PHOTOELECTRIC SENSOR
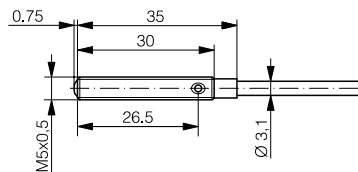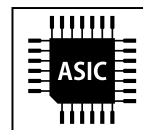# BACKGROUND SUPPRESSION
LHR-M05MA-NM

25 mm

- ✓ M5 miniature housing
- ✓ Focus RED light source
- ✓ IO-Link
- ✓ Calibrated range
- ✓ Embeddable
- ✓ Immunity to mutual interferences
- ✓ Excellent black/white behaviour

Cable type

OPTICAL DATA

Sensing range typ. max.	7...25 mm[1]
Operating range	8...20 mm[1]
Light source	LED, red 630 nm
Light spot size (distance)	Ø 5 mm (10 mm)
	Ø 8 mm (20 mm)

[1]Object with 90% reflectance (standard white paper)

INTERFACE

Sensitivity adjustment	None
Indicator LED, green	Excess gain
Indicator LED, yellow	Sensing state
IO-Link	✓
MTTF (@40°C)	664 y

ELECTRICAL DATA

Supply voltage range (Ub)	10...30 VDC
Residual ripple	≤ 10% Vpp
Output current	≤ 100 mA
Signal PNP high/low	≤ (Ub-2.0 V)/approx. 0 V
Signal NPN high/low	Approx. Ub/≤ 2.0 V
Power consumption (no load)	≤ 15 mA
Response time[1]	≤ 1 ms (normal)/≤2 ms/ ≤500us
Switching frequency[1]	≤ 500 Hz (normal)/≤250 Hz/≤ 1KHz
Short circuit protection	✓
Voltage reversal protection	✓

[1]By default, "Normal" mode. "Fine" and "Fast" modes selectable via IO-Link.
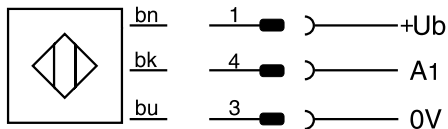
MECHANICAL DATA

Enclosure rating	IP67
Ambient temperature operation	-25...+65°C
Shock and vibration	IEC 60947-5-2
Weight (cable/connector/pigtail)	30 g / 4 g / 12 g
Housing material	V2A stainless steel
Optics material	PBT / PMMA
Cable type	PUR, 2 m, 3-wire

SENSING RANGE

Target 50x50 mm	Operating range	Sensing range max.
90%	8...20 mm	7...25 mm
18%	8...19 mm	7...24 mm
6%	8...18 mm	7...21 mm

IO-LINK FUNCTIONALITIES

IO-Link version	1.0
SIO mode	Supported
Process data	Detection state & stability alarm
Baudrate	COM2 (38.4 kBaud)
Special functions	Output configuration, output timing,
	sensor mode, detection counter,
	event flags, maximum and actual sensor temperature

IO-Link specifications and IODD files may be downloaded
from www.contrinex.com (Download section)

WIRING DIAGRAM

AVAILABLE TYPES

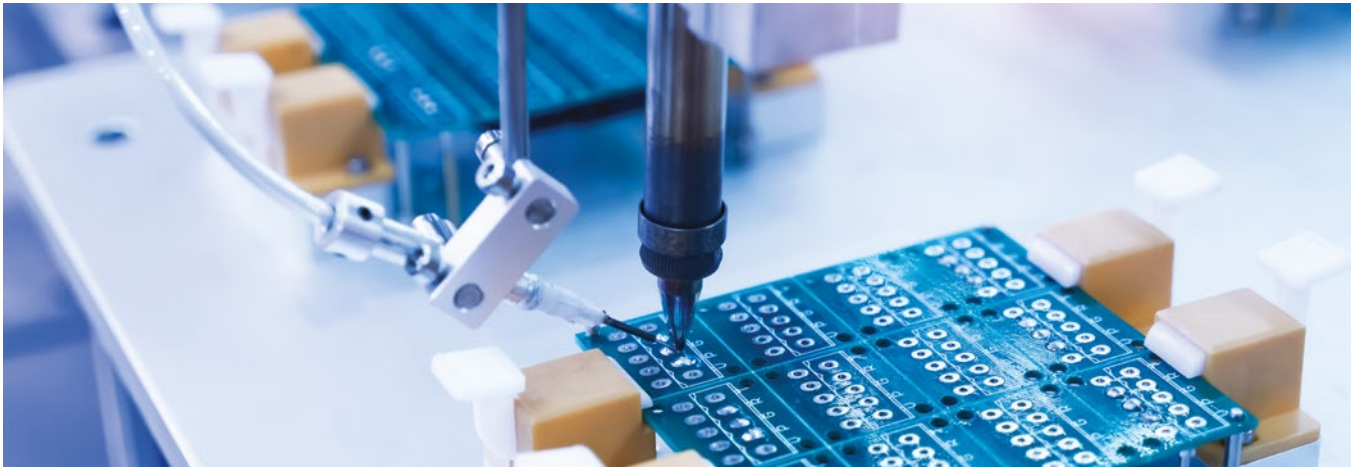| Part number	Part reference	Polarity	Connection	Output (A1)
620-600-472	LHR-M05MA-NMK-403	PNP	PUR, 2 m, 3-wire	Light-on/IO-Link
620-600-615	LHR-M05MA-NMK-301	NPN	PUR, 2 m, 3-wire	Light-on

Note: additional suffix can appear to indicate a revision version or a special version.
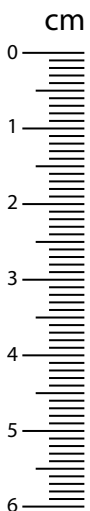
CONTRINEX

D04 AND M05 SERIES

HIGHLIGHTS

- ✓ Calibrated sensing ranges
- ✓ Teach available with extended type
- ✓ High switching frequency
- ✓ Connection by cable, M8 connector or M8 pigtail
- ✓ IO-Link interface available on PNP types

- ✓ Diffuse or through-beam operating principle
- ✓ Mutual interference immunity for through-beam types by setting emitter/receiver pairs with IO-Link
- ✓ Enclosure rating IP67

D04 SERIES

Embeddable housing in stainless steel V2A, Ø 4 mm

M05 SERIES
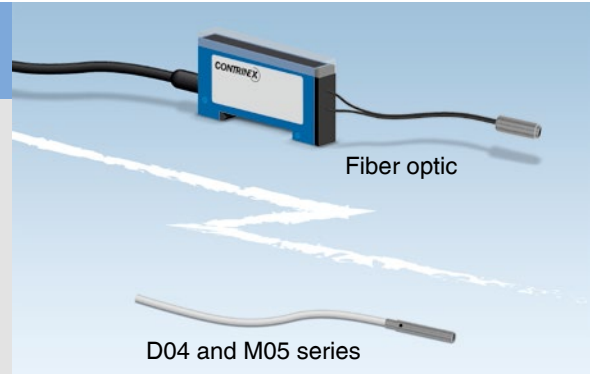
Embeddable housing in stainless steel V2A, threaded M5

INDUSTRIES

Packaging, logistics, materials handling, assembly, automation, robotics, precision engineering, semi-conductors, electronics, vending machines, miniature conveyors, grippers
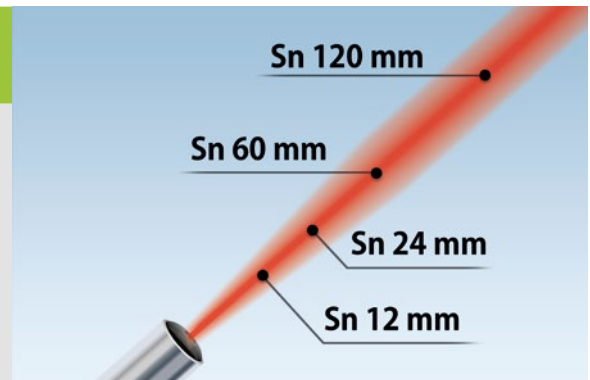
ADVANTAGES

SIMPLE AND ECONOMIC
ALTERNATIVE TO FIBER OPTICS

* Similar space requirement to an optical fiber, without the need for a separate amplifier
* Reduced costs for mounting and wiring
* Visible red light source for ease of installation
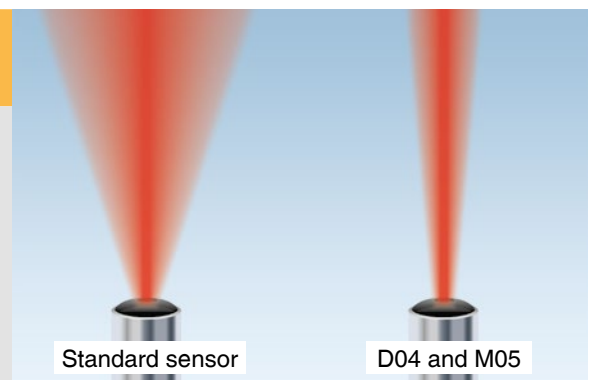* Types with infrared light source available on demand

Fiber optic

D04 and M05 series

ADAPTABLE TO ALL CONDITIONS
CALIBRATED SENSING RANGES

* Factory calibrated diffuse types with precise sensing ranges: 12 mm, 24 mm, 60 mm and 120 mm
* Extended types with sensitivity adjustment by IO-Link or teach wire (4th wire)
* A single extended sensor type adapts to many applications
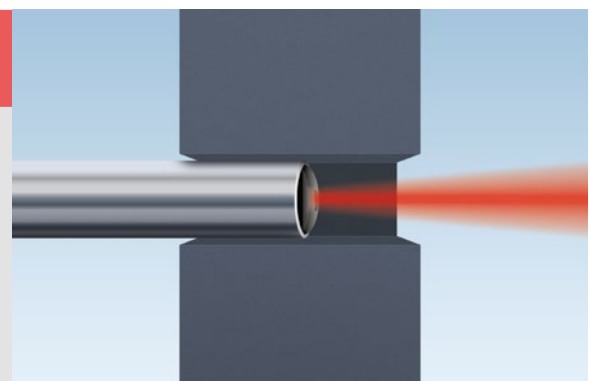* Through-beam types with sensing range up to 600 mm

Sn 120 mm

Sn 60 mm

Sn 24 mm

Sn 12 mm

PRECISE TARGET DETECTION
FOCUSED, NARROW LIGHT BEAM

* Special optics with narrow beam and small light spot: 6 mm diameter at range of 50 mm
* Reliable detection of small, thin targets
* Reliable at high speed: switching frequency up to 2.5 kHz, adjustable via IO-Link

Standard sensor

D04 and M05

FULLY EMBEDDABLE
RECESSED MOUNTING POSSIBLE

* Easy to mount using brackets, drill holes or existing gaps
* Embeddable, including recessed mounting
* Target detection possible through a narrow gap

CONTRINEX

PHOTOELECTRIC SENSOR

SELECTION OF PRODUCTS

		PART REFERENCE	ART. NO.	HOUSING SIZE	SENSING RANGE	ADJUST-MENT	OUTPUT*	CONNEC-TION**
DIFFUSE	D04	LTR-D04MA-NSK-403	620-600-362	Ø4	12 mm	No	PNP Light-ON	3-wire PUR 2 m
		LTR-D04MA-NMK-403	620-600-363	Ø4	24 mm	No	PNP Light-ON	3-wire PUR 2 m
		LTR-D04MA-NLK-403	620-600-361	Ø4	60 mm	IO-Link	PNP Light-ON	3-wire PUR 2 m
		LTR-D04MA-WXK-403	620-600-365	Ø4	120 mm	Teach or IO-Link	PNP Light-ON	4-wire PUR 2 m
	M05	LTR-M05MA-NSK-403	620-600-340	M5	12 mm	No	PNP Light-ON	3-wire PUR 2 m
		LTR-M05MA-NMK-403	620-600-341	M5	24 mm	No	PNP Light-ON	3-wire PUR 2 m
		LTR-M05MA-NLK-403	620-600-339	M5	60 mm	IO-Link	PNP Light-ON	3-wire PUR 2 m
		LTR-M05MA-WXK-403	620-600-343	M5	120 mm	Teach or IO-Link	PNP Light-ON	4-wire PUR 2 m
THROUGH-BEAM	D04	LLR-D04MA-NMK-404 (receiver)	620-600-356	Ø4	600 mm	IO-Link	PNP Dark-ON	3-wire PUR 2 m
	M05	LLR-M05MA-NMK-404 (receiver)	620-600-334	M5	600 mm	IO-Link	PNP Dark-ON	3-wire PUR 2 m

*Other output types available   **M8 connector and M8 pigtail types also available