



PHOTOELECTRIC SENSORS: SERIES 3#30 & 3#31



- ✓ Complete **miniature sensor series** ∇ 30 x 30 x 15 mm in rugged Crastin housings
- ✓ **Shock & vibration resistant** due to fully vacuum-potted electronics
- ✓ Diffuse sensors with **precise background suppression**
- ✓ **Polarizing filter** (reflex sensors)
- ✓ **High system reserves** (excess gain)
- ✓ **Pre-failure warning** (pollution monitoring)
- ✓ **Changeover outputs**
- ✓ **Analog outputs**

TECHNICAL DATA

(according to IEC 60947-5-2)	
Housing material	Glass-fiber reinforced PBTP (Crastin)
Hysteresis	10 % typ. / 15% typ. (LA#-3130-119)
Supply voltage range U_B	10...36 VDC/15...36 VDC (LA#-3130-119)
Max. ripple content	\leq 20 %
Output current (total of both outputs)	\leq 200 mA / --- (LA)
Output voltage drop	\leq 2.0 V at 200 mA / --- (LA)
Max. switching frequency // Bandwidth (-3 dB)	1,000 Hz/500 Hz (LH)//500 Hz @ s=50mm (LA)
Switching time (\uparrow and \downarrow)	0.5 msec / 1 msec (LH) / --- (LA)
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 67 / IP 65 (3031)
EMC protection:	
IEC 60947-5-2 (7.2.3.1)	5 kV
IEC 61000-4-2	Level 2 / Level 3 (3#31 + LA)
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3
IEC 61000-4-6	Level 2 (3131 + LA)
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in / --- (LA)

Complete miniature sensor series in rugged Crastin housings ∇ 30 x 30 x 15 mm. Shock and vibration resistant with high system reserves (excess gain) and changeover outputs. Diffuse sensors with precise background suppression or analog output as well as polarized reflex sensors. Pollution monitoring (green LED) in case of reduced system reserves (excess gain) prevents downtime caused by pollution. Particularly suited for:

- ✓ **handling systems**
- ✓ **printing industry**
- ✓ **wrapping machines**
- ✓ **vending machines**
- ✓ **semiconductor industry**
- ✓ **electronics industry**
- ✓ **conveyor systems**
- ✓ **assembly machines**
- ✓ **inserters & sorting machines**

HOUSING SIZE

30 X 30 X 15

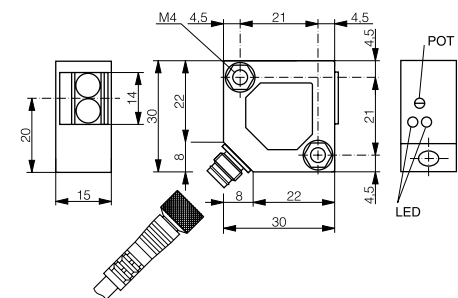
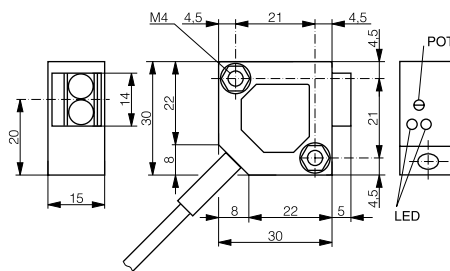
SENSING RANGE

REFLEX SENSOR (POLARIZED)
4,000 mm

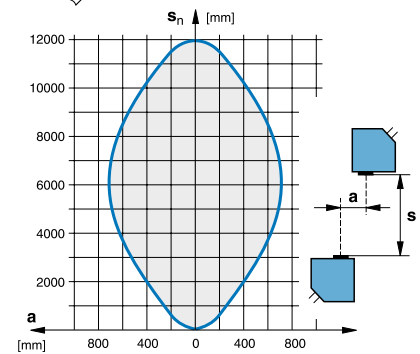
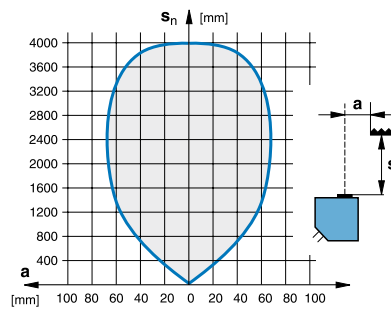
THROUGH-BEAM SENSOR
12,000 mm



Dimensions:



Response curves:



TECHNICAL DATA

Sensing range	4,000 mm	12,000 mm
Reflector (page 197)	Reflector type 3	---
No-load supply current	≤ 20 mA	≤ 10 mA (R) / ≤ 15 mA (E)
Emitter	LED red polarized 660 nm	IR LED 880 nm
Approvals	CE, UL, RoHS	CE, UL, RoHS
Weight (cable / connector model)	80 / 18 g	150 / 34 g (R and E)

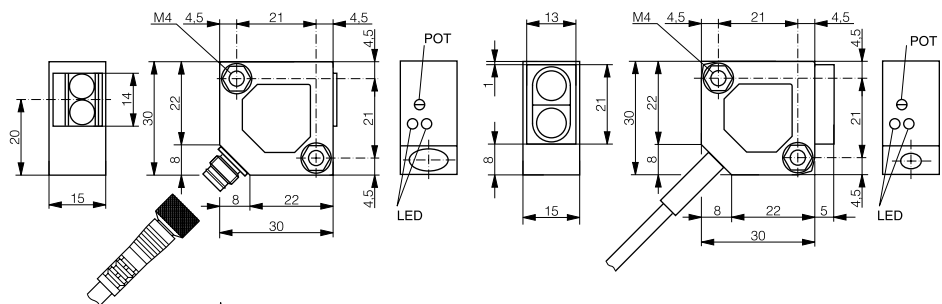
PART REFERENCES

(bold: preferred types)		(R) receiver / (E) emitter
NPN changeover outputs / cable	LRK-3030-101	LLK-3030-001 (R) / LLK-3030-000 (E)
NPN light-ON + excess gain / cable	LRK-3030-102	LLK-3030-002 (R) / LLK-3030-000 (E)
NPN changeover outputs / S8	LRS-3030-101	LLS-3030-001 (R) / LLS-3030-000 (E)
NPN light-ON + excess gain / S8	LRS-3030-102	LLS-3030-002 (R) / LLS-3030-000 (E)
PNP changeover outputs / cable	LRK-3030-103	LLK-3030-003 (R) / LLK-3030-000 (E)
PNP light-ON + excess gain / cable	LRK-3030-104	LLK-3030-004 (R) / LLK-3030-000 (E)
PNP changeover outputs / S8	LRS-3030-103	LLS-3030-003 (R) / LLS-3030-000 (E)
PNP light-ON + excess gain / S8	LRS-3030-104	LLS-3030-004 (R) / LLS-3030-000 (E)
Compatible connectors (page 268)	E, F	E, F
Wiring (pages 198-199)	Diagram 2	Diagram 2 (R) / 4 (E)

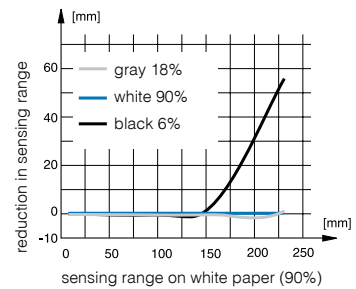
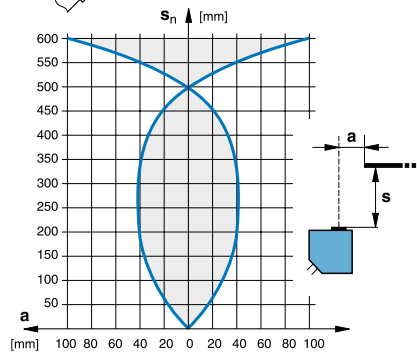
HOUSING SIZE	30 X 30 X 15	
SENSING RANGE	DIFFUSE SENSOR 600 mm	DIFFUSE SENSOR WITH BACKGROUND SUPPRESSION 200 mm



Dimensions:



Response curves:



TECHNICAL DATA

Sensing range (setting range)	600 mm	200 mm (15 ... 200 mm)
Standard target	200 x 200 mm white	100 x 100 mm white
No-load supply current	≤ 15 mA	≤ 25 mA
Emitter	IR LED 880 nm	LED red 660 nm
Approvals	CE, UL, RoHS	CE, RoHS
Weight (cable / connector model)	75 / 17 g	75 / 17 g

PART REFERENCES

(bold: preferred types)		
NPN light-ON / cable	LTK-3031-301	LHK-3131-301
NPN dark-ON / cable	---	---
NPN light-ON / connector S8	LTS-3031-301	LHS-3131-301
NPN dark-ON / connector S8	---	---
PNP light-ON / cable	LTK-3031-303	LHK-3131-303
PNP dark-ON / cable	---	---
PNP light-ON / connector S8	LTS-3031-303	LHS-3131-303
PNP dark-ON / connector S8	---	---
Compatible connectors (page 268)	A, B	A, B
Wiring (pages 198-199)	Diagram 1	Diagram 1

HOUSING SIZE

30 X 30 X 15

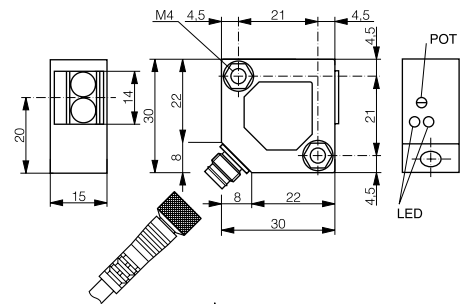
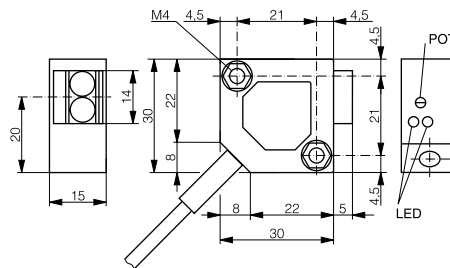
SENSING RANGE

REFLEX SENSOR (POLARIZED)
2,000 mm

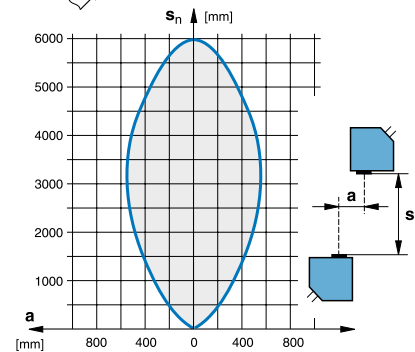
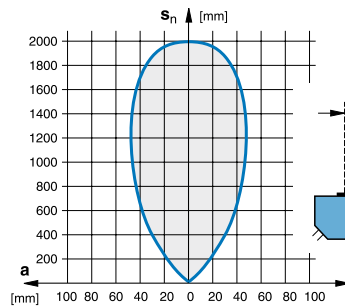
THROUGH-BEAM SENSOR
6,000 mm



Dimensions:



Response curves:




TECHNICAL DATA

	2,000 mm	6,000 mm
Sensing range	2,000 mm	6,000 mm
Reflector (page 197)	Reflector type 3	---
No-load supply current	≤ 15 mA	≤ 10 mA (R) / ≤ 15 mA (E)
Emitter	LED red polarized 660 nm	IR LED 880 nm
Approvals	CE, UL, RoHS	CE, UL, RoHS
Weight (cable / connector model)	80 / 18 g	150 / 34 g (R and E)

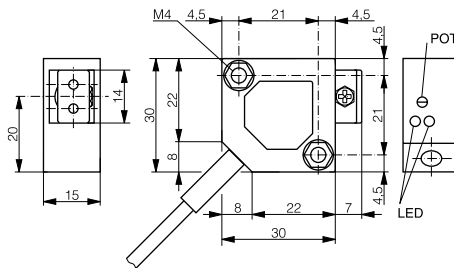
PART REFERENCES

(bold : preferred types)		(R) receiver / (E) emitter
NPN light-ON / cable	---	---
NPN dark-ON / cable	LRK-3031-302	LLK-3031-202 (R) / LLK-3031-200 (E)
NPN light-ON / connector S8	---	---
NPN dark-ON / connector S8	LRS-3031-302	LLS-3031-202 (R) / LLS-3031-200 (E)
PNP light-ON / cable	---	---
PNP dark-ON / cable	LRK-3031-304	LLK-3031-204 (R) / LLK-3031-200 (E)
PNP light-ON / connector S8	---	---
PNP dark-ON / connector S8	LRS-3031-304	LLS-3031-204 (R) / LLS-3031-200 (E)
Compatible connectors (page 268)	A, B	A, B
Wiring (pages 198-199)	Diagram 1	Diagram 1 (R) / 4 (E)

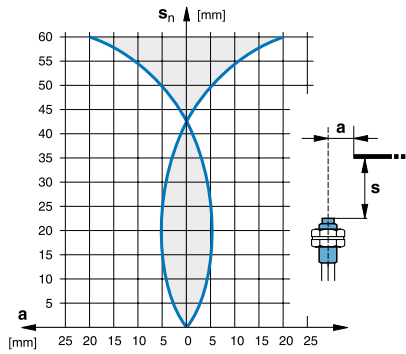
HOUSING SIZE	 30 X 30 X 15
SENSING RANGE	FIBER-OPTIC AMPLIFIER * 60 mm



Dimensions:



Response curve:



TECHNICAL DATA		
Sensing range	60 mm (with LFP-1002-020)	
Standard target	100 x 100 mm white	
No-load supply current	≤ 15 mA	
Emitter	LED red 660 nm	
Approvals	CE, UL, RoHS	
Weight (cable / connector model)	78 / 17 g	

PART REFERENCES		
(bold: preferred types)		
NPN light-ON / cable	LFK-3031-301	
NPN dark-ON / cable	LFK-3031-302	
NPN light-ON / connector S8	LFS-3031-301	
NPN dark-ON / connector S8	LFS-3031-302	
PNP light-ON / cable	LFK-3031-303	
PNP dark-ON / cable	LFK-3031-304	
PNP light-ON / connector S8	LFS-3031-303	
PNP dark-ON / connector S8	LFS-3031-304	
Compatible connectors (page 268)	A, B	
Wiring (pages 198-199)	Diagram 1	

* Optical fibers (pages 200 - 219)

HOUSING SIZE

30 X 30 X 15 WITH ANALOG OUTPUT

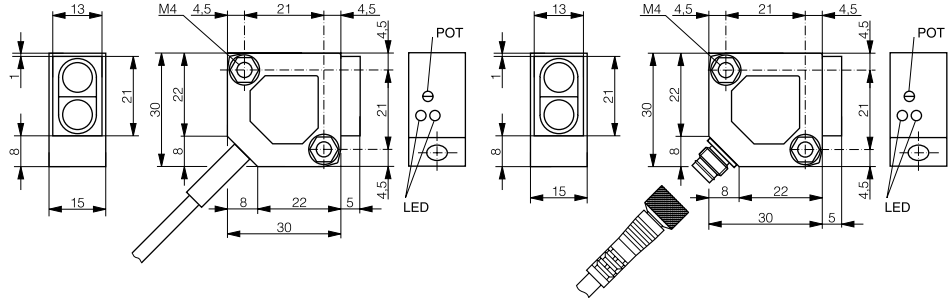
SENSING RANGE

DIFFUSE SENSOR
10 ... 100 mm

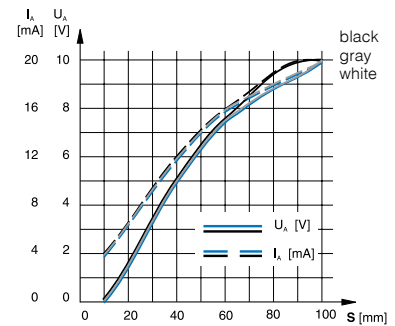
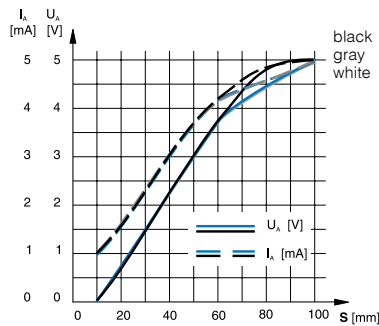
DIFFUSE SENSOR
10 ... 100 mm



Dimensions:



Response curves:



TECHNICAL DATA

Sensing range	10 ... 100 mm	10 ... 100 mm
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
Voltage output	0 ... 5 V	0 ... 10 V
Current output	1 ... 5 mA	4 ... 20 mA
Approvals	CE, RoHS	CE, RoHS
Weight (cable / connector model)	75 / 17 g	75 / 17 g

PART REFERENCES

(bold: preferred types)		
Voltage and current outputs / cable	LAK-3130-109	LAK-3130-119
Voltage and current outputs / S8	LAS-3130-109	LAS-3130-119
Compatible connectors (page 268)	E, F	E, F
Wiring (pages 198-199)	Diagram 9	Diagram 9