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!

- **Safe class 2 laser with visible light for ease of alignment.**
- **Detect objects smaller than 1 mm across.**
- **Long range versions for measurement up to 60 m.**
- **Accurate and repeatable switch point setting.**
- **Fine ajustment mounting brackets for easy installation.**

Photoelectric sensors: laser

Laser systems are used where detection of small objects or precise positioning is required. They are available as through-beam sensors, retro-reflective sensors or diffuse reflection sensors.

Laser light consists of light waves of identical length which have a defined phase relation (coherence). This results in an important feature of laser systems, that is the almost parallel light beam. Result: Due to the small angle of divergence long ranges of up to 60 metres can be achieved. The laser spot which is also clearly visible at daylight simplifies the alignment of the system. Apart from the advantages some points have to be taken into account for the selection of the suitable optical system: compared to standard sensors the laser sensors have a reduced temperature range (-10...50 °C). In view of the small light spot and the often high ranges the system is more sensitive to vibrations than standard sensors.

Mounting aids

The ifm laser sensors offer a useful function for easier alignment: The laser power is increased during adjustment: This leads to a particularly bright laser spot which enables safe alignment from a distance even at daylight.

How dangerous are laser sensors?

Due to the small angle of divergence laser beams are focussed on a small area. The energy and power density on this area is extremely high. ifm laser sensors comply with the European standard EN 60825 or the international standard IEC 60825. These standards describe the operation of laser systems.

Coherent: Laser sensors emit light of a defined wave length and the same phase position.

Cylindrical housing OG (M18) Laser PerformanceLine

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Through-beam sensor · Type OGSL M18 x 1 · M12 connector · high-grade stainless steel · DC								
	Transmitter	2 m	5	–	10...36	1	1	**OGS701**
Through-beam sensor · Type OGEL M18 x 1 · M12 connector · high-grade stainless steel · DC								
	Receiver	2 m	–	H/D PNP	10...36	2	2	**OGE701**
Through-beam sensor · Type OGSL M18 x 1 · M12 connector · high-grade stainless steel · DC								
	Transmitter	60 m	150	–	10...36	1	1	**OGS700**
Through-beam sensor · Type OGEL M18 x 1 · M12 connector · high-grade stainless steel · DC								
	Receiver	60 m	–	H/D PNP	10...36	2	2	**OGE700**
Retro-reflective sensor · Type OGPL M18 x 1 · M12 connector · high-grade stainless steel · DC								
	Polarisation filter	0.2...2 m	5	H/D PNP	10...36	2	2	**OGP701**
	Polarisation filter	0.2...15 m	40	H/D PNP	10...36	2	2	**OGP700**
Diffuse reflection sensor · Type OGHL M18 x 1 · M12 connector · high-grade stainless steel · DC								
	Background suppression	20...200 mm	1.2	H/D PNP	10...36	2	2	**OGH700**

Rectangular housing OJ Laser PerformanceLine, lateral sensing face

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Through-beam sensor · Type OJSL · M8 connector · plastics · DC								
	Transmitter	1 m	< 4	–	10...30	1	3	**OJ5041**
Through-beam sensor · Type OJEL · M8 connector · plastics · DC								
	Receiver	1 m	–	H/D PNP	10...30	3	3	**OJ5042**
Through-beam sensor · Type OJSL · M8 connector · plastics · DC								
	Transmitter	15 m	< 24	–	10...30	1	3	**OJ5038**
Through-beam sensor · Type OJEL · M8 connector · plastics · DC								
	Receiver	15 m	–	H/D PNP	10...30	3	3	**OJ5039**

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Retro-reflective sensor · Type OJPL · M8 connector · plastics · DC								
	Polarisation filter	8 m	< 12	H/D PNP	10...30	3	3	**OJ5036**
Diffuse reflection sensor · Type OJHL · M8 connector · plastics · DC								
	Background suppression	7...150 mm	0.8	H/D PNP	10...30	3	4	**OJ5058**
	Background suppression	7...150 mm	0.8	H/D PNP	10...30	3	5	**OJ5158**
	Background suppression	15...200 mm	2x1	H/D PNP	10...30	3	6	**OJ5054**
	Background suppression	15...200 mm	2x1	H/D PNP	10...30	3	7	**OJ5154**

Rectangular housing OJ Laser PerformanceLine, front sensing face

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Through-beam sensor · Type OJSL · M8 connector · plastics · DC								
	Transmitter	1 m	< 4	–	10...30	1	8	**OJ5019**
	Transmitter	15 m	< 24	–	10...30	1	8	**OJ5016**
Through-beam sensor · Type OJEL · M8 connector · plastics · DC								
	Receiver	1 m	–	H/D PNP	10...30	3	8	**OJ5020**
	Receiver	15 m	–	H/D PNP	10...30	3	8	**OJ5017**
Retro-reflective sensor · Type OJPL · M8 connector · plastics · DC								
	Polarisation filter	8 m	< 12	H/D PNP	10...30	3	8	**OJ5014**
Diffuse reflection sensor · Type OJHL · M8 connector · plastics · DC								
	Background suppression	7...150 mm	0.8	H/D PNP	10...30	3	9	**OJ5056**
	Background suppression	15...200 mm	2x1	H/D PNP	10...30	3	10	**OJ5052**

Rectangular housing OJ Laser class 1, front sensing face

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Through-beam sensor · Type OJSL · M8 connector · plastics · DC								
	Transmitter	1 m	< 4	–	10...30	1	11	**OJ5141**
	Transmitter	15 m	< 24	–	10...30	1	11	**OJ5138**

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Through-beam sensor · Type OJSL · M8 connector · plastics · DC								
	Transmitter	15 m	< 24	–	10...30	1	12	**OJ5116**
Through-beam sensor · Type OJEL · M8 connector · plastics · DC								
	Receiver	1 m	–	H/D PNP	10...30	3	11	**OJ5142**
	Receiver	15 m	–	H/D PNP	10...30	3	11	**OJ5139**
	Receiver	15 m	–	H/D PNP	10...30	3	12	**OJ5117**
Retro-reflective sensor · Type OJPL · M8 connector · plastics · DC								
	Polarisation filter	8 m	< 12	H/D PNP	10...30	3	12	**OJ5114**
	Polarisation filter	8 m	< 12	H/D PNP	10...30	3	11	**OJ5136**
Diffuse reflection sensor · Type OJHL · M8 connector · plastics · DC								
	Background suppression	15...200 mm	2x1	H/D PNP	10...30	3	13	**OJ5152**

Rectangular housing O5 Laser class 1

Type	Operating principle	Sensing range	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	U_b [V]	Wiring diagram no.	Draw-ing no.	Order no.
Through-beam sensor · Type O5S · M12 connector · plastics · DC								
	Transmitter	60 m	150	–	10...36	1	14	**O5S700**
Through-beam sensor · Type O5E · M12 connector · plastics · DC								
	Receiver	60 m	–	H/D PNP	10...36	2	15	**O5E700**
Retro-reflective sensor · Type O5P · M12 connector · plastics · DC								
	Polarisation filter	15 m	40	H/D PNP	10...36	2	16	**O5P700**
Diffuse reflection sensor · Type O5H · M12 connector · plastics · DC								
	Background suppression	20...200 mm	1.2	H/D PNP	10...36	2	17	**O5H700**

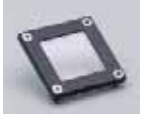
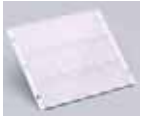
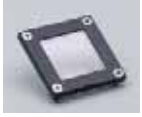
Rectangular housing O1 Laser PerformanceLine with background suppression

Type	Operating principle	Measuring range	Light spot diameter [mm]	U_b [V]	Current consumption [mA]	Sampling rate / switching frequency [Hz]	Drawing no.	Order no.
Optical distance sensor · Type O1DL · M12 connector · metal · DC								
	Background suppression	0.2...10 m	6	10...30	150	5	18	**O1D101**
	Background suppression	0.2...10 m	6	10...30	150	5	18	**O1D104**

Accessories

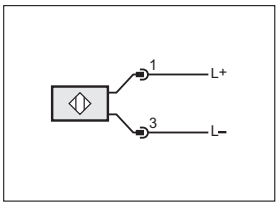
Type	Description	Order no.
	Prismatic reflector · Ø 10 mm · round · fixing by screw · M3 · for laser units · for type OGPL, OJPL, OLPL · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / Nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20990**
	Prismatic reflector · Ø 15 mm · round · fixing by screw · M3 · for laser units · for type OGPL, OJPL, OLPL · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / Nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20992**
	Prismatic reflector · Ø 19 mm · round · fixing by screw · M3 · for laser units · for type OGPL, OJPL, OLPL · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / Nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20993**
	Prismatic reflector · 11 x 11 mm · angular · fixing by screw · M3 · for laser units · for type OGPL, OJPL, OLPL · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / Nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20991**
	Prismatic reflector · 14 x 23 mm · angular · for laser units · for type OGPL, OJPL, OLPL · Housing materials: front plate: PMMA / base: ABS	**E20989**
	Prismatic reflector · 30 x 20 mm · angular · for laser units · for type OGPL, OJPL, OLPL · Housing materials: front plate: PMMA / base: ABS	**E20994**
	Prismatic reflector · 50 x 10 mm · angular · for laser units · for type OGPL, OJPL, OLPL · Housing materials: front plate: PMMA / base: ABS	**E20988**
	Prismatic reflector · 50 x 50 mm · angular · for laser sensors and glass / film detection sensors · Housing materials: plastics	**E20722**
	Fixture for mounting and fine adjustment of laser units · Ø 18.5 mm · Clamp mounting · rod or free-standing depending on the clamp · for type OG · Housing materials: stainless steel 316Ti / 1.4571	**E20737**
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	**E20720**
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	**E20721**

Type	Description	Order no.
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	**E21206**
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	**E21207**
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E20938**
	mounting rod · Ø 12 / M10 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	**E20940**
	Cube · M10 · aluminium profile · Housing materials: diecast zinc	**E20951**
	Head cap screw · M10 x 45 mm · ISO 4762 (DIN 912) · free-standing M10 · Housing materials: screw: steel galvanised	**E21208**
	Head cap screw · M10 x 45 mm · ISO 4762 (DIN 912) · free-standing M10 · Housing materials: screw: high-grade stainless steel	**E21209**
	Fixture for mounting and fine adjustment of laser units · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E21219**
	Fixture for mounting and fine adjustment of laser units · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: high-grade stainless steel	**E21220**
	Mounting set · OJ · for front lens · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20970**
	Mounting set · OJ · for front lens · Clamp mounting · rod mounting · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E21221**
	mounting rod · Ø 10 / M8 · Length: 150 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E21081**
	mounting rod · Ø 10 / M8 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	**E80310**
	Head cap screw · M8 x 40 mm · ISO 4762 (DIN 912) · free-standing M8 · Housing materials: screw: steel galvanised	**E21204**

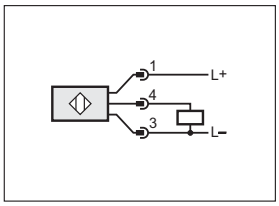
Type	Description	Order no.
	Swivel-mount clip · for type OJ · Housing materials: diecast zinc	**E20974**
	Fixture for mounting and fine adjustment of laser units · for front lens · for type OJ · Housing materials: diecast zinc	**E20975**
	Mounting set · OJ · for side lens · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E21222**
	Mounting set · OJ · for side lens · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20973**
	Fixture for mounting and fine adjustment of laser units · for side lens · for type OJ · Housing materials: diecast zinc	**E20976**
	Mounting set · OJ · for side lens · rod mounting Ø 10 mm · Housing materials: clamp: diecast zinc / fixture: stainless steel 316Ti / 1.4571	**E21095**
	angle support · 90° · for type OF · Housing materials: housing: ABS / lens: PC	**E20590**
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: PMMA transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	**E21133**
	Fixture for mounting and fine adjustment of laser units · O1D · Clamp mounting · rod or free-standing depending on the clamp · Housing materials: fixture: aluminium transparent anodised / plastics: POM / screws: stainless steel	**E1D100**
	Prismatic reflector · 226 x 262 mm · angular · for type O1D · Housing materials: plastics	**E21159**
	Mounting set · E2D101 + E20938 + E20951	**E21079**
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: glass transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	**E21171**
	Fixture for mounting and fine adjustment of laser units · Clamp mounting · rod or free-standing depending on the clamp · for type OL, O5 · Housing materials: stainless steel 316Ti / 1.4571	**E20794**

Wiring diagrams

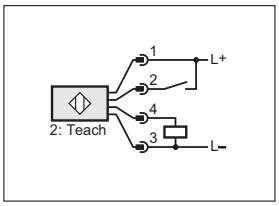
1



2

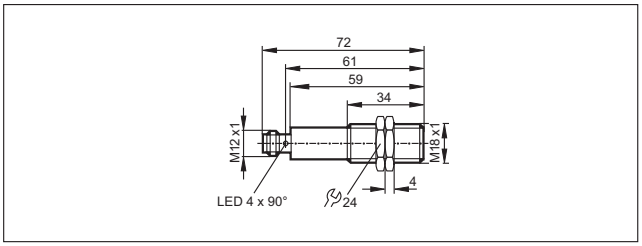


3

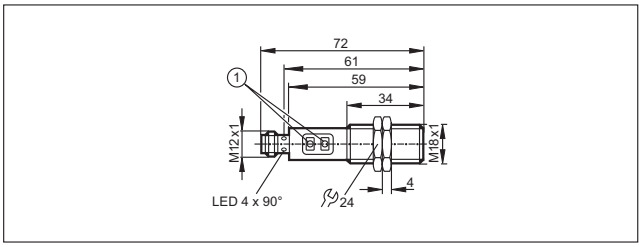


Scale drawings

1

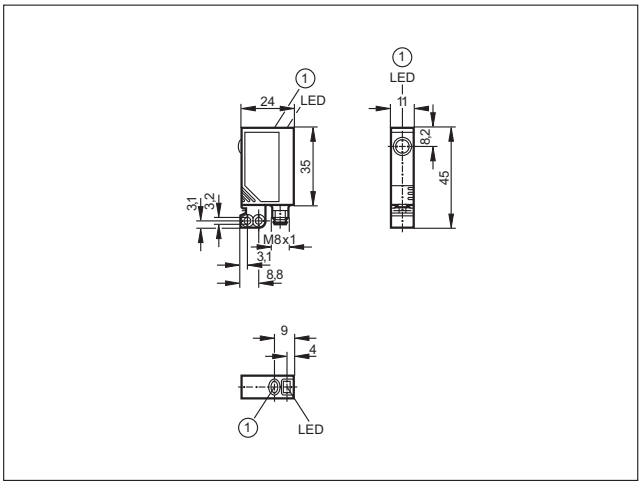


2



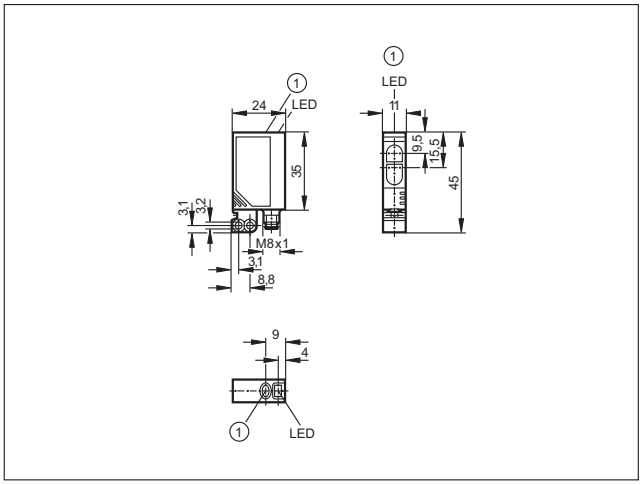
1: Programming buttons

3



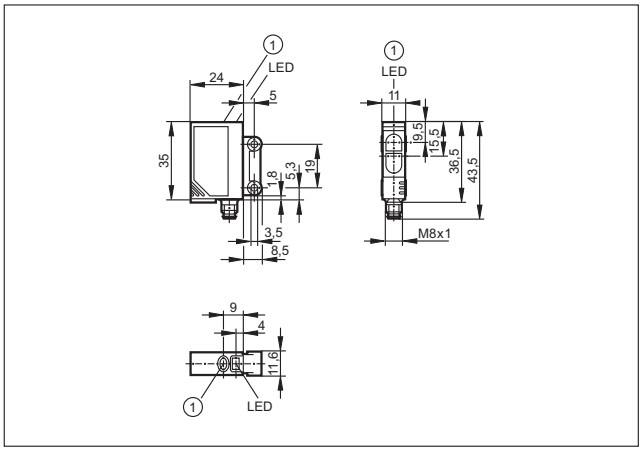
1: pushbutton

4



1: pushbutton

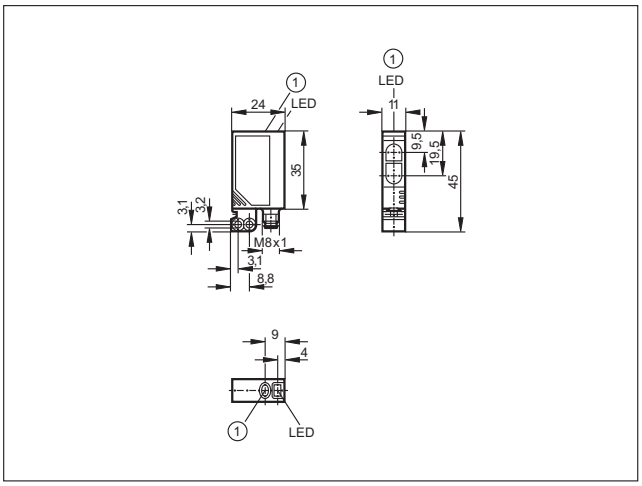
5



1: pushbutton

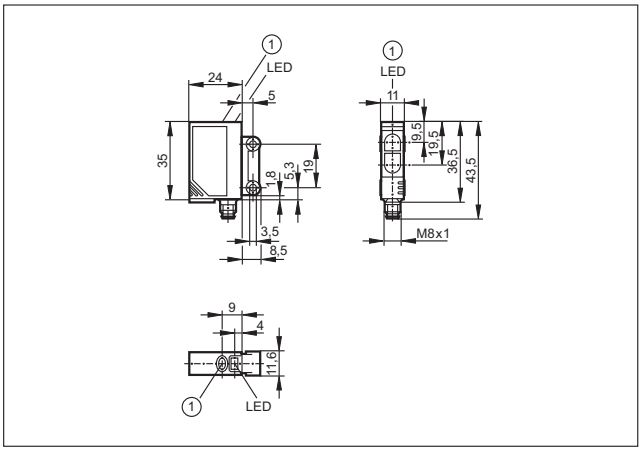
Scale drawings

6



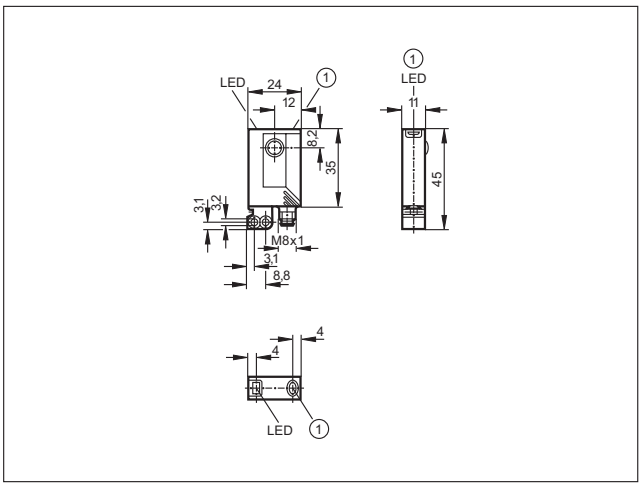
1: pushbutton

7



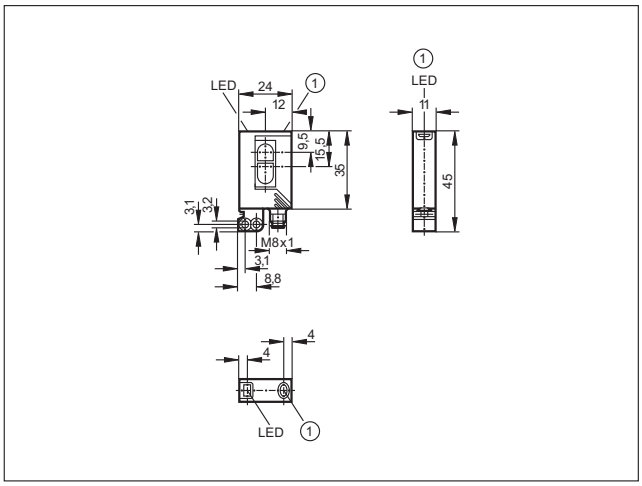
1: pushbutton

8



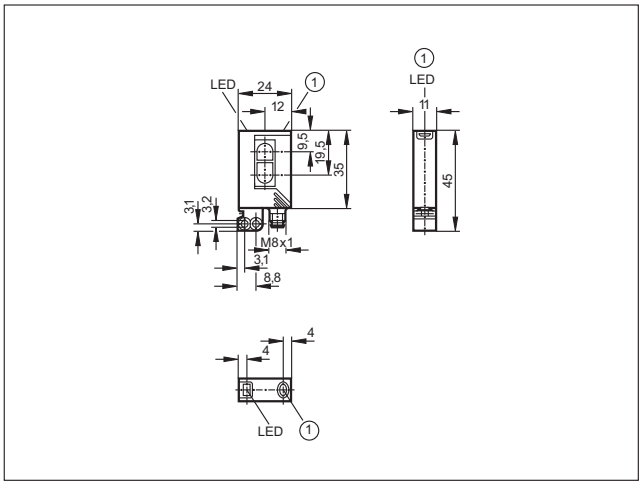
1: pushbutton

9



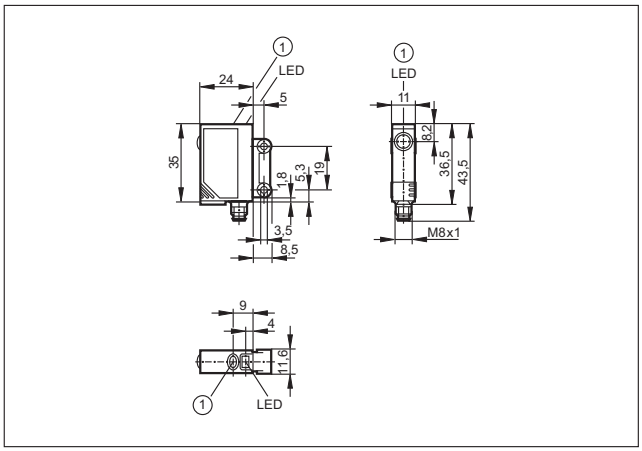
1: pushbutton

10



1: pushbutton

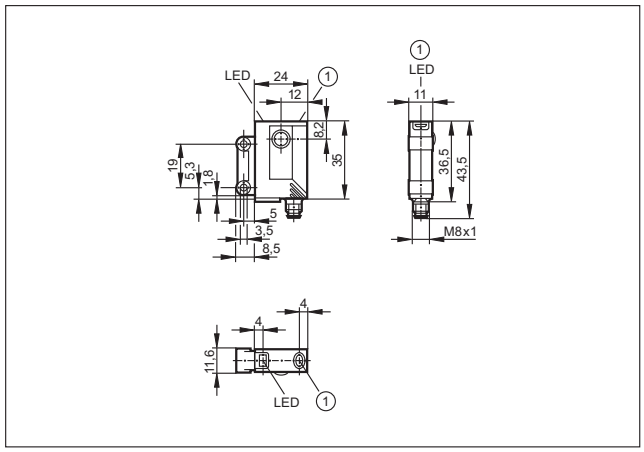
11



1: pushbutton

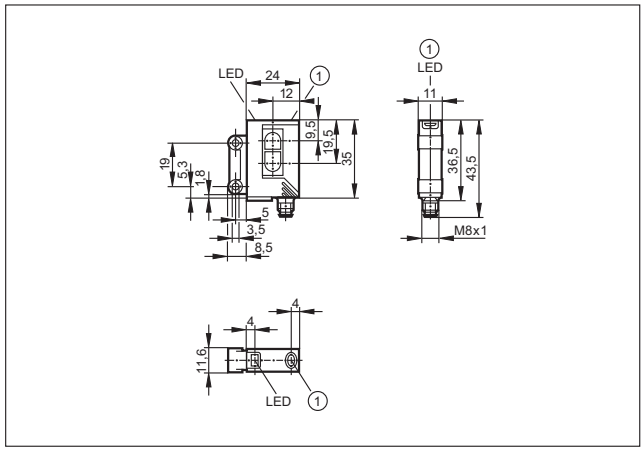
Scale drawings

12



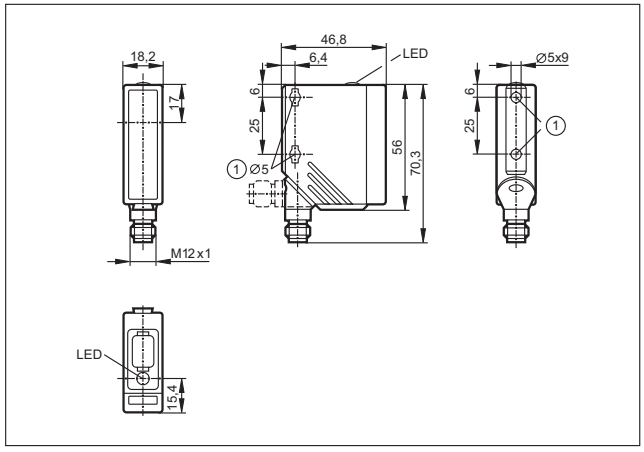
1: pushbutton

13



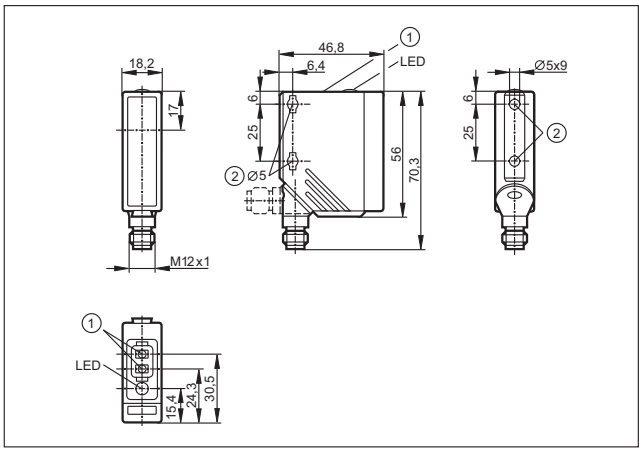
1: pushbutton

14



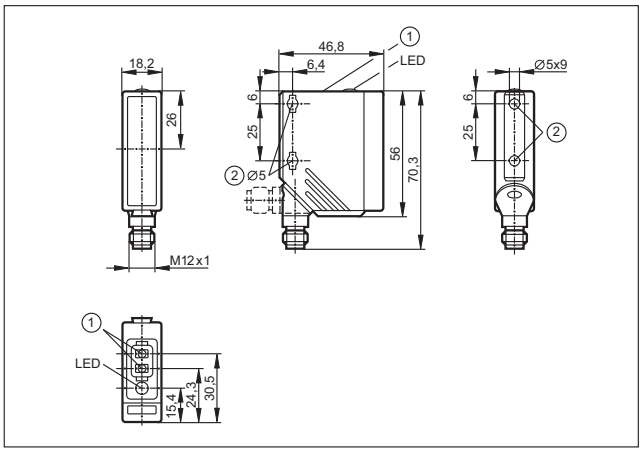
1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

15



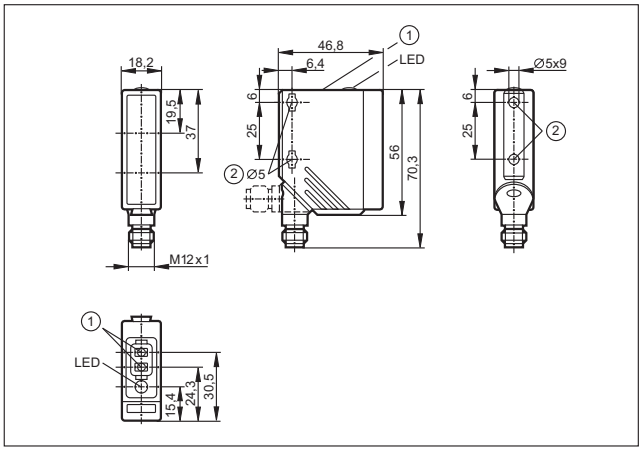
1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

16



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

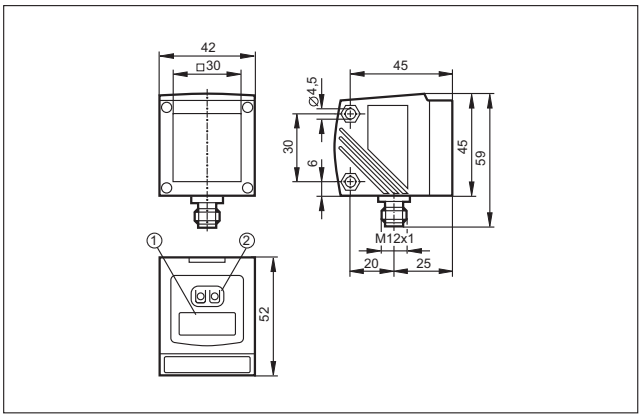
17



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

Scale drawings

18



1: 4-digit alphanumeric display, 2: Programming buttons

www.ifm.com