

APPLICATION

Miniature photoelectric sensor, mounted in existing structural space of conveyor, detects presence of small parts

A miniature conveyor system uses photoelectric sensors flush-mounted in the conveyor structure itself to detect the presence of small parts. To avoid impairing conveyor function, existing slots in the conveyor had to be widened to accommodate standard sensors. However, by switching to Contrinex Miniature sensors with a diameter of just 4 mm, mounting was possible without modifying the existing slot, saving time and installation costs.

INDUSTRIES

Packaging, logistics, materials handling, assembly, automation, robotics, precision engineering, semiconductors, electronics, vending machines, miniature conveyors, grippers



Micromechanical grippers



PCB component presence check



Detection of small parts



Packaging systems


MINIATURE PHOTOELECTRIC SENSORS

SMALLEST ON THE MARKET

The Contrinex **Miniature** range packs exceptional position- and presence-sensing performance into the smallest self-contained photoelectric sensors on the market. Designers have the choice of through-beam or diffuse sensors in **Ø4** and **M5** cylindrical metal housings that offer multiple mounting methods and beam orientation. For fully embedded applications, **M5** and **Ø4** sensors produce focused, cylindrical light beams.

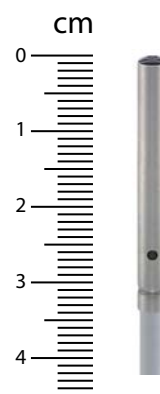
KEY ADVANTAGES

D04 / M05 / 0507 series

- ✓ Rugged diffuse or through-beam sensors in steel housing: Ø4, M5 or 5 × 7 × 40 mm
- ✓ Extremely compact self-contained photoelectric sensors
- ✓ Accurate target detection due to focused red light beam
- ✓  IO-Link

C12 series

- ✓ Plastic housing, 13 × 21/27 × 7 mm
- ✓ Red pinpoint LED, small visible light spot
- ✓ Long sensing ranges
- ✓ Excellent background suppression up to 120 mm with 3-turn potentiometer



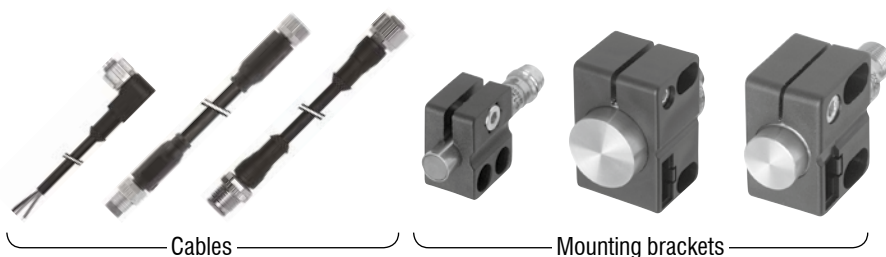
PRODUCT OVERVIEW

 IO-Link

SERIES Housing size mm	D04 Ø4	M05 M5	0507 □ 5x7x40	C12 □ 13x21/27x7
Diffuse	12/24/60/120	12/24/60/120	20/50/90	–
Background suppression	–	–	–	15/30/120
Reflex	–	–	–	3,000
Through-beam	600	600	–	2,000

ACCESSORIES

Go to page 298 to see all the accessories



Cables

Mounting brackets

COMMON FEATURES

Supply Voltage range	10 ... 30 VDC
Output	PNP Light-ON (Diffuse) PNP Dark-ON (Through)*

*Other types available: NPN Light-ON, NPN Dark-ON

OUTPUT

Sensor type
[LT] Diffuse [LL] Through-beam

Housing size
[04] Diameter 4 mm [05] Diameter 5 mm
see p. 196

Emission type
[I] Infrared
[R] Red

Housing type
[D] Cylindrical non threaded
[M] Cylindrical threaded

Reference key on page 196

Example: [xx][x]-[x][xx]MA-[xxx]-[xxx] — see p. 196

OPERATING PRINCIPLE

Diffuse

Through-beam

ACCESSORIES

A Group A: M8 3-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes

B Group B: M8 4-pin
Sub-group: Field attachable connectors

C Group C: M12 4-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes

D Group D: M12 AC/DC 3-pin

E Group E: Universal mounting brackets
Sub-group: Mechanical stops

F Group F: Photoelectric mounting brackets

G Group G: Photoelectric reflectors

H Group H: Sensor tester

Go to page 298 for details

CABLES
Cable lengths available:
2 m, 5 m, 10 m
other customised lengths possible

CYLINDRICAL D04/M05 D04/M05 SERIES

FAMILY	OPERATING PRINCIPLE	SENSING RANGE (mm)	HOUSING SIZE (mm)	LIGHT SOURCE
CYLINDRICAL D04/M05 – D04/M05 SERIES		12	Ø 4	LED, red 680 nm
		12	Ø 4	LED, red 680 nm
		12	Ø 4	LED, red 680 nm
		12	Ø 4	LED, infrared 880 nm
		24	Ø 4	LED, red 680 nm
		24	Ø 4	LED, red 680 nm
		24	Ø 4	LED, red 680 nm
		24	Ø 4	LED, infrared 880 nm
		24	Ø 4	LED, infrared 880 nm
		24	Ø 4	LED, infrared 880 nm
		60	Ø 4	LED, red 680 nm
		60	Ø 4	LED, red 680 nm
		60	Ø 4	LED, red 680 nm
		120	Ø 4	LED, red 680 nm
		120	Ø 4	LED, red 680 nm
		600	Ø 4	LED, red 680 nm
		600	Ø 4	LED, red 680 nm
		600	Ø 4	LED, red 680 nm
		12	M5	LED, red 680 nm
		12	M5	LED, red 680 nm
		12	M5	LED, red 680 nm
		12	M5	LED, infrared 880 nm
		24	M5	LED, red 680 nm



KEY ADVANTAGES

- ✓ Rugged metal housing
- ✓ Rugged sapphire-glass or glass sensing face, scratch & chemically resistant
- ✓ Shock & vibration resistant due to fully vacuum-potted electronics
- ✓ Accurate target detection due to cylindrical light beam



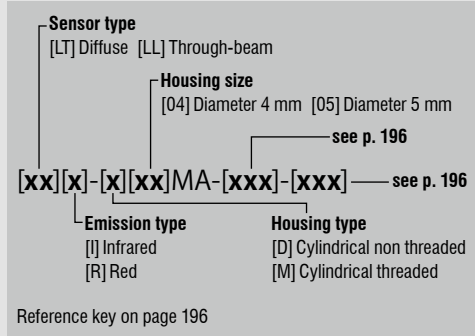
	HOUSING MATERIAL	CABLE	CONNECTOR	IO-Link	SWITCHING FREQUENCY	AMBIENT TEMPERATURE	DEGREE OF PROTECTION	PART REFERENCE*	ACCESSORIES (SEE PAGE 150)
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NSK-403	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NSV-403	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NSS-403	A E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTI-D04MA-NSK-403	E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NMK-403	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NMV-403	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NMS-403	A E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTI-D04MA-NMK-403	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTI-D04MA-NMV-403	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTI-D04MA-NMS-403	A E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NLK-403	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NLV-403	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-NLS-403	A E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-WXK-403	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-D04MA-WXV-403	B E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LLR-D04MA-NMK-404	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LLR-D04MA-NMV-404	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LLR-D04MA-NMS-404	A E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NSK-403	E H
	Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NSV-403	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NSS-403	A E H
	Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTI-M05MA-NSS-403	A E H
	Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NMK-403	E H

COMMON FEATURES

Supply Voltage range	10 ... 30 VDC
Output	PNP Light-ON (Diffuse) PNP Dark-ON (Through)*

*Other types available: NPN Light-ON, NPN Dark-ON

OUTPUT



OPERATING PRINCIPLE



ACCESSORIES

- A** Group A: M8 3-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes
- B** Group B: M8 4-pin
Sub-group: Field attachable connectors
- C** Group C: M12 4-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes
- D** Group D: M12 AC/DC 3-pin
- E** Group E: Universal mounting brackets
Sub-group: Mechanical stops
- F** Group F: Photoelectric mounting brackets
- G** Group G: Photoelectric reflectors
- H** Group H: Sensor tester

Go to page 298 for details

CABLES
Cable lengths available:
2 m, 5 m, 10 m
other customised lengths possible

CYLINDRICAL D04/M05 D04/M05 SERIES

FAMILY	OPERATING PRINCIPLE	SENSING RANGE (mm)	HOUSING SIZE (mm)	LIGHT SOURCE
CYLINDRICAL D04/M05 – D04/M05 SERIES		24	M5	LED, red 680 nm
		24	M5	LED, red 680 nm
		24	M5	LED, infrared 880 nm
		24	M5	LED, infrared 880 nm
		24	M5	LED, infrared 880 nm
		60	M5	LED, red 680 nm
		60	M5	LED, red 680 nm
		60	M5	LED, red 680 nm
		120	M5	LED, red 680 nm
		120	M5	LED, red 680 nm
		600	M5	LED, red 680 nm
		600	M5	LED, red 680 nm
		600	M5	LED, red 680 nm



KEY ADVANTAGES

- ✓ Rugged metal housing
- ✓ Rugged sapphire-glass or glass sensing face, scratch & chemically resistant
- ✓ Shock & vibration resistant due to fully vacuum-potted electronics
- ✓ Accurate target detection due to cylindrical light beam



HOUSING MATERIAL	CABLE	CONNECTOR	IO-Link	SWITCHING FREQUENCY	AMBIENT TEMPERATURE	DEGREE OF PROTECTION	PART REFERENCE*	ACCESSORIES (SEE PAGE 152)
Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NMV-403	A E H
Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NMS-403	A E H
Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTI-M05MA-NMK-403	E H
Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTI-M05MA-NMV-403	A E H
Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTI-M05MA-NMS-403	A E H
Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NLK-403	E H
Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NLV-403	A E H
Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-NLS-403	A E H
Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-WXK-403	E H
Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LTR-M05MA-WXV-403	B E H
Stainless steel V2A	PUR		IO-Link	1,000	-25 ... +65°C	IP67	LLR-M05MA-NMK-404	E H
Stainless steel V2A	0.3 m PUR	M8	IO-Link	1,000	-25 ... +65°C	IP67	LLR-M05MA-NMV-404	A E H
Stainless steel V2A		M8	IO-Link	1,000	-25 ... +65°C	IP67	LLR-M05MA-NMS-404	A E H

PHOTOELECTRIC SENSORS MINIATURE

COMMON FEATURES

Supply Voltage range 10 ... 30 VDC

OUTPUT

Sensor type
[T] Diffuse

L[x][x]-0507-[xxx]-[xxx] — see p. 197









Connection
[K] Cable — see p. 197

Reference key on page 197

OPERATING PRINCIPLE

 Diffuse






ACCESSORIES

-  **A** Group A: M8 3-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes
-  **B** Group B: M8 4-pin
Sub-group: Field attachable connectors
-  **C** Group C: M12 4-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes
-  **D** Group D: M12 AC/DC 3-pin
-  **E** Group E: Universal mounting brackets
Sub-group: Mechanical stops
-  **F** Group F: Photoelectric mounting brackets
-  **G** Group G: Photoelectric reflectors
-  **H** Group H: Sensor tester

Go to page 298 for details

 **CABLES**
Cable lengths available:
2 m, 5 m, 10 m
other customised lengths possible

CUBIC 0507 0507 SERIES

FAMILY	OPERATING PRINCIPLE	SENSING RANGE (mm)	HOUSING SIZE (mm)	LIGHT SOURCE
CUBIC 0507 – 0507 SERIES		20	5 × 7	LED, infrared 880 nm
		20	5 × 7	LED, infrared 880 nm
		50	5 × 7	LED, infrared 880 nm
		50	5 × 7	LED, infrared 880 nm
		90	5 × 7	LED, infrared 880 nm

CUBIC 0507 – 0507 SERIES










KEY ADVANTAGES

- ✓ Rugged metal housing
- ✓ Rugged sapphire-glass or glass sensing face, scratch & chemically resistant
- ✓ Shock & vibration resistant due to fully vacuum-potted electronics
- ✓ Accurate target detection due to cylindrical light beam



	HOUSING MATERIAL	CABLE	CONNECTOR	IO-Link	SWITCHING FREQUENCY	AMBIENT TEMPERATURE	DEGREE OF PROTECTION	PART REFERENCE	ACCESSORIES (SEE PAGE 154)
	Stainless steel V2A	PVC 			250	0 ... +55°C	IP67	LTK-0507-301-501	H
	Stainless steel V2A	PVC 			250	0 ... +55°C	IP67	LTK-0507-303-501	H
	Stainless steel V2A	PVC 			250	0 ... +55°C	IP67	LTK-0507-301	H
	Stainless steel V2A	PVC 			250	0 ... +55°C	IP67	LTK-0507-303	H
	Stainless steel V2A	PVC 			250	0 ... +55°C	IP67	LTK-0507-303-502	H

PHOTOELECTRIC SENSORS MINIATURE

COMMON FEATURES

Supply Voltage range 10 ... 30 VDC

OUTPUT

Sensor type
 [LH] Background suppression [LL] Through-beam
 [LR] Reflex

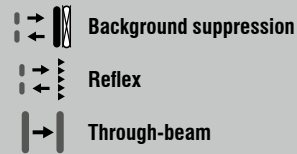
see p. 196

[xx][x]-C12PA-[xxx]-[xxx] — see p. 196

Emission type
 [R] Red

Reference key on page 196

OPERATING PRINCIPLE



ACCESSORIES

- A** Group A: M8 3-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes
- B** Group B: M8 4-pin
Sub-group: Field attachable connectors
- C** Group C: M12 4-pin
Sub-group: Field attachable connectors
Sub-group: Distribution boxes
- D** Group D: M12 AC/DC 3-pin
- E** Group E: Universal mounting brackets
Sub-group: Mechanical stops
- F** Group F: Photoelectric mounting brackets
- G** Group G: Photoelectric reflectors
- H** Group H: Sensor tester

Go to page 298 for details

CABLES
 Cable lengths available:
 2 m, 5 m, 10 m
 other customised lengths possible

CUBIC C12 C12 SERIES

FAMILY	OPERATING PRINCIPLE	SENSING RANGE (mm)	HOUSING SIZE (mm)	LIGHT SOURCE
CUBIC C12 – C12 SERIES		120	13 × 27 (C12)	Pinpoint LED, red 640 nm
		120	13 × 27 (C12)	Pinpoint LED, red 640 nm
		120	13 × 27 (C12)	Pinpoint LED, red 640 nm
		120	13 × 27 (C12)	Pinpoint LED, red 640 nm
		18	13 × 21 (C12)	Pinpoint LED, red 640 nm
		18	13 × 21 (C12)	Pinpoint LED, red 640 nm
		18	13 × 21 (C12)	Pinpoint LED, red 640 nm
		18	13 × 21 (C12)	Pinpoint LED, red 640 nm
		36	13 × 21 (C12)	Pinpoint LED, red 640 nm
		36	13 × 21 (C12)	Pinpoint LED, red 640 nm
		36	13 × 21 (C12)	Pinpoint LED, red 640 nm
		36	13 × 21 (C12)	Pinpoint LED, red 640 nm
		3,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		3,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		3,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		3,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		2,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		2,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		2,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
		2,000	13 × 21 (C12)	Pinpoint LED, red 640 nm
	2,000	13 × 21 (C12)	Pinpoint LED, red 640 nm	
	2,000	13 × 21 (C12)	Pinpoint LED, red 640 nm	



KEY ADVANTAGES

- ✓ Plastic housing, 13 × 21/27 × 7 mm
- ✓ Red pinpoint LED, small visible light spot
- ✓ Long sensing ranges
- ✓ Excellent background suppression up to 120 mm with 3-turn potentiometer



	HOUSING MATERIAL	CABLE	CONNECTOR	IO-Link	SWITCHING FREQUENCY	AMBIENT TEMPERATURE	DEGREE OF PROTECTION	PART REFERENCE	ACCESSORIES (SEE PAGE 156)
	ABS	PVC			800	-20 ... +50°C	IP67	LHR-C12PA-PLK-303	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LHR-C12PA-PLV-303	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LHR-C12PA-PLK-301	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LHR-C12PA-PLV-301	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LHR-C12PA-NSK-303	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LHR-C12PA-NSV-303	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LHR-C12PA-NSK-301	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LHR-C12PA-NSV-301	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LHR-C12PA-NMK-303	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LHR-C12PA-NMV-303	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LHR-C12PA-NMK-301	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LHR-C12PA-NMV-301	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LRR-C12PA-NMK-304	G H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LRR-C12PA-NMV-304	A G H
	ABS	PVC			800	-20 ... +50°C	IP67	LRR-C12PA-NMK-302	G H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LRR-C12PA-NMV-302	A G H
	ABS	PVC			800	-20 ... +50°C	IP67	LLR-C12PA-NMK-300	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LLR-C12PA-NMV-300	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LLR-C12PA-NMK-304	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LLR-C12PA-NMV-304	A H
	ABS	PVC			800	-20 ... +50°C	IP67	LLR-C12PA-NMK-302	H
	ABS	0.2 m PVC	M8		800	-20 ... +50°C	IP67	LLR-C12PA-NMV-302	A H