL DATA

|  |                                      |                         |
|--|--------------------------------------|-------------------------|
| Electrical contact life at 5 A, 230 VAC $\cos \varphi = 1$ | > $1.5 \times 10^5$ switching cycles |                         |
| Permissible operating frequency                            | max. 1200 operating cycles/h         |                         |
| Short-circuit strength:                                    | max. fuse rating                     | IEC/EN 60947-5-1        |
|  | line circuit breaker                 |                         |
| Ambient temperature range                                  | -15 ... +55 °C (+5 ... +130 °F)      |                         |
| EMC  | according to IEC/EN 61000-4-2 to 5   |                         |
| Degree of protection:                                      | Housing                              | IP 40      IEC/EN 60529 |
|  | Terminals                            | IP 20      IEC/EN 60529 |
| Wire connection  | according to DIN 46228-1/-2/-3/-4    |                         |
| Housing material   | thermoplastic, meets UL 94V-0        |                         |
| Mounting   | on DIN rail                          | IEC/EN 60715            |
| Weight   | 220 g                                |                         |
| Housing dimensions (W x H x D)                             | 22.5 x 90 x 118 mm                   |                         |

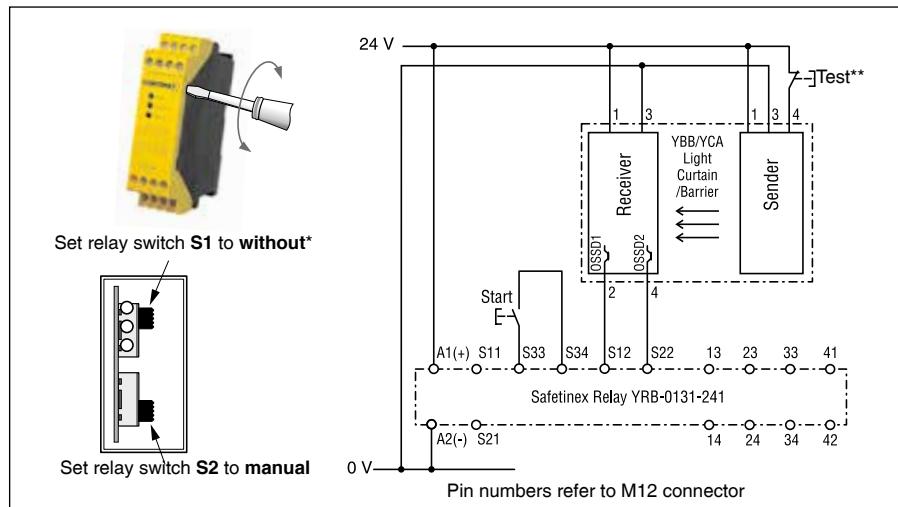


## PART REFERENCE

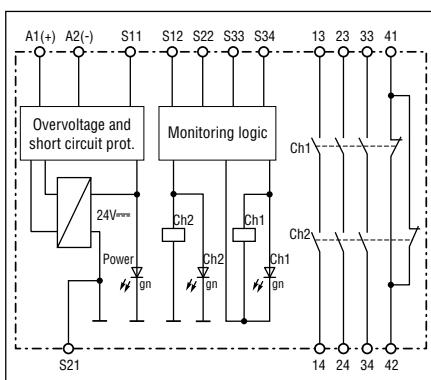
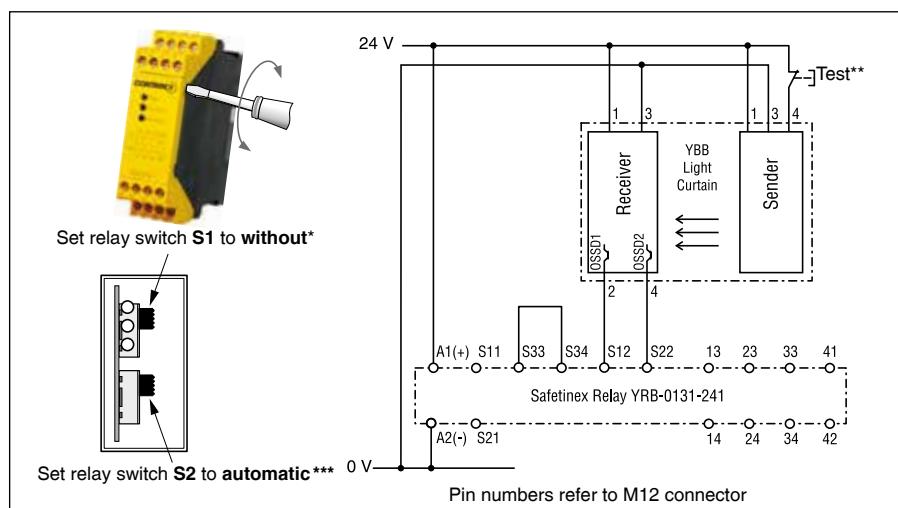
Safety relay

YRB-0131-241

### MANUAL RESTART MODE (Channel 1)



### AUTOMATIC RESTART MODE (Channel 1)



\* Position of switch S1:

- With symmetric outputs on light curtains or access control barriers (such as Safetinex YBB and YCA models), set switch S1 to "without".
- With asymmetric outputs on light curtains or access control barriers, set switch S1 to "with".

\*\* Test button is only applicable for YBB models.

\*\*\* Automatic restart is **not allowed** for YCA access control devices.

# MULTI-FUNCTIONAL RELAY



**YRB-0330-242**

## APPLICATION AREA

- The following operation types can be selected by means of a rotary switch:
  - **Protective operation**, e.g. light curtains
  - **Protective operation with muting**, e.g. conveyor belts
    - Setting of various signal cycles of muting sensors
    - Setting of max. permissible muting time
    - Override function by means of start button
  - **Stepping operation**, e.g. presses
    - 1, 2 or 3 cycles
    - Number of cycles can be set by means of key switch
- Suitable for connection of type 4 AOPDs or type 2 AOPDs according to IEC/EN 61496-1, cross-circuit monitoring in AOPDs
- Connection of max.
  - 3 2-channel AOPDs, or
  - 2 2-channel AOPDs and 2 1-channel muting sensors, or
  - 1 2-channel AOPD and 4 1-channel muting sensors, or
  - 2 2-channel AOPDs and key switch for cycle switching
  - additionally: start button and machine contact with line-fault detection

## TECHNICAL DATA

### INPUT

|  |  |
|--|--|
| Nominal voltage $U_N$                    | 24 VDC   |
| Voltage range at max. 5 % ripple content | 0.85 ... 1.15 $U_N$                            |
| Nominal consumption                      | max. 170 mA (no load on semiconductor outputs) |
| Control voltage on                       | 23 VDC at $U_N$                                |
| S21, S23, S31, S33, S41, S43, 48, 58     |  |
| Control current on                       | 4.5 mA each at $U_N$                           |
| S12, S14, S22, S24, S32, S34, S42, S44   |  |
| Min. voltage on                          | 16 VDC   |
| S12, S14, S22, S24, S32, S34, S42, S44   |  |
| Device protection                        | Internal by means of PTC                       |
| Min. current on M1, M2                   | 25 mA (lamp active)                            |

### OUTPUT

|                                   |  |
|-----------------------------------|--|
| Contacts                          | 3 x N.O.   |
| Contact type                      | Relay, positively driven   |
| Operating delay (typ. at $U_N$ ): |  |
| Manual start                      | max. 50 ms   |
| Automatic start                   | max. 1.5 s   |
| Automatic restart                 | max. 55 ms   |
| Release delay (reaction time)     | max. 30 ms<br>(max. 50 ms when error on AOPD and only 1 input channel of AOPD off) |
| Nominal output voltage            | 250 VAC<br>DC: see limit curve for arc-free operation                              |
| Switching of low loads            | $\geq 100$ mV  |
| Thermal current $I_{th}$          | 5 A  |
| Switching capacity                |  |
| to AC 15                          | 3 A / 230 VAC      IEC/EN 60947-5-1  |
| to DC 13 at 0.1 Hz                | 8 A / 24 VDC      IEC/EN 60947-5-1   |

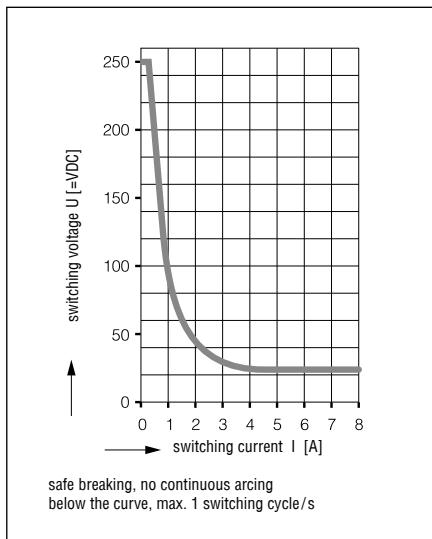


Länna, S-142 50 SKOGÅS  
Stockholm, Sweden

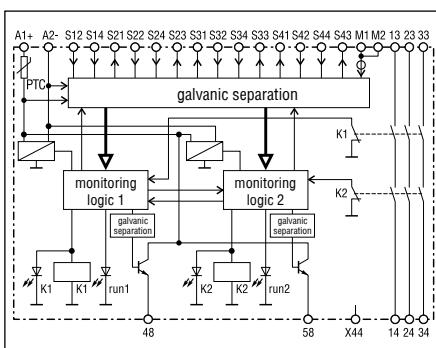
Ordertel 08-771 00 04  
Orderfax 08-771 62 00

Växel 08-771 02 20  
Teknisk 08-771 35 80

Email info@hemomatik.se  
Internet www.hemomatik.se



Limit curve for arc-free operation



Block diagram

## SEMICONDUCTOR OUTPUTS

Output (terminals 48 and 58)

Nominal output voltage

Transistor outputs, plus switching

24 VDC, max. 100 mA continuous current,  
max. 400 mA for 0.5s internal short-circuit, over-  
temperature and overload protection

## GENERAL DATA

Electrical life

to AC 15 at 2 A, AC 230 V

$10^5$  switching cycles IEC/EN 60947-5-1

Permissible operating frequency

max. 1200 switching cycles/h

Short-circuit strength:

max. fuse rating

line circuit breaker

6 A gL

IEC/EN 60947-5-1

C 8 A

$10 \times 10^6$  switching cycles

0 ... +50 °C (+32 ... +122 °F)

Mechanical life

4 kV / 2 IEC/EN 60664-1

Temperature range

Clearance and creepage distance:

Nominal impulse voltage /

Pollution degree

EMC:

Electrostatic discharge (ESD)

8 kV (contact discharge) IEC/EN 61000-4-2  
(according to test degree 3)

HF irradiation

10 V / m IEC/EN 61000-4-3

Fast transients:

- on power supply wires A1 - A2

- on signal and control wires

Surge voltage:

- between power supply wires

- between wire and ground

- HF-wire guided

Interference suppression

Degree of protection:

Housing

IP 40 IEC/EN 60529

Terminals

IP 20 IEC/EN 60529

Housing

Thermoplastic polymer with V0 behavior acc. to UL  
Subject 94

Vibration resistance according to IEC/EN 61496-1

Amplitude 0.35 mm

Frequency 10 ... 55 Hz IEC/EN 60068-2-6

Shock resistance:

Acceleration

10 g

Impulse length

16 ms

Number of shocks

1000 per axis on three axes

Climatic resistance

0 / 050 / 04 IEC/EN 60068-1

Terminals

EN 50005

Wire connection

according to DIN 46228-1/-2/-3/-4

Wire fixing

M3.5 captive plus-minus terminal screws

Box terminal with wire protection

Mounting DIN rail

IEC/EN 60715

Weight

320 g

Dimensions (W x H x D)

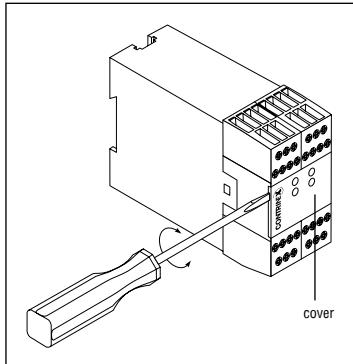
45 x 84 x 118 mm

## PART REFERENCE

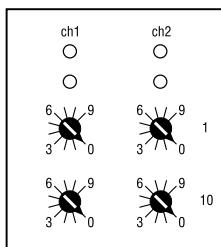
Multi-functional safety relay

YRB-0330-242

# APPLICATION EXAMPLES



Device setting



Inside view

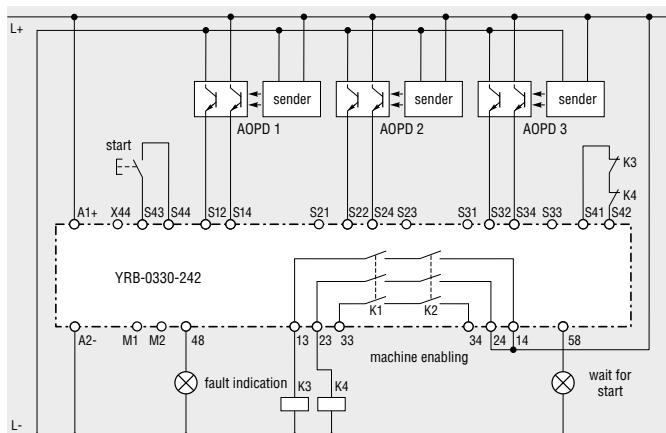


Diagram 1: Protective operation with 3 AOPDs, manual or automatic start, setting with feedback input

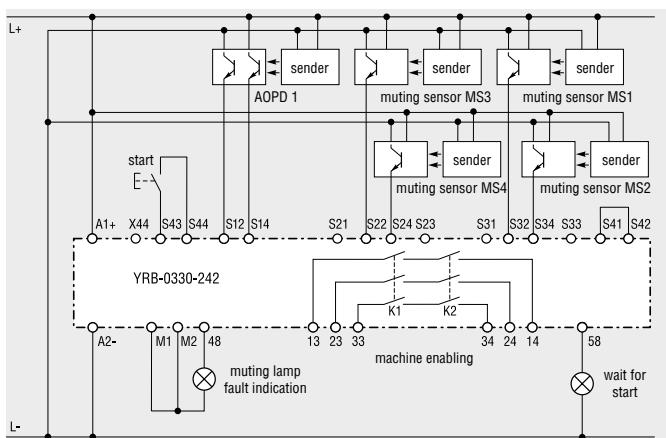


Diagram 2: Protective operation with muting, 4 muting sensors, 1 AOPD

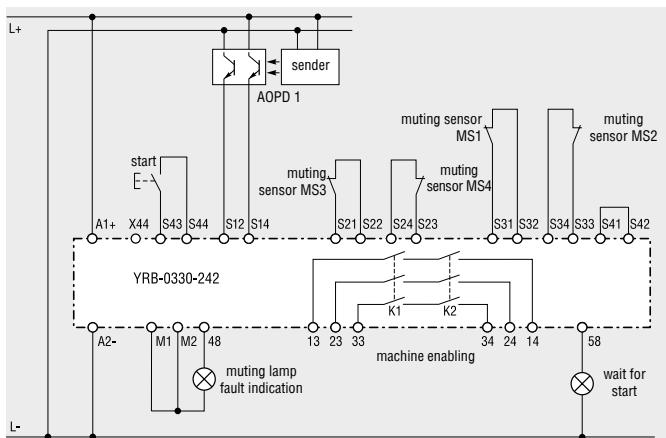


Diagram 3: Protective operation with muting via 4 muting-sensor contacts

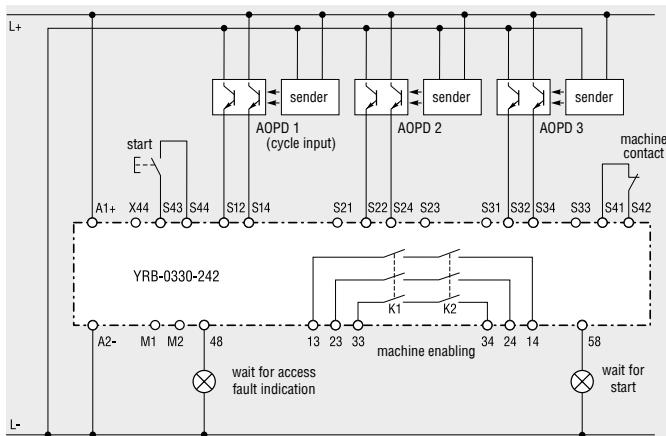
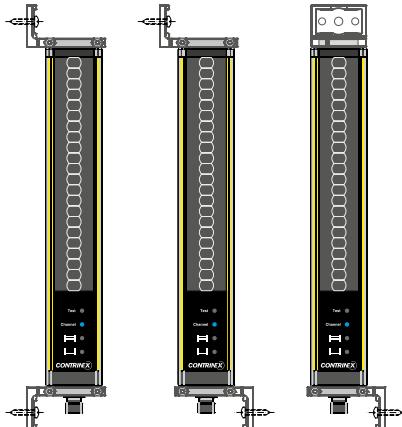


Diagram 4: Stepping operation with 3 AOPDs

# ACCESSORIES



## TOP/BOTTOM MOUNTING BRACKET

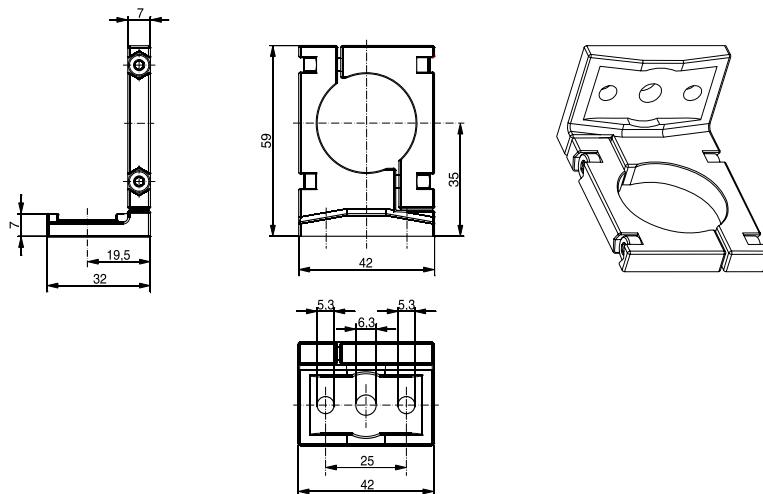
- Synthetic swivel mounting bracket

- Easy-to-use

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

## DIMENSIONS

### TOP/BOTTOM MOUNTING BRACKETS



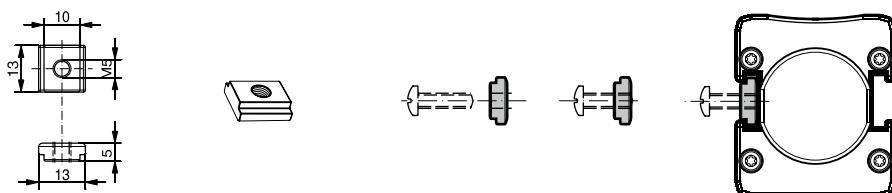
## PART REFERENCE

Top/bottom mounting brackets, synthetic (pair)

YXW-0001-000

## DIMENSIONS

### SLIDING T-NUTS FOR SIDE MOUNTING

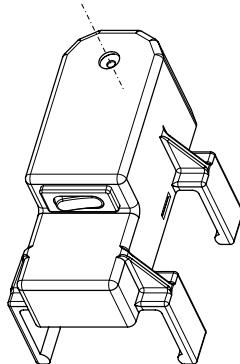


## PART REFERENCE

T-nuts for side mounting, metal (pair)

YXW-0003-000

# LASER ALIGNMENT TOOL



## MAIN FEATURES

- Easily clippable onto Safetinex 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 10 m      | < 10 mm                |
| Range                             | ≤ 50 m                 |
| Housing material                  | PA with 30% fiberglass |
| Dimensions                        | 80 x 48 x 56 mm        |

## PART REFERENCE

|                      |              |
|----------------------|--------------|
| Laser alignment tool | YXL-0001-000 |
|----------------------|--------------|



LASER ALIGNMENT TOOL



# CABLE CONNECTORS

## M12 4-POLE

### TECHNICAL DATA

|                      |   |
|----------------------|---|
| Rated voltage        | 250 V AC/DC max.  |
| Rated current        | 4 A max.  |
| Sleeve material      | PUR non-inflammable IEC 332-2, halogen-free<br>DIN VDE 0472 part 815, silicone-free, RoHS |
| Wire structure       | 4 x 0.34 mm <sup>2</sup>  |
| Wire insulation      | PP, halogen-free  |
| Outer cable diameter | Ø 4.7 mm  |
| Temperature range    | -25 ... +80 °C (-13 ... +175 °F)  |
| Degree of protection | IP 67   |
| Certification        | UL E227529, section 4   |

### PART REFERENCE

|                                   |              |
|-----------------------------------|--------------|
| PUR, unshielded, S12 4-pole, 2 m  | S12-4FUG-020 |
| PUR, unshielded, S12 4-pole, 5 m  | S12-4FUG-050 |
| PUR, unshielded, S12 4-pole, 10 m | S12-4FUG-100 |

## M12 4-POLE WITH V4A (AISI 316L/DIN 1.4404) CONNECTORS (FOOD SAFE)

### TECHNICAL DATA

|                      |                                 |
|----------------------|---------------------------------|
| Rated voltage        | 32 V AC/DC max.                 |
| Rated current        | 4 A max.                        |
| Sleeve material      | PVC                             |
| Wire structure       | 4 x 0.34 mm <sup>2</sup>        |
| Wire insulation      | PVC                             |
| Outer cable diameter | Ø 5.2 mm ± 5 %                  |
| Temperature range    | -5 ... +70 °C (+23 ... +158 °F) |
| Degree of protection | IP 67, IP 68 & IP 69K           |
| Certification        | CSA, Ecolab                     |

### PART REFERENCE

|                                   |                   |
|-----------------------------------|-------------------|
| PVC, unshielded, S12 4-pole, 2 m  | S12-4FVG-020-NNLN |
| PVC, unshielded, S12 4-pole, 5 m  | S12-4FVG-050-NNLN |
| PVC, unshielded, S12 4-pole, 10 m | S12-4FVG-100-NNLN |

## M12 5-POLE SHIELDED

### TECHNICAL DATA

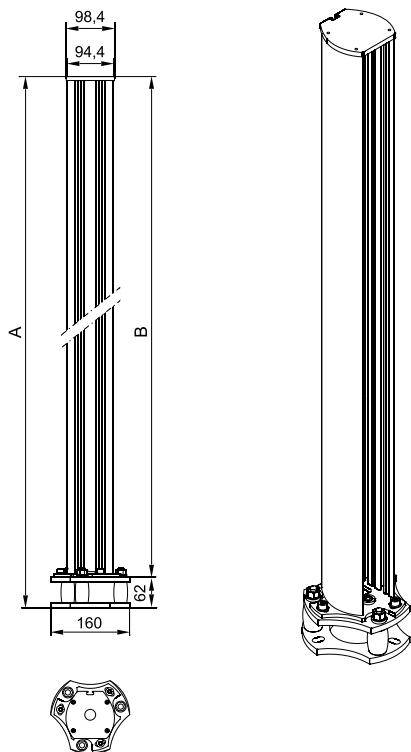
|                            |                                  |
|----------------------------|----------------------------------|
| Rated voltage              | 60 V AC/DC max.                  |
| Rated current              | 4 A max. per contact             |
| Electromagnetic protection | shielded                         |
| Sleeve material            | PUR                              |
| Wire structure             | 5 x 0.34 mm <sup>2</sup>         |
| Wire insulation            | PP                               |
| Outer cable diameter       | Ø 6.3 mm ± 5 %                   |
| Temperature range          | -25 ... +80 °C (-13 ... +175 °F) |
| Degree of protection       | IP 67                            |
| Certification              | UL, CSA                          |

### PART REFERENCE

|                                 |                   |
|---------------------------------|-------------------|
| PUR, shielded, S12 5-pole, 2 m  | S12-5FUG-020-NBSN |
| PUR, shielded, S12 5-pole, 5 m  | S12-5FUG-050-NBSN |
| PUR, shielded, S12 5-pole, 10 m | S12-5FUG-100-NBSN |

# 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 Safetinex YBB and YCA models

## TECHNICAL DATA

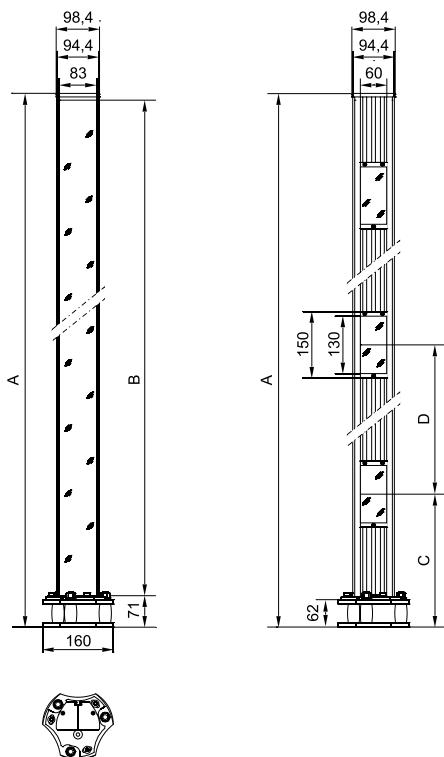
|         |   |
|---------|---|
| Housing | Aluminum profile and steel floor plates |
| Surface | Powder-varnished, yellow (RAL 1021)     |

## PART REFERENCE

| Device column       | Total height (A) [mm] | Housing height (B) [mm] | Suitable for  |
|---------------------|-----------------------|-------------------------|---|
| <b>YXC-1060-F00</b> | 1060                  | 974                     | YBB-####-0150-###<br>to YBB-####-0800-###   |
| <b>YXC-1360-F00</b> | 1360                  | 1274                    | YBB-####-0900-###,<br>YBB-####-1000-###,<br>YCA-####-3400-###,<br>YCA-####-4300-###                         |
| <b>YXC-1660-F00</b> | 1660                  | 1574                    | YBB-####-1200-###<br>to YBB-####-1400-###,<br>YCA-####-3500-###,<br>YCA-####-5300-###,<br>YCA-####-4400-### |
| <b>YXC-1960-F00</b> | 1960                  | 1874                    | YBB-####-1600-###,<br>YBB-####-1700-###,<br>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/M24, on the other hand, feature 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] |
|----------------------|-----------------------|------------------------|---------------------|-----------------------|-------------------|-----------------------------|
| <b>YXC-1060-M11</b>  | 1060                  | 974                    | <b>YXC-1360-M23</b> | 1360                  | 2 x 400           | 300                         |
| <b>YXC-1360-M11</b>  | 1360                  | 1274                   | <b>YXC-1360-M24</b> | 1360                  | 3 x 300           | 300                         |
| <b>YXC-1660-M11</b>  | 1660                  | 1574                   |                     |                       |                   |                             |
| <b>YXC-1960-M11</b>  | 1960                  | 1874                   |                     |                       |                   |                             |



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**HEADQUARTERS**

**CONTRINEX AG** Industrial Electronics  
route André Piller 50 - PO Box - CH 1762 Givisiez - Switzerland  
**Tel:** +41 26 460 46 46 - **Fax:** +41 26 460 46 40  
**Internet:** [www.contrinex.com](http://www.contrinex.com) - **E-mail:** [info@contrinex.com](mailto:info@contrinex.com)



[www.contrinex.com](http://www.contrinex.com)



**HEMOMATIK**

Länna, S-142 50 SKOGÅS

**Ordertel** 08-771 00 04 **Växel** 08-771 02 20  
**Orderfax** 08-771 62 00 **Teknisk** 08-771 35 80

Email [info@hemomatik.se](mailto:info@hemomatik.se)  
Internet [www.hemomatik.se](http://www.hemomatik.se)