

CUBIC MINIATURE PHOTOELECTRIC SENSORS

KEY ADVANTAGES

C23 series

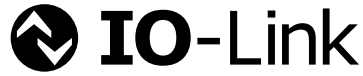
- ✓ Complete series, 20 mm x 30 mm x 10 mm
- ✓ Long sensing ranges
- ✓ Special optics for excellent background suppression characteristics
- ✓ Through-beam type with sensing range up to 30,000 mm, cross-talk immunity and alignment aid
- ✓ IO-Link on all PNP sensors

C23 Distance measuring sensors

- ✓ IP 69K housing, 20 mm x 34 mm x 12 mm
- ✓ Two distance measurement ranges: 20...80 mm and 30...200 mm
- ✓ High precision and repeatability
- ✓ Settable analog range for optimum distance measurement
- ✓ Adjustable digital output for window of acceptance

RANGE OVERVIEW	Distance mm	Diffuse	Reflex	Through-beam	Background suppression	Analog	Distance
CUBIC MINIATURE	600 / 1200	p. 225-226					
	2000 / 4000		p. 227-228				
	6000 / 12,000			p. 229			
	200				p. 223-224		
	10 ... 100					p. 223	
	300				p. 217		
	1500	p. 218					
	8000		p. 219				
	30,000				p. 219		
	20...80/30...200						p. 221

OVERVIEW



HOUSING SIZE

OPERATING PRINCIPLE

SENSING RANGE MM

	C23
Housing material	ABS / PMMA
Degree of protection	IP 67
Supply voltage range	10 ... 30 VDC
Ambient temperature range	-25 ... +65 °C / -13 ... +149 °F
Output current (total both outputs)	≤ 100 mA
Output voltage drop	≤ 2 V
Max. ambient light halogen	5000 Lux
Max. ambient light sun	10,000 Lux
Compatible mounting bracket	See pages 242-244

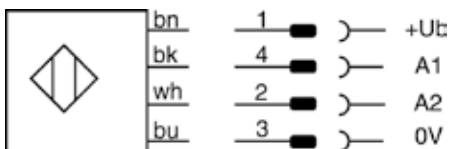
PHOTOELECTRIC

WIRING DIAGRAMS

PNP/NPN Light-ON / Dark-ON / Emitter



PNP/NPN Light-ON / Dark-ON



DATA

Standard target
No-load supply current
Light source
Switching frequency (normal mode)
Setup
PNP Light-ON / IO-Link
PNP Light-ON/Dark-ON / IO-Link
PNP Light-ON/IO-Link+stability alarm
NPN Light-ON
NPN Light-ON / Dark-ON
NPN Light-ON + stability alarm
Other types available

CUBIC MINIATURE

□ 20 X 30 X 10

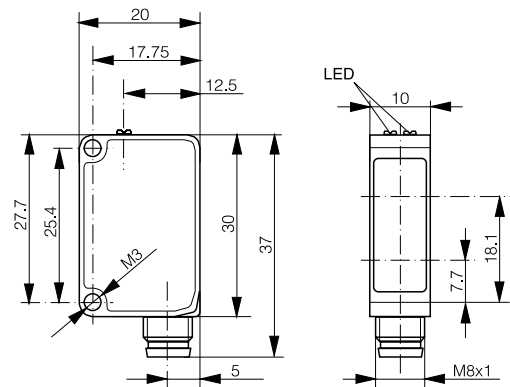
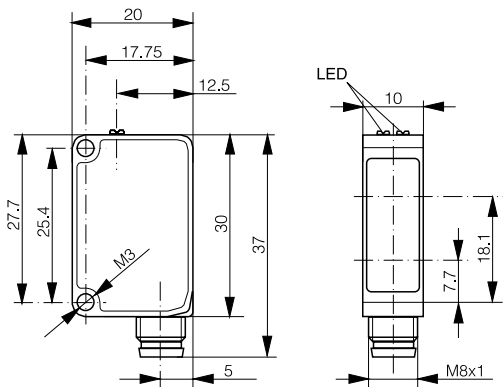
DIFFUSE SENSOR WITH
BACKGROUND SUPPRESSION

10 ... 300

□ 20 X 30 X 10

DIFFUSE SENSOR WITH
BACKGROUND SUPPRESSION

10 ... 300



100 x 100 mm white

≤ 30 mA

Red pinpoint LED 640 nm

≤ 1000 Hz

Potentiometer

LHR-C23PA-PMS-403

LHR-C23PA-PMS-603

LHR-C23PA-PMS-60C

LHR-C23PA-PMS-301

LHR-C23PA-PMS-101

LHR-C23PA-PMS-10A

Cable version

100 x 100 mm white

≤ 30 mA

Red pinpoint LED 640 nm

≤ 1000 Hz

Teach button

LHR-C23PA-TMS-403

LHR-C23PA-TMS-603

LHR-C23PA-TMS-60C

LHR-C23PA-TMS-301

LHR-C23PA-TMS-101

LHR-C23PA-TMS-10A

Cable version

Inductive

Photoelectric

Ultrasonic

Capacitive

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CUBIC MINIATURE

HOUSING SIZE

□ 20 X 30 X 10

□ 20 X 30 X 10

OPERATING PRINCIPLE

DIFFUSE SENSOR

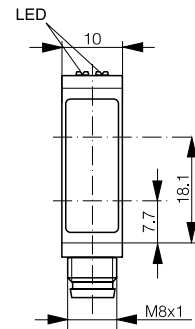
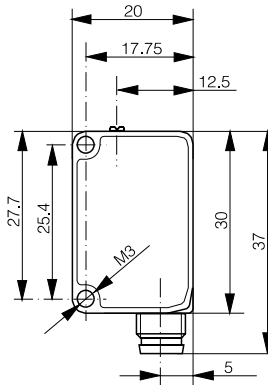
DIFFUSE SENSOR

SENSING RANGE MM

1500

1500

PHOTOELECTRIC



DATA		
Standard target	200 x 200 mm white	200 x 200 mm white
No-load supply current	≤ 15 mA	≤ 15 mA
Light source	Red LED 630 nm	Red LED 630 nm
Switching frequency (normal mode)	≤ 1500 Hz	≤ 1500 Hz
Setup	Potentiometer	IO-Link
Emitter / IO Link		LTR-C23PA-NMS-403
PNP Light-ON / IO-Link	LTR-C23PA-PMS-403	
PNP Light-ON/Dark-ON / IO-Link	LTR-C23PA-PMS-603	
PNP Light-ON/IO-Link+stability alarm	LTR-C23PA-PMS-60C	
NPN Light-ON	LTR-C23PA-PMS-301	
NPN Light-ON / Dark-ON	LTR-C23PA-PMS-101	
NPN Light-ON + stability alarm	LTR-C23PA-PMS-104	
Other types available	Cable version	Cable version

CUBIC MINIATURE

□ 20 X 30 X 10

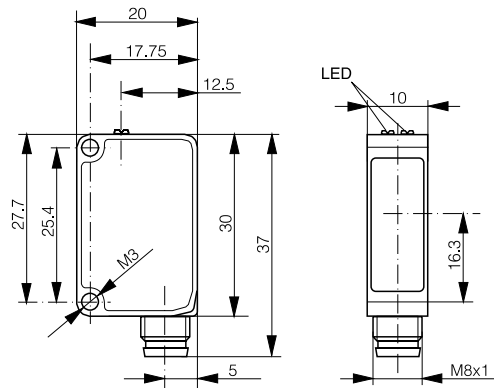
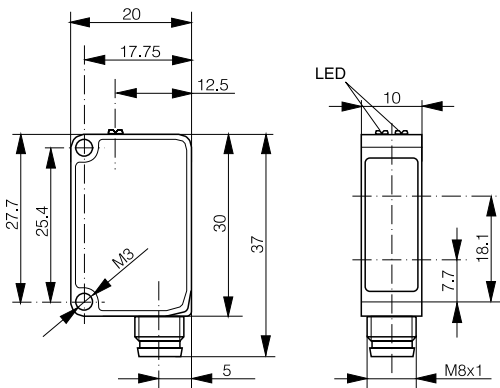
REFLEX SENSOR

8000

□ 20 X 30 X 10

THROUGH-BEAM SENSOR

30,000



LXR-0000-084 (see page 247)

≤ 15 mA

Red LED 630 nm

≤ 1500 Hz

IO-Link

LRR-C23PA-NMS-404

LRR-C23PA-NMS-603

LRR-C23PA-NMS-60D

LRR-C23PA-NMS-302

LRR-C23PA-NMS-101

LRR-C23PA-NMS-10B

Cable version

≤ 9 mA (receiver) / ≤ 7 mA (emitter)

Red LED 630 nm

≤ 1000 Hz

IO-Link

LLR-C23PA-NMS-400 (emitter)

LLR-C23PA-NMS-404

LLR-C23PA-NMS-603

LLR-C23PA-NMS-60D

LLR-C23PA-NMS-302

LLR-C23PA-NMS-101

LLR-C23PA-NMS-10B

Alignment aid, cable version

Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

Connectivity

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OVERVIEW

	C23 DISTANCE
Housing material	ABS / PMMA
Degree of protection	IP 67 / IP 69K
Supply voltage range	13 ... 30 VDC
Ambient temperature range	-20 ... +60 °C / -4 ... +140 °F
No-load supply current	≤ 30
Output current	≤ 100
Output voltage drop	≤ 2 V
Switching frequency	≤ 1000 Hz
Response time (analog)	0.4 msec (80 mm) / 3.4 msec (200 mm)
Setup	Teach button
Compatible mounting bracket	See pages 242-244

HOUSING SIZE

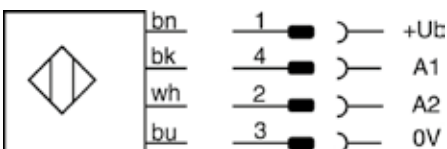
OPERATING PRINCIPLE

MEASUREMENT RANGE MM

PHOTOELECTRIC

WIRING DIAGRAM

PNP/NPN Light-ON/Dark-ON + Analog 1 ... 10V



DATA

Light source

Light spot size

Resolution

Linearity

Repeatability

PNP Light/Dark-ON+analog 1...10V

NPN Light/Dark-ON+analog 1...10V

Other types available

CUBIC MINIATURE

□ 20 X 34 X 12

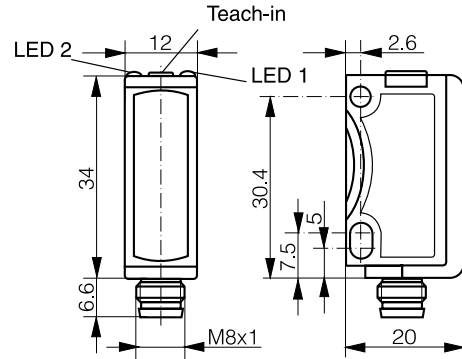
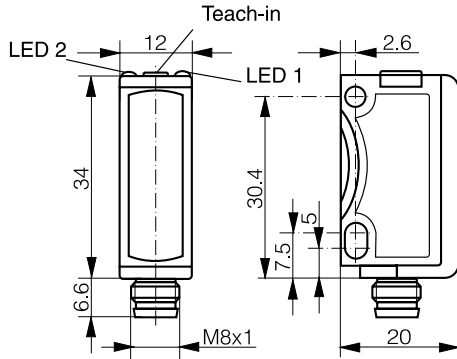
DISTANCE MEASURING SENSOR

20 ... 80

□ 20 X 34 X 12

DISTANCE MEASURING SENSOR

30 ... 200



LED red 632 nm

5 mm at 50 mm

0.12 mm

+/- 0.4 mm

≤ 0.4 mm

DTR-C23PB-TMS-139

DTR-C23PB-TMS-129

LED red 632 nm

7 mm at 60 mm

0.68 mm

+/- 2 mm

≤ 1 mm

DTR-C23PB-TLS-139

DTR-C23PB-TLS-129

Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

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OVERVIEW

	3#3#
Housing material	PBTP (Crastin)
Hysteresis	10 % typ.
Degree of protection	IP 67
Supply voltage range	10 ... 36 VDC / 15 ... 36 VDC (LA#-3130-119)
Ambient temperature range	-25 ... +55 °C / -13 ... +131 °F
Output current (total both outputs)	≤ 200 mA / -- (LA)
Output voltage drop	≤ 2 V / -- (LA)
Max. ambient light halogen	5000 Lux
Max. ambient light sun	10,000 Lux
Setup	Potentiometer
Compatible mounting bracket	See page 245

HOUSING SIZE MM

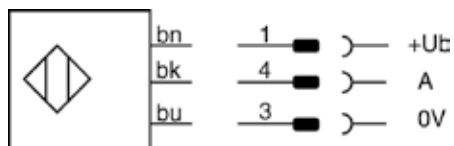
OPERATING PRINCIPLE

SENSING RANGE MM

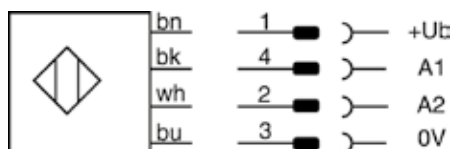
PHOTOELECTRIC

WIRING DIAGRAMS

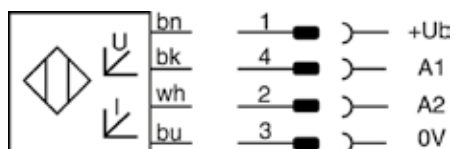
PNP/NPN Light-ON / Dark-ON / Emitter



PNP/NPN Changeover



Analog



DATA

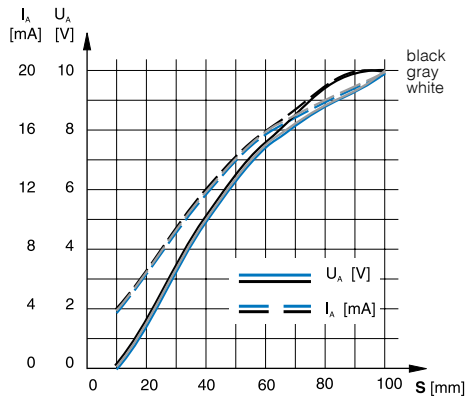
- Standard target
- No-load supply current
- Emitter
- Max. switching frequency
- Switching time
- Analog output
- PNP Changeover
- Other types available

CUBIC MINIATURE

□ 30 X 30 X 15

WITH ANALOG OUTPUT

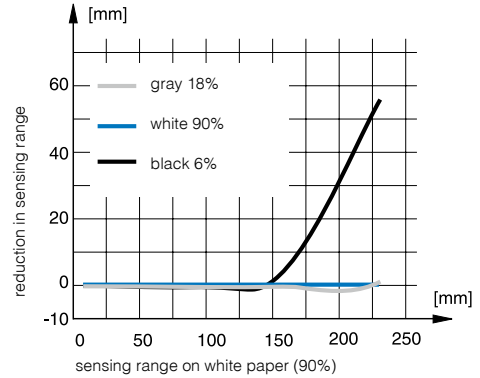
10 ... 100



□ 30 X 30 X 15

DIFFUSE SENSOR WITH
BACKGROUND SUPPRESSION

15 ... 200



Inductive

Photoelectric

Ultrasonic

Capacitive

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100 x 100 mm white

≤ 25 mA

LED red 660 nm

-

-

LAS-3130-119

Cable version

100 x 100 mm white

≤ 25 mA

LED red 660 nm

500 Hz

1 msec

LHS-3130-103

NPN Changeover

CUBIC MINIATURE

HOUSING SIZE MM

□ 30 X 30 X 15

□ 30 X 30 X 15

OPERATING PRINCIPLE

DIFFUSE SENSOR WITH
BACKGROUND SUPPRESSION

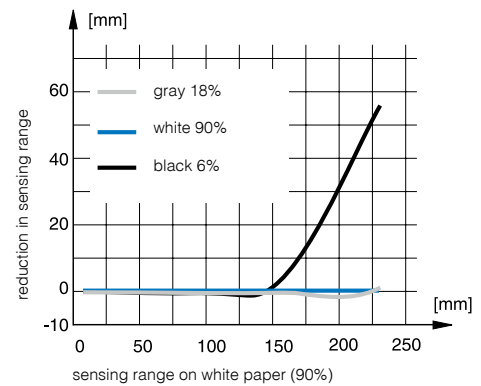
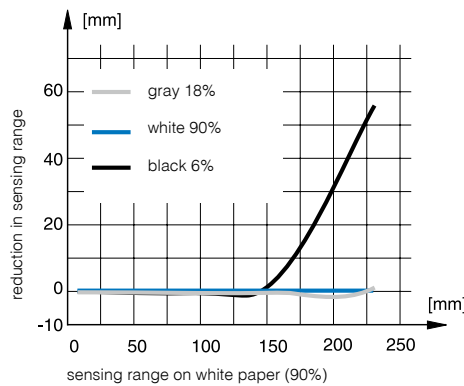
DIFFUSE SENSOR WITH
BACKGROUND SUPPRESSION

SENSING RANGE MM

15 ... 200

15 ... 200

PHOTOELECTRIC



DATA

Standard target

100 x 100 mm white

100 x 100 mm white

No-load supply current

≤ 25 mA

≤ 25 mA

Emitter

LED red 660 nm

LED red 660 nm

Max. switching frequency

500 Hz

500 Hz

Switching time

1 msec

1 msec

PNP Light-ON

LHK-3131-303

LHS-3131-303

NPN Light-ON

LHK-3131-301

LHS-3131-301

Other types available

CUBIC MINIATURE

□ 30 X 30 X 15

DIFFUSE SENSOR

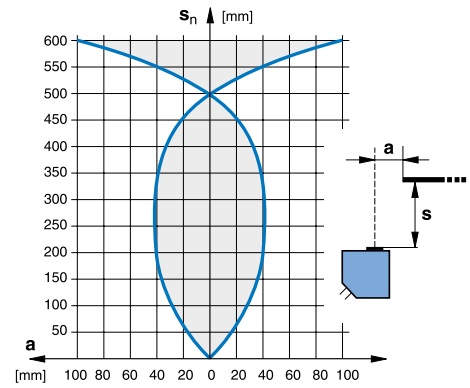
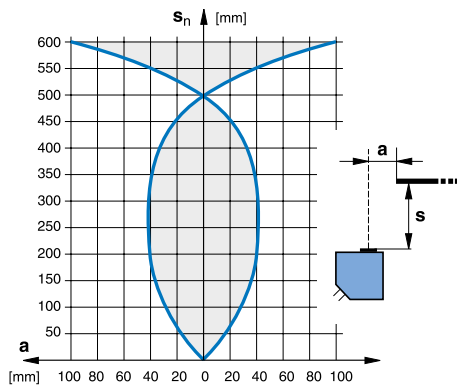
600



□ 30 X 30 X 15

DIFFUSE SENSOR

600



200 x 200 mm white

≤ 15 mA

IR LED 880 nm

1000 Hz

0.5 msec

LTS-3031-303

LTS-3031-301

200 x 200 mm white

≤ 15 mA

IR LED 880 nm

1000 Hz

0.5 msec

LTK-3031-303

LTK-3031-301

Inductive

Photoelectric

Ultrasonic

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CUBIC MINIATURE

HOUSING SIZE MM

□ 30 X 30 X 15

□ 30 X 30 X 15

OPERATING PRINCIPLE

DIFFUSE SENSOR

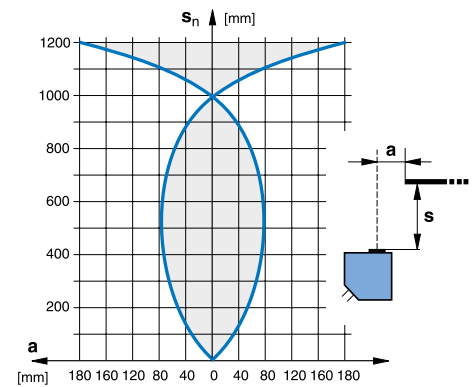
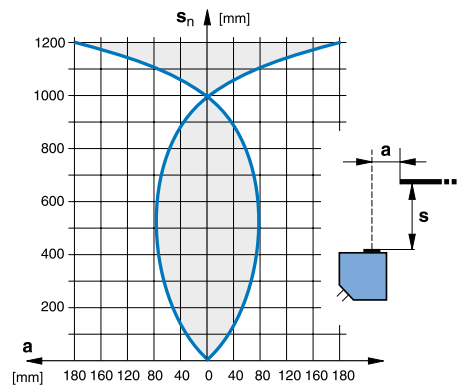
DIFFUSE SENSOR

SENSING RANGE MM

1200

1200

PHOTOELECTRIC



DATA

Standard target / Reflector type

200 x 200 mm white

200 x 200 mm white

No-load supply current

≤ 20 mA

≤ 20 mA

Emitter

IR LED 880 nm

IR LED 880 nm

Max. switching frequency

1000 Hz

1000 Hz

Switching time

0.5 msec

0.5 msec

PNP Changeover

LTS-3030-103

LTK-3030-103

NPN Changeover

LTS-3030-101

LTK-3030-101

PNP Dark-ON

Other types available

CUBIC MINIATURE

□ 30 X 30 X 15

REFLEX SENSOR

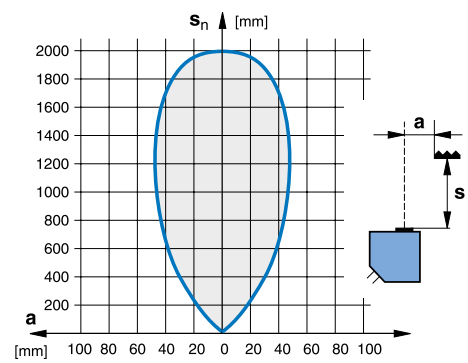
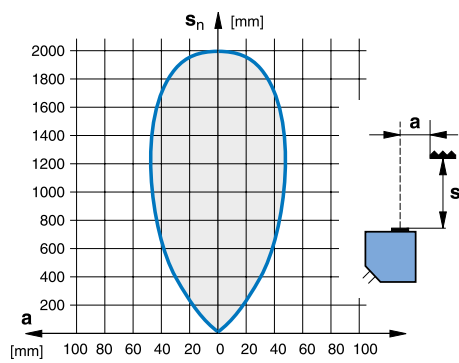
2000



□ 30 X 30 X 15

REFLEX SENSOR

2000



LXR-0000-084 (see page 247)

≤ 15 mA

LED red polarized 660 nm

1000 Hz

0.5 msec

LRS-3031-304

NPN Dark-ON

LXR-0000-084 (see page 247)

≤ 15 mA

LED red polarized 660 nm

1000 Hz

0.5 msec

LRK-3031-304

NPN Dark-ON

Inductive

Photoelectric

Ultrasonic

Capacitive

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CUBIC MINIATURE

HOUSING SIZE MM

□ 30 X 30 X 15

□ 30 X 30 X 15

OPERATING PRINCIPLE

REFLEX SENSOR

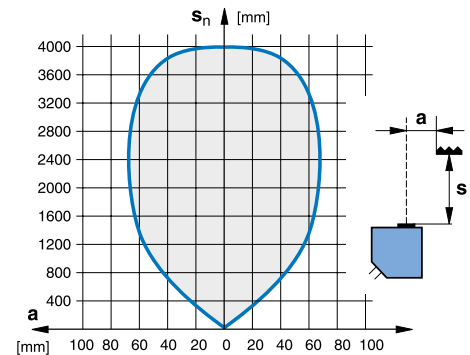
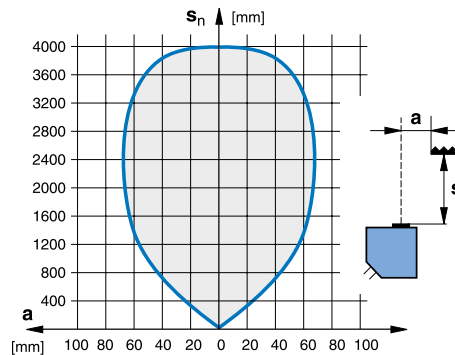
REFLEX SENSOR

SENSING RANGE MM

4000

4000

PHOTOELECTRIC



DATA

Standard target / Reflector type

LXR-0000-084 (see page 247)

LXR-0000-084 (see page 247)

No-load supply current

≤ 20 mA

≤ 20 mA

Emitter

LED red polarized 660 nm

LED red polarized 660 nm

Max. switching frequency

1000 Hz

1000 Hz

Switching time

0.5 msec

0.5 msec

Emitter

PNP Changeover

LRS-3030-103

LRK-3030-103

NPN Changeover

LRS-3030-101

LRK-3030-101

PNP Dark-ON

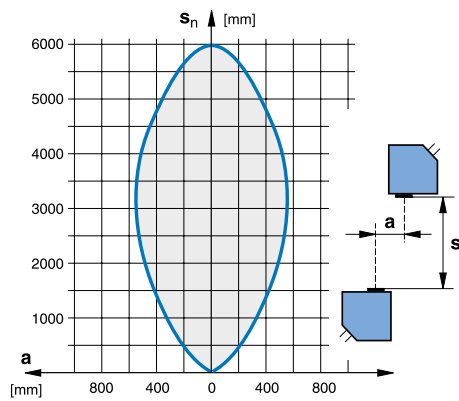
Other types available

CUBIC MINIATURE

□ 30 X 30 X 15

THROUGH-BEAM SENSOR

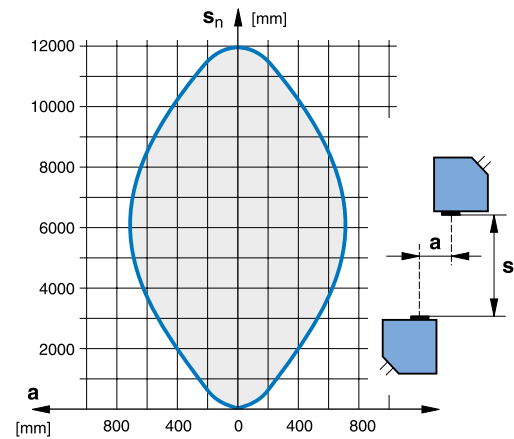
6000



□ 30 X 30 X 15

THROUGH-BEAM SENSOR

12,000



Inductive

Photoelectric

Ultrasonic

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≤ 10 mA (receiver) / ≤ 15 mA (emitter)

IR LED 880 nm

1000 Hz

0.5 msec

LLS-3031-200

LLS-3031-204 (receiver)

NPN Dark-ON

≤ 10 mA (receiver) / ≤ 15 mA (emitter)

IR LED 880 nm

1000 Hz

0.5 msec

LLS-3030-000

LLS-3030-003 (receiver)

LLS-3030-001 (receiver)



(1) OUT 1 (black)
(2) OUT 2 (white)
(3) OUT 3 (grey)

Note:
Press SET for 2...4 sec; "Tolerance" A
center "Value" LEDs are ON
Set tolerance with "↑" and "↓"; press SET.
Select Channel with "↑" and "↓"; press SET.
Repeat procedure for other channels.

CONTRINEX
FTS-4035-301

U.S. & CAN. ONLY
24 VDC (max)
100 mA (max)
NPN/NO (black)
NPN/NC (white)
PNP/NO (grey)

Note:
Press SET for 2...4 sec; "Tolerance" A
center "Value" LEDs are ON
Set tolerance with "↑" and "↓"; press SET.
Select Channel with "↑" and "↓"; press SET.
Repeat procedure for other channels.

CONTRINEX
FTS-4035-301

U.S. & CAN. ONLY
24 VDC (max)
100 mA (max)
NPN/NO (black)
NPN/NC (white)
PNP/NO (grey)

Note:
Press SET for 2...4 sec; "Tolerance" A
center "Value" LEDs are ON
Set tolerance with "↑" and "↓"; press SET.
Select Channel with "↑" and "↓"; press SET.
Repeat procedure for other channels.