

DC ULTRA-MINI INDUCTIVE PROXIMITY SENSOR

MAXIMUM USE OF CRAMPED INSTALLATION SPACE

Ultra-Mini proximity sensors with integrated electronics are designed for position detection in small space. They can be fully integrated when installed in compact components such as linear units, valves, and actuators.

- **Stainless-Steel Cylinders in Ø3,Ø4,M4,M5**
- **Brass Cubes With Square Base in Q5**
- **PNP and NPN Version**
- **N.O. or N.C. Configurations**

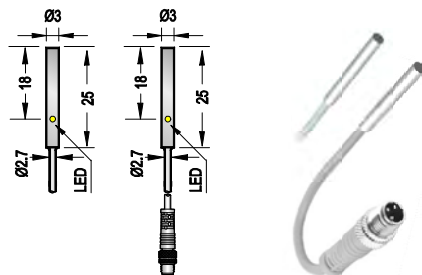
HIGHLIGHTS

- **Maximum Uptime**
- **Long-term Reliability**
- **Fully Integrated Electronics**
- **Standard LED Output State Indicator**
- **EMC Protection And CE Conformity Achived**
- **Shielded Installation Protects Against Mechanical Impact Or Damage**
- **With Short-Circuit Protection, Overload Protection, Polarity Reversal Protection**

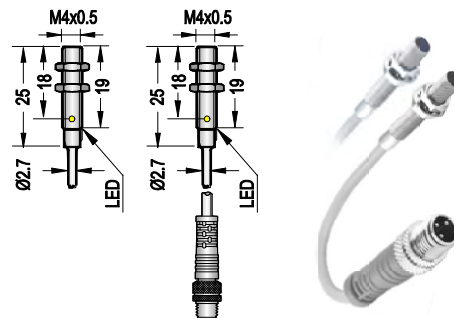


Features:

- Ø3mm, M4mm diameter
- Sn=0.6mm, shielded
- Stainless steel housing case
- 10-30VDC operating voltage
- Short circuit protection
- Overload protection
- Reverse-polarity protection
- NPN, PNP Output
- NO, NC Function
- Cable version
- M8 Pigtail version
- IP67 Protection



(Unit: mm)



(Unit: mm)

		Shielded			Shielded		
		Standard Sn	Extended Sn	Long Sn	Standard Sn	Extended Sn	Long Sn
2m Cable	NPN-NO	L1DE03C0.6A			L1CE04C0.6A		
	NPN-NC	L1DE03D0.6A			L1CE04D0.6A		
	PNP-NO	L1DE03A0.6A			L1CE04A0.6A		
	PNP-NC	L1DE03B0.6A			L1CE04B0.6A		
	NPN-NO+NC						
	PNP-NO+NC						
M8 Pigtail	NPN-NO	L1DE03C0.6N			L1CE04C0.6N		
	NPN-NC	L1DE03D0.6N			L1CE04D0.6N		
	PNP-NO	L1DE03A0.6N			L1CE04A0.6N		
	PNP-NC	L1DE03B0.6N			L1CE04B0.6N		
	NPN-NO+NC						
	PNP-NO+NC						

General Data

Housing size	Ø3mm			M4mm		
Installation type	Shielded			Shielded		
Sensing distance (Sn: mm)	0.6mm			0.6mm		
Standard sensing object	Steel 3x3x1mm			Steel 4x4x1mm		
Effective sensing distance (Sr: mm)	90 ... 110% of Sn			90 ... 110% of Sn		
Assured operating distance (Sa: mm)	0 ... 80% of Sn			0 ... 80% of Sn		
Hysteresis	<15%			<15%		
Housing material	Stainless steel			Stainless steel		
Operating voltage	10 ... 30VDC			10 ... 30VDC		

Electrical Data

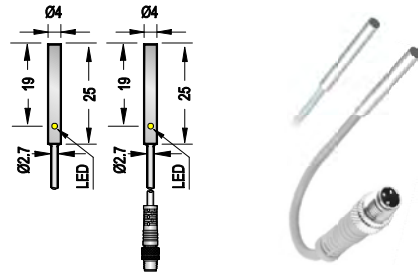
Rated operating voltage	24VDC			24VDC		
Repeated accuracy	±10%			±10%		
Ripple	<10%			<10%		
No load current	10mA			10mA		
Max. Load current	100mA			100mA		
Leakage current	<0.01mA			<0.01mA		
Voltage drop	<1.5VDC			<1.5VDC		
Switching frequency	2000Hz			2000Hz		
Response time	0.1ms/0.1ms			0.1ms/0.1ms		
Rated insulation voltage	75VDC			75VDC		
Operating temperature	-25°C ... +70°C			-25°C ... +70°C		
Storage temperature	-40°C ... +80°C			-40°C ... +80°C		
Temperature drift	<10%			<10%		
Power indicator	No			No		
Function indicator	Yellow LED			Yellow LED		
Reverse polarity protection	Yes			Yes		
Short-circuit protection	Yes			Yes		
Overload trip point	120mA			120mA		
Correction factors	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/copper approx. 0.4			Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/copper approx. 0.4		

Mechanical Data

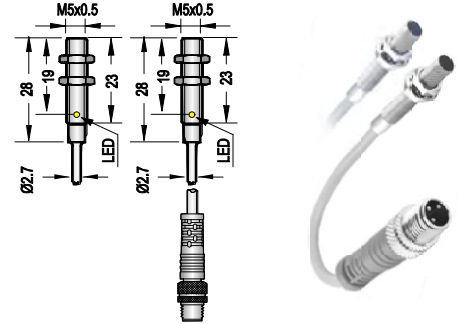
Sensing surface material	POM			POM		
Protection	IP67			IP67		
Shock rating	Shock, half-sinus, 30gn, 11ms			Shock, half-sinus, 30gn, 11ms		
Vibration rating	55Hz, 1mm ampl., 3x30min.			55Hz, 1mm ampl., 3x30min.		
EMC	IEC 60947-5-2			IEC 60947-5-2		
Accessory	/			2 nuts		
Connection	2m PVC cable (Ø2.7 3x0.15mm ²)/300mm Pigtail(3Pin M8 connector)			2m PVC cable (Ø2.7 3x0.15mm ²)/300mm Pigtail(3Pin M8 connector)		
Weight	Approx. 25g			Approx. 25g		

Features:

- Ø4mm, M5mm diameter
- Sn=0.8/1.0/1.5mm shielded
- Stainless steel housing case
- 10-30VDC operating voltage
- Short circuit protection
- Overload protection
- Reverse-polarity protection
- NPN, PNP Output
- NO, NC Function
- Cable version
- M8 Pigtail version
- IP67 Protection



(Unit: mm)



(Unit: mm)

		Shielded			Shielded		
		Standard Sn	Extended Sn	Long Sn	Standard Sn	Extended Sn	Long Sn
2m Cable	NPN-NO	L1DE04C0.8A	L1DE04C01A	L1DE04C1.5A	L1CE05C0.8A	L1CE05C01A	L1CE05C1.5A
	NPN-NC	L1DE04D0.8A	L1DE04D01A	L1DE04D1.5A	L1CE05D0.8A	L1CE05D01A	L1CE05D1.5A
	PNP-NO	L1DE04A0.8A	L1DE04A01A	L1DE04A1.5A	L1CE05A0.8A	L1CE05A01A	L1CE05A1.5A
	PNP-NC	L1DE04B0.8A	L1DE04B01A	L1DE04B1.5A	L1CE05B0.8A	L1CE05B01A	L1CE05B1.5A
	NPN-NO+NC						
M8 Pigtail	PNP-NO+NC						
	NPN-NO	L1DE04C0.8N	L1DE04C01N	L1DE04C1.5N	L1CE05C0.8N	L1CE05C01N	L1CE05C1.5N
	NPN-NC	L1DE04D0.8N	L1DE04D01N	L1DE04D1.5N	L1CE05D0.8N	L1CE05D01N	L1CE05D1.5N
	PNP-NO	L1DE04A0.8N	L1DE04A01N	L1DE04A1.5N	L1CE05A0.8N	L1CE05A01N	L1CE05A1.5N
	PNP-NC	L1DE04B0.8N	L1DE04B01N	L1DE04B1.5N	L1CE05B0.8N	L1CE05B01N	L1CE05B1.5N
	NPN-NO+NC						
	PNP-NO+NC						

General Data

Housing size	Ø4mm			M5mm		
Installation type	Shielded			Shielded		
Sensing distance(Sn: mm)	0.8mm	1.0mm	1.5mm	0.8mm	1.0mm	1.5mm
Standard sensing object	Steel 4x4x1mm	Steel 4x4x1mm	Steel 4x4x1mm	Steel 5x5x1mm	Steel 5x5x1mm	Steel 5x5x1mm
Effective sensing distance (Sr: mm)	90 ... 110% of Sn			90 ... 110% of Sn		
Assured operating distance(Sa: mm)	0 ... 80% of Sn			0 ... 80% of Sn		
Hysteresis	<15%			<15%		
Housing material	Stainless steel			Stainless steel		
Operating voltage	10 ... 30VDC			10 ... 30VDC		

Electrical Data

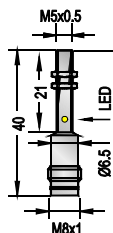
Rated operating voltage	24VDC			24VDC		
Repeated accuracy	±10%			±10%		
Ripple	<10%			<10%		
No load current	10mA			10mA		
Max. Load current	200mA			200mA		
Leakage current	<0.01mA			<0.01mA		
Voltage drop	<1.5VDC	<1.5VDC	<1.5VDC	<1.5VDC	<1.5VDC	<1.5VDC
Switching frequency	2000Hz	2000Hz	2000Hz	2000Hz	2000Hz	2000Hz
Response time	0.1ms/0.1ms	0.1ms/0.1ms	0.1ms/0.1ms	0.1ms/0.1ms	0.1ms/0.1ms	0.1ms/0.1ms
Rated insulation voltage	75VDC			75VDC		
Operating temperature	-25°C ... +70°C			-25°C ... +70°C		
Storage temperature	-40°C ... +80°C			-40°C ... +80°C		
Temperature drift	<10%			<10%		
Power indicator	No			No		
Function indicator	Yellow LED			Yellow LED		
Reverse polarity protection	Yes			Yes		
Short-circuit protection	Yes			Yes		
Overload trip point	220mA			220mA		
Correction factors	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/copper approx. 0.4			Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/copper approx. 0.4		

Mechanical Data

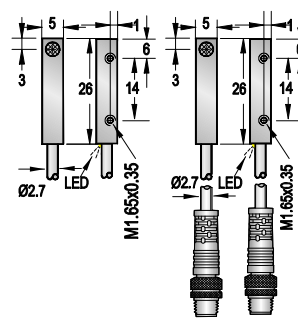
Sensing surface material	POM			POM		
Protection	IP67			IP67		
Shock rating	Shock, half-sinus, 30gn, 11ms			Shock, half-sinus, 30gn, 11ms		
Vibration rating	55Hz, 1mm ampl., 3x30min.			55Hz, 1mm ampl., 3x30min.		
EMC	IEC 60947-5-2			IEC 60947-5-2		
Accessory	/			2 nuts		
Connection	2m PVC cable (Ø2.7 3x0.15mm ²)/300mm Pigtail(3Pin M8 connector)			2m PVC cable (Ø2.7 3x0.15mm ²)/300mm Pigtail(3Pin M8 connector)		
Weight	Approx. 25g			Approx. 25g		

Features:

- M5mm, Q5x5mm diameter
- Sn=0.8/1.0/1.5mm shielded
- Stainless steel housing case
- Nickel plated brass housing case
- 10-30VDC operating voltage
- Short circuit protection
- Overload protection
- Reverse-polarity protection
- NPN, PNP Output
- NO, NC Function
- Cable version
- M8 Pigtail version
- IP67 Protection



(Unit: mm)



(Unit: mm)

		Shielded			Shielded		
		Standard Sn	Extended Sn	Long Sn	Standard Sn	Extended Sn	Long Sn
2m Cable	NPN-NO				L1FE05C0.8A	L1FE05C01A	L1FE05C1.5A
	NPN-NC				L1FE05D0.8A	L1FE05D01A	L1FE05D1.5A
	PNP-NO				L1FE05A0.8A	L1FE05A01A	L1FE05A1.5A
	PNP-NC				L1FE05B0.8A	L1FE05B01A	L1FE05B1.5A
	NPN-NO+NC						
	PNP-NO+NC						
M8 Pigtail	NPN-NO	L1CE05C0.8F	L1CE05C01F	L1CE05C1.5F	L1FE05C0.8N	L1FE05C01N	L1FE05C1.5N
	NPN-NC	L1CE05D0.8F	L1CE05D01F	L1CE05D1.5F	L1FE05D0.8N	L1FE05D01N	L1FE05D1.5N
	PNP-NO	L1CE05A0.8F	L1CE05A01F	L1CE05A1.5F	L1FE05A0.8N	L1FE05A01N	L1FE05A1.5N
	PNP-NC	L1CE05B0.8F	L1CE05B01F	L1CE05B1.5F	L1FE05B0.8N	L1FE05B01N	L1FE05B1.5N
	NPN-NO+NC						
	PNP-NO+NC						
M8 Connector							

General Data			
Housing size	M5mm		
Installation type	Shielded		
Sensing distance(Sn: mm)	0.8mm	1.0mm	1.5mm
Standard sensing object	Steel 5x5x1mm	Steel 5x5x1mm	Steel 5x5x1mm
Effective sensing distance (Sr: mm)	90 ... 110% of Sn		
Assured operating distance(Sa: mm)	0 ... 80% of Sn		
Hysteresis	<15%		
Housing material	Stainless steel		
Operating voltage	10 ... 30VDC		
Electrical Data			
Rated operating voltage	24VDC		
Repeated accuracy	±10%		
Ripple	<10%		
No load current	10mA		
Max. Load current	200mA		
Leakage current	<0.01mA		
Voltage drop	<1.5VDC	<1.5VDC	<1.5VDC
Switching frequency	2000Hz	2000Hz	2000Hz
Response time	0.1ms/0.1ms	0.1ms/0.1ms	0.1ms/0.1ms
Rated insulation voltage	75VDC		
Operating temperature	-25°C ... +70°C		
Storage temperature	-40°C ... +80°C		
Temperature drift	<10%		
Power indicator	No		
Function indicator	Yellow LED		
Reverse polarity protection	Yes		
Short-circuit protection	Yes		
Overload trip point	220mA		
Correction factors	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/copper approx. 0.4		
Mechanical Data			
Sensing surface material	POM		
Protection	IP67		
Shock rating	Shock, half-sinus, 30gn, 11ms		
Vibration rating	55Hz, 1mm ampl., 3x30min.		
EMC	IEC 60947-5-2		
Accessory	2 nuts		
Connection	Pico-style 3Pin M8 connector		
Weight	Approx. 4g		

Q5x5mm		
Shielded		
0.8mm	1.0mm	1.5mm
Steel 5x5x1mm	Steel 5x5x1mm	Steel 5x5x1mm
90 ... 110% of Sn		
0 ... 80% of Sn		
<15%		
Nickel plated brass		
10 ... 30VDC		

24VDC		
±10%		
<10%		
10mA		
200mA		
<0.01mA		
<1.5VDC	<1.5VDC	<1.5VDC
2000Hz	2000Hz	2000Hz
0.1ms/0.1ms	0.1ms/0.1ms	0.1ms/0.1ms
75VDC		
-25°C ... +70°C		
-40°C ... +80°C		
<10%		
No		
Yellow LED		
Yes		
Yes		
220mA		
Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/copper approx. 0.4		

POM		
IP67		
Shock, half-sinus, 30gn, 11ms		
55Hz, 1mm ampl., 3x30min.		
IEC 60947-5-2		
/		
2m PVC cable (Ø2.7 3x0.15mm²)/300mm Pigtail(3Pin M8 connector)		
Approx. 25g		