

ifm electronic



7415 x

Made in Germany

2010



fluid sensors
and diagnostic
systems

position
sensors
and object
recognition

bus,
identification
and control systems

ifm electronic – close to you!



- Dual inductive feedback sensors for valves and actuators.
- Straightforward fit to standard actuators.
- Compact, weatherproof and low maintenance.
- Optional back wiring option for local solenoid control.
- Versions for network, hazardous area and conventional wiring.

Valve sensors

In industrial processes where liquids, air or gases are used valves are needed for dosing and control. There is a wide variety of valve types; butterfly or ball valves being the most common quarter-turn types.

These valves are seldom operated manually. Pneumatic valve actuators are normally used for mechanical positioning. The valve position must be monitored electronically.

Mechanical switches are still often used for position feedback on the actuator shaft. For other solutions several proximity sensors are used together with a switch target for position detection. Disadvantage: Mounting is mechanically complex. During switch mounting the signal wires can be reversed when they are connected in the top-mounted junction box. Where there are temperature fluctuations condensing humidity leads to corrosion and thus malfunction.

Operating principle

An innovative design eliminates the disadvantages of these conventional solutions. In 1992 ifm electronic developed a standard which is now used by many leading actuator manufacturers. A round switch target, known as a "puck", with two metal screws offset by 90° is mounted on the actuator shaft. The screws are located at a different height. A compact dual proximity switch (type IND) with two integral sensors detects the upper or lower metal screw depending on the valve position and thus the two switch positions.

Due to the simple construction the system operates safely with no wear at all. It is virtually resistant to external influence and meets the protection rating IP 67. Under certain conditions the unit can even be self-cleaning. The sensors are also resistant to mechanical stress such as vibration and shock.

Special design AS-i (T5)


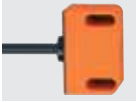

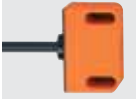

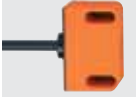

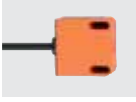













An extended design is the series T5. In addition to the inductive dual sensor, the unit provides an integrated connection for the solenoid valve. The connection to the control unit is made via a two-wire AS-i cable. The asset: Up to 30 other units can be connected to this line and separately controlled via the AS-i master.



Feedback: Monitoring of pneumatic and manual valves must be possible.




Sensors for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Draw- ing no.	Order no.
Cable 2 m · Output function  · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT	10...36	IP67	1300	250	1	IN5251
Cable 6 m · Output function  · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PC (polycarbonate)	10...36	IP67	1300	250	1	IN5304
Cable 10 m · Output function  · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT	10...36	IP67	1300	250	1	IN5323
Cable 2 m · Output function  · AC/DC · Wiring diagram no. 2									
	40 x 26 x 40	4 nf	PBT	20...250	IP67	25 / 50	350 / 100	2	IN0110*
M12 connector · Output function  · DC PNP/NPN · Wiring diagram no. 13									
	40 x 26 x 26	4 nf	PBT	10...36	IP67	1300	250	3	IN5224
M12 connector · Output function  · DC PNP/NPN · Wiring diagram no. 3									
	40 x 26 x 47	4 nf	PBT	10...36	IP67	250	250	4	IN5331
M12 connector · Output function  · DC PNP · Wiring diagram no. 4									
	40 x 26 x 26	4 nf	PBT	10...36	IP67	1300	250	3	IN5225
	40 x 26 x 47	4 nf	PBT	10...36	IP67	1300	250	4	IN5327
M18 connector · Output function  · DC PNP · Wiring diagram no. 4									
	40 x 26 x 26	4 nf	PBT	10...36	IP67	1300	250	5	IN5285
M18 connector · Output function  · AC/DC · Wiring diagram no. 5									
	40 x 26 x 40	4 nf	PBT	20...250	IP67	25 / 50	350 / 100	6	IN0108*
Rd 24 x 1/8 connector 6 pins · Output function  · DC PNP									
	40 x 26 x 60	4 nf	PBT	10...36	IP67	1300	250	7	IN5334

Valve sensors

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Draw- ing no.	Order no.
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Terminals · Output function / · DC PNP · Wiring diagram no. 14

	33 x 60 x 92	4 nf	PA (polyamide)	10...30	IP67	500	100	8	IN5409
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f = flush / nf = non flush


* Note for AC and AC/DC units

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting). Recommendation: check the unit for reliable function after a short circuit.


Sensors for industrial applications, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Draw- ing no.	Order no.
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For connection to AS-i flat cable IP 67 · 1 x 2 inputs · Wiring diagram no. 6

	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP67	–	–	9	AC2315
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M12 connector · Output function transistor PNP · 2 inputs / 1 output

	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP67	–	–	10	AC2316
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For connection to AS-i flat cable IP 67 · Output function transistor PNP · 2 inputs / 2 outputs


	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP67	–	–	10	AC2317
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f = flush / nf = non flush

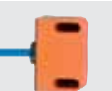
Sensors with ATEX approval 1G/2G and 1D

Type	Dimensions [mm]	Sensing range [mm]	Material	U _{nom.} at 1 KΩ [V]	U _b [V]	Internal capacit. [nF]	Internal inductance [μH]	f [Hz]	Draw- ing no.	Order no.
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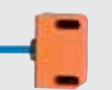
M12 connector · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 7

	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	11	NN5008
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Cable 2 m · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 8


	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	1	NN5009
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Cable 10 m · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 8


	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	140	1800	1	NN5011
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Type	Dimensions [mm]	Sensing range [mm]	Material	U _{nom.} at 1 kΩ [V]	U _b [V]	Internal capacit. [nF]	Internal inductance [μH]	f [Hz]	Drawing no.	Order no.
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M18 connector · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 9

	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	5	NN5013
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Rd 24 x 1/8 connector 6 pins · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW


	40 x 26 x 60	4 nf	PBT	8.2 DC	–	150	150	250	7	N95001
	40 x 26 x 60	4 nf	PBT	8.2 DC	–	100	150	1300	7	N95002

f = flush / nf = non flush



Sensors with ATEX approval 3D and / or 3G

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Drawing no.	Order no.
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M12 connector · Output function transistor PNP · 2 inputs / 2 outputs

	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP5X	–	–	10	AC317A
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M12 connector · Output function transistor PNP · 2 inputs / 1 output

	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP5X	–	–	10	AC316A
	55 x 60 x 35	4	PBT (Pocan)	26.5...31.6	IP67	–	–	12	AC326A

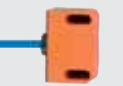
M12 connector · 1 x 2 inputs · Wiring diagram no. 6

	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP5X	–	–	9	AC315A
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M12 connector · Output function  · DC PNP · Wiring diagram no. 4

	40 x 26 x 47	4	PBT	10...30	IP67	1300	100	13	IN507A
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Cable 2 m · Output function  · DC PNP · Wiring diagram no. 1





	40 x 26 x 26	4 nf	PBT (Pocan)	10...30	IP67	1300	100	1	IN508A
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M12 connector · Output function  · DC PNP · Wiring diagram no. 4


	40 x 26 x 47	4 nf	PBT (Pocan)	10...30	IP67	1300	100	4	IN509A
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f = flush / nf = non flush











Sensors for rising stem valves

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Draw- ing no.	Order no.
Cable 2 m · Output function 1...5 V analogue · DC · Wiring diagram no. 10									
	67.5 x 43 x 110	0...80	PA	18...36	IP65 / IP67	–	–	14	IX5002
Cable 2 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 11									
	67.5 x 43 x 110	0...80	PA	18...36	IP65 / IP67	–	100	15	IX5006
Cable with connector 0.3 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 12									
	65 x 52 x 110	0...80	PA	18...36	IP65 / IP67	–	100	16	IX5010
· Wiring diagram no. 12									
	65 x 43 x 110	–	–	–	–	–	–	17	ZZ0214

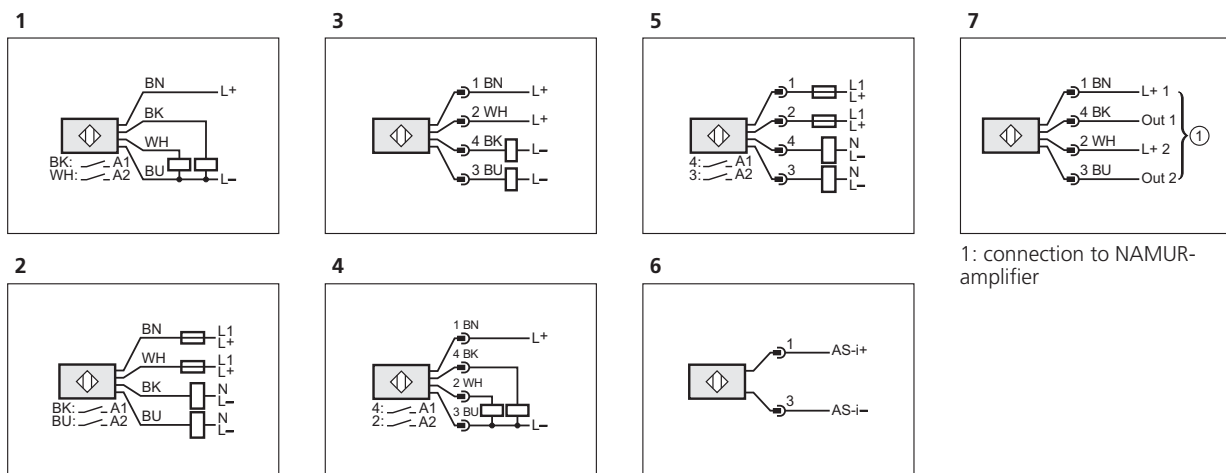
Accessories

Type	Description	Order no.
	Spacer · 10 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10579
	Spacer · 3 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10584
	Spacer · 5 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10585
	Target puck · Ø 53 mm · Adjustable between 0° and 360° · Housing materials: Target puck: PVC / screws: high-grade stainless steel	E10661
	Mounting kit for limit position feedback · tyco 792E-100 · for Keystone actuators	E11243
	Mounting adapter · for Kieselmann seat valves · accessory for IX · Housing materials: adapter: PA / Target: stainless steel 1.4404	E12123
	reinforcement bracket · for type IND · Housing materials: stainless steel 316Ti / 1.4571	E11310
	Mounting adapter · for Alfa Laval valves · accessory for IX · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	E11900

Type	Description	Order no.
	Mounting adapter · for Südm valves · accessory for IX · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	E11989
	Mounting adapter · for Georg Fischer diaphragm valve Diastar with mounting kit M12 · accessory for IX · Housing materials: adapter: POM / Target: stainless steel	E12009
	Mounting adapter · for Georg Fischer diaphragm valve Diastar with mounting kit M16 · accessory for IX · Housing materials: adapter: POM / Target: stainless steel	E12010
	Mounting adapter · IX / Ø 30 mm · for Gemü actuators with mounting kit · accessory for IX · Housing materials: adapter: POM / Target: stainless steel	E12042
	Mounting adapter · IX / Ø 45 mm · for Gemü actuators with mounting kit · accessory for IX · Housing materials: adapter: POM / Target: stainless steel	E12043
	Target puck · Ø 53 mm · 6 possible switching flag positions · with drain holes · Housing materials: Target puck: PA 6 / screws: high-grade stainless steel	E17105
	Target puck · Ø 53 mm · Housing materials: Target puck: PBT / screws: high-grade stainless steel	E17118
	Target puck · Ø 65 mm · Housing materials: Target puck: PVC / screws: high-grade stainless steel	E17148
	Target puck · Ø 55 mm · Inverted function · Housing materials: Target puck: PVC / screws: high-grade stainless steel / Metal ring: stainless steel	E17205
	direction indicator black · 12 x 4.8 · For target puck · Housing materials: POM	E17295
	direction indicator yellow · 12 x 4.8 · For target puck · Housing materials: POM	E17296
	Target puck · Ø 53 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17320
	Target puck · Ø 53 mm · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17321
	Target puck · Ø 53 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17322

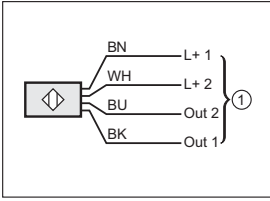
Type	Description	Order no.
	Target puck · Ø 53 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17323
	Target puck · Ø 65 mm · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17324
	Target puck · Ø 65 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17325
	Target puck · Ø 65 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17326
	Target puck · Ø 65 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17327
	Target puck · Ø 102 · Housing materials: Target puck: PA 6 / screws: V2A	E17328
	Target puck · Ø 102 · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17329
	Target puck · Ø 102 · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17330
	Target puck · Ø 102 · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17331
	protective housing · Accessory for valve sensors · for type IND · Housing materials: stainless steel	E11984

Wiring diagrams



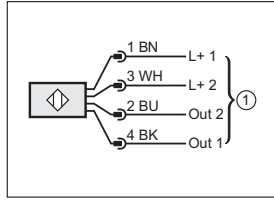
Wiring diagrams

8



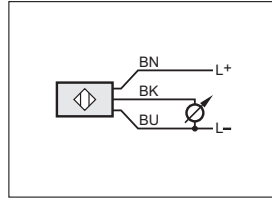
1: connection to NAMUR-amplifier

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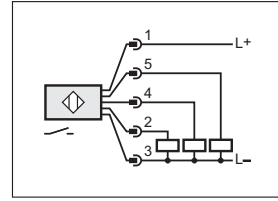


1: connection to NAMUR-amplifier

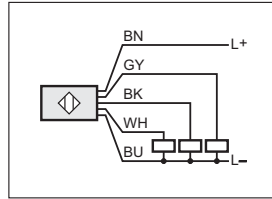
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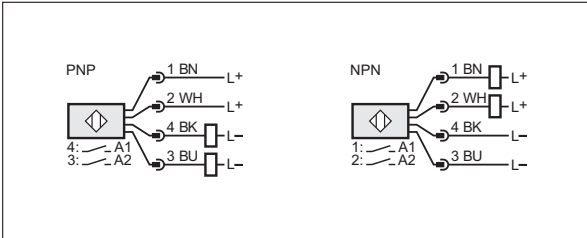
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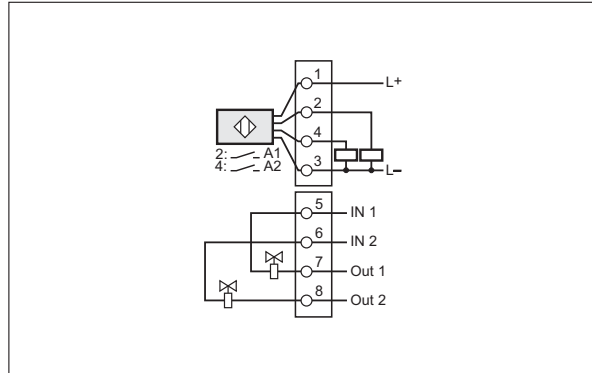
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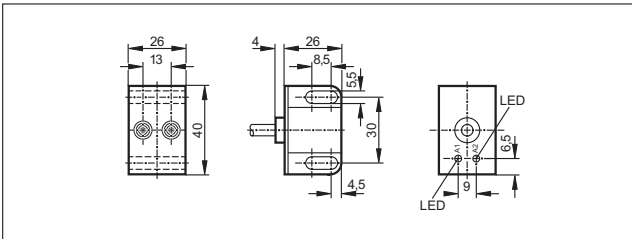


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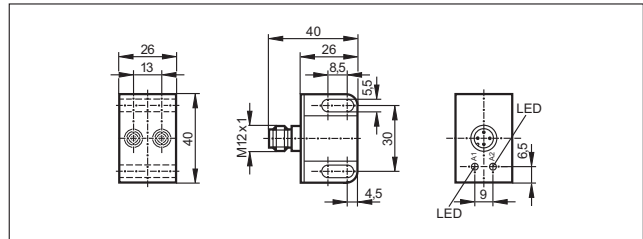


Scale drawings

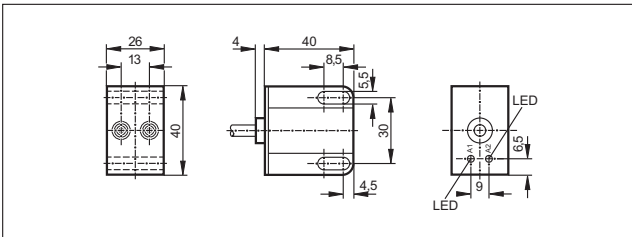
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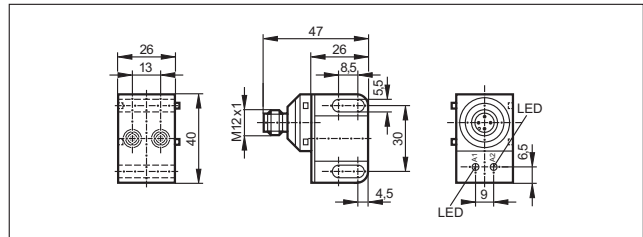
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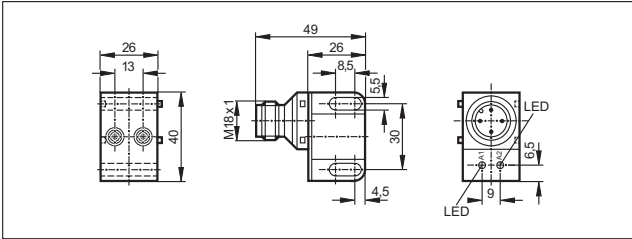


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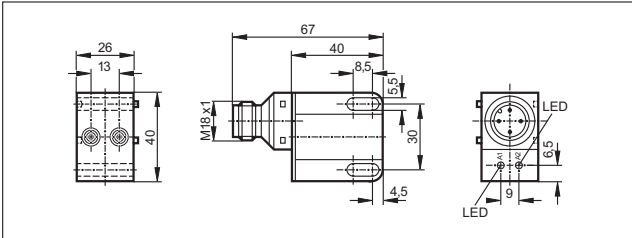


Scale drawings

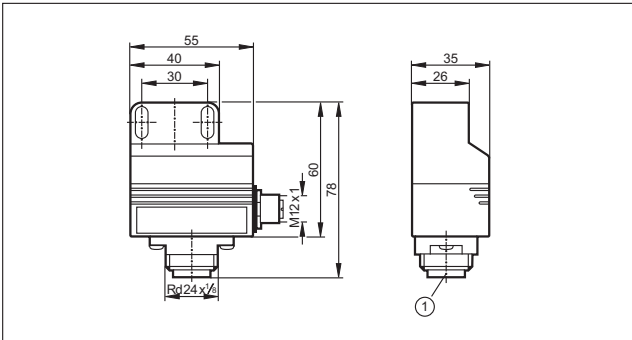
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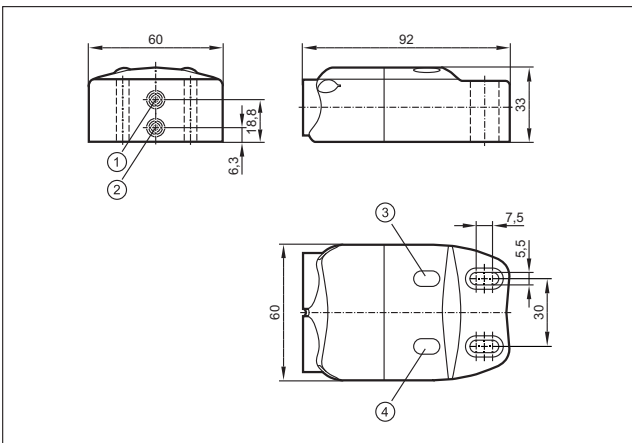


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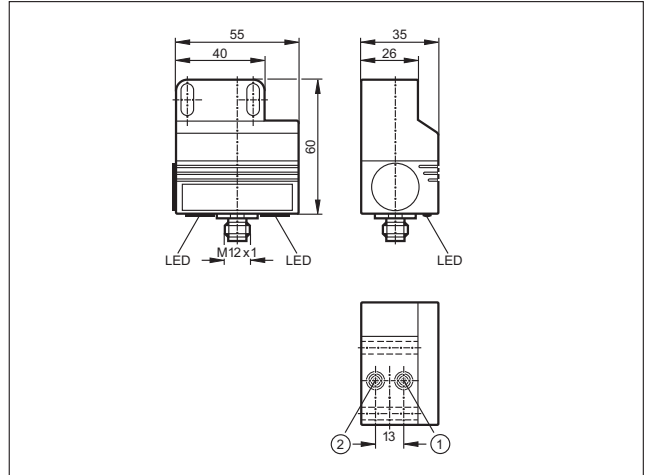
1: field connection

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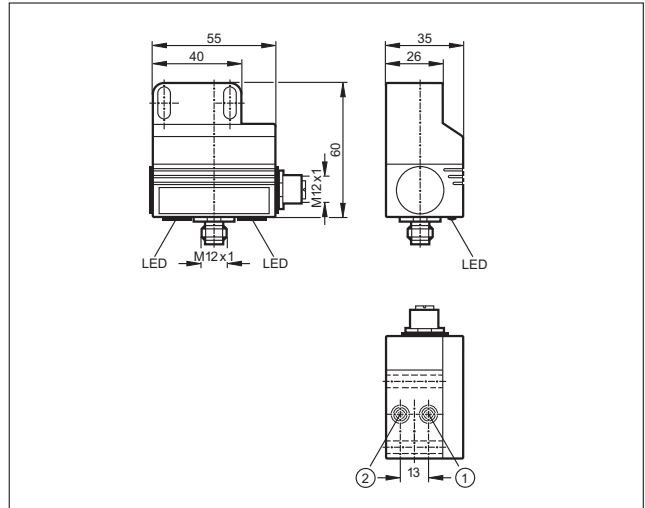
1: sensor 1, 2: sensor 2, 3: LED OUT 1, 4: LED OUT 2

9



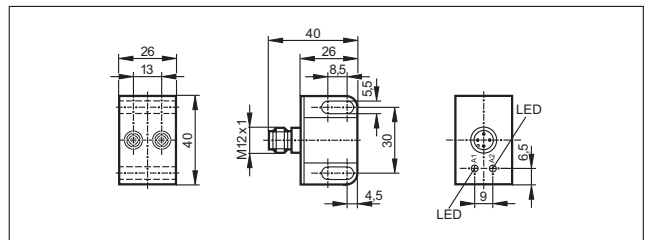
1: sensor 1, 2: sensor 2

10



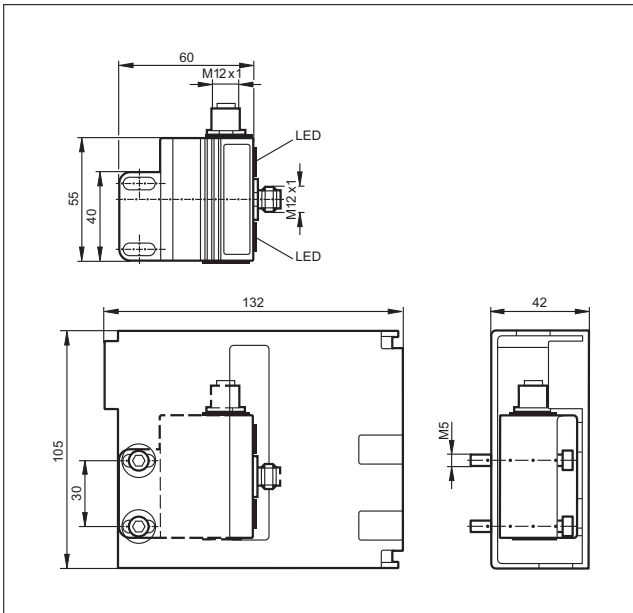
1: sensor 1, 2: sensor 2

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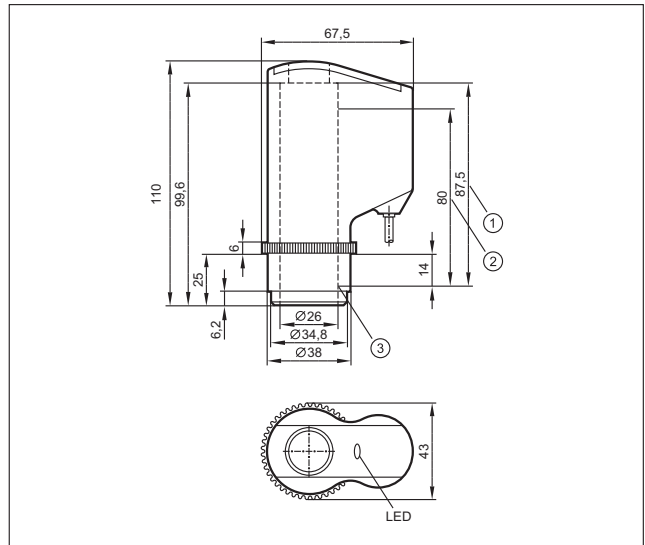


Scale drawings

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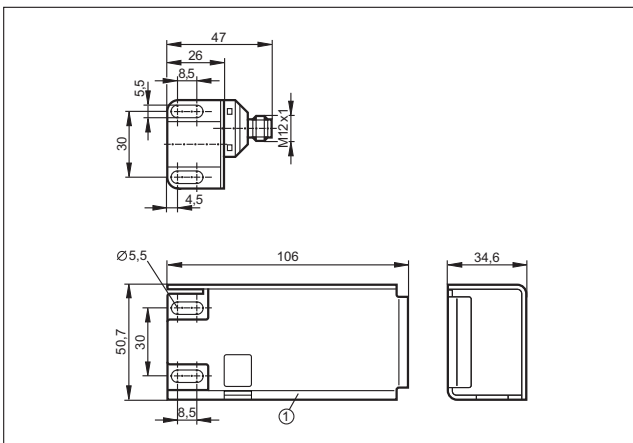


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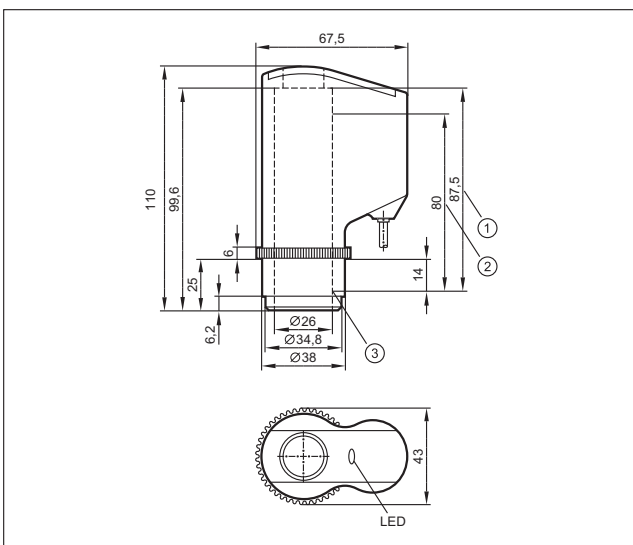
1: Measuring distance, 2: Max. spindle stroke, 3: Initial value of the measuring range (zero point)

13



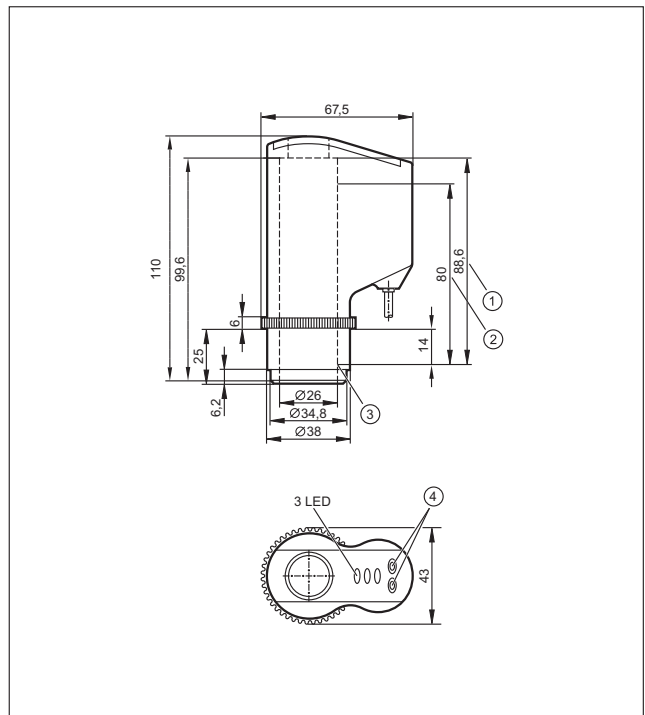
1: protective housing

14



1: Measuring range, 2: Max. spindle stroke, 3: Initial value of the measuring range (zero point)

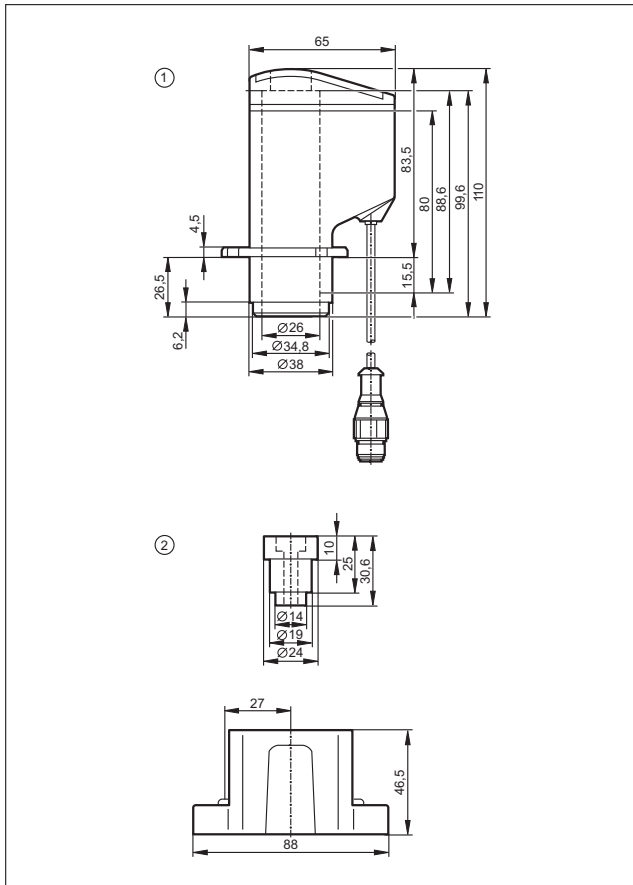
16



1: Measuring distance, 2: Max. spindle stroke, 3: Initial value of the measuring range (zero point), 4: Programming buttons

Scale drawings

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1: Valve sensor IX5010, 2: Mounting adapter E11900



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