

EXCELLENT VALUE FOR DEMANDING APPLICATIONS

# CUBIC SMALL

## PHOTOELECTRIC SENSORS

### KEY ADVANTAGES

- ✓ Small sensor series for peak performance
- ✓ Shock and vibration resistant due to fully vacuum potted electronics
- ✓ Ecolab tested and approved
- ✓ Sensing face of glass or coated plastic
- ✓ Fibre-optic amplifiers (blue light and high frequency)
- ✓ Color sensor

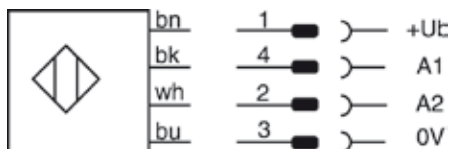
| RANGE OVERVIEW | Distance     | Diffuse | Reflex     | Through-beam | Background suppression | Color  |
|----------------|--------------|---------|------------|--------------|------------------------|--------|
| CUBIC<br>SMALL | 30 ... 40 mm |         |            |              |                        | p. 193 |
|                | 500 mm       |         |            |              | p. 187                 |        |
|                | 1200 mm      | p. 188  |            |              |                        |        |
|                | 2000 mm      | p. 183  |            |              |                        |        |
|                | 4000 mm      |         | p. 188-189 |              |                        |        |
|                | 6000 mm      |         | p. 184     |              |                        |        |
|                | 15,000 mm    |         |            | p. 184       |                        |        |
|                | 50,000 mm    |         |            | p. 189-190   |                        |        |

## OVERVIEW

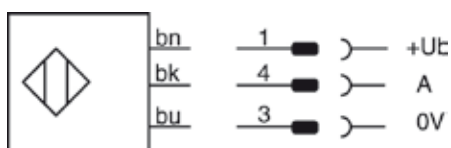
|                                        | 4040                             |
|----------------------------------------|----------------------------------|
| Housing material                       | PBTP (Crastin)                   |
| Hysteresis                             | 10 % typ.                        |
| Degree of protection                   | IP 67                            |
| Supply voltage range                   | 10 ... 36 VDC                    |
| Ambient temperature range              | -25 ... +55 °C / -13 ... +131 °F |
| Output current (total of both outputs) | ≤ 200 mA                         |
| Output voltage drop                    | ≤ 2 V                            |
| Switching frequency                    | ≤ 1000 Hz                        |
| Switching time                         | 0.5 msec                         |
| Max. ambient light halogen             | 5000 Lux                         |
| Max. ambient light sun                 | 10,000 Lux                       |
| Compatible mounting bracket            | See page 204                     |

## WIRING DIAGRAMS

### PNP/NPN Changeover



### Emitter



### HOUSING SIZE MM

### OPERATING PRINCIPLE

### SENSING RANGE MM

## PHOTOELECTRIC

### DATA

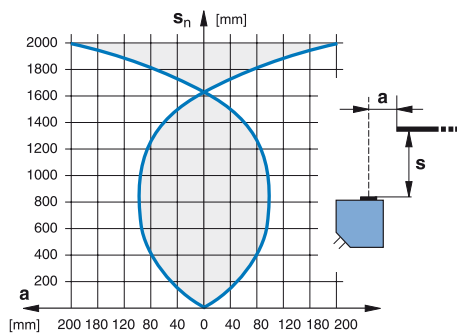
|                        |
|------------------------|
| Standard target        |
| No-load supply current |
| Emitter                |
| Setup                  |
| Description            |
| Part reference         |
| Description            |
| Part reference         |
| Description            |
| Part reference         |
| Other types available  |

# CUBIC SMALL

□ 40 X 40 X 19

DIFFUSE SENSOR

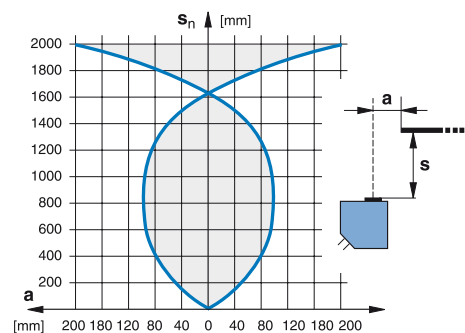
2000



□ 40 X 40 X 19

DIFFUSE SENSOR

2000



400 x 400 mm white

≤ 25 mA

IR LED 880 nm

Potentiometer

PNP Changeover

LTK-4040-103

NPN Changeover / PNP/NPN Light-ON + Excess gain



400 x 400 mm white

≤ 25 mA

IR LED 880 nm

Potentiometer

PNP Changeover

LTS-4040-103

NPN Changeover / PNP/NPN Light-ON + Excess gain

# CUBIC SMALL

HOUSING SIZE MM

□ 40 X 40 X 19

□ 40 X 40 X 19

OPERATING PRINCIPLE

REFLEX SENSOR

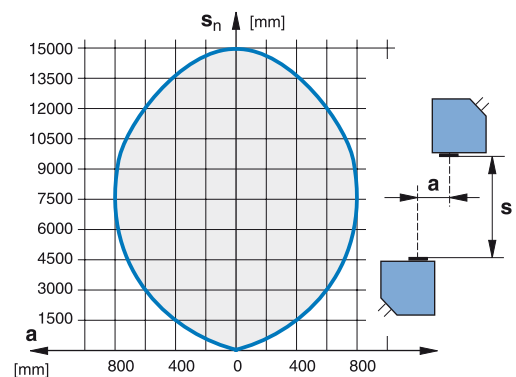
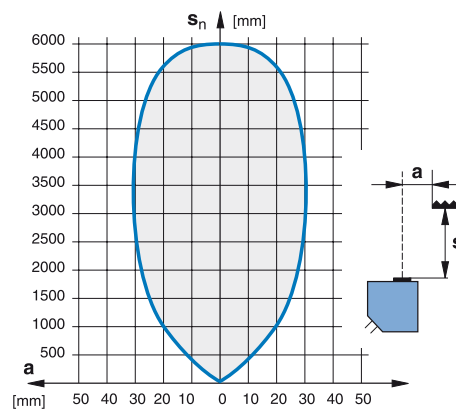
THROUGH-BEAM SENSOR

SENSING RANGE MM

6000

15,000

PHOTOELECTRIC



## DATA



Standard target / Reflector type

LXR-0000-084 (see page 205)

No-load supply current

≤ 20 mA

Emitter

LED red polarized 660 nm

Setup

Potentiometer

Description

PNP Changeover

Part reference

LRK-4040-103

Description

NPN Changeover

Part reference

LRK-4040-101

Description

Part reference

Other types available

PNP/NPN Light-ON + Excess gain



-

≤ 15 mA

IR LED 880 nm

Potentiometer

Emitter

LLS-4040-000

PNP Changeover

LLS-4040-003 (receiver)

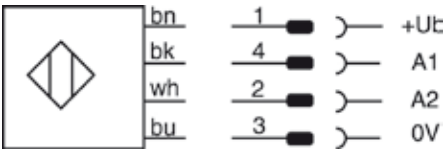
NPN Changeover / PNP/NPN Light-ON + Excess gain

# OVERVIEW

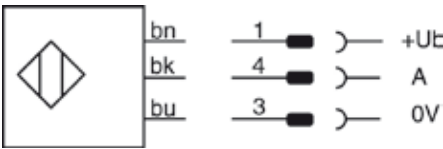
|                                        | 4#50                           |
|----------------------------------------|--------------------------------|
| Housing material                       | PBTP                           |
| Hysteresis                             | $\leq 10 \% s_n$               |
| Degree of protection                   | IP 67                          |
| Supply voltage range                   | 10 ... 36 VDC                  |
| Ambient temperature range              | -5 ... +55 °C / 23 ... +131 °F |
| Output current (total of both outputs) | $\leq 200 \text{ mA}$          |
| Output voltage drop                    | $\leq 2 \text{ V}$             |
| Max. ambient light halogen             | 5000 Lux                       |
| Max. ambient light sun                 | 10,000 Lux                     |
| Compatible mounting bracket            | See page 204                   |

# WIRING DIAGRAMS

PNP/NPN Changeover



Emitter



HOUSING SIZE MM

OPERATING PRINCIPLE

SENSING RANGE MM

PHOTOELECTRIC

## DATA

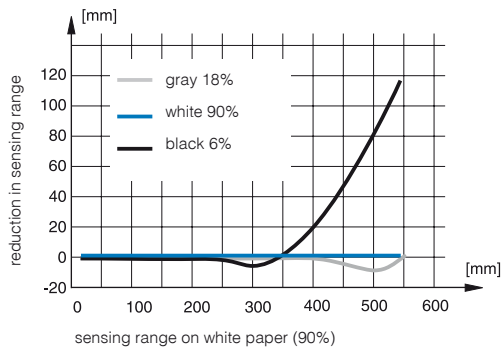
|                          |
|--------------------------|
| Standard target          |
| No-load supply current   |
| Emitter                  |
| Max. switching frequency |
| Switching time           |
| Sensing face material    |
| Setup                    |
| Description              |
| Part reference           |
| Description              |
| Part reference           |
| Description              |
| Part reference           |
| Other types available    |

# CUBIC SMALL

□ 40 X 50 X 15

**DIFFUSE SENSOR WITH  
BACKGROUND SUPPRESSION**

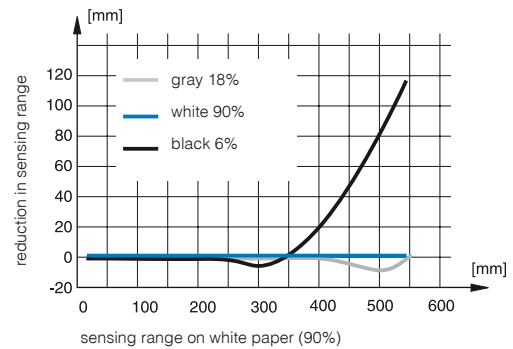
**30 ... 500**



□ 40 X 50 X 15

**DIFFUSE SENSOR WITH  
BACKGROUND SUPPRESSION**

**30 ... 500**



100 x 100 mm white

≤ 30 mA

LED red 630 nm

500 Hz

1 msec

Glass

Potentiometer

PNP Changeover

LHS-4050-103

NPN Changeover / PNP/NPN Light-ON + Excess gain



100 x 100 mm white

≤ 30 mA

LED red 630 nm

500 Hz

1 msec

Coated plastic

Potentiometer

PNP Changeover

LHS-4150-103

NPN Changeover / PNP/NPN Light-ON + Excess gain

# CUBIC SMALL

HOUSING SIZE MM

□ 40 X 50 X 15

□ 40 X 50 X 15

OPERATING PRINCIPLE

DIFFUSE SENSOR

REFLEX SENSOR

SENSING RANGE MM

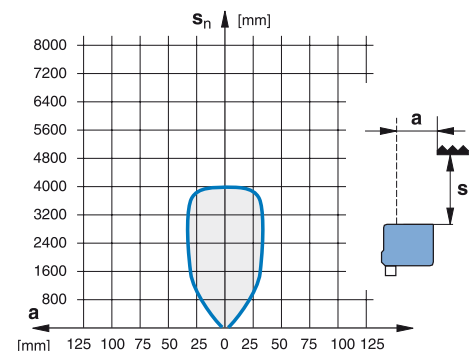
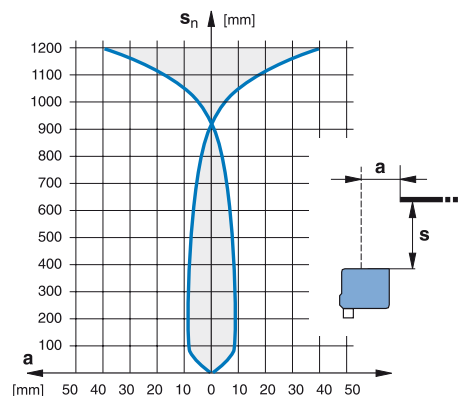
30 ... 1200

4000

PHOTOELECTRIC



AUTOCOLLIMATION



DATA



Standard target / Reflector type

200 x 200 mm white

No-load supply current

$\leq 25$  mA

Emitter

LED red 630 nm

Max. switching frequency

4500 Hz

Switching time

0.5 msec

Sensing face material

Coated plastic

Setup

Potentiometer

Description

PNP Changeover

Part reference

LTS-4150-103

Description

Part reference

Description

Part reference

Other types available

NPN Changeover / PNP/NPN Light-ON + Excess gain



LXR-0000-084 (see page 205)

$\leq 20$  mA

LED red polarized 680 nm

1500 Hz

0.5 msec

Glass

Potentiometer

PNP Changeover

LRS-4050-103

NPN Changeover / PNP/NPN Light-ON + Excess gain

# CUBIC SMALL

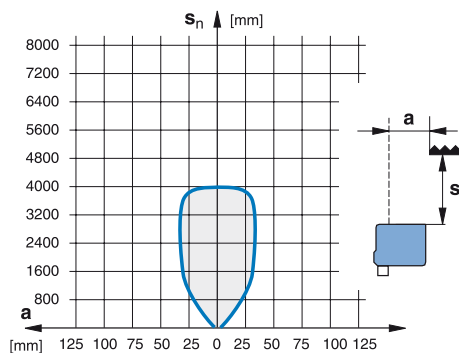
□ 40 X 50 X 15

REFLEX SENSOR

4000



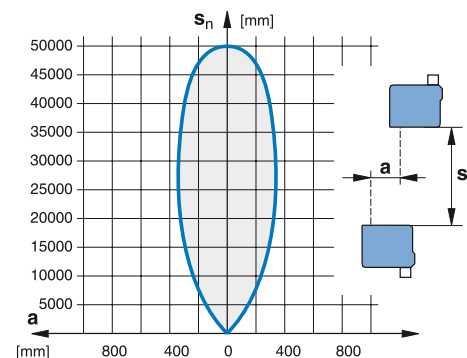
AUTOCOLLIMATION



□ 40 X 50 X 15

THROUGH-BEAM SENSOR

50,000



LXR-0000-084 (see page 205)

≤ 20 mA

LED red polarized 680 nm

1500 Hz

0.5 msec

Coated plastic

Potentiometer

PNP Changeover

LRS-4150-103

NPN Changeover / PNP/NPN Light-ON + Excess gain



-

≤ 15 mA

LED red 630 nm

1500 Hz

0.5 msec

Glass

Potentiometer (receiver)

Emitter

LLS-4050-000

PNP Changeover

LLS-4050-003 (receiver)

NPN Changeover

LLS-4050-001 (receiver)

PNP/NPN Light-ON + Excess gain

# CUBIC SMALL

HOUSING SIZE MM

□ 40 X 50 X 15

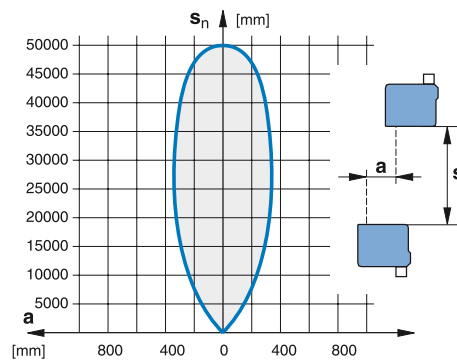
OPERATING PRINCIPLE

THROUGH-BEAM SENSOR

SENSING RANGE MM

50,000

PHOTOELECTRIC



## DATA



Standard target

-

No-load supply current

≤ 15 mA

Emitter

LED red 630 nm

Switching frequency

1500 Hz

Switching time

0.5 msec

Sensing face material

Coated plastic

Setup

Potentiometer (receiver)

Description

Emitter

Part reference

LLS-4150-000

Description

PNP Changeover

Part reference

LLS-4150-003 (receiver)

Description

Part reference

Other types available

NPN Changeover / PNP/NPN Light-ON + Excess gain

# OVERVIEW

|                                        | 4055                           |
|----------------------------------------|--------------------------------|
| Housing material                       | PBTP                           |
| Average positioning tolerance (tol. 3) | ± 5 mm                         |
| Beam diameter at 35 mm                 | 4 mm                           |
| Degree of protection                   | IP 67                          |
| Supply voltage range                   | 10 ... 30 VDC                  |
| Ambient temperature range              | -5 ... +55 °C / 23 ... +131 °F |
| Output current                         | ≤ 200 mA                       |
| Output voltage drop                    | ≤ 2 V                          |
| Switching frequency                    | 4000 Hz                        |
| Switching time                         | 0.4 msec                       |
| Max. ambient light halogen             | 5000 Lux                       |
| Max. ambient light sun                 | 10,000 Lux                     |
| Compatible mounting bracket            | See page 204                   |

# WIRING DIAGRAMS

3xPNP Light-ON / Teach-in



|                     |  |
|---------------------|--|
| HOUSING SIZE MM     |  |
| OPERATING PRINCIPLE |  |
| SENSING RANGE MM    |  |

# PHOTOELECTRIC

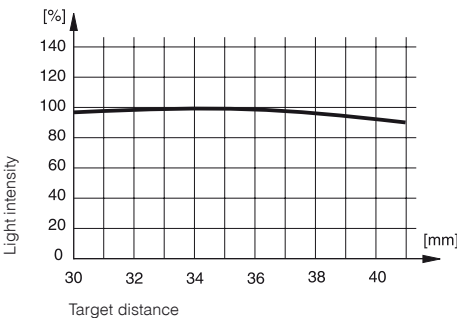
| DATA                   |
|------------------------|
| No-load supply current |
| Emitter                |
| Description            |
| Part reference         |
| Description            |
| Part reference         |
| Description            |
| Part reference         |
| Other types available  |

# CUBIC SMALL

□ 40 X 50 X 15

COLOR SENSOR (DIFFUSE)

30 ... 40



≤ 35 mA

White LED

3 x PNP Light-ON / Teach-in

FTS-4055-303

3 x NPN Light-ON / Teach-in

# OVERVIEW

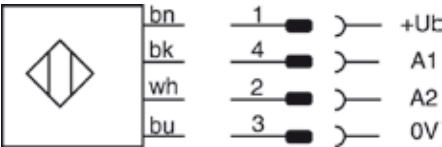
|                             | 3#6#                                                            |
|-----------------------------|-----------------------------------------------------------------|
| Housing material            | PBTP (Crastin)                                                  |
| Hysteresis                  | 10 % typ. / ≤ 5 % (3066)                                        |
| Degree of protection        | IP 64                                                           |
| Supply voltage range        | 10 ... 30 VDC                                                   |
| Ambient temperature range   | -25...+55 °C/-13...+131 °F // -5...+55 °C/+23... +131 °F (3066) |
| Output current              | ≤ 200 mA                                                        |
| Output voltage drop         | ≤ 2 V                                                           |
| Max. ambient light halogen  | 5000 Lux                                                        |
| Max. ambient light sun      | 10,000 Lux                                                      |
| Compatible mounting bracket | See page 204                                                    |

|                     |  |
|---------------------|--|
| HOUSING SIZE MM     |  |
| OPERATING PRINCIPLE |  |
| SENSING RANGE MM    |  |

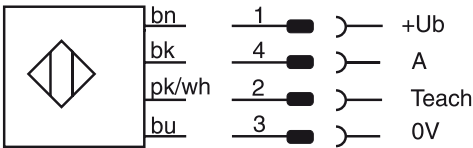
# PHOTOELECTRIC

# WIRING DIAGRAMS

PNP Light/Dark-ON switchable



PNP Light/Dark-ON with teach-in



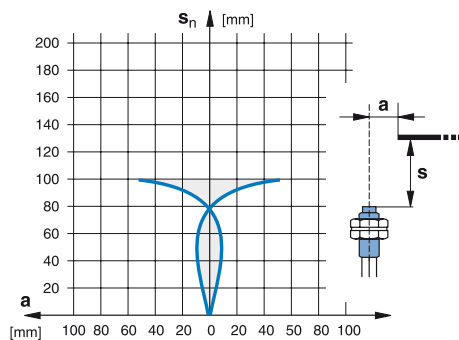
| DATA                     |
|--------------------------|
| Standard target          |
| No-load supply current   |
| Emitter                  |
| Max. switching frequency |
| Setup                    |
| Description              |
| Part reference           |
| Description              |
| Part reference           |
| Description              |
| Part reference           |
| Other types available    |

# CUBIC SMALL

□ 31 X 60 X 10

FIBER-OPTIC AMPLIFIER - BLUE LIGHT

100



100 x 100 mm white

≤ 15 mA

LED blue 465 nm

1500 Hz

Potentiometer

PNP Light-ON/Dark-ON switchable + Excess gain

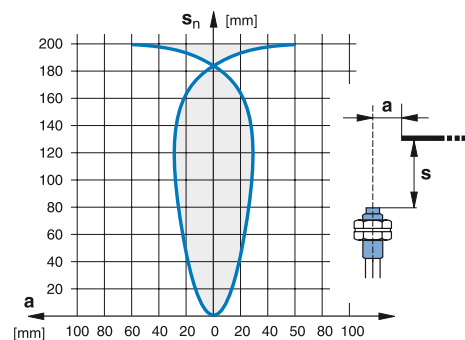
LFS-3360-103

NPN Light-ON/Dark-ON + Excess gain

□ 31 X 60 X 10

FIBER-OPTIC AMPLIFIER

200



100 x 100 mm white

≤ 25 mA

LED red 680 nm

1500 Hz

Teach-in

PNP Light-ON/Dark-ON switchable + Excess gain

LFK-3065-103

NPN / Blue light devices / Increased switching frequency

# CUBIC SMALL

HOUSING SIZE MM

□ 31 X 60 X 10

□ 31 X 60 X 10

OPERATING PRINCIPLE

FIBER-OPTIC AMPLIFIER

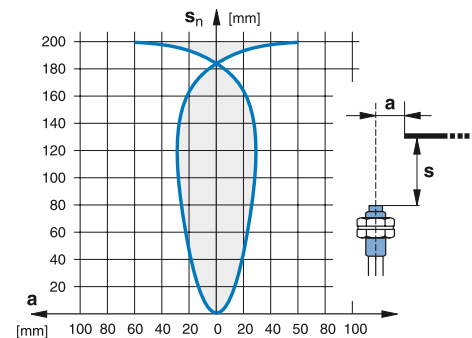
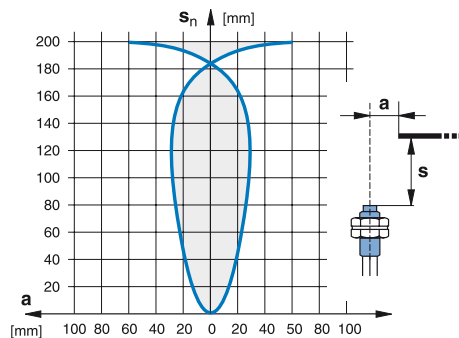
FIBER-OPTIC AMPLIFIER

SENSING RANGE MM

200

200

PHOTOELECTRIC



## DATA



|                          |                                                             |
|--------------------------|-------------------------------------------------------------|
| Standard target          | 100 x 100 mm white                                          |
| No-load supply current   | ≤ 25 mA                                                     |
| Emitter                  | LED red 680 nm                                              |
| Max. switching frequency | 1500 Hz                                                     |
| Setup                    | Teach-in                                                    |
| Description              | PNP Light-ON/Dark-ON switchable + Excess gain               |
| Part reference           | LFS-3065-103                                                |
| Description              |                                                             |
| Part reference           |                                                             |
| Description              |                                                             |
| Part reference           |                                                             |
| Other types available    | NPN / Blue light devices /<br>Increased switching frequency |



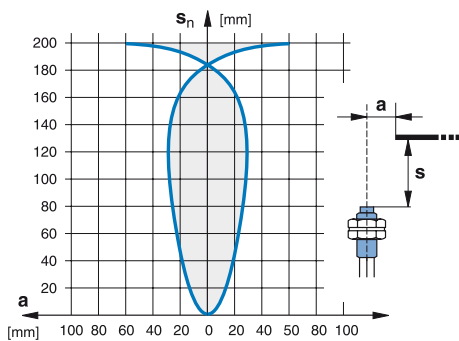
|                          |                                 |
|--------------------------|---------------------------------|
| Standard target          | 100 x 100 mm white              |
| No-load supply current   | ≤ 30 mA                         |
| Emitter                  | LED red 680 nm                  |
| Max. switching frequency | 4000 Hz                         |
| Setup                    | Teach-in                        |
| Description              | PNP Light-ON/Dark-ON switchable |
| Part reference           | LFS-3066-103                    |
| Description              |                                 |
| Part reference           |                                 |
| Description              |                                 |
| Part reference           |                                 |
| Other types available    | NPN Light-ON/Dark-ON switchable |

# CUBIC SMALL

□ 31 X 60 X 10

FIBER-OPTIC AMPLIFIER

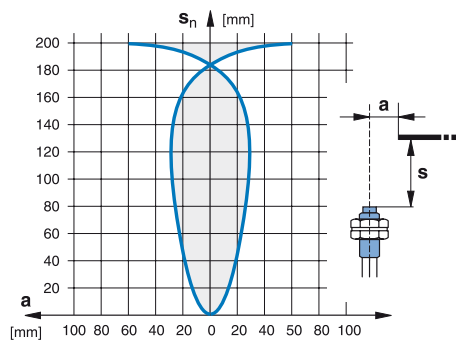
200



□ 31 X 60 X 10

FIBER-OPTIC AMPLIFIER

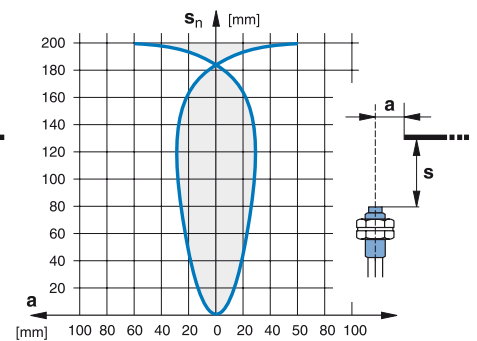
200



□ 31 X 60 X 10

FIBER-OPTIC AMPLIFIER

200



100 x 100 mm white

≤ 30 mA

LED red 680 nm

4000 Hz

Teach-in

PNP Light-ON/Dark-ON switchable + IO Link

LFS-3066-403

-



100 x 100 mm white

≤ 15 mA

LED red 680 nm

1500 Hz

Potentiometer

PNP Light-ON/Dark-ON switchable + Excess gain

LFK-3060-103

NPN Light-ON/Dark-ON switchable + Excess gain



100 x 100 mm white

≤ 15 mA

LED red 680 nm

1500 Hz

Potentiometer

PNP Light-ON/Dark-ON switchable + Excess gain

LFS-3060-103

NPN Light-ON/Dark-ON switchable + Excess gain

# OVERVIEW

|                                        | 4040                             |
|----------------------------------------|----------------------------------|
| Housing material                       | PBTP (Crastin)                   |
| Hysteresis                             | 10 % typ.                        |
| Degree of protection                   | IP 67                            |
| Supply voltage range                   | 10 ... 36 VDC                    |
| Ambient temperature range              | -25 ... +55 °C / -13 ... +131 °F |
| Output current (total of both outputs) | ≤ 200 mA                         |
| Output voltage drop                    | ≤ 2 V                            |
| Switching frequency                    | ≤ 1000 Hz                        |
| Switching time                         | 0.5 msec                         |
| Max. ambient light halogen             | 5000 Lux                         |
| Max. ambient light sun                 | 10,000 Lux                       |
| Compatible mounting bracket            | See page 204                     |

HOUSING SIZE MM

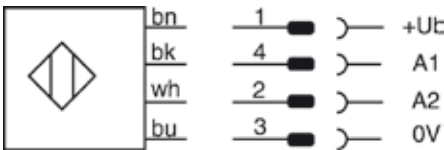
OPERATING PRINCIPLE

SENSING RANGE MM

# PHOTOELECTRIC

# WIRING DIAGRAMS

PNP/NPN Changeover



DATA

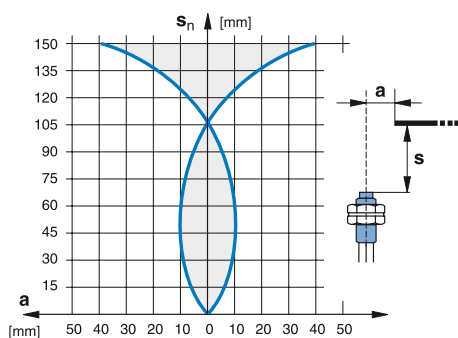
- Standard target
- No-load supply current
- Emitter
- Setup
- Description
- Part reference
- Description
- Part reference
- Description
- Part reference
- Other types available

# CUBIC SMALL

**40 X 40 X 19**

## FIBER-OPTIC AMPLIFIER

150



100 x 100 mm white

 $\leq 20 \text{ mA}$ 

IR LED 880 nm

## Potentiometer

## PNP Changeover

LFS-4040-103

NPN Changeover / PNP/NPN Light-ON + Excess gain