INDUCTIVE SENSORS

HIGHLIGHTS:

- ✓ Analog sensors
- ✓ All-metal sensors for extreme environmental conditions (e.g. food industry, sea-water & high-pressure applications)
- ✓ High-pressure-resistant sensors (500 bar permanent pressure, 1000 bar peak pressure)
- ✓ Sealed sensors
- ✓ Sensors for temperatures up to 230 °C
- ✓ Miniature sensors
- ✓ Sensors with long operating distances

NEW:

- ✓ High-pressure-resistant sensors M12 with 2.5 mm operating distance
- ✓ High-pressure-resistant sensors M5 & M8
- ✓ High-pressure-resistant sensors for temperatures up to 100 °C
- ✓ 2-wire DC and AC/DC sensors

PROGRAM OVERVIEW

HOUSING SIZE	OPERATING DISTANCE	OUTPUT				
		PNP	NPN	NAMUR	2-wire (DC)	2-wire (AC/DC)
∅ 3 mm / M4	0.6 mm	✓	✓	✓		
	1 mm	✓	✓			
∅ 4 mm / M5	0.8 mm	✓	✓	✓		
	1.5 mm	✓	✓			
	2.5 mm	✓	✓			
5 x 5 mm	0.8 mm	✓	✓	✓		
	1.5 mm	✓	✓			
∅ 6.5 mm	1.5 mm	✓	✓	✓		
	2 mm	✓	✓			
	3 mm	✓	✓			
	4 mm	✓	✓			
∅ 8 mm / M8	1.5 mm	✓	✓	✓		
	1.5 mm				✓	
	2 mm	✓	✓		✓	
	2.5 mm	✓	✓		✓	
	3 mm	✓	✓			
	4 mm	✓	✓			
	6 mm	✓	✓			
8 x 8 mm	1.5 mm	✓	✓			
	2 mm	✓	✓			
	3 mm	✓	✓			
M12	2 mm	✓	✓		✓	✓
	4 mm	✓	✓		✓	✓
	6 mm	✓	✓			
	8 mm	✓	✓			
	10 mm	✓	✓			
M18	5 mm	✓	✓		✓	✓
	8 mm	✓	✓		✓	✓
	10 mm	✓	✓			
	12 mm	✓	✓			
	20 mm	✓	✓			
M30	10 mm	✓	✓		✓	✓
	15 mm	✓	✓		✓	✓
	20 mm	✓	✓			
	22 mm	✓	✓			
	40 mm	✓	✓			
40 x 40 mm	15 mm	✓	✓		✓	
	20 mm	✓	✓			
	35 mm	✓	✓		✓	
40 x 120 mm	15 mm	✓	✓		✓	
	40 mm	✓				
60 x 80 mm	50 mm	✓				
80 x 100 mm	65 mm	✓				

Detailed data sheets for these products can be found on the Contrinex website:

MOUNTING			SUPPLY VOLTAGE U_B			CONNECTION						PAGE (2-WIRE)
Embeddable	Quasi-embeddable	Non-embeddable	PNP / NPN	NAMUR 2-wire (DC)	2-wire (AC/DC)	Connector S8	Connector S12	Cable	Screw terminal	Single wires	All-metal housing	
✓			10 ... 30 VDC	7,7 ... 9 VDC		✓		✓				18 - 19 (110-111)
✓			10 ... 30 VDC			✓		✓				18 - 20
✓			10 ... 30 VDC	7,7 ... 9 VDC		✓		✓		✓		20 - 22 (111-112)
✓			10 ... 30 VDC			✓		✓				21 - 23
✓			10 ... 30 VDC			✓		✓				21 - 23
✓			10 ... 30 VDC	7,7 ... 9 VDC		✓		✓				24 (112-113)
✓			10 ... 30 VDC			✓		✓				24 - 25
✓			10 ... 30 VDC	7,7 ... 9 VDC		✓	✓	✓				25 - 27 (113)
✓			10 ... 30 VDC			✓	✓	✓				28 - 30
	✓		10 ... 30 VDC			✓	✓	✓				31
		✓	10 ... 30 VDC			✓		✓				31 - 32
✓			10 ... 30 VDC	7,7 ... 9 VDC		✓	✓	✓				32 - 35 (114)
✓				10 ... 65 VDC		✓	✓	✓				(115)
✓			10 ... 30 VDC	10 ... 65 VDC		✓	✓	✓				32, 35-38 (115-116)
		✓	10 ... 30 VDC	10 ... 65 VDC		✓	✓	✓				39 - 40 (116-117)
✓			10 ... 30 VDC			✓	✓	✓			✓	41 - 42
✓		✓	10 ... 30 VDC			✓	✓	✓				42 - 43
		✓	10 ... 30 VDC			✓	✓	✓			✓	44 - 45
✓			10 ... 30 VDC			✓		✓				45 - 46
✓			10 ... 30 VDC			✓		✓				46
	✓		10 ... 30 VDC			✓		✓				47
✓			10 ... 30 VDC	10 ... 65 VDC	20...265 VAC/10...320 VDC		✓*	✓			✓**	47 - 48 (117-119)
✓		✓	10 ... 30 VDC	10 ... 65 VDC	20...265 VAC/10...320 VDC		✓*	✓			✓**	48 - 50 (119-122)
✓	✓		10 ... 30 VDC				✓	✓			✓	50 - 51
	✓	✓	10 ... 30 VDC				✓	✓				51 - 53
		✓	10 ... 30 VDC				✓	✓			✓	53 - 54
✓			10 ... 30 VDC	10 ... 65 VDC	20...265 VAC/10...320 VDC		✓*	✓			✓**	55 (122-124)
	✓	✓	10 ... 30 VDC	10 ... 65 VDC	20...265 VAC/10...320 VDC		✓*	✓			✓**	56 - 58 (124-127)
✓			10 ... 30 VDC				✓	✓			✓	58 - 59
	✓		10 ... 30 VDC				✓	✓				59 - 60
		✓	10 ... 30 VDC				✓	✓			✓	60 - 62
✓			10 ... 30 VDC	10 ... 65 VDC	20...265 VAC/10...320 VDC		✓*	✓			✓**	62 - 63 (127-128)
		✓	10 ... 30 VDC	10 ... 65 VDC	20...265 VAC/10...320 VDC		✓*	✓			✓**	63 - 64 (129-130)
✓			10 ... 30 VDC				✓	✓			✓	64 - 65
	✓		10 ... 30 VDC				✓	✓				65 - 66
		✓	10 ... 30 VDC				✓	✓			✓	66 - 67
✓			15 ... 34 VDC		20...265 VAC/20...320 VDC		✓					68 (131)
✓			15 ... 34 VDC				✓					68
		✓	15 ... 34 VDC		20...265 VAC/20...320 VDC		✓					68 (131)
✓			15 ... 34 VDC		20...265 VAC/20...320 VDC				✓			69 (131)
		✓	10 ... 65 VDC						✓			69
		✓	10 ... 65 VDC						✓			69
		✓	10 ... 65 VDC						✓			69

*Connector 1/2" for 2-wire **on request (3-wire version)

INDUCTIVE SENSORS

PROGRAM OVERVIEW

SPECIAL SENSORS

HOUSING SIZE	OPERATING DISTANCE	OUTPUT			
		PNP	NPN	Analog	Changeover
ANALOG OUTPUT (SERIES 509)					
8 x 8 mm / M8	0 ... 4 mm			✓	
M12	0 ... 6 mm			✓	
M18	0 ... 10 mm			✓	
	0 ... 20 mm			✓	
M30	0 ... 20 mm			✓	
	0 ... 40 mm			✓	
ALL METAL (SERIES 700)					
M8	3 mm	✓	✓		
M8 / M12	6 mm	✓	✓		
M12 / M18	10 mm	✓	✓		
M18 / M30	20 mm	✓	✓		
M30	40 mm	✓	✓		
FOOD & SEA WATER (SERIES 700L)					
M12	6 mm	✓	✓		
M12 / M18	10 mm	✓	✓		
M18 / M30	20 mm	✓	✓		
M30	40 mm	✓	✓		
ALL METAL & HIGH-PRESSURE-RESISTANT (SERIES 700P)					
M12	1.5 mm	✓			
HIGH-PRESSURE-RESISTANT (SERIES 500P)					
M5	1 mm	✓	✓		
M8	1.5 mm	✓	✓		
M12	1.5 mm	✓	✓		✓
M12	2.5 mm	✓	✓		✓
M18	1.5 mm	✓	✓		
P20 (M14)	3.0 mm	✓	✓		
SEALED (SERIES E)					
∅ 4 mm / M5	0.6 mm	✓	✓		
M5	0.8 mm	✓			
M8	1.5 mm	✓			
∅ 6.5 mm / M8	2.5 mm	✓	✓		
HIGH TEMPERATURE					
M8	2 mm	✓	✓		
M12	3 mm	✓	✓		
	4 mm	✓	✓		
M18	5 mm	✓	✓		
	8 mm	✓	✓		
M30	10 mm	✓	✓		
	15 mm	✓	✓		
M50	20 mm	✓	✓		
	25 mm	✓	✓		

Detailed data sheets for these products can be found on the Contrinex website:

MOUNTING			SUPPLY VOLTAGE U_B	CONNECTION				MAX. AMBIENT TEMPERATURE T_A				PAGE (2-W.)
Embeddable	Quasi-emb.	Non-emb.	PNP / NPN	Connector S8	Connector S12	Cable	All-metal housing	100 °C	140 / 150 °C	180 °C	230 °C	
	✓		10 / 15 ... 30 VDC	✓	✓	✓						71 - 72
	✓		10 / 15 ... 30 VDC		✓	✓						72 - 73
	✓		10 / 15 ... 30 VDC		✓	✓						73 - 74
		✓	10 / 15 ... 30 VDC		✓	✓						75
	✓		10 / 15 ... 30 VDC		✓	✓						76 - 77
		✓	10 / 15 ... 30 VDC		✓	✓						77 - 78
✓			10 ... 30 VDC	✓	✓	✓	✓					80
✓		✓	10 ... 30 VDC	✓	✓	✓	✓					81 - 82
✓		✓	10 ... 30 VDC		✓	✓	✓					82 - 83
✓		✓	10 ... 30 VDC		✓	✓	✓					84 - 85
		✓	10 ... 30 VDC		✓	✓	✓					85
✓			10 ... 30 VDC		✓	✓	✓					87
✓		✓	10 ... 30 VDC		✓	✓	✓					87 - 88
✓		✓	10 ... 30 VDC		✓	✓	✓					89
		✓	10 ... 30 VDC		✓	✓	✓					90
✓			10 ... 30 VDC		✓	✓	✓					92
✓			10 ... 30 VDC			✓						94
✓			10 ... 30 VDC			✓		✓				94
✓			10 ... 30 VDC		✓	✓		✓				94 - 97
✓			10 ... 30 VDC		✓			✓				97 - 99
✓			10 ... 30 VDC		✓							99
✓			10 ... 30 VDC		✓	✓						99 - 100
✓			10 ... 30 VDC			✓						102
✓			10 ... 30 VDC			✓						102
✓			10 ... 30 VDC			✓						103
✓			10 ... 30 VDC			✓						103
✓			10 ... 30 VDC			✓			✓			105
✓			10 ... 30 VDC			✓			✓			105
		✓	10 ... 30 VDC			✓			✓			105
✓			10 ... 30 VDC			✓				✓	✓	106
		✓	10 ... 30 VDC			✓				✓		106
✓			10 ... 30 VDC			✓				✓	✓	107
		✓	10 ... 30 VDC			✓				✓	✓	107
	✓		10 ... 30 VDC			✓				✓	✓	108
		✓	10 ... 30 VDC			✓				✓	✓	108 - 109

TECHNOLOGY

Depending on the type, Contrinex inductive devices work according to one of **three different technologies.** All have in common the generation of an alternating magnetic field, which emanates from the sensing face. When a conductive, generally metallic, object enters into this field, the latter is influenced in a way that can be detected and evaluated by the built-in electronics.

OPERATING PRINCIPLES

CLASSIC INDUCTIVE SENSORS

The coil of a conventional circuit oscillator in the sensor generates a high-frequency magnetic field, which emanates from the sensing face. Any metallic object found in this field absorbs some of the energy, which is detected and evaluated by the built-in electronics (Fig. 1).

Ferromagnetic metals (steel, nickel, cobalt) absorb the most energy. The achievable operating distances are therefore greatest with these metals. Good conducting, non-ferromagnetic metals, such as aluminum, absorb less energy. As a result, operating distances are significantly lower (approx. 25...45% of those on steel).

This technology is used in 300, 400, 420, 600 and 620 series devices.

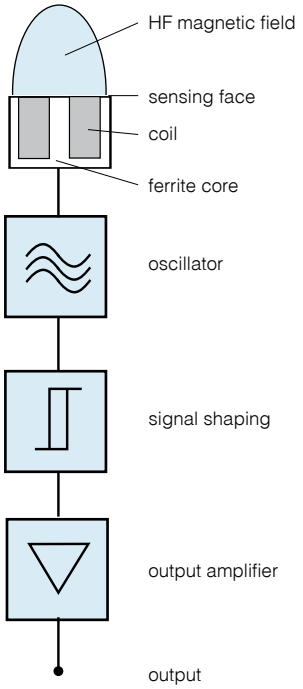


Fig. 1

SENSORS USING CONDIST® TECHNOLOGY

By means of a Contrinex patented **Condist® oscillator**, these sensors also generate a high-frequency magnetic field, which emanates from the sensing face (Fig.2). Again, the resulting effect is that any metallic object entering the field absorbs energy from it.

The oscillator and the subsequent signal evaluation circuit are however completely different, with the objective of achieving a significantly **better stability** with respect to environmental influences, in particular, temperature. The most important contribution to this comes from the Contrinex patented Condist® oscillator.

The improved stability permits the switch point to be further away, leading to **longer operating distances** (Fig. 3). The subsequent assemblies on the other hand are no different from those of sensors with standard operating distances. Material dependency is similar to conventional oscillators.

This technology is used in 500 and 520 series devices.

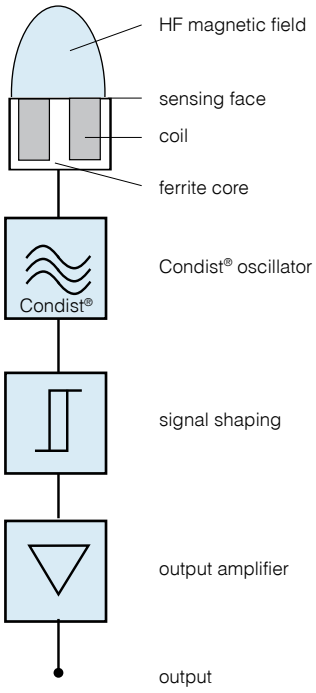


Fig. 2

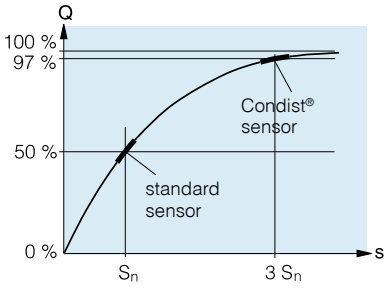


Fig. 3

SENSORS USING CONDET® TECHNOLOGY

These devices also function according to inductive technology. However, the coil which generates the magnetic field is not part of the oscillator (Fig. 4). Instead, the field is generated by periodic, short **transmitter current pulses**, which flow through the coil (Fig. 5). This field induces a voltage in the target, which, in turn, generates a current flow in it. When the transmitter current pulse is switched off, the current in the object dies away, causing a **voltage to be induced** in the transmitting coil (Fig. 6).

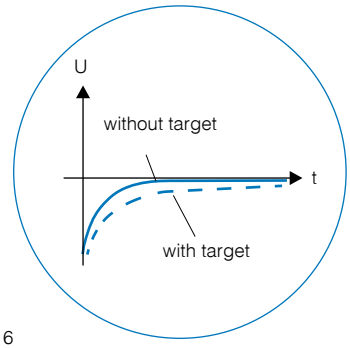


Fig. 6

This voltage generates the signal required, and is in principle **independent of the field's energy loss**. Therein lies the fundamental advantage of this technology, since the field energy losses, which are evaluated in conventional sensors, are liable to a number of undesirable environmental and material influences.

The coupling between the target and the coil is rather **like a transformer**, and is hence **temperature independent** and only **slightly influenced by the target's material.** Only metals which are non-ferromagnetic and also have poor electrical conductivity give a reduced usable signal.

This technology is used in 700 series devices.

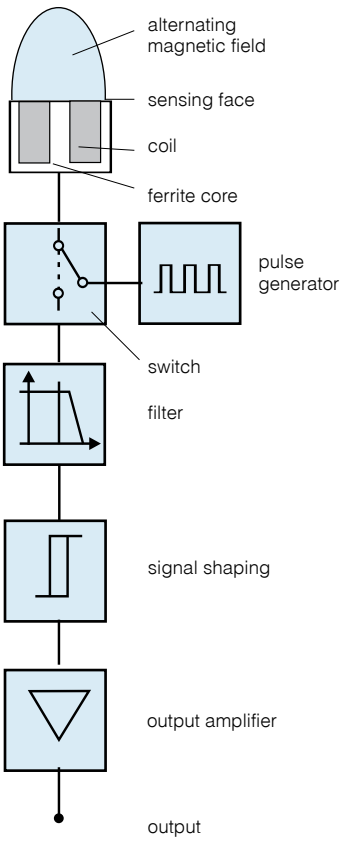


Fig. 4

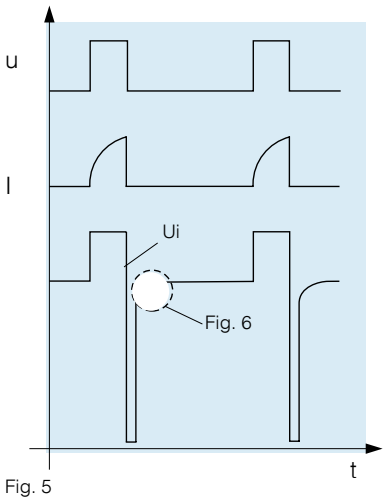
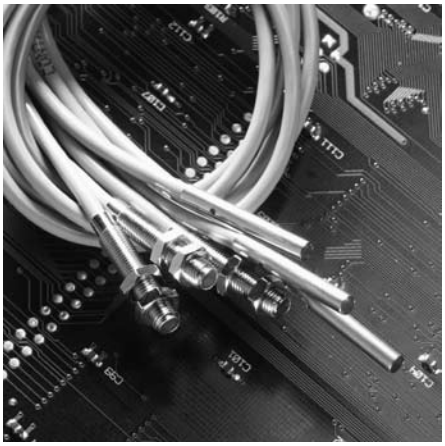


Fig. 5

MINIATURE SENSORS

The small devices operate with conventional (Fig. 1) or Condist® (Fig. 2) technology. They have been so optimized that a particularly **high switching frequency** can be obtained.



The essential differences compared to larger versions lie in their construction and manufacture. Only sub-components with the smallest dimensions possible can be used. The semiconductors are mounted onto the substrate as chips (without housings), i.e. bonded (COB technique). As substrate, exclusively glass-fiber reinforced epoxy resin is used (**no ceramic,** with its undesirable brittleness). The finished electronic assemblies are subsequently potted, using a special vacuum technique, i.e. without any inclusion of air bubbles. In this way, **optimum long-term reliability,** even under difficult operating conditions, can be guaranteed.

SENSORS WITH LONG OPERATING DISTANCES (SERIES 500)

These devices work using Condist® technology (Fig. 2). They are distinguished by their **long operating distances** on ferromagnetic metals, and react particularly well to elongated targets, e.g. rods and wires.

To a great extent, all other properties correspond to those of conventional sensors. Special attention has been paid to **meet the relevant standards as much as possible**, so that easy **interchangeability** with conventional devices is guaranteed. Great emphasis has been placed on a very good EMC resistance and on perfect sealing against liquid penetration.

SENSORS WITH VERY LONG OPERATING DISTANCES (SERIES 520)

These devices also work using Condist® technology (Fig. 2). Available in sizes M8 and M12, they are a further development of the series 500 switches, featuring **even longer operating distances** on ferromagnetic metals than the latter.

STANDARD SENSORS (SERIES 600)

Functioning according to classical technology (Fig. 1), these devices form the backbone amongst position sensors. They are reliable, undemanding, standardized, low-cost, and therefore suitable for many applications where there are **no special requirements.**

STANDARD SENSORS WITH INCREASED OPERATING DISTANCES (SERIES 620)

Functioning also according to classical technology (Fig. 1), these devices basically correspond to those of the 300, 400, 420 and 600 series. Switching-wise, they have been optimized in such a way that an **increased operating distance** can be achieved, especially for small sizes. Users will find them interesting, since with a relatively small markup in price, a valuable increase in operating distance can be obtained.

ALL-METAL SENSORS WITH LONG OPERATING DISTANCES (SERIES 700)

These devices work using Condet® technology (Fig. 4). They are characterized by **long operating distances**, not only on ferromagnetic metals, but also on all other metals having good conductivity, such as **aluminum, copper, brass,** etc. Only metals which are both non-ferromagnetic as well as having poor electrical conductivity result in reduced operating distances. For good results, the target must have a certain surface area, this technology being less suitable for elongated geometries.

A further important characteristic of these devices is the **one-piece stainless steel housing,** sensing face included (Fig. 7). Throughout the whole of their working lives therefore, the 700 series devices are **without reservation impervious** at the sensing face to all liquids and gases which do not corrode stainless steel. The material at the sensing face being relatively thick, the devices are therefore **pressure resistant** to a considerable extent. In addition, thanks to their all-metal housing, they are much **more resistant to mechanical and chemical stresses** in the area of the sensing face than conventional sensors. As a result, important weak spots of conventional devices are eliminated.

All other properties correspond to a great extent to those of conventional sensors found on the market. Special attention has also been paid to **meet the relevant standards as much as possible,** so that **easy interchangeability** with previously used devices is guaranteed.

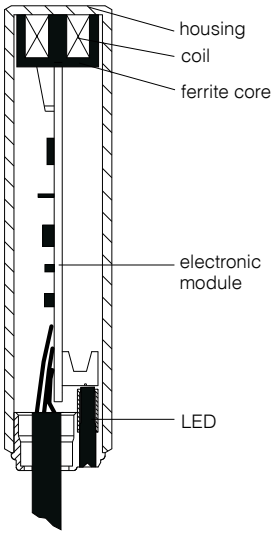


Fig. 7

FOR SPECIAL APPLICATIONS

ANALOG SENSORS

Within the 500 series, a number of devices are available with analog output. At the moment, executions with non-linear transmission behavior (Fig. 8) are available. Models with linear transmission behavior are in preparation.

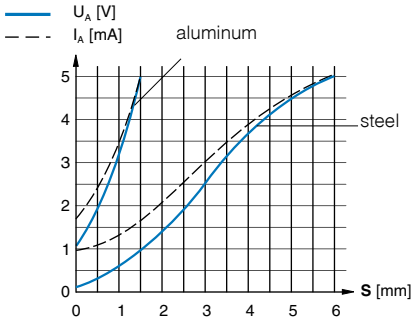


Fig. 8

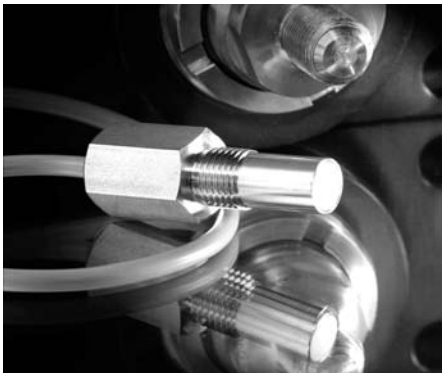
These devices use Condist® technology (Fig. 2). They are characterized by a **very large sensing range**, good accuracy, stability, and repeat accuracy, as well as low specimen scattering.

SEALED SENSORS (SERIES E)

The sealed series E is equipped with a **stainless steel** housing, an imperviously bonded **sapphire or ceramic disk** at the sensing face, and polyurethane cable. In order to benefit from optimum impermeability, the LED and connector versions have been dispensed with.

HIGH-PRESSURE-RESISTANT SENSORS (SERIES P)

The main problem of any pressure-resistant sensor is that, in order to achieve pressure resistance, a thick cover (usually of a ceramic material) on the sensing face is necessary. The thickness of this cover reduces the device's normal operating distance, so that only a small usable operating distance, or even none at all, remains. Because of this, devices are available on the market which have the oscillator coil on the high-



pressure side. On top of this, the sensing face is sometimes made of plastic. As a result, when used in normal operating environments (hydraulic oils, high temperature, cyclic pressure stress), reliability problems are unavoidable with this type of sensor. Contrinex devices are constructed entirely differently, and such problems do not occur. Using Condist® technology, the electronic modules are inserted into thick-walled stainless steel housings. Thanks to their very long operating distance, it is possible to employ a simple, robust, sufficiently **thick ceramic disk** at the sensing face, without any support construction or other artificial tricks. The whole **electronic unit,** ferrite core and coil included, is thus found on the **no-pressure side**. The remaining usable operating distance is more than sufficient. The assembly is shown in Fig. 9.

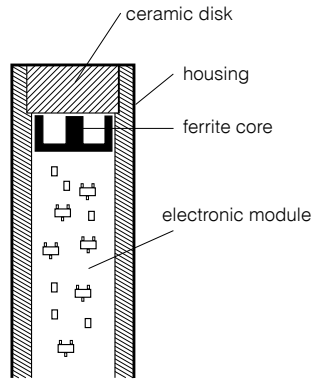


Fig. 9

The housing is heat shrunk onto the ceramic disk. Without any further measures, such as additional sealing, the union produced by this force fit is mechanically very resistant and **exceptionally impervious.** This technology results in devices which are outstanding for applications where there is **high dynamic pressure stress.**

HIGH-TEMPERATURE SENSORS

These devices are suitable for applications up to 140°C, 150°C, 180°C (built-in amplifier) and 230°C (external amplifier).

ALL-METAL SENSORS FOR FOOD, SEA-WATER & HIGH-PRESSURE APPLICATIONS

These devices work using Condet® technology (Fig. 4) and are a further development of the series 700 all-metal switches. They are **pressure resistant, food safe** and **corrosion resistant** (V4A/ AISI 316L) and feature **IP 68 + IP 69K**.

PRODUCT OVERVIEW

SERIES 300

The delivery program includes sizes diameter 3 mm smooth and M4 in embeddable execution. These are the **smallest self-contained inductive sensors available on the market** with fully integrated evaluation electronics. These sizes, introduced by Contrinex, are not yet standardized.

All devices are available in 3-wire DC, NPN and PNP executions. Additionally, the range contains devices with 2 wires according to NAMUR (DIN/EN 19234). All 3-wire models are available in N.O. and N.C. configurations; a LED output state indicator is standard. In addition, all the important protection functions are built in, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, power-on reset, etc. (only partially for NAMUR devices). CE conformity is achieved **without** the external protective circuit authorized according to the standard (EN 60947-5-2 / 7.2.3.1).

SERIES 400

The delivery program includes sizes diameter 4 mm smooth, M5 threaded, as well as the 5 x 5 x 25 mm cuboid **with through holes** for fixing, all in embeddable execution. A further device with 4 mm diameter is distinguished by its very short length of only 10 mm (only in NAMUR execution). **Also introduced by Contrinex, these sizes** are now standardized for the most part.

All devices are available in 3-wire DC, NPN and PNP executions. Additionally, the range contains devices with 2 wires according to NAMUR (DIN/EN 19234). All 3-wire models are available in N.O. and N.C. configurations; a LED output state indicator is standard. In addition, all the important protection functions are built in, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, power-on reset, etc. (only partially for NAMUR devices). CE conformity is achieved **without** the external protective circuit authorized according to the standard (EN 60947-5-2 / 7.2.3.1).

SERIES 420

The delivery program includes sizes diameter 6.5 mm smooth and M8. These devices are distinguished by their **extremely short lengths**. The execution with right-angled cable exit permits a **further reduction** in length. Introduced by Contrinex, these sizes correspond to all relevant standards, with the exception of their length.

All devices are available in 3-wire DC, NPN and PNP executions. Additionally, the range contains devices with 2 wires according to NAMUR (DIN / EN 19234). All 3-wire models are available in N.O. and N.C. configurations; a LED output state indicator is standard. In addition, all the important protection functions are built in, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, power-on reset, etc. (only partially for NAMUR devices). CE conformity is achieved **without** the external protective circuit authorized according to the standard (EN 60947-5-2 / 7.2.3.1).

SERIES 500

The delivery program includes sizes from diameter 4 mm to M30 in (quasi-)embeddable (∅ 4 mm, M5 and M8 embeddable) and non-embeddable executions. These sizes are standardized. Varying from the standard, the series 500 offers however **greater operating distances** (2.2 ... 3 times the standard values).

The devices are available in 3-wire DC NPN and PNP executions, in either N.O. or N.C. configuration; a LED output state indicator is standard. In addition, all the important protection functions are built in, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, power-on reset, etc.

The range additionally includes devices with **analog output**. For most models, a voltage output (0 ... 5 V or 0 ... 10 V) and a current output (1 ... 5 mA or 4 ... 20 mA) are simultaneously available. For the moment, analog devices are available in sizes C8, M8, M12, M18, and M30 quasi-embeddable, as well as M18 and M30 non-embeddable.

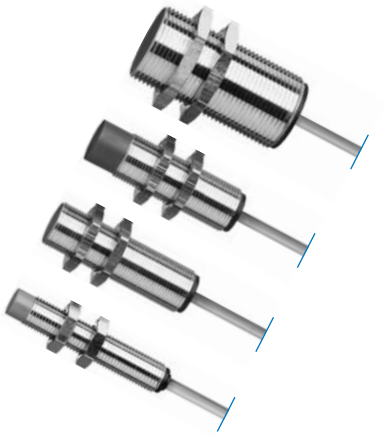
SERIES 520

The 520 series devices are a further development of the 500 series. In addition to the previously existing properties, they feature even longer operating distances. For the moment, sizes M8 embeddable and M12 quasi-embeddable are available.

SERIES 600

CYLINDRICAL HOUSINGS

This range of sensors comprises all widely used sizes from 6.5 mm smooth to M30, according to the standards IEC 60947-5-2 / EN 60947-5-2 and VDE 0660 part 208. All switches are available in 3-wire DC PNP and NPN versions, with cable or connector. Sizes M12, M18 and M30 are also available as 2-wire AC/DC models as well as 2-wire DC execution. A LED output state indicator is standard. All switches are available in either N.O. or N.C. configuration with all the important protection functions, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, etc.



CUBOID HOUSINGS

In addition to the cylindrical models, series 600 also includes cuboid types in sizes 40 x 120 mm (IEC I1C40 / I2C40), 60 x 80 mm and 80 x 100 mm (IEC I2D80). These are equipped with screw terminals for easy connection. All types are available as 3-wire DC PNP models, and some also as NPN models or as 2-wire UC (AC/DC) versions. In addition, there are cubic models 40 x 40 x 40 mm with connector S12, available as 4-wire PNP or NPN, as well as 2-wire UC (AC/DC). LED and protection circuitry are as for cylindrical types. High-quality plastic housings (mostly glass-fiber reinforced PBTP) ensure the excellent mechanical stability of these switches.

SERIES 620

These sensors are a further development of the series 300, 400, 420 and 600 models, but having increased operating distances. Sizes 3 mm smooth to M18, including C5 and C8 cuboids, are currently available.

SERIES 700

At the present time, the delivery program includes sizes M8, M12, M18, and M30 in embeddable and non-embeddable executions. Further sizes are in preparation. The available sizes are basically standardized. Varying from the standard, the series 700 offers however **long operating distances**. These operating distances are moreover also achieved on the most important **non-ferrous metals.** Of further particular interest is the **one-piece** stainless steel housing, sensing face included.

The range includes devices of food-safe and corrosion-resistant stainless steel (V4A / AISI 316L / DIN 1.4435), featuring IP 68 + IP 69K degree of protection, for the **food and pharmaceutical industries**, as well as for **sea-water applications**.

All devices are available in 3-wire DC NPN and PNP executions. They are available in N.O. and N.C. configurations; a LED output state indicator is standard. In addition, all the important protection functions are built in, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, power-on reset, etc.

SEALED SENSORS (SERIES E)

At the present time, the delivery program includes sizes from 4 mm smooth to M8. The devices are intended for **difficult environmental conditions**. They are equipped with a **stainless steel housing** imperviously bonded to a **sapphire or ceramic disk** on the sensing face. Connection is by means of a highly flexible cable with a polyurethane sleeve. The electrical properties are equivalent to those of the corresponding series 400, 600 and 500 devices. However, due to the thickness of the disk, the operating distances are somewhat shorter.

HIGH-PRESSURE-RESISTANT SENSORS (SERIES 500P)

The delivery program includes different size devices for **permanent operating pressures of 100 ... 500 bar** and **peak pressures up to 1000 bar.** Their main applications are in high-pressure hydraulic systems. They have a **stainless steel housing** imperviously shrunk onto a ceramic disk at the sensing face (Fig. 9). Connection is by means of either a highly flexible cable with a polyurethane sleeve, or an integrated connector. The electric properties are equivalent to those of the corresponding series 500 devices.

HIGH-PRESSURE-RESISTANT ALL-METAL SENSORS (SERIES 700P)

The series 700P is a further development of the series 700L in a high-pressure and corrosion-resistant one-piece stainless steel housing (V4A / AISI 316L / DIN 1.4404). The sensing face of these devices resists permanent pressures of up to 500 bar. These devices are therefore particularly suited for hydraulic offshore or under-water applications. They guarantee excellent detection of ferromagnetic and non-ferromagnetic metals with good conductivity. Connection is by means of either a highly flexible cable with a polyurethane sleeve, or an integrated connector. The electric properties are equivalent to those of the corresponding series 700 devices.

HIGH-TEMPERATURE SENSORS

The delivery program includes sizes from M8 to M50 in embeddable and non-embeddable executions. The devices are intended for demanding applications in high-temperature areas, and are respectively suitable for ambient temperatures of up to **140 °C, 150 °C, 180 °C and 230 °C**. Executions up to 180 °C feature built-in amplifiers, and connection by means of a 2 m silicone or Teflon cable is standard. For 230 °C types, the amplifiers are built into an M12 stainless-steel housing, which is connected by means of a standard 3 m Teflon cable, and thus removed from the hot area.

SPECIAL EXECUTIONS

In addition to the types described in this catalog, a number of special executions are available, in particular devices with different cable lengths, different cable types (e.g. with oil-resistant, highly flexible PUR insulation, or silicone cables), or different housing materials (e.g. stainless steel).

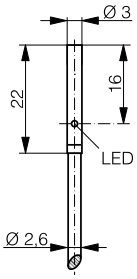
CE MARK

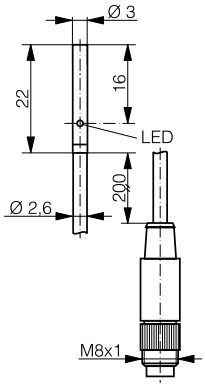
The inductive sensors in this catalog comply with the requirements of European standards EN 60947-1 and EN 60947-5-2 and therefore correspond to the EMC guideline 2004/108/EC as well as the low-voltage guideline 2006/95/EC.

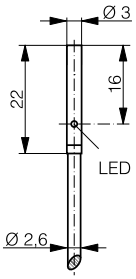
They are therefore provided throughout with the **CE mark.** CE

HOUSING SIZE	Ø 3		
OPERATING DISTANCE MM	0.6	0.6	1.0

INCREASED DISTANCE







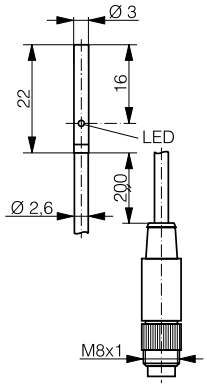
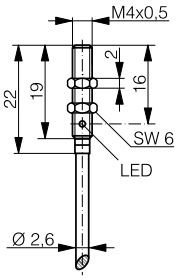
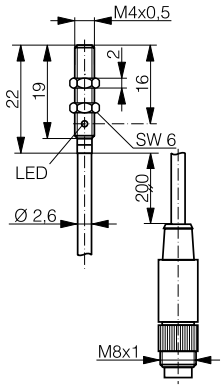
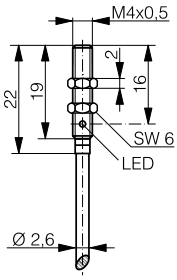
[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	PUR cable type 1	PUR cable type 1 / Connector S8	PUR cable type 1
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	3,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 100 mA	≤ 100 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

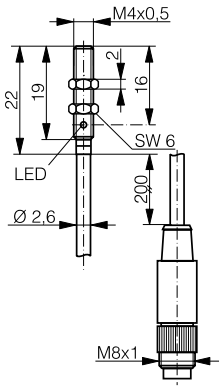
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

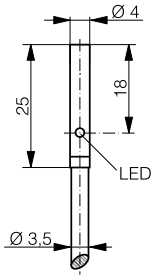
NPN N.O.	**DW-AD-301-03**	**DW-AV-301-03-276**	**DW-AD-621-03**
NPN N.C.	DW-AD-302-03	DW-AV-302-03-276	DW-AD-622-03
PNP N.O.	**DW-AD-303-03**	**DW-AV-303-03-276**	**DW-AD-623-03**
PNP N.C.	DW-AD-304-03	DW-AV-304-03-276	DW-AD-624-03
Compatible connectors [4]		A, B	

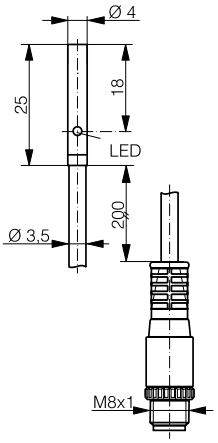
Ø 3	M4		
1.0	0.6	0.6	1.0
			
INCREASED DISTANCE			INCREASED DISTANCE
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PUR cable type 1 / Connector S8	PUR cable type 1	PUR cable type 1 / Connector S8	PUR cable type 1
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
3,000 Hz	5,000 Hz	5,000 Hz	3,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AV-621-03-276	**DW-AD-301-M4**	**DW-AV-301-M4-276**	**DW-AD-621-M4**
DW-AV-622-03-276	DW-AD-302-M4	DW-AV-302-M4-276	DW-AD-622-M4
DW-AV-623-03-276	**DW-AD-303-M4**	**DW-AV-303-M4-276**	**DW-AD-623-M4**
DW-AV-624-03-276	DW-AD-304-M4	DW-AV-304-M4-276	DW-AD-624-M4
A, B		A, B	

HOUSING SIZE	M4	Ø 4	
OPERATING DISTANCE MM	1.0	0.8	0.8

INCREASED DISTANCE







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

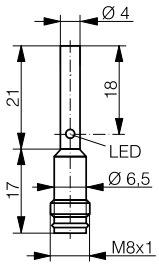
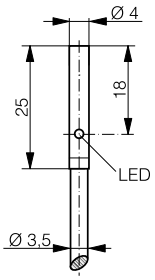
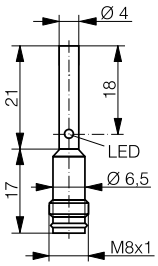
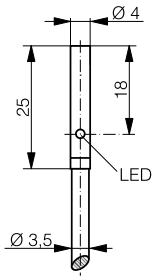
TECHNICAL DATA

Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	PUR cable type 1 / Connector S8	PVC cable type 2	PVC cable type 2 / Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	3,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

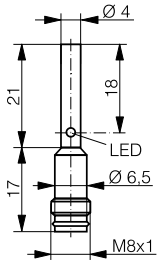
NPN N.O.	**DW-AV-621-M4-276**	**DW-AD-401-04**	
NPN N.C.	DW-AV-622-M4-276	DW-AD-402-04	
PNP N.O.	**DW-AV-623-M4-276**	**DW-AD-403-04**	**DW-AV-403-04-236**
PNP N.C.	DW-AV-624-M4-276	DW-AD-404-04	DW-AV-404-04-236
Compatible connectors [4]	A, B		A, B

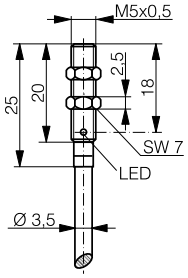
Ø 4

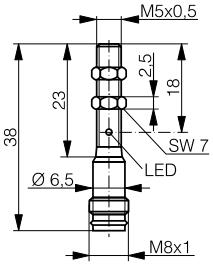
0.8	1.5	1.5	2.5
			
	INCREASED DISTANCE	INCREASED DISTANCE	LONG DISTANCE
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Nickel silver
Connector S8	PVC cable type 2	Connector S8	PVC cable type 2
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	3,000 Hz	3,000 Hz	800 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AS-401-04	**DW-AD-621-04**	**DW-AS-621-04**	**DW-AD-501-04**
DW-AS-402-04	DW-AD-622-04	DW-AS-622-04	DW-AD-502-04
DW-AS-403-04	**DW-AD-623-04**	**DW-AS-623-04**	**DW-AD-503-04**
DW-AS-404-04	DW-AD-624-04	DW-AS-624-04	DW-AD-504-04
A, B		A, B	

HOUSING SIZE	Ø 4	M5	
OPERATING DISTANCE MM	2.5	0.8	0.8

LONG DISTANCE





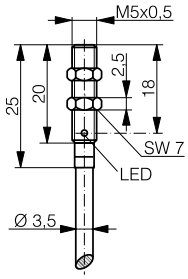
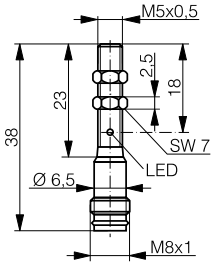
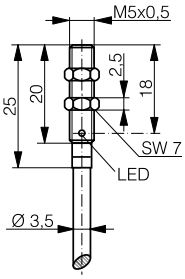
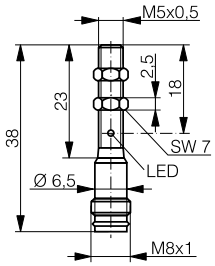


[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA			
Housing material	Nickel silver	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S8	PVC cable type 2	Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	800 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

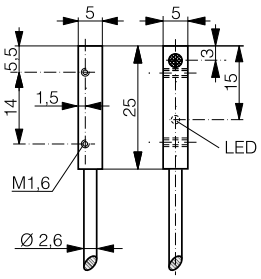
PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-AS-501-04**	**DW-AD-401-M5**	**DW-AS-401-M5**
NPN N.C.	DW-AS-502-04	DW-AD-402-M5	DW-AS-402-M5
PNP N.O.	**DW-AS-503-04**	**DW-AD-403-M5**	**DW-AS-403-M5**
PNP N.C.	DW-AS-504-04	DW-AD-404-M5	DW-AS-404-M5
Compatible connectors [4]	A, B		A, B

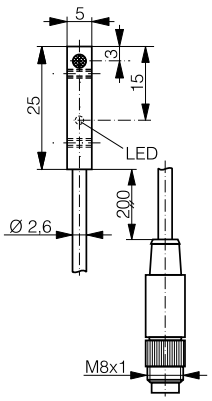
M5

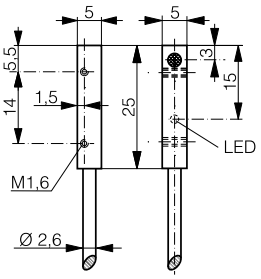
1.5	1.5	2.5	2.5
			
INCREASED DISTANCE	**INCREASED DISTANCE**	**LONG DISTANCE**	**LONG DISTANCE**
			
Stainless steel V2A	Stainless steel V2A	Nickel silver	Nickel silver
PVC cable type 2	Connector S8	PVC cable type 2	Connector S8
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
3,000 Hz	3,000 Hz	800 Hz	800 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AD-621-M5	**DW-AS-621-M5**	**DW-AD-501-M5**	**DW-AS-501-M5**
DW-AD-622-M5	DW-AS-622-M5	DW-AD-502-M5	DW-AS-502-M5
DW-AD-623-M5	**DW-AS-623-M5**	**DW-AD-503-M5**	**DW-AS-503-M5**
DW-AD-624-M5	DW-AS-624-M5	DW-AD-504-M5	DW-AS-504-M5
	A, B		A, B

HOUSING SIZE	⌀ 5 X 5		
OPERATING DISTANCE MM	0.8	0.8	1.5

INCREASED DISTANCE







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	PUR cable type 1	PUR cable type 1 / Connector S8	PUR cable type 1
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	3,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

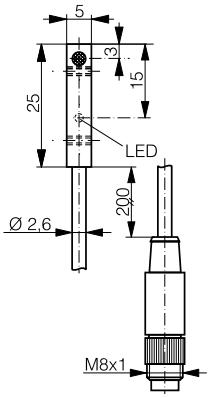
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

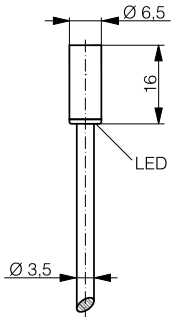
NPN N.O.	**DW-AD-401-C5**	**DW-AV-401-C5-276**	**DW-AD-621-C5**
NPN N.C.	DW-AD-402-C5	DW-AV-402-C5-276	DW-AD-622-C5
PNP N.O.	**DW-AD-403-C5**	**DW-AV-403-C5-276**	**DW-AD-623-C5**
PNP N.C.	DW-AD-404-C5	DW-AV-404-C5-276	DW-AD-624-C5
Compatible connectors [4]		A, B	

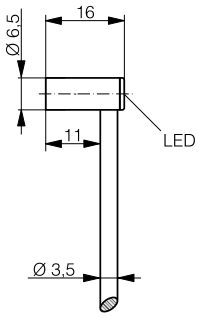
⧄ 5 X 5	Ø 6.5		
1.5	1.5	1.5	1.5

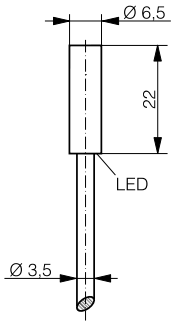



INCREASED DISTANCE





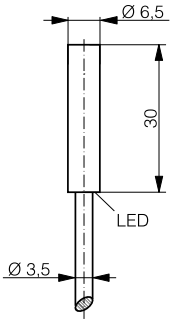


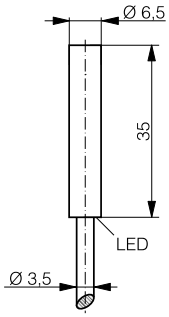


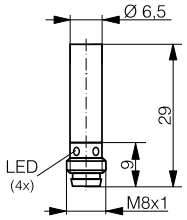
Chrome-plated brass	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PUR cable type 1 / Connector S8	PVC cable type 2	PVC cable type 2	PVC cable type 2
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
3,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, CCC, UL, RoHS

DW-AV-621-C5-276	**DW-AD-421-065**	**DW-AD-421-065-400**	**DW-AD-601-065-121**
DW-AV-622-C5-276	DW-AD-422-065	DW-AD-422-065-400	DW-AD-602-065-121
DW-AV-623-C5-276	**DW-AD-423-065**	**DW-AD-423-065-400**	**DW-AD-603-065-121**
DW-AV-624-C5-276	DW-AD-424-065	DW-AD-424-065-400	DW-AD-604-065-121
A, B			

HOUSING SIZE	Ø 6.5		
OPERATING DISTANCE MM	1.5	1.5	1.5







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

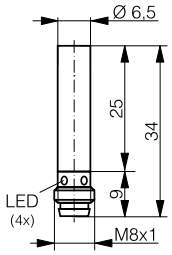
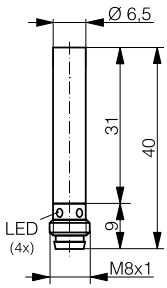
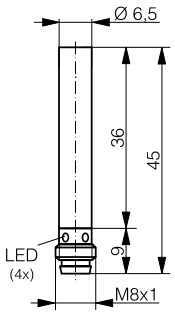
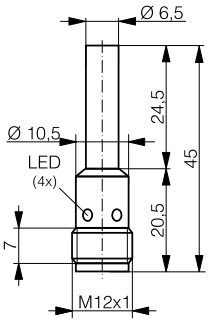
TECHNICAL DATA

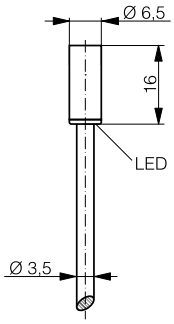
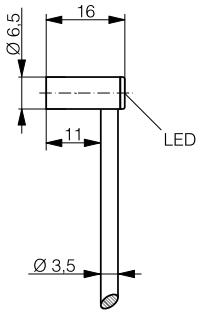
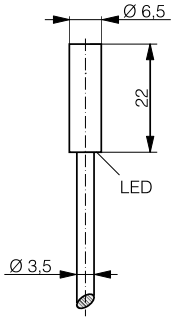
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	PVC cable type 2	PVC cable type 2	Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AD-601-065-122**	**DW-AD-601-065**	**DW-AS-421-065-001**
NPN N.C.	DW-AD-602-065-122	DW-AD-602-065	DW-AS-422-065-001
PNP N.O.	**DW-AD-603-065-122**	**DW-AD-603-065**	**DW-AS-423-065-001**
PNP N.C.	DW-AD-604-065-122	DW-AD-604-065	DW-AS-424-065-001
Compatible connectors [4]			A, B

Ø 6.5

1.5	1.5	1.5	1.5
			
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connector S8	Connector S8	Connector S8	Connector S12
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AS-601-065-123	**DW-AS-601-065-124**	**DW-AS-601-065-001**	**DW-AS-601-065**
DW-AS-602-065-123	DW-AS-602-065-124	DW-AS-602-065-001	DW-AS-602-065
DW-AS-603-065-123	**DW-AS-603-065-124**	**DW-AS-603-065-001**	**DW-AS-603-065**
DW-AS-604-065-123	DW-AS-604-065-124	DW-AS-604-065-001	DW-AS-604-065
A, B	A, B	A, B	G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	Ø 6.5		
OPERATING DISTANCE MM	2	2	2
			
	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

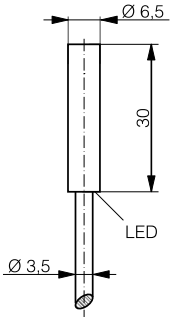
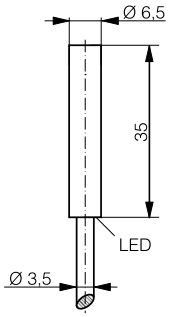
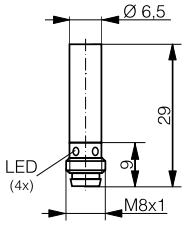
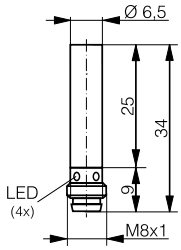
TECHNICAL DATA

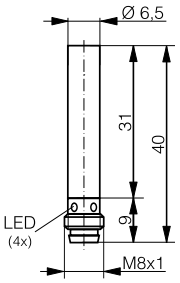
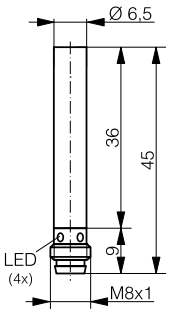
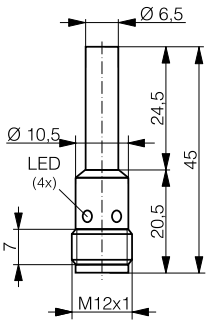
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	PVC cable type 2	PVC cable type 2	PVC cable type 2
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AD-621-065-120**	**DW-AD-621-065-400**	**DW-AD-621-065-121**
NPN N.C.	DW-AD-622-065-120	DW-AD-622-065-400	DW-AD-622-065-121
PNP N.O.	**DW-AD-623-065-120**	**DW-AD-623-065-400**	**DW-AD-623-065-121**
PNP N.C.	DW-AD-624-065-120	DW-AD-624-065-400	DW-AD-624-065-121
Compatible connectors [4]			

Ø 6.5

2	2	2	2
			
INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PVC cable type 2	PVC cable type 2	Connector S8	Connector S8
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-621-065-122	**DW-AD-621-065**	**DW-AS-621-065-129**	**DW-AS-621-065-123**
DW-AD-622-065-122	DW-AD-622-065	DW-AS-622-065-129	DW-AS-622-065-123
DW-AD-623-065-122	**DW-AD-623-065**	**DW-AS-623-065-129**	**DW-AS-623-065-123**
DW-AD-624-065-122	DW-AD-624-065	DW-AS-624-065-129	DW-AS-624-065-123
		A, B	A, B

HOUSING SIZE	Ø 6.5		
OPERATING DISTANCE MM	2	2	2
			
	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

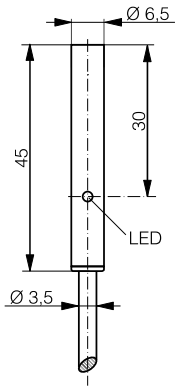
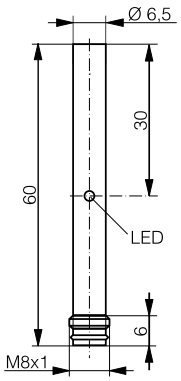
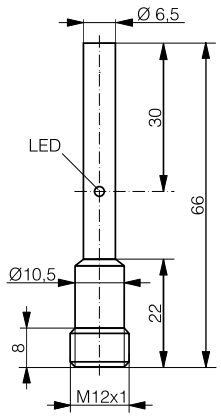
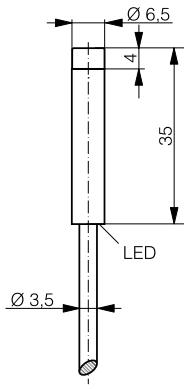
TECHNICAL DATA

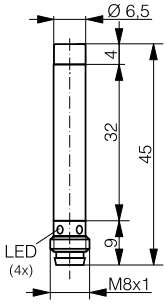
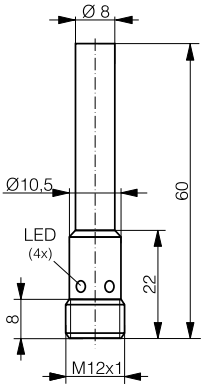
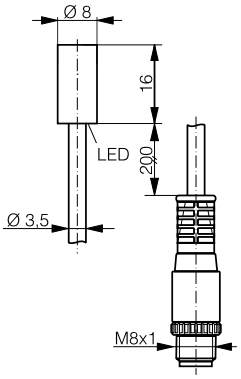
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S8	Connector S8	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-621-065-124**	**DW-AS-621-065-001**	**DW-AS-621-065**
NPN N.C.	DW-AS-622-065-124	DW-AS-622-065-001	DW-AS-622-065
PNP N.O.	**DW-AS-623-065-124**	**DW-AS-623-065-001**	**DW-AS-623-065**
PNP N.C.	DW-AS-624-065-124	DW-AS-624-065-001	DW-AS-624-065
Compatible connectors [4]	A, B	A, B	G, H, M, N (N.O.); M, N (N.C.)

Ø 6.5

3	3	3	4
			
LONG DISTANCE	LONG DISTANCE	LONG DISTANCE	INCREASED DISTANCE
			
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Stainless steel V2A
PVC cable type 2	Connector S8	Connector S12	PVC cable type 2
IP 67	IP 67	IP 67	IP 67
Quasi-embeddable	Quasi-embeddable	Quasi-embeddable	Non-embeddable
1,000 Hz	1,000 Hz	1,000 Hz	3,500 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-501-065	**DW-AS-501-065-001**	**DW-AS-501-065**	**DW-AD-631-065**
DW-AD-502-065	DW-AS-502-065-001	DW-AS-502-065	DW-AD-632-065
DW-AD-503-065	**DW-AS-503-065-001**	**DW-AS-503-065**	**DW-AD-633-065**
DW-AD-504-065	DW-AS-504-065-001	DW-AS-504-065	DW-AD-634-065
	A, B	G, H, M, N (N.O.); M, N (N.C.)	

HOUSING SIZE	Ø 6.5	Ø 8	
OPERATING DISTANCE MM	4	1.5	2
			
	INCREASED DISTANCE		INCREASED DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

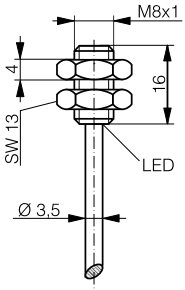
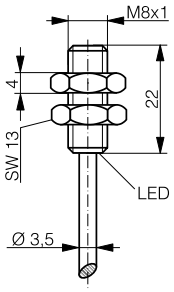
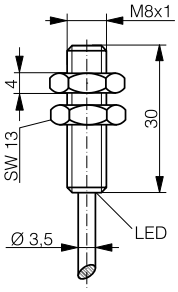
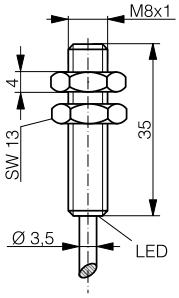
TECHNICAL DATA

Housing material	Stainless steel V2A	Stainless steel V2A	Chrome-plated brass
Connection [1]	Connector S8	Connector S12	PVC cable type 2 / Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Non-embeddable	Embeddable	Embeddable
Max. switching frequency	3,500 Hz	5,000 Hz	3,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 2	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

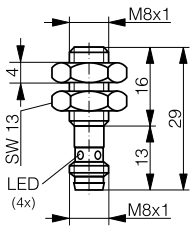
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

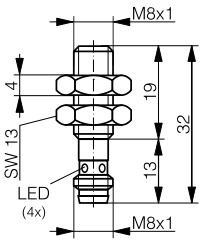
NPN N.O.	**DW-AS-631-065-001**		
NPN N.C.	DW-AS-632-065-001		
PNP N.O.	**DW-AS-633-065-001**	**DW-AS-603-080-168**	**DW-AV-623-080-236**
PNP N.C.	DW-AS-634-065-001		
Compatible connectors [4]	A, B	G, H, M, N	A, B

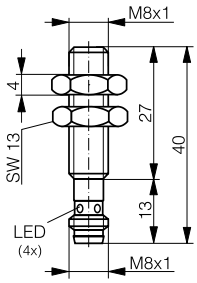
M8

1.5	1.5	1.5	1.5
			
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PVC cable type 2	PVC cable type 2	PVC cable type 2	PVC cable type 2
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-421-M8	**DW-AD-601-M8-121**	**DW-AD-601-M8-122**	**DW-AD-601-M8**
DW-AD-422-M8	DW-AD-602-M8-121	DW-AD-602-M8-122	DW-AD-602-M8
DW-AD-423-M8	**DW-AD-603-M8-121**	**DW-AD-603-M8-122**	**DW-AD-603-M8**
DW-AD-424-M8	DW-AD-604-M8-121	DW-AD-604-M8-122	DW-AD-604-M8

HOUSING SIZE	M8		
OPERATING DISTANCE MM	1.5	1.5	1.5







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

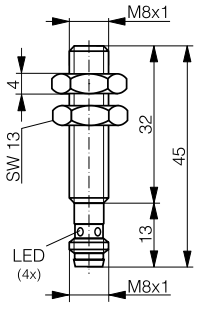
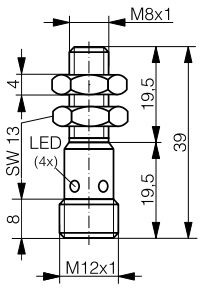
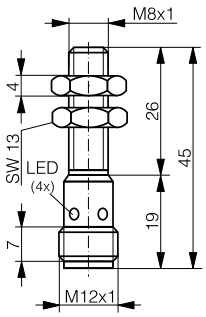
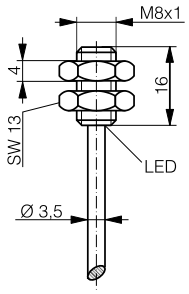
TECHNICAL DATA

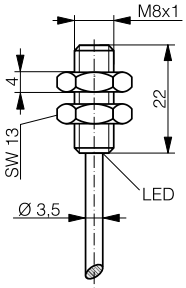
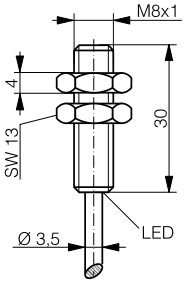
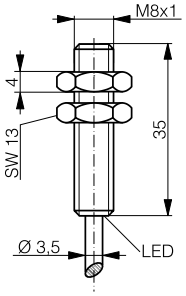
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S8	Connector S8	Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-421-M8-001**	**DW-AS-601-M8-123**	**DW-AS-601-M8-124**
NPN N.C.	DW-AS-422-M8-001	DW-AS-602-M8-123	DW-AS-602-M8-124
PNP N.O.	**DW-AS-423-M8-001**	**DW-AS-603-M8-123**	**DW-AS-603-M8-124**
PNP N.C.	DW-AS-424-M8-001	DW-AS-604-M8-123	DW-AS-604-M8-124
Compatible connectors [4]	A, B	A, B	A, B

M8

1.5	1.5	1.5	2
			
			INCREASED DISTANCE
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connector S8	Connector S12	Connector S12	PVC cable type 2
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 2	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AS-601-M8-001	**DW-AS-601-M8-120**	**DW-AS-601-M8**	**DW-AD-621-M8-120**
DW-AS-602-M8-001		DW-AS-602-M8	DW-AD-622-M8-120
DW-AS-603-M8-001	**DW-AS-603-M8-120**	**DW-AS-603-M8**	**DW-AD-623-M8-120**
DW-AS-604-M8-001		DW-AS-604-M8	DW-AD-624-M8-120
A, B	G, H, M, N	G, H, M, N (N.O.); M, N (N.C.)	

HOUSING SIZE	M8		
OPERATING DISTANCE MM	2	2	2
			
	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

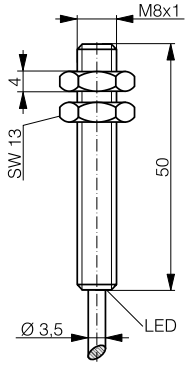
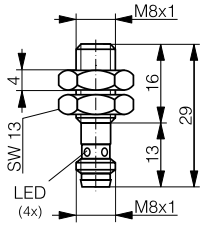
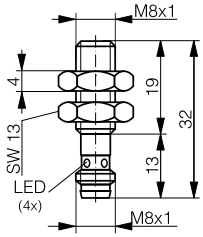
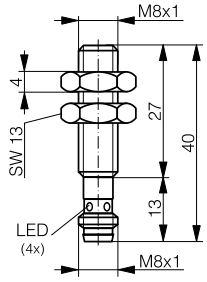
TECHNICAL DATA

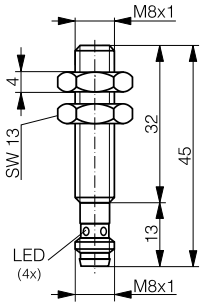
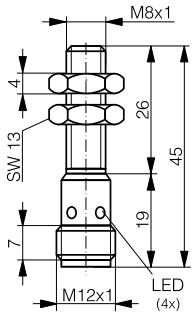
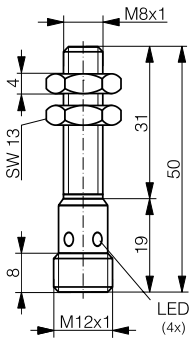
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	PVC cable type 2	PVC cable type 2	PVC cable type 2
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AD-621-M8-121**	**DW-AD-621-M8-122**	**DW-AD-621-M8**
NPN N.C.	DW-AD-622-M8-121	DW-AD-622-M8-122	DW-AD-622-M8
PNP N.O.	**DW-AD-623-M8-121**	**DW-AD-623-M8-122**	**DW-AD-623-M8**
PNP N.C.	DW-AD-624-M8-121	DW-AD-624-M8-122	DW-AD-624-M8
Compatible connectors [4]			

M8

2	2	2	2
			
INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PVC cable type 2	Connector S8	Connector S8	Connector S8
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-621-M8-177	**DW-AS-621-M8-129**	**DW-AS-621-M8-123**	**DW-AS-621-M8-124**
DW-AD-622-M8-177	DW-AS-622-M8-129	DW-AS-622-M8-123	DW-AS-622-M8-124
DW-AD-623-M8-177	**DW-AS-623-M8-129**	**DW-AS-623-M8-123**	**DW-AS-623-M8-124**
DW-AD-624-M8-177	DW-AS-624-M8-129	DW-AS-624-M8-123	DW-AS-624-M8-124
	A, B	A, B	A, B

HOUSING SIZE	M8		
OPERATING DISTANCE MM	2	2	2
			
	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

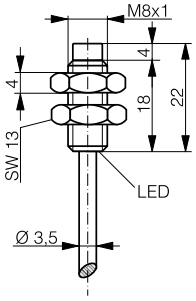
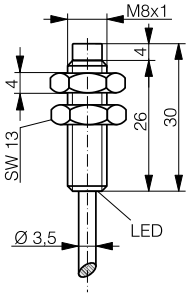
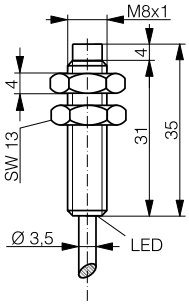
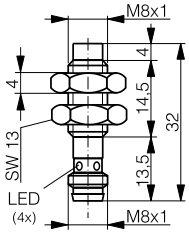
TECHNICAL DATA

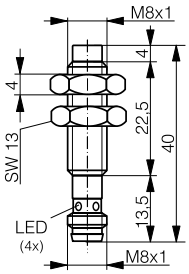
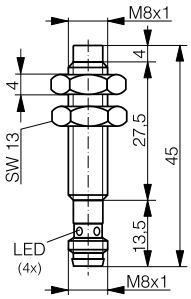
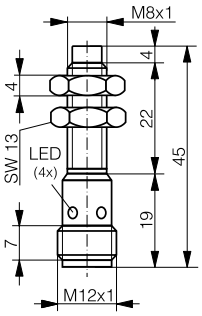
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S8	Connector S12	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 2	Diagram 2
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-621-M8-001**	**DW-AS-621-M8**	**DW-AS-621-M8-193**
NPN N.C.	DW-AS-622-M8-001	DW-AS-622-M8	DW-AS-622-M8-193
PNP N.O.	**DW-AS-623-M8-001**	**DW-AS-623-M8**	**DW-AS-623-M8-193**
PNP N.C.	DW-AS-624-M8-001	DW-AS-624-M8	DW-AS-624-M8-193
Compatible connectors [4]	A, B	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)

M8

2.5	2.5	2.5	2.5
			
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PVC cable type 2	PVC cable type 2	PVC cable type 2	Connector S8
IP 67	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
4,500 Hz	4,500 Hz	4,500 Hz	4,500 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-611-M8-121	**DW-AD-611-M8-122**	**DW-AD-611-M8**	**DW-AS-611-M8-123**
DW-AD-612-M8-121	DW-AD-612-M8-122	DW-AD-612-M8	DW-AS-612-M8-123
DW-AD-613-M8-121	**DW-AD-613-M8-122**	**DW-AD-613-M8**	**DW-AS-613-M8-123**
DW-AD-614-M8-121	DW-AD-614-M8-122	DW-AD-614-M8	DW-AS-614-M8-123
			A, B

HOUSING SIZE	M8		
OPERATING DISTANCE MM	2.5	2.5	2.5
			
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

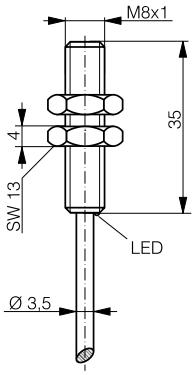
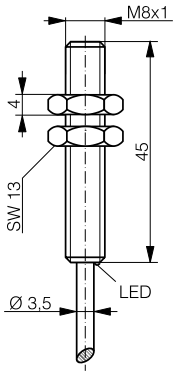
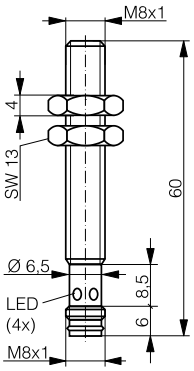
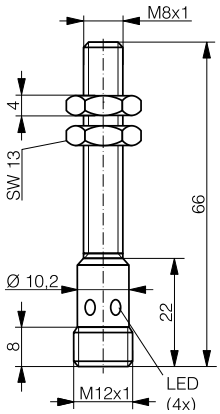
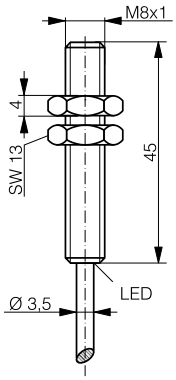
TECHNICAL DATA

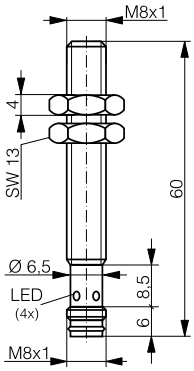
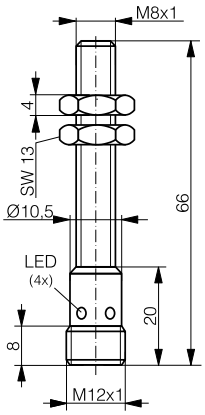
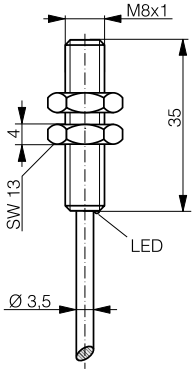
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S8	Connector S8	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Non-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	4,500 Hz	4,500 Hz	4,500 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-611-M8-124**	**DW-AS-611-M8-001**	**DW-AS-611-M8**
NPN N.C.	DW-AS-612-M8-124	DW-AS-612-M8-001	DW-AS-612-M8
PNP N.O.	**DW-AS-613-M8-124**	**DW-AS-613-M8-001**	**DW-AS-613-M8**
PNP N.C.	DW-AS-614-M8-124	DW-AS-614-M8-001	DW-AS-614-M8
Compatible connectors [4]	A, B	A, B	G, H, M, N (N.O.); M, N (N.C.)

M8

3	3	3	3	3
				
LONG DISTANCE	LONG DISTANCE	LONG DISTANCE	LONG DISTANCE	ALL-METAL / 100 BAR
				
Cr-plated nickel silver	Cr-plated nickel silver	Cr-plated nickel silver	Cr-plated nickel silver	Stainless steel V2A
PVC cable type 2	PVC cable type 2	Connector S8	Connector S12	PUR cable type 3
IP 67	IP 67	IP 67	IP 67	IP 68
Embeddable	Embeddable	Embeddable	Embeddable	Embeddable
1,000 Hz	1,000 Hz	1,000 Hz	1,000 Hz	1,000 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AD-501-M8-750	**DW-AD-501-M8**	**DW-AS-501-M8-001**	**DW-AS-501-M8**	**DW-AD-701-M8**
DW-AD-502-M8-750	DW-AD-502-M8	DW-AS-502-M8-001	DW-AS-502-M8	DW-AD-702-M8
DW-AD-503-M8-750	**DW-AD-503-M8**	**DW-AS-503-M8-001**	**DW-AS-503-M8**	**DW-AD-703-M8**
DW-AD-504-M8-750	DW-AD-504-M8	DW-AS-504-M8-001	DW-AS-504-M8	DW-AD-704-M8
		A, B	G, H, M, N (N.O.); M, N (N.C.)	

HOUSING SIZE	M8		
OPERATING DISTANCE MM	3	3	4
			
	ALL-METAL / 100 BAR	ALL-METAL / 100 BAR	4 X DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

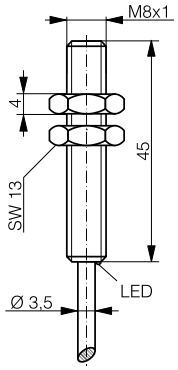
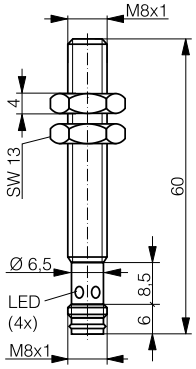
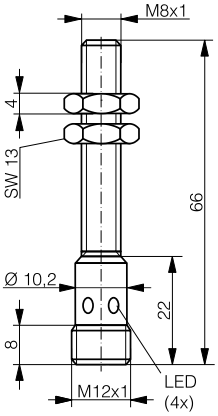
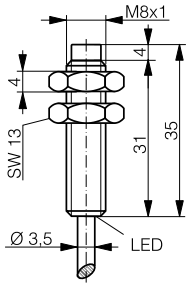
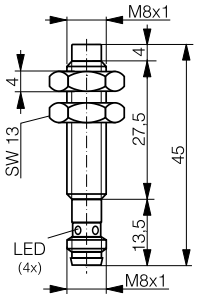
TECHNICAL DATA

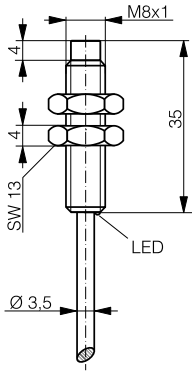
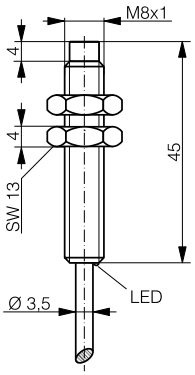
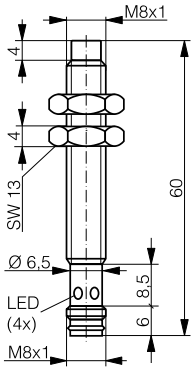
Housing material	Stainless steel V2A	Stainless steel V2A	Cr-plated nickel silver
Connection [1]	Connector S8	Connector S12	PVC cable type 2
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	1,000 Hz	1,000 Hz	500 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 2	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-701-M8-001**	**DW-AS-701-M8**	**DW-AD-521-M8-750**
NPN N.C.	DW-AS-702-M8-001	DW-AS-702-M8	DW-AD-522-M8-750
PNP N.O.	**DW-AS-703-M8-001**	**DW-AS-703-M8**	**DW-AD-523-M8-750**
PNP N.C.	DW-AS-704-M8-001	DW-AS-704-M8	DW-AD-524-M8-750
Compatible connectors [4]	A, B	G, H, M, N (N.O.); M, N (N.C.)	

M8

4	4	4	4	4
				
4 X DISTANCE	4 X DISTANCE	4 X DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
				
Cr-plated nickel silver	Cr-plated nickel silver	Cr-plated nickel silver	Stainless steel V2A	Stainless steel V2A
PVC cable type 2	Connector S8	Connector S12	PVC cable type 2	Connector S8
IP 67	IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Non-embeddable	Non-embeddable
500 Hz	500 Hz	500 Hz	3,500 Hz	3,500 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 2	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-521-M8	**DW-AS-521-M8-001**	**DW-AS-521-M8**	**DW-AD-631-M8**	**DW-AS-631-M8-001**
DW-AD-522-M8	DW-AS-522-M8-001	DW-AS-522-M8	DW-AD-632-M8	DW-AS-632-M8-001
DW-AD-523-M8	**DW-AS-523-M8-001**	**DW-AS-523-M8**	**DW-AD-633-M8**	**DW-AS-633-M8-001**
DW-AD-524-M8	DW-AS-524-M8-001	DW-AS-524-M8	DW-AD-634-M8	DW-AS-634-M8-001
	A, B	G, H, M, N (N.O.); M, N (N.C.)		A, B

HOUSING SIZE	M8		
OPERATING DISTANCE MM	6	6	6
			
	LONG DISTANCE	LONG DISTANCE	LONG DISTANCE
			

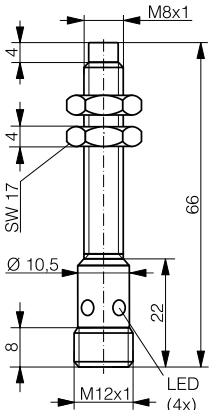
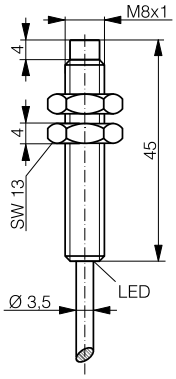
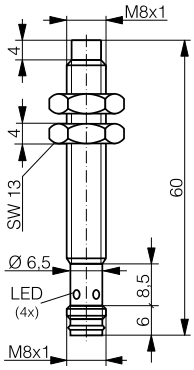
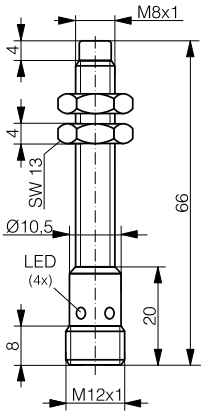
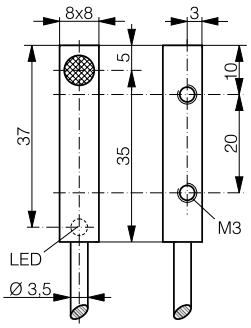
[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	PVC cable type 2	PVC cable type 2	Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Non-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	500 Hz	500 Hz	500 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

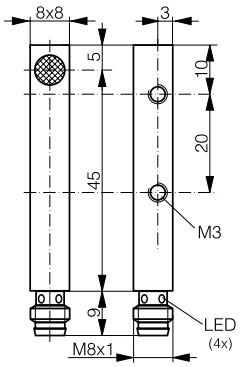
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

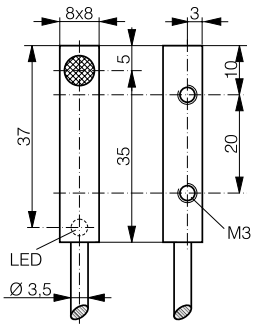
NPN N.O.	**DW-AD-511-M8-750**	**DW-AD-511-M8**	**DW-AS-511-M8-001**
NPN N.C.	DW-AD-512-M8-750	DW-AD-512-M8	DW-AS-512-M8-001
PNP N.O.	**DW-AD-513-M8-750**	**DW-AD-513-M8**	**DW-AS-513-M8-001**
PNP N.C.	DW-AD-514-M8-750	DW-AD-514-M8	DW-AS-514-M8-001
Compatible connectors [4]			A, B

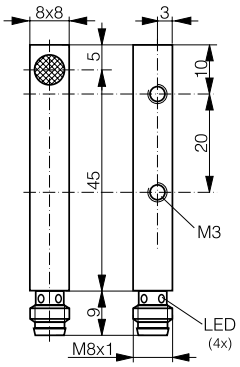
M8				8 X 8
6	6	6	6	1.5
				
LONG DISTANCE	ALL-METAL / 100 BAR	ALL-METAL / 100 BAR	ALL-METAL / 100 BAR	
				
Chrome-plated brass	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Nickel-plated brass
Connector S12	PUR cable type 3	Connector S8	Connector S12	PVC cable type 2
IP 67	IP 68	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable	Embeddable
500 Hz	700 Hz	700 Hz	700 Hz	5,000 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 1	Diagram 1	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AS-511-M8	**DW-AD-711-M8**	**DW-AS-711-M8-001**	**DW-AS-711-M8**	**DW-AD-601-C8**
DW-AS-512-M8	DW-AD-712-M8	DW-AS-712-M8-001	DW-AS-712-M8	DW-AD-602-C8
DW-AS-513-M8	**DW-AD-713-M8**	**DW-AS-713-M8-001**	**DW-AS-713-M8**	**DW-AD-603-C8**
DW-AS-514-M8	DW-AD-714-M8	DW-AS-714-M8-001	DW-AS-714-M8	DW-AD-604-C8
G, H, M, N (N.O.); M, N (N.C.)		A, B	G, H, M, N (N.O.); M, N (N.C.)	

HOUSING SIZE	⌀ 8 X 8		
OPERATING DISTANCE MM	1.5	2	2

	INCREASED DISTANCE	INCREASED DISTANCE







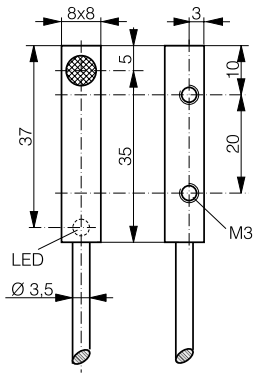
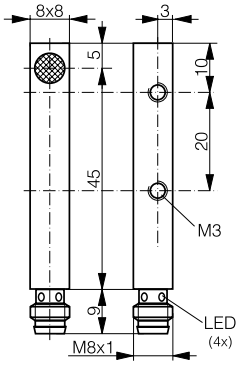
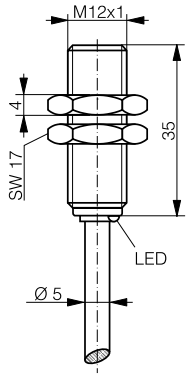
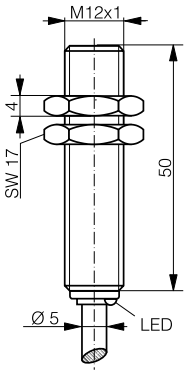
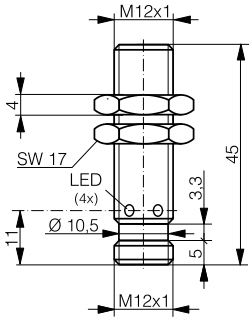
[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

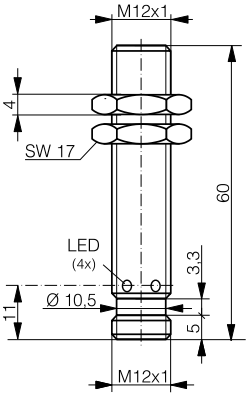
Housing material	Nickel-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S8	PVC cable type 2	Connector S8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	3,000 Hz	3,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

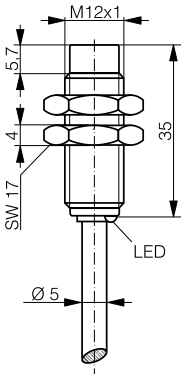
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

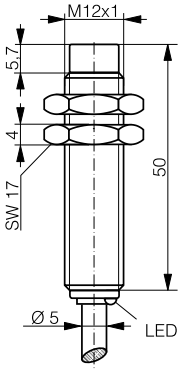
NPN N.O.	**DW-AS-601-C8-001**	**DW-AD-621-C8**	**DW-AS-621-C8-001**
NPN N.C.	DW-AS-602-C8-001	DW-AD-622-C8	DW-AS-622-C8-001
PNP N.O.	**DW-AS-603-C8-001**	**DW-AD-623-C8**	**DW-AS-623-C8-001**
PNP N.C.	DW-AS-604-C8-001	DW-AD-624-C8	DW-AS-624-C8-001
Compatible connectors [4]	A, B		A, B

⌀ 8 X 8		M12		
3	3	2	2	2
				
LONG DISTANCE	LONG DISTANCE			
				
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
PVC cable type 2	Connector S8	PVC cable type 8	PVC cable type 8	Connector S12
IP 67	IP 67	IP 67	IP 67	IP 67
Quasi-embeddable	Quasi-embeddable	Embeddable	Embeddable	Embeddable
1,000 Hz	1,000 Hz	3,000 Hz	3,000 Hz	3,000 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 1	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-501-C8	**DW-AS-501-C8**	**DW-AD-601-M12-120**	**DW-AD-601-M12**	**DW-AS-601-M12-120**
DW-AD-502-C8	DW-AS-502-C8	DW-AD-602-M12-120	DW-AD-602-M12	DW-AS-602-M12-120
DW-AD-503-C8	**DW-AS-503-C8**	**DW-AD-603-M12-120**	**DW-AD-603-M12**	**DW-AS-603-M12-120**
DW-AD-504-C8	DW-AS-504-C8	DW-AD-604-M12-120	DW-AD-604-M12	DW-AS-604-M12-120
	A, B			G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M12		
OPERATING DISTANCE MM	2	4	4







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

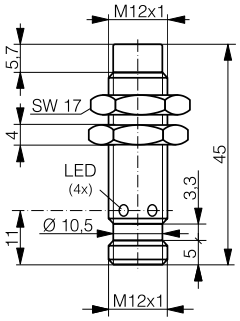
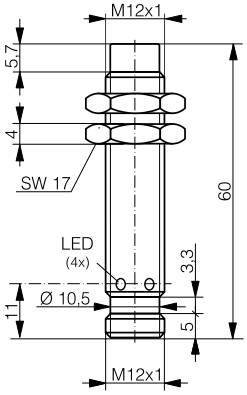
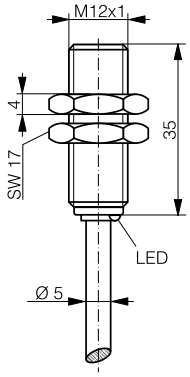
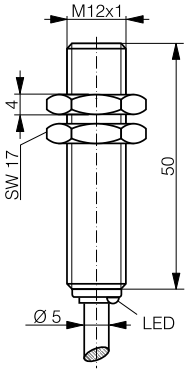
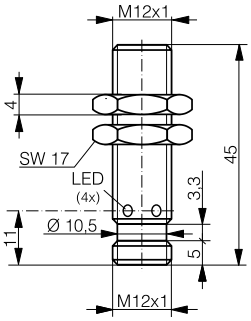
TECHNICAL DATA

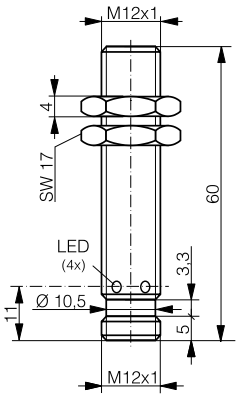
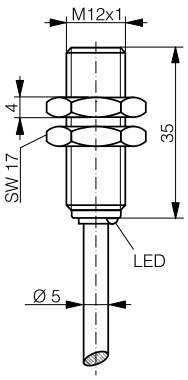
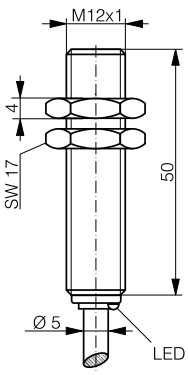
Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	PVC cable type 8	PVC cable type 8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	3,000 Hz	2,000 Hz	2,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-601-M12**	**DW-AD-611-M12-120**	**DW-AD-611-M12**
NPN N.C.	DW-AS-602-M12	DW-AD-612-M12-120	DW-AD-612-M12
PNP N.O.	**DW-AS-603-M12**	**DW-AD-613-M12-120**	**DW-AD-613-M12**
PNP N.C.	DW-AS-604-M12	DW-AD-614-M12-120	DW-AD-614-M12
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		

M12

4	4	4	4	4
				
		INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
				
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector S12	Connector S12	PVC cable type 8	PVC cable type 8	Connector S12
IP 67	IP 67	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Embeddable	Embeddable	Embeddable
2,000 Hz	2,000 Hz	2,500 Hz	2,500 Hz	2,500 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 2	Diagram 1	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AS-611-M12-120	**DW-AS-611-M12**	**DW-AD-621-M12-120**	**DW-AD-621-M12**	**DW-AS-621-M12-120**
DW-AS-612-M12-120	DW-AS-612-M12	DW-AD-622-M12-120	DW-AD-622-M12	DW-AS-622-M12-120
DW-AS-613-M12-120	**DW-AS-613-M12**	**DW-AD-623-M12-120**	**DW-AD-623-M12**	**DW-AS-623-M12-120**
DW-AS-614-M12-120	DW-AS-614-M12	DW-AD-624-M12-120	DW-AD-624-M12	DW-AS-624-M12-120
G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)			G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M12		
OPERATING DISTANCE MM	4	6	6
			
	INCREASED DISTANCE	LONG DISTANCE	LONG DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

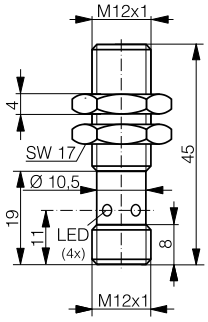
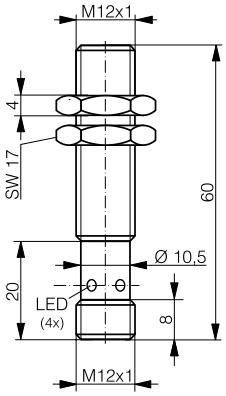
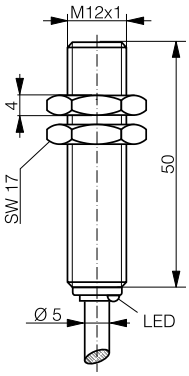
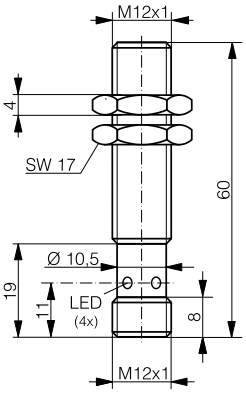
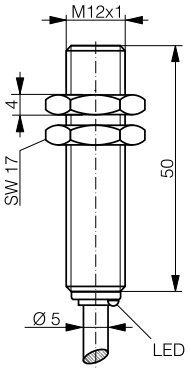
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	PVC cable type 8	PVC cable type 8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Quasi-embeddable	Quasi-embeddable
Max. switching frequency	2,500 Hz	800 Hz	800 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-621-M12**	**DW-AD-501-M12-120**	**DW-AD-501-M12**
NPN N.C.	DW-AS-622-M12	DW-AD-502-M12-120	DW-AD-502-M12
PNP N.O.	**DW-AS-623-M12**	**DW-AD-503-M12-120**	**DW-AD-503-M12**
PNP N.C.	DW-AS-624-M12	DW-AD-504-M12-120	DW-AD-504-M12
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		

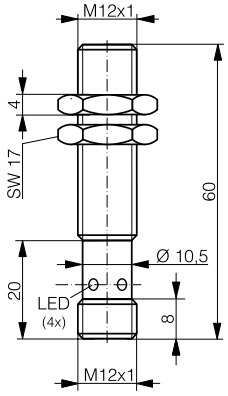
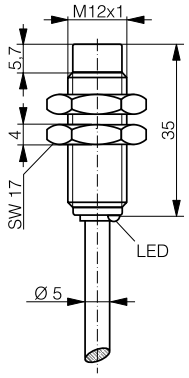
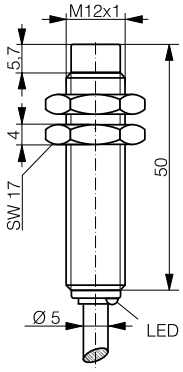
M12

6	6	6*	6*	8**
				
LONG DISTANCE	**LONG DISTANCE**	**ALL-METAL / 80 BAR**	**ALL-METAL / 80 BAR**	**4 X DISTANCE**
				

Chrome-plated brass	Chrome-plated brass	Stainless steel V2A	Stainless steel V2A	Chrome-plated brass
Connector S12	Connector S12	PUR cable type 11	Connector S12	PVC cable type 8
IP 67	IP 67	IP 68 & IP 69K	IP 68 & IP 69K	IP 67
Quasi-embeddable	Quasi-embeddable	Embeddable	Embeddable	Quasi-embeddable
800 Hz	800 Hz	600 Hz	600 Hz	400 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 2	Diagram 1	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AS-501-M12-120	**DW-AS-501-M12**	**DW-AD-701-M12**	**DW-AS-701-M12**	**DW-AD-521-M12**
DW-AS-502-M12-120	DW-AS-502-M12	DW-AD-702-M12	DW-AS-702-M12	DW-AD-522-M12
DW-AS-503-M12-120	**DW-AS-503-M12**	**DW-AD-703-M12**	**DW-AS-703-M12**	**DW-AD-523-M12**
DW-AS-504-M12-120	DW-AS-504-M12	DW-AD-704-M12	DW-AS-704-M12	DW-AD-524-M12
G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)		G, H, M, N (N.O.); M, N (N.C.)	

* versions with 2 mm operating distance on request ** short version in preparation

HOUSING SIZE	M12		
OPERATING DISTANCE MM	8*	8	8
			
	4 X DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

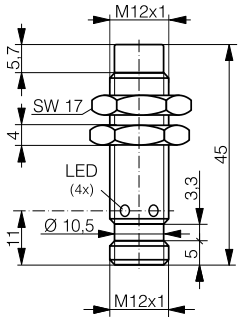
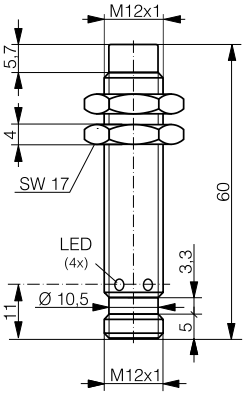
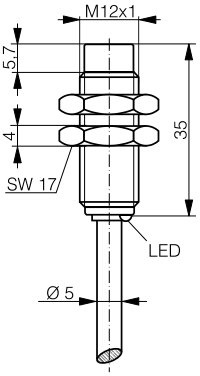
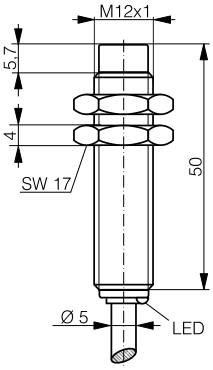
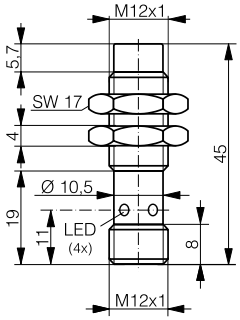
Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	PVC cable type 8	PVC cable type 8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Quasi-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	400 Hz	1,400 Hz	1,400 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-521-M12**	**DW-AD-631-M12-120**	**DW-AD-631-M12**
NPN N.C.	DW-AS-522-M12	DW-AD-632-M12-120	DW-AD-632-M12
PNP N.O.	**DW-AS-523-M12**	**DW-AD-633-M12-120**	**DW-AD-633-M12**
PNP N.C.	DW-AS-524-M12	DW-AD-634-M12-120	DW-AD-634-M12
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		

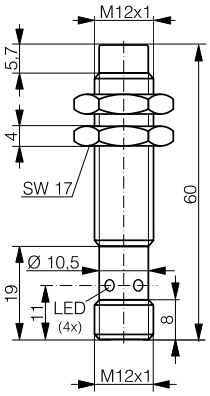
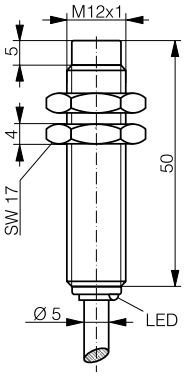
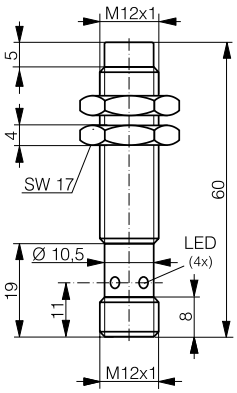
* short version in preparation

M12

8	8	10	10	10
				
INCREASED DISTANCE	INCREASED DISTANCE	LONG DISTANCE	LONG DISTANCE	LONG DISTANCE
				

Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector S12	Connector S12	PVC cable type 8	PVC cable type 8	Connector S12
IP 67	IP 67	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
1,400 Hz	1,400 Hz	400 Hz	400 Hz	400 Hz
Table 1	Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 2	Diagram 1	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AS-631-M12-120	**DW-AS-631-M12**	**DW-AD-511-M12-120**	**DW-AD-511-M12**	**DW-AS-511-M12-120**
DW-AS-632-M12-120	DW-AS-632-M12	DW-AD-512-M12-120	DW-AD-512-M12	DW-AS-512-M12-120
DW-AS-633-M12-120	**DW-AS-633-M12**	**DW-AD-513-M12-120**	**DW-AD-513-M12**	**DW-AS-513-M12-120**
DW-AS-634-M12-120	DW-AS-634-M12	DW-AD-514-M12-120	DW-AD-514-M12	DW-AS-514-M12-120
G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)			G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M12		
OPERATING DISTANCE MM	10	10*	10*
			
	LONG DISTANCE	ALL-METAL / 80 BAR	ALL-METAL / 80 BAR
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

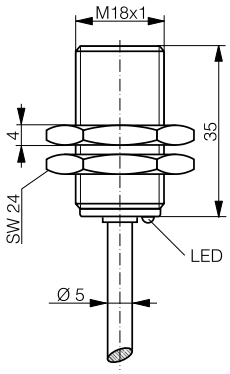
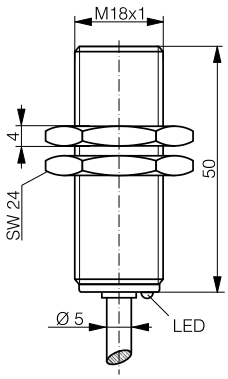
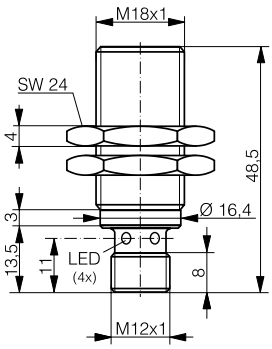
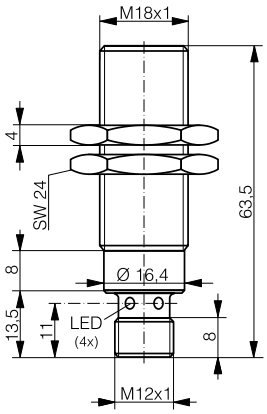
Housing material	Chrome-plated brass	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S12	PUR cable type 11	Connector S12
Degree of protection	IP 67	IP 68 & IP 69K	IP 68 & IP 69K
Mounting	Non-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	400 Hz	400 Hz	400 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

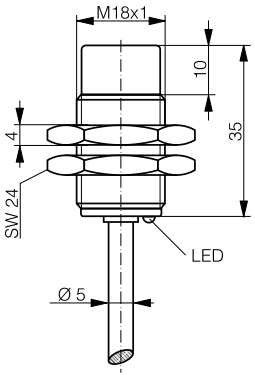
NPN N.O.	**DW-AS-511-M12**	**DW-AD-711-M12**	**DW-AS-711-M12**
NPN N.C.	DW-AS-512-M12	DW-AD-712-M12	DW-AS-712-M12
PNP N.O.	**DW-AS-513-M12**	**DW-AD-713-M12**	**DW-AS-713-M12**
PNP N.C.	DW-AS-514-M12	DW-AD-714-M12	DW-AS-714-M12
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		G, H, M, N (N.O.); M, N (N.C.)

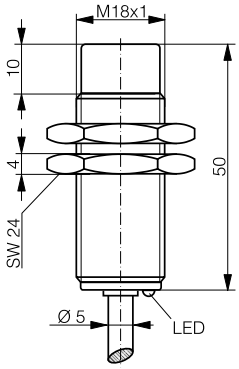
* versions with 4 mm operating distance on request

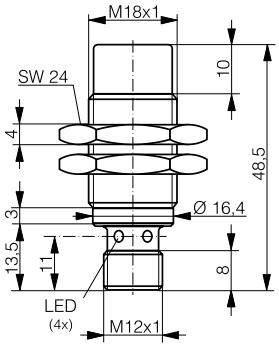
M18

5	5	5	5
			
			
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
PVC cable type 8	PVC cable type 8	Connector S12	Connector S12
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
2,000 Hz	2,000 Hz	2,000 Hz	2,000 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 1	Diagram 2	Diagram 2
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AD-601-M18-120	**DW-AD-601-M18**	**DW-AS-601-M18-120**	**DW-AS-601-M18-002**
DW-AD-602-M18-120	DW-AD-602-M18	DW-AS-602-M18-120	DW-AS-602-M18-002
DW-AD-603-M18-120	**DW-AD-603-M18**	**DW-AS-603-M18-120**	**DW-AS-603-M18-002**
DW-AD-604-M18-120	DW-AD-604-M18	DW-AS-604-M18-120	DW-AS-604-M18-002
		G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M18		
OPERATING DISTANCE MM	8	8	8







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

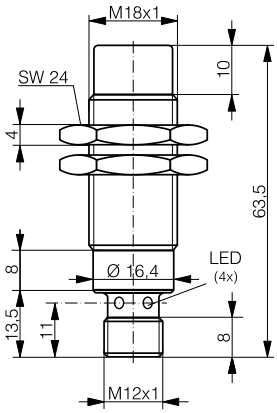
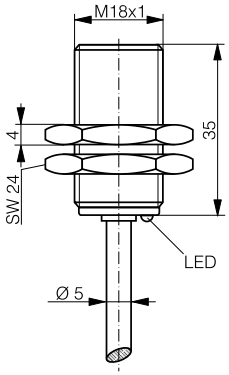
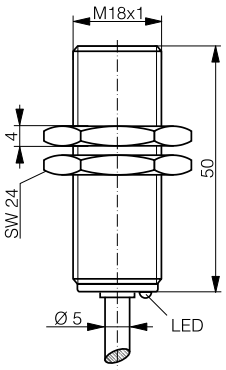
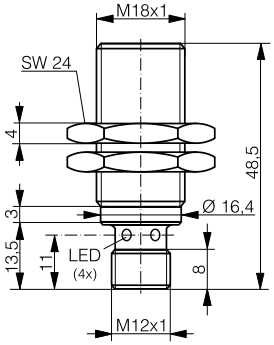
TECHNICAL DATA

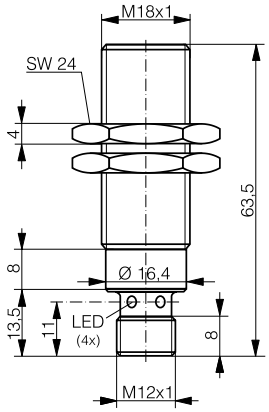
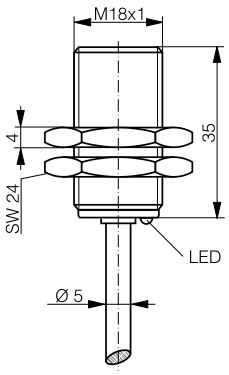
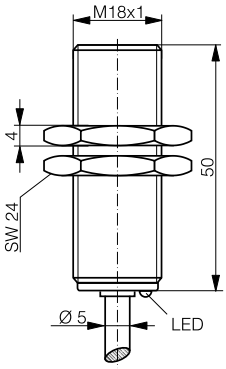
Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	PVC cable type 8	PVC cable type 8	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Non-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	2,000 Hz	2,000 Hz	2,000 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 1	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AD-611-M18-120**	**DW-AD-611-M18**	**DW-AS-611-M18-120**
NPN N.C.	DW-AD-612-M18-120	DW-AD-612-M18	DW-AS-612-M18-120
PNP N.O.	**DW-AD-613-M18-120**	**DW-AD-613-M18**	**DW-AS-613-M18-120**
PNP N.C.	DW-AD-614-M18-120	DW-AD-614-M18	DW-AS-614-M18-120
Compatible connectors [4]			G, H, M, N (N.O.); M, N (N.C.)

M18

8	8	8	8
			
	INCREASED DISTANCE	INCREASED DISTANCE	INCREASED DISTANCE
			
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector S12	PVC cable type 8	PVC cable type 8	Connector S12
IP 67	IP 67	IP 67	IP 67
Non-embeddable	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
2,000 Hz	1,500 Hz	1,500 Hz	1,500 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 1	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-AS-611-M18-002	**DW-AD-621-M18-120**	**DW-AD-621-M18**	**DW-AS-621-M18-120**
DW-AS-612-M18-002	DW-AD-622-M18-120	DW-AD-622-M18	DW-AS-622-M18-120
DW-AS-613-M18-002	**DW-AD-623-M18-120**	**DW-AD-623-M18**	**DW-AS-623-M18-120**
DW-AS-614-M18-002	DW-AD-624-M18-120	DW-AD-624-M18	DW-AS-624-M18-120
G, H, M, N (N.O.); M, N (N.C.)			G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M18		
OPERATING DISTANCE MM	8	10	10*
			
	INCREASED DISTANCE	ALL-METAL / 60 BAR	ALL-METAL / 60 BAR
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

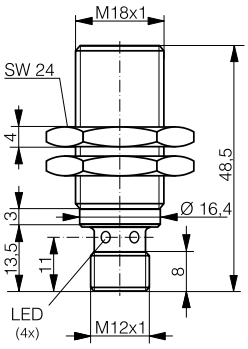
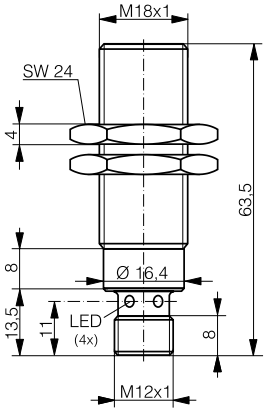
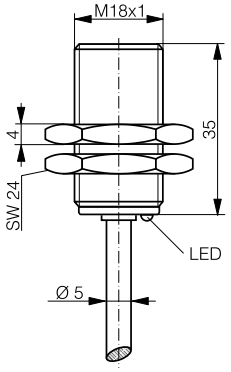
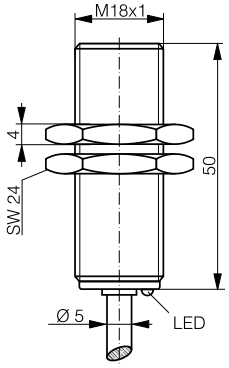
Housing material	Chrome-plated brass	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S12	PUR cable type 11	PUR cable type 11
Degree of protection	IP 67	IP 68 & IP 69K	IP 68 & IP 69K
Mounting	Quasi-embeddable	Embeddable	Embeddable
Max. switching frequency	1,500 Hz	200 Hz	200 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

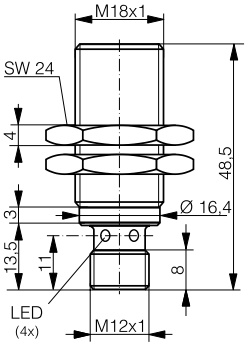
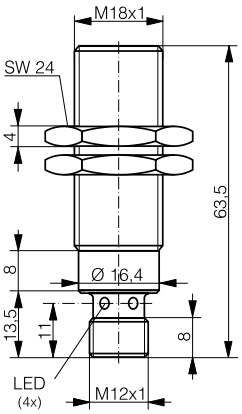
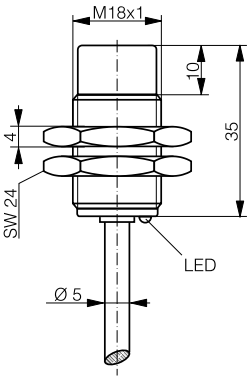
NPN N.O.	**DW-AS-621-M18-002**	**DW-AD-701-M18-120**	**DW-AD-701-M18**
NPN N.C.	DW-AS-622-M18-002	DW-AD-702-M18-120	DW-AD-702-M18
PNP N.O.	**DW-AS-623-M18-002**	**DW-AD-703-M18-120**	**DW-AD-703-M18**
PNP N.C.	DW-AS-624-M18-002	DW-AD-704-M18-120	DW-AD-704-M18
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		

* versions with 5 mm operating distance on request

M18

10	10*	12	12
			
ALL-METAL / 60 BAR	ALL-METAL / 60 BAR	LONG DISTANCE	LONG DISTANCE
			
Stainless steel V2A	Stainless steel V2A	Chrome-plated brass	Chrome-plated brass
Connector S12	Connector S12	PVC cable type 8	PVC cable type 8
IP 68 & IP 69K	IP 68 & IP 69K	IP 67	IP 67
Embeddable	Embeddable	Quasi-embeddable	Quasi-embeddable
200 Hz	200 Hz	500 Hz	500 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 2	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AS-701-M18-120	**DW-AS-701-M18-002**	**DW-AD-501-M18-120**	**DW-AD-501-M18**
DW-AS-702-M18-120	DW-AS-702-M18-002	DW-AD-502-M18-120	DW-AD-502-M18
DW-AS-703-M18-120	**DW-AS-703-M18-002**	**DW-AD-503-M18-120**	**DW-AD-503-M18**
DW-AS-704-M18-120	DW-AS-704-M18-002	DW-AD-504-M18-120	DW-AD-504-M18
G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)		

* versions with 5 mm operating distance on request

HOUSING SIZE	M18		
OPERATING DISTANCE MM	12	12	20
			
	LONG DISTANCE	LONG DISTANCE	LONG DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

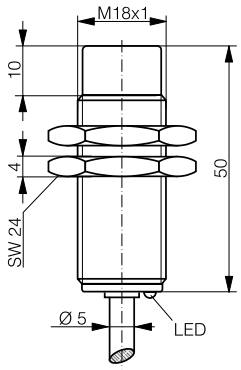
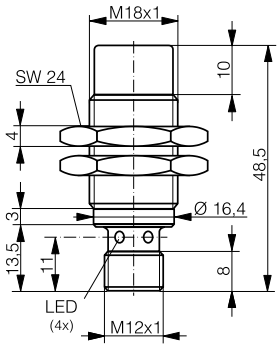
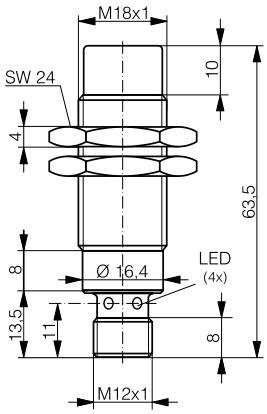
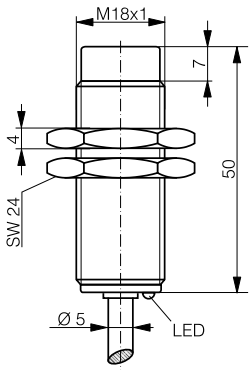
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	Connector S12	PVC cable type 8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Quasi-embeddable	Quasi-embeddable	Non-embeddable
Max. switching frequency	500 Hz	500 Hz	200 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 2	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-501-M18-120**	**DW-AS-501-M18-002**	**DW-AD-511-M18-120**
NPN N.C.	DW-AS-502-M18-120	DW-AS-502-M18-002	DW-AD-512-M18-120
PNP N.O.	**DW-AS-503-M18-120**	**DW-AS-503-M18-002**	**DW-AD-513-M18-120**
PNP N.C.	DW-AS-504-M18-120	DW-AS-504-M18-002	DW-AD-514-M18-120
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)	

M18

20	20	20	20*
			
LONG DISTANCE	LONG DISTANCE	LONG DISTANCE	ALL-METAL / 60 BAR
			

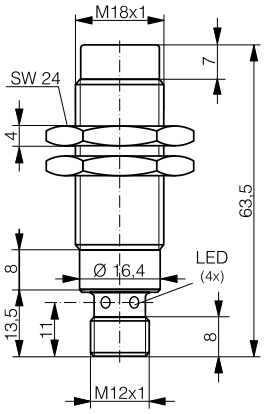
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Stainless steel V2A
PVC cable type 8	Connector S12	Connector S12	PUR cable type 11
IP 67	IP 67	IP 67	IP 68 & IP 69K
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
200 Hz	200 Hz	200 Hz	200 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 1	Diagram 2	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

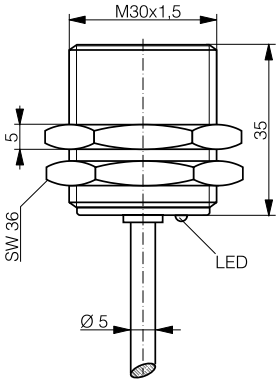
DW-AD-511-M18	**DW-AS-511-M18-120**	**DW-AS-511-M18-002**	**DW-AD-711-M18**
DW-AD-512-M18	DW-AS-512-M18-120	DW-AS-512-M18-002	DW-AD-712-M18
DW-AD-513-M18	**DW-AS-513-M18-120**	**DW-AS-513-M18-002**	**DW-AD-713-M18**
DW-AD-514-M18	DW-AS-514-M18-120	DW-AS-514-M18-002	DW-AD-714-M18
	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)	

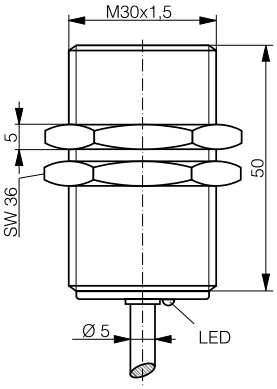
* versions with 8 mm operating distance on request

HOUSING SIZE	M18	M30	
OPERATING DISTANCE MM	20*	10	10

ALL-METAL / 60 BAR







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

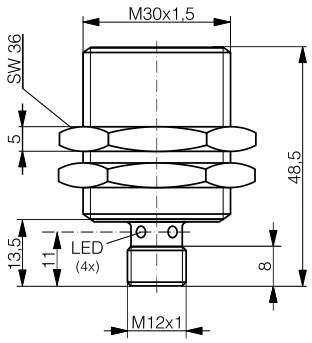
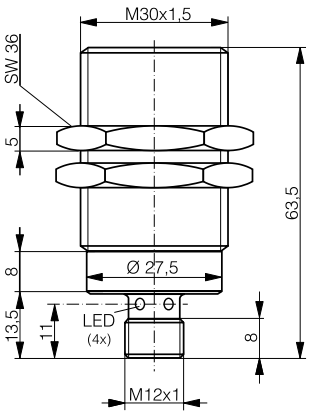
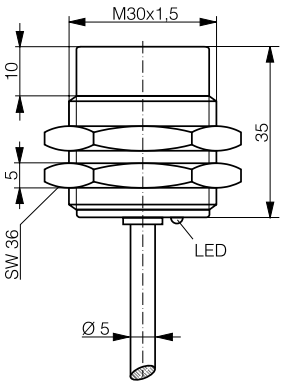
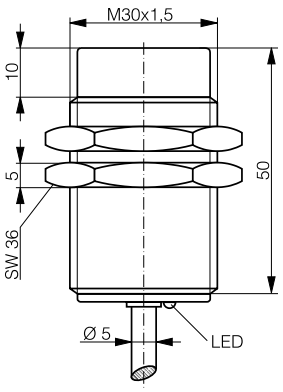
Housing material	Stainless steel V2A	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	PVC cable type 8	PVC cable type 8
Degree of protection	IP 68 & IP 69K	IP 67	IP 67
Mounting	Non-embeddable	Embeddable	Embeddable
Max. switching frequency	200 Hz	1,200 Hz	1,200 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-711-M18-002**	**DW-AD-601-M30-120**	**DW-AD-601-M30**
NPN N.C.	DW-AS-712-M18-002	DW-AD-602-M30-120	DW-AD-602-M30
PNP N.O.	**DW-AS-713-M18-002**	**DW-AD-603-M30-120**	**DW-AD-603-M30**
PNP N.C.	DW-AS-714-M18-002	DW-AD-604-M30-120	DW-AD-604-M30
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		

* versions with 8 mm operating distance on request

M30

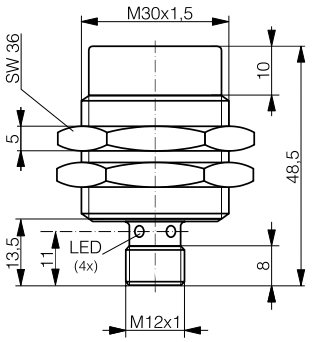
10	10	15	15
			
			

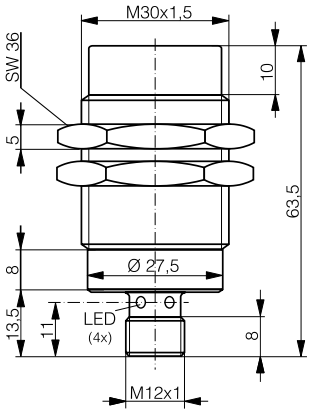
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector S12	Connector S12	PVC cable type 8	PVC cable type 8
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Non-embeddable	Non-embeddable
1,200 Hz	1,200 Hz	700 Hz	700 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 2	Diagram 1	Diagram 1
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

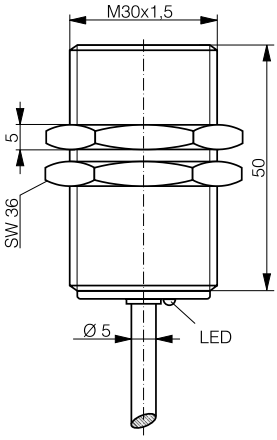
DW-AS-601-M30-120	**DW-AS-601-M30-002**	**DW-AD-611-M30-120**	**DW-AD-611-M30**
DW-AS-602-M30-120	DW-AS-602-M30-002	DW-AD-612-M30-120	DW-AD-612-M30
DW-AS-603-M30-120	**DW-AS-603-M30-002**	**DW-AD-613-M30-120**	**DW-AD-613-M30**
DW-AS-604-M30-120	DW-AS-604-M30-002	DW-AD-614-M30-120	DW-AD-614-M30
G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)		

HOUSING SIZE	M30		
OPERATING DISTANCE MM	15	15	20*

ALL-METAL / 40 BAR







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

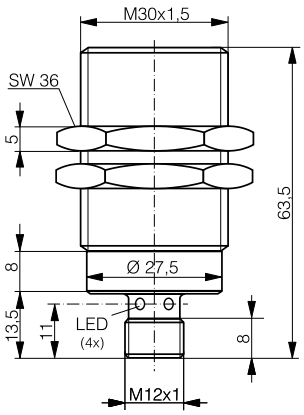
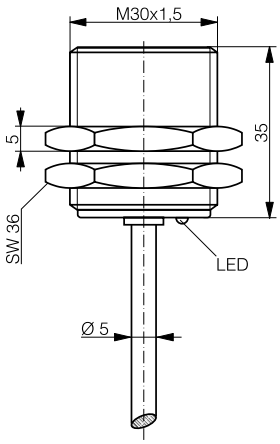
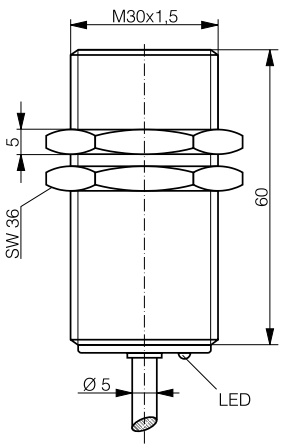
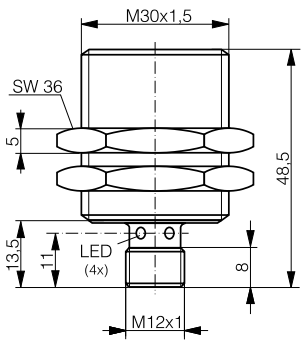
Housing material	Chrome-plated brass	Chrome-plated brass	Stainless steel V2A
Connection [1]	Connector S12	Connector S12	PUR cable type 11
Degree of protection	IP 67	IP 67	IP 68 & IP 69K
Mounting	Non-embeddable	Non-embeddable	Embeddable
Max. switching frequency	700 Hz	700 Hz	100 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 2	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

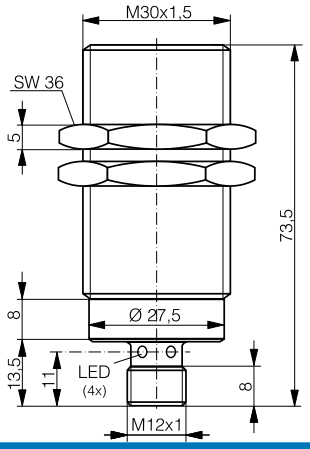
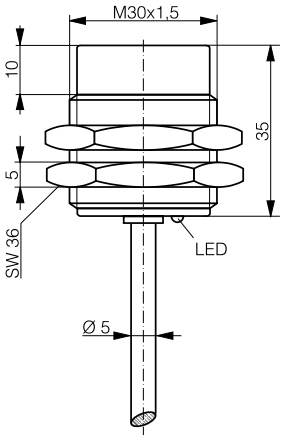
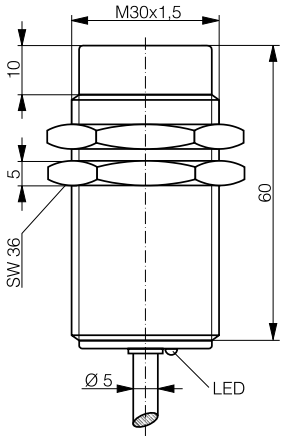
NPN N.O.	**DW-AS-611-M30-120**	**DW-AS-611-M30-002**	**DW-AD-701-M30**
NPN N.C.	DW-AS-612-M30-120	DW-AS-612-M30-002	DW-AD-702-M30
PNP N.O.	**DW-AS-613-M30-120**	**DW-AS-613-M30-002**	**DW-AD-703-M30**
PNP N.C.	DW-AS-614-M30-120	DW-AS-614-M30-002	DW-AD-704-M30
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)	

* versions with 10 mm operating distance on request

M30

20*	22	22	22
			
ALL-METAL / 40 BAR	**LONG DISTANCE**	**LONG DISTANCE**	**LONG DISTANCE**
			
Stainless steel V2A	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector S12	PVC cable type 8	PVC cable type 8	Connector S12
IP 68 & IP 69K	IP 67	IP 67	IP 67
Embeddable	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
100 Hz	200 Hz	200 Hz	200 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 1	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AS-701-M30-002	DW-AD-501-M30-120	**DW-AD-501-M30**	DW-AS-501-M30-120
DW-AS-702-M30-002	DW-AD-502-M30-120	DW-AD-502-M30	DW-AS-502-M30-120
DW-AS-703-M30-002	DW-AD-503-M30-120	**DW-AD-503-M30**	DW-AS-503-M30-120
DW-AS-704-M30-002	DW-AD-504-M30-120	DW-AD-504-M30	DW-AS-504-M30-120
G, H, M, N (N.O.); M, N (N.C.)			G, H, M, N (N.O.); M, N (N.C.)

* versions with 10 mm operating distance on request

HOUSING SIZE	M30		
OPERATING DISTANCE MM	22	40	40
			
	LONG DISTANCE	LONG DISTANCE	LONG DISTANCE
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

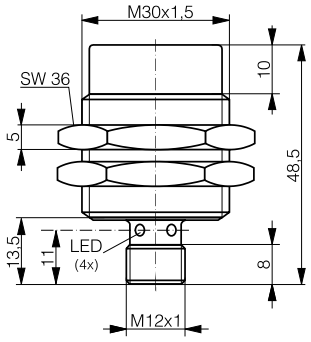
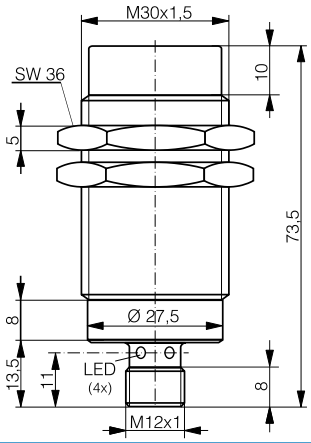
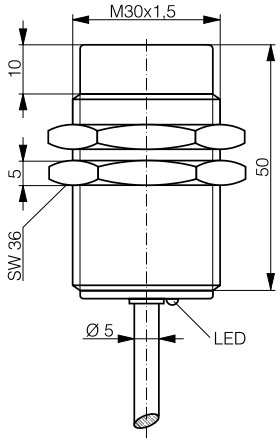
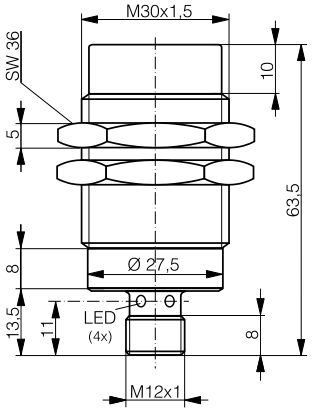
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	PVC cable type 8	PVC cable type 8
Degree of protection	IP 67	IP 67	IP 67
Mounting	Quasi-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	200 Hz	100 Hz	100 Hz
Additional technical data [2]	Table 1	Table 1	Table 1
Wiring [3]	Diagram 2	Diagram 1	Diagram 1
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 200 mA	≤ 200 mA
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

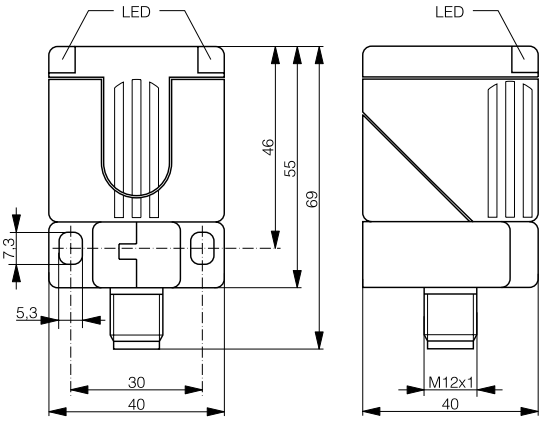
NPN N.O.	**DW-AS-501-M30-002**	DW-AD-511-M30-120	**DW-AD-511-M30**
NPN N.C.	DW-AS-502-M30-002	DW-AD-512-M30-120	DW-AD-512-M30
PNP N.O.	**DW-AS-503-M30-002**	DW-AD-513-M30-120	**DW-AD-513-M30**
PNP N.C.	DW-AS-504-M30-002	DW-AD-514-M30-120	DW-AD-514-M30
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)		

M30

40	40	40*	40*
			
LONG DISTANCE	**LONG DISTANCE**	**ALL-METAL / 40 BAR**	**ALL-METAL / 40 BAR**
			
Chrome-plated brass	Chrome-plated brass	Stainless steel V2A	Stainless steel V2A
Connector S12	Connector S12	PUR cable type 11	Connector S12
IP 67	IP 67	IP 68 & IP 69K	IP 68 & IP 69K
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
100 Hz	100 Hz	90 Hz	90 Hz
Table 1	Table 1	Table 1	Table 1
Diagram 2	Diagram 2	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in
10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AS-511-M30-120	**DW-AS-511-M30-002**	**DW-AD-711-M30**	**DW-AS-711-M30-002**
DW-AS-512-M30-120	DW-AS-512-M30-002	DW-AD-712-M30	DW-AS-712-M30-002
DW-AS-513-M30-120	**DW-AS-513-M30-002**	**DW-AD-713-M30**	**DW-AS-713-M30-002**
DW-AS-514-M30-120	DW-AS-514-M30-002	DW-AD-714-M30	DW-AS-714-M30-002
G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)		G, H, M, N (N.O.); M, N (N.C.)

* versions with 15 mm operating distance on request

HOUSING SIZE	⌀ 40 X 40		
OPERATING DISTANCE MM	15	20	35



Sensing face can be rotated to 5 different sides.

[1] Standard cable length 2 m. Non-standard cable lengths and types on request.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

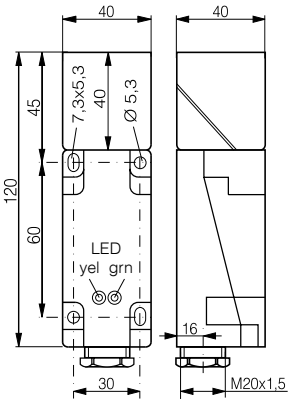
Housing material	PBTP	PBTP	PBTP
Connection [1]	Connector S12	Connector S12	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Non-embeddable
Max. switching frequency	50 Hz	30 Hz	30 Hz
Additional technical data [2]	Table 8	Table 8	Table 8
Wiring [3]	Diagram 6	Diagram 6	Diagram 6
LED	Built-in	Built-in	Built-in
Supply voltage range	15 ... 34 VDC	15 ... 34 VDC	15 ... 34 VDC
Ambient temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Output current	≤ 200 mA / ≤ 150 mA*	≤ 200 mA / ≤ 150 mA*	≤ 200 mA / ≤ 150 mA*
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

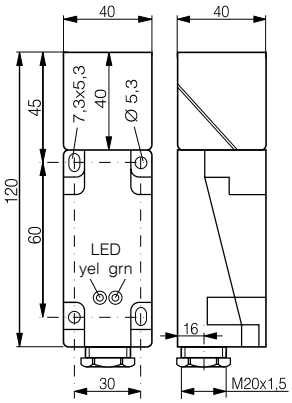
NPN N.O. + N.C.	**DW-AS-601-C44**	**DW-AS-601-C44-304**	**DW-AS-611-C44**
NPN N.O.			
PNP N.O. + N.C.	**DW-AS-603-C44**	**DW-AS-603-C44-304**	**DW-AS-613-C44**
PNP N.O.			
Compatible connectors [4]	M, N	M, N	M, N

* 50 °C / 85 °C

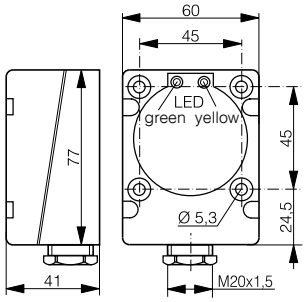
Ø 40 X 120		Ø 60 X 80	Ø 80 X 100
15	40	50	65

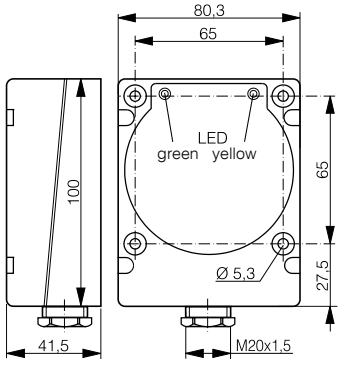


Sensing face can be rotated to 5 different sides.



Sensing face can be rotated to 5 different sides.





PBTP	PBTP	PBTP	PBTP
Screw terminal	Screw terminal	Screw terminal	Screw terminal
IP 65	IP 65	IP 65	IP 65
Embeddable	Non-embeddable	Non-embeddable	Non-embeddable
100 Hz	20 Hz	20 Hz	10 Hz
Table 2	Table 3	Table 3	Table 3
Diagram 2	Diagram 2	Diagram 2	Diagram 2
Built-in	Built-in	Built-in	Built-in
15 ... 34 VDC	10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC
-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
≤ 200 mA / ≤ 150 mA*	≤ 300 mA	≤ 300 mA	≤ 300 mA
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
DW-AD-601-C40			
DW-AD-603-C40	**DW-AD-613-C40****	**DW-AD-613-C60****	**DW-AD-613-C80****

* 50 °C / 85 °C

** N.O. / N.C. switchable

INDUCTIVE SENSORS: ANALOG OUTPUT SERIES 509

- ✓ Sensing range up to **40 mm**
- ✓ Resolution in **µm** range
- ✓ Excellent **temperature stability**
- ✓ Very good **repeat accuracy**
- ✓ **Current & voltage outputs**
- ✓ **Several switch points** with a single device

TECHNICAL DATA

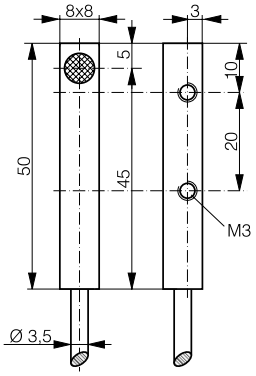
(according to IEC 60947-5-2)	
Housing material	Chrome-plated brass
Degree of protection	IP 67
Max. ripple content	≤ 20 % U_B
No-load supply current	≤ 10 mA
Output voltage, damped	0 VDC
Output voltage, non-damped	5 VDC / 10 VDC (-320/-39#)
Temperature drift % s_r	≤ 5 % (0...+70 °C); ≤ 10 % (-25...+0 °C)
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

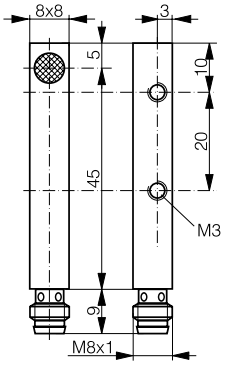
Inductive sensors with analog output for continuous measuring from 0 to 40 mm with very high detection accuracy (µm range). High resolution and temperature stability as well as excellent repeat accuracy. Voltage (all models) and current outputs (M12, M18 and M30) in the same device. Particularly suited for

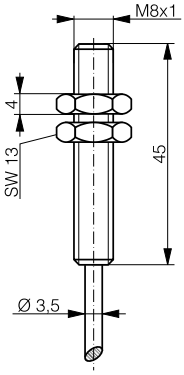
- ✓ regulated approach of **elevators** to end positions
- ✓ **vibration monitoring**
- ✓ **rotation monitoring**
- ✓ **angle detection**
- ✓ detection of **pedal positions** in vehicles
- ✓ **position monitoring** of parts on conveyor belts
- ✓ **sheet-metal forming**
- ✓ **metal-sorting systems**

HOUSING SIZE	⌀ 8 X 8		M8
SENSING RANGE MM	0 ... 4	0 ... 4	0 ... 4

ANALOG OUTPUT / LARGE SENSING RANGE







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

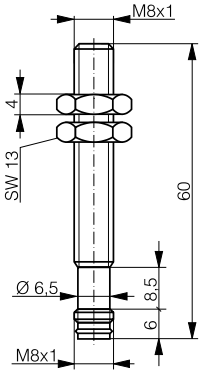
TECHNICAL DATA			
Connection [1]	PUR cable type 3	Connector S8	PUR cable type 3
Bandwidth (-3 dB)	1,600 Hz (at s = 2 mm)	1,600 Hz (at s = 2 mm)	1,600 Hz (at s = 2 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 10 V	0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	---	---	---
Wiring [2]	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	15 ... 30 VDC	15 ... 30 VDC	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

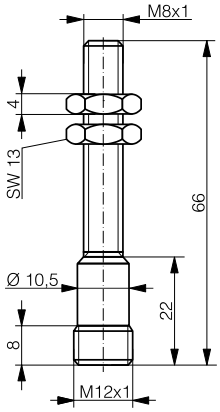
PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA			**DW-AD-509-M8*** **
Outputs 0 ... 10 V / 4 ... 20 mA	**DW-AD-509-C8-390*** **	**DW-AS-509-C8-390*** **	**DW-AD-509-M8-390*** **
Compatible connectors [3]		A, B	

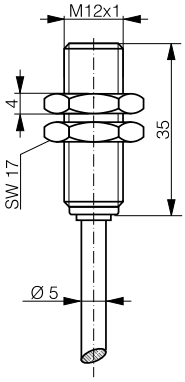
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets) *** without current output

HOUSING SIZE	M8		M12
SENSING RANGE MM	0 ... 4	0 ... 4	0 ... 6

ANALOG OUTPUT / LARGE SENSING RANGE







[1] Standard cable length 2 m.
Non-standard cable lengths and types on request.
Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Connection [1]	Connector S8	Connector S12	PUR cable type 7
Bandwidth (-3 dB)	1,600 Hz (at s = 2 mm)	1,600 Hz (at s = 2 mm)	1,000 Hz (at s = 3 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	---	---	1 ... 5 mA
Wiring [2]	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

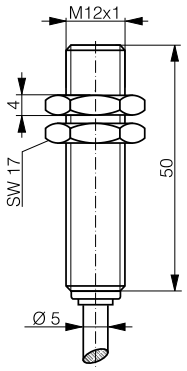
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

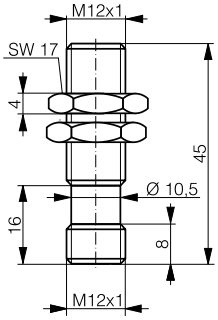
Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	**DW-AS-509-M8-001*** **	**DW-AS-509-M8*** **	**DW-AD-509-M12-120**
Outputs 0 ... 10 V / 4 ... 20 mA	**DW-AS-509-M8-390*** **	**DW-AS-509-M8-393*** **	**DW-AD-509-M12-320*** **
Compatible connectors [3]	A, B	G, H, M, N	

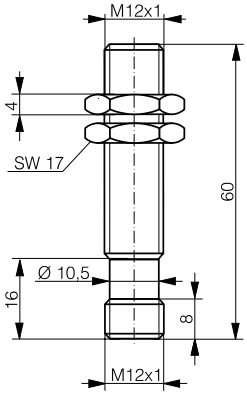
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets) *** without current output

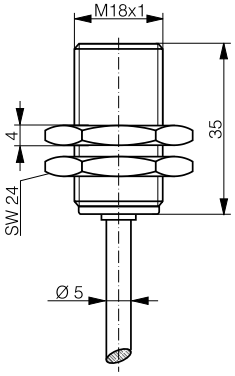
M12			M18
0 ... 6	0 ... 6	0 ... 6	0 ... 10
			

ANALOG OUTPUT / LARGE SENSING RANGE









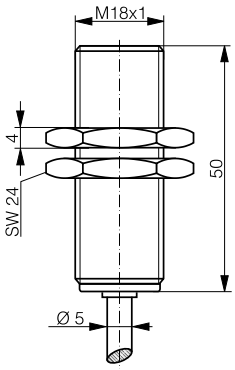
PUR cable type 7	Connector S12	Connector S12	PUR cable type 7
1,000 Hz (at s = 3 mm)	1,000 Hz (at s = 3 mm)	1,000 Hz (at s = 3 mm)	500 Hz (at s = 5 mm)
Quasi-embeddable	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Diagram 5	Diagram 5	Diagram 5	Diagram 5
10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
-25 ... +70 °C**	-25 ... +70 °C	-25 ... +70 °C**	-25 ... +70 °C**
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

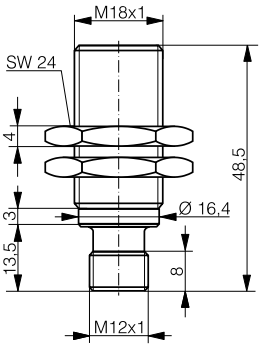
DW-AD-509-M12	**DW-AS-509-M12-120**	**DW-AS-509-M12**	**DW-AD-509-M18-120**
DW-AD-509-M12-390	**DW-AS-509-M12-320*** **	**DW-AS-509-M12-390**	**DW-AD-509-M18-320**
	M, N	M, N	

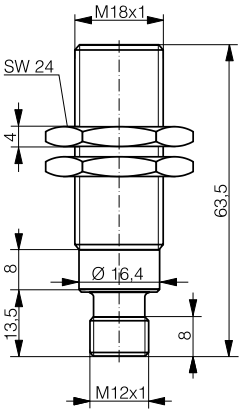
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets) *** without current output

HOUSING SIZE	M18		
SENSING RANGE MM	0 ... 10	0 ... 10	0 ...10

ANALOG OUTPUT / LARGE SENSING RANGE







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Connection [1]	PUR cable type 7	Connector S12	Connector S12
Bandwidth (-3 dB)	500 Hz (at s = 5 mm)	500 Hz (at s = 5 mm)	500 Hz (at s = 5 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Wiring [2]	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

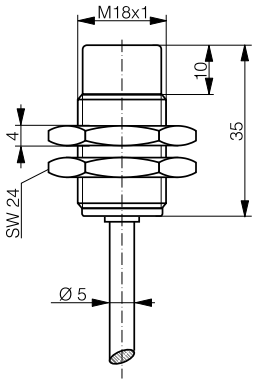
Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	**DW-AD-509-M18**	**DW-AS-509-M18-120**	**DW-AS-509-M18-002**
Outputs 0 ... 10 V / 4 ... 20 mA	**DW-AD-509-M18-390**	**DW-AS-509-M18-320**	**DW-AS-509-M18-390**
Compatible connectors [3]		M, N	M, N

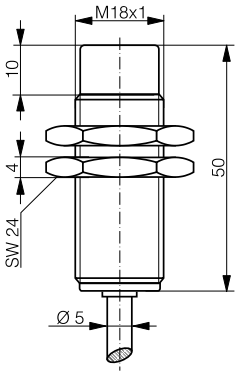
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets)

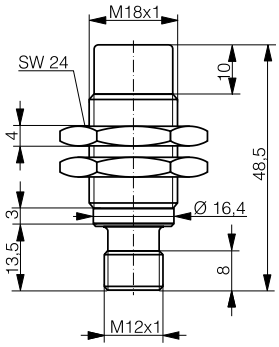
M18

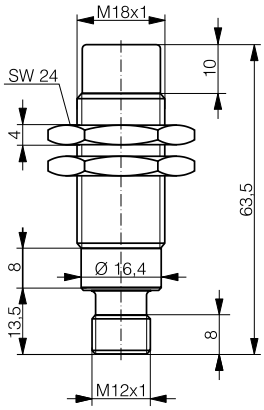
0 ... 20	0 ... 20	0 ... 20	0 ... 20
			

ANALOG OUTPUT / LARGE SENSING RANGE









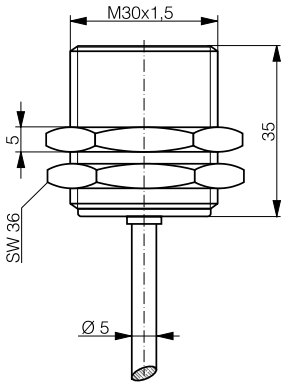
PUR cable type 7	PUR cable type 7	Connector S12	Connector S12
250 Hz (at s = 10 mm)	250 Hz (at s = 10 mm)	250 Hz (at s = 10 mm)	250 Hz (at s = 10 mm)
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Diagram 5	Diagram 5	Diagram 5	Diagram 5
10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**	25 ... +70 °C**
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

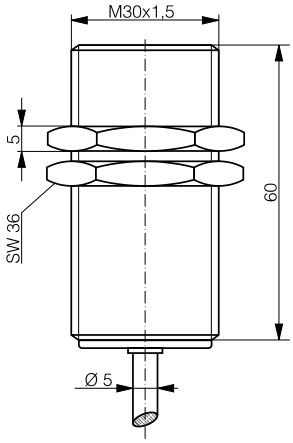
DW-AD-519-M18-120	**DW-AD-519-M18**	**DW-AS-519-M18-120**	**DW-AS-519-M18-002**
DW-AD-519-M18-320	**DW-AD-519-M18-390**	**DW-AS-519-M18-320**	**DW-AS-519-M18-390**
		M, N	M, N

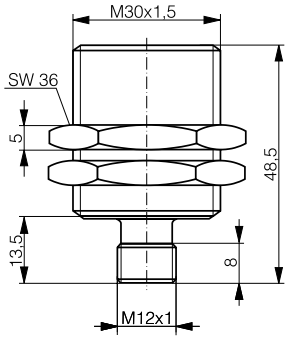
* DW-A#-519-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-519-M##-320/390 (see data sheets)

HOUSING SIZE	M30		
SENSING RANGE MM	0 ... 20	0 ... 20	0 ... 20

ANALOG OUTPUT / LARGE SENSING RANGE







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Connection [1]	PUR cable type 7	PUR cable type 7	Connector S12
Bandwidth (-3 dB)	200 Hz (at s = 10 mm)	200 Hz (at s = 10 mm)	200 Hz (at s = 10 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Wiring [2]	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

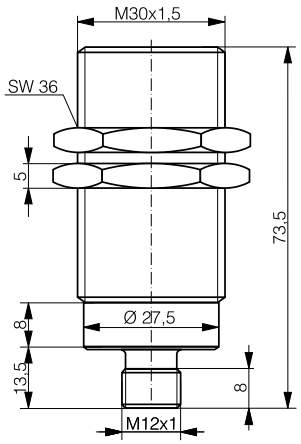
Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	DW-AD-509-M30-120	**DW-AD-509-M30**	DW-AS-509-M30-120
Outputs 0 ... 10 V / 4 ... 20 mA	DW-AD-509-M30-320	**DW-AD-509-M30-390**	DW-AS-509-M30-320
Compatible connectors [3]			M, N

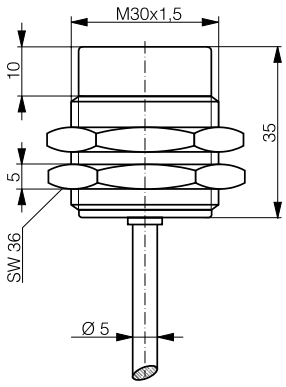
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets)

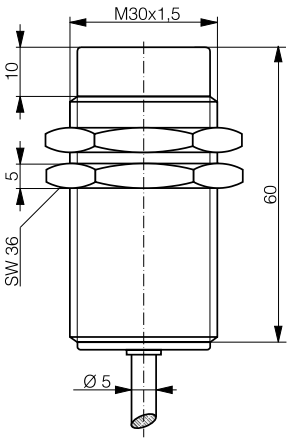
M30

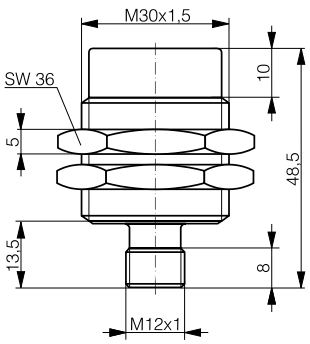
0 ... 20	0 ... 40	0 ... 40	0 ... 40
			

ANALOG OUTPUT / LARGE SENSING RANGE









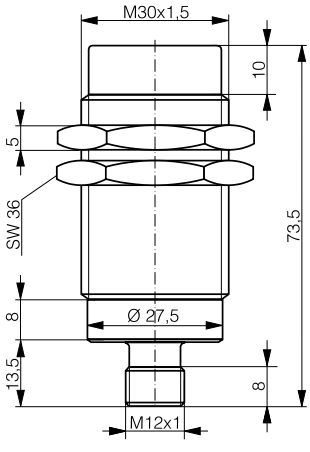
Connector S12	PUR cable type 7	PUR cable type 7	Connector S12
200 Hz (at s = 10 mm)	100 Hz (at s = 20 mm)	100 Hz (at s = 20 mm)	100 Hz (at s = 20 mm)
Quasi-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Diagram 5	Diagram 5	Diagram 5	Diagram 5
10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AS-509-M30-002	DW-AD-519-M30-120	**DW-AD-519-M30**	DW-AS-519-M30-120
DW-AS-509-M30-390	DW-AD-519-M30-320	**DW-AD-519-M30-390**	DW-AS-519-M30-320
M, N			M, N

* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets)

HOUSING SIZE	M30		
SENSING RANGE MM	0 ... 40		

ANALOG OUTPUT / LARGE SENSING RANGE



[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Connection [1]	Connector S12		
Bandwidth (-3 dB)	100 Hz (at s = 20 mm)		
Mounting	Non-embeddable		
Voltage output	0 ... 5 V / 0 ... 10 V		
Current output	1 ... 5 mA / 4 ... 20 mA		
Wiring [2]	Diagram 5		
Supply voltage range	10 ... 30 / 15 ... 30 VDC*		
Ambient temperature range	-25 ... +70 °C**		
Approvals	CE, UL, RoHS		

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	**DW-AS-519-M30-002**		
Outputs 0 ... 10 V / 4 ... 20 mA	**DW-AS-519-M30-390**		
Compatible connectors [3]	M, N		

* DW-A#-519-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-519-M##-320/390 (see data sheets)

INDUCTIVE SENSORS: ALL-METAL SERIES 700

- ✓ Mechanically and chemically **rugged**
- ✓ **All-metal housing** (incl. sensing face) in stainless steel **V2A**
- ✓ Impervious: **IP 68 & IP 69K**
- ✓ Pressure-resistant up to **100 bar**
- ✓ Long operating distances up to **40 mm**
- ✓ **Factor 1:** identical operating distances on steel and aluminum

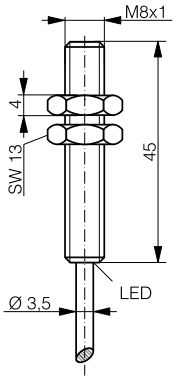
TECHNICAL DATA

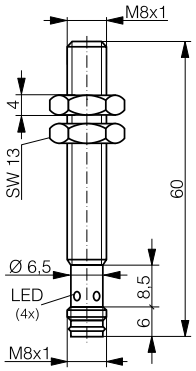
(according to IEC 60947-5-2)	
Housing material	V2A
Degree of protection	IP 68 & IP 69K (M12, M18, M30)
Supply voltage range U_B	10 ... 30 VDC
Ambient temperature	-25 ... +70 °C
Output current	200 mA
Max. ripple content	≤ 20 % U_B
No-load supply current	≤ 10 mA
Leakage current at output	≤ 0,1 mA
Voltage drop, switched state	≤ 2,0 V
Temperature drift % s_r	≤ 10 %
Hysteresis % s_r	≤ 15 %
Repeat accuracy % s_r	≤ 5 %
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

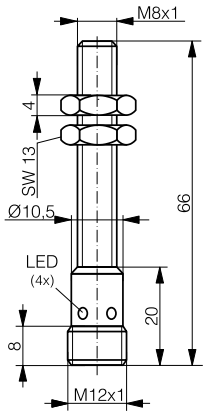
Mechanically and chemically very rugged all-metal sensors in V2A (incl. sensing face) for considerably reduced downtimes in extremely rough environments. Impervious (IP 68 & IP 69K) and pressure-resistant up to 100 bar. Factor 1: long operating distances on ferromagnetic and non-ferromagnetic metals with good conductivity as well as identical operating distances on steel and aluminum. Particularly suited for

- ✓ **automotive industry**
- ✓ **chemical industry**
- ✓ **oil-rigs**
- ✓ **harbor cranes**
- ✓ **ships**
- ✓ **machine tool manufacturing**
- ✓ **industrial laundries**
- ✓ **utility vehicles**
- ✓ **ski lifts**
- ✓ **military transporters**
- ✓ **cable detection**
- ✓ **wood & paper industry**
- ✓ **EDM machines**

HOUSING SIZE	M8		
OPERATING DISTANCE MM	3	3	3
			
	ALL-METAL / 100 BAR	ALL-METAL / 100 BAR	ALL-METAL / 100 BAR







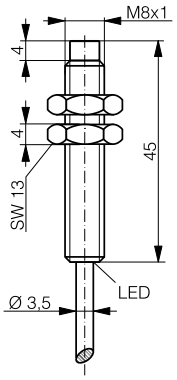
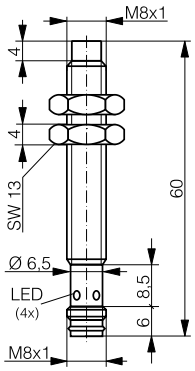
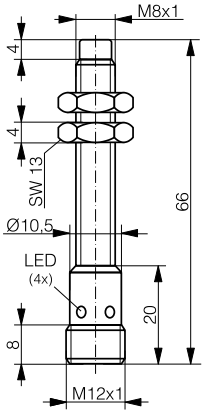
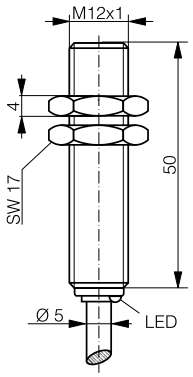
[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

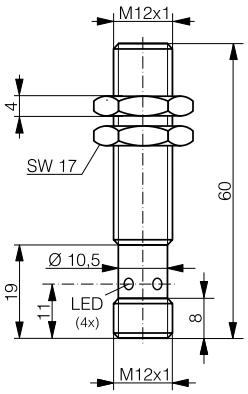
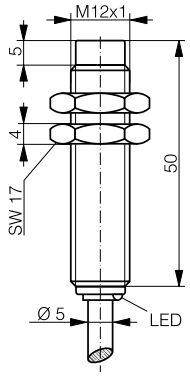
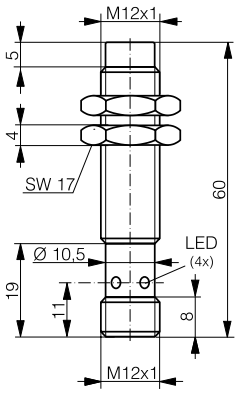
Connection [1]	PUR cable type 3	Connector S8	Connector S12
Degree of protection	IP 68	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	1,000 Hz	1,000 Hz	1,000 Hz
Wiring [2]	Diagram 1	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AD-701-M8**	**DW-AS-701-M8-001**	**DW-AS-701-M8**
NPN N.C.	DW-AD-702-M8	DW-AS-702-M8-001	DW-AS-702-M8
PNP N.O.	**DW-AD-703-M8**	**DW-AS-703-M8-001**	**DW-AS-703-M8**
PNP N.C.	DW-AD-704-M8	DW-AS-704-M8-001	DW-AS-704-M8
Compatible connectors [3]		A, B	G, H, M, N (N.O.); M, N (N.C.)

M8			M12
6	6	6	6*
			
ALL-METAL / 100 BAR	ALL-METAL / 100 BAR	ALL-METAL / 100 BAR	ALL-METAL / 80 BAR
			
PUR cable type 3	Connector S8	Connector S12	PUR cable type 11
IP 68	IP 67	IP 67	IP 68 & IP 69K
Non-embeddable	Non-embeddable	Non-embeddable	Embeddable
700 Hz	700 Hz	700 Hz	600 Hz
Diagram 1	Diagram 1	Diagram 2	Diagram 1
Built-in	Built-in	Built-in	Built-in
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS
DW-AD-711-M8	**DW-AS-711-M8-001**	**DW-AS-711-M8**	**DW-AD-701-M12**
DW-AD-712-M8	DW-AS-712-M8-001	DW-AS-712-M8	DW-AD-702-M12
DW-AD-713-M8	**DW-AS-713-M8-001**	**DW-AS-713-M8**	**DW-AD-703-M12**
DW-AD-714-M8	DW-AS-714-M8-001	DW-AS-714-M8	DW-AD-704-M12
	A, B	G, H, M, N (N.O.); M, N (N.C.)	

* versions with 2 mm operating distance on request

HOUSING SIZE	M12		
OPERATING DISTANCE MM	6*	10**	10**
			
	ALL-METAL / 80 BAR	ALL-METAL / 80 BAR	ALL-METAL / 80 BAR
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Connection [1]	Connector S12	PUR cable type 11	Connector S12
Degree of protection	IP 68 & IP 69K	IP 68 & IP 69K	IP 68 & IP 69K
Mounting	Embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	600 Hz	400 Hz	400 Hz
Wiring [2]	Diagram 2	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

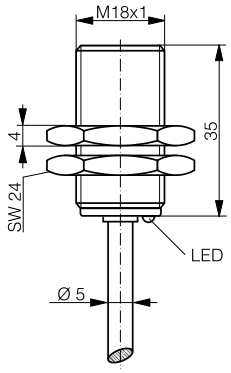
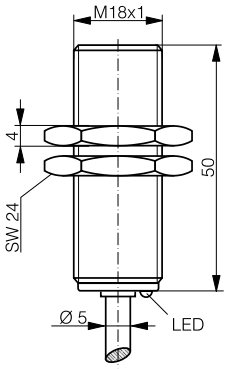
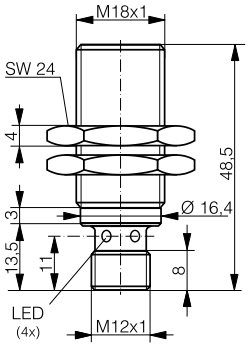
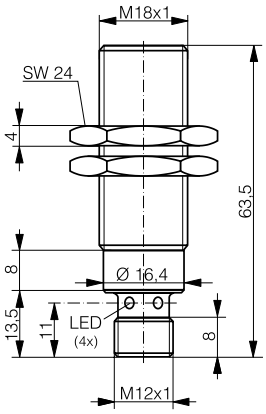
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-701-M12**	**DW-AD-711-M12**	**DW-AS-711-M12**
NPN N.C.	DW-AS-702-M12	DW-AD-712-M12	DW-AS-712-M12
PNP N.O.	**DW-AS-703-M12**	**DW-AD-713-M12**	**DW-AS-713-M12**
PNP N.C.	DW-AS-704-M12	DW-AD-714-M12	DW-AS-714-M12
Compatible connectors [3]	G, H, M, N (N.O.); M, N (N.C.)		G, H, M, N (N.O.); M, N (N.C.)

* versions with 2 mm operating distance on request

** versions with 4 mm operating distance on request

M18

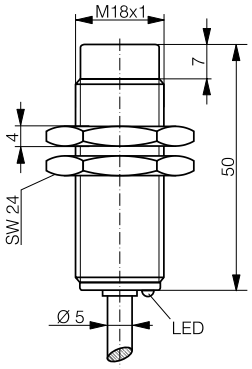
10	10*	10	10*
			
ALL-METAL / 60 BAR	ALL-METAL / 60 BAR	ALL-METAL / 60 BAR	ALL-METAL / 60 BAR
			

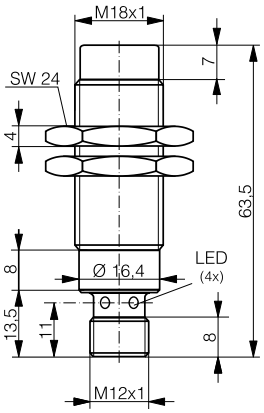
PUR cable type 11	PUR cable type 11	Connector S12	Connector S12
IP 68 & IP 69K	IP 68 & IP 69K	IP 68 & IP 69K	IP 68 & IP 69K
Embeddable	Embeddable	Embeddable	Embeddable
200 Hz	200 Hz	200 Hz	200 Hz
Diagram 1	Diagram 1	Diagram 2	Diagram 2
Built-in	Built-in	Built-in	Built-in
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

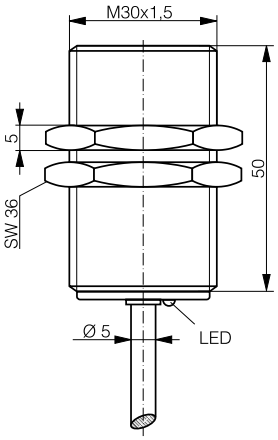
DW-AD-701-M18-120	**DW-AD-701-M18**	**DW-AS-701-M18-120**	**DW-AS-701-M18-002**
DW-AD-702-M18-120	DW-AD-702-M18	DW-AS-702-M18-120	DW-AS-702-M18-002
DW-AD-703-M18-120	**DW-AD-703-M18**	**DW-AS-703-M18-120**	**DW-AS-703-M18-002**
DW-AD-704-M18-120	DW-AD-704-M18	DW-AS-704-M18-120	DW-AS-704-M18-002
		G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)

* versions with 5 mm operating distance on request

HOUSING SIZE	M18		M30
OPERATING DISTANCE MM	20*	20*	20**
			
	ALL-METAL / 60 BAR	ALL-METAL / 60 BAR	ALL-METAL / 40 BAR







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

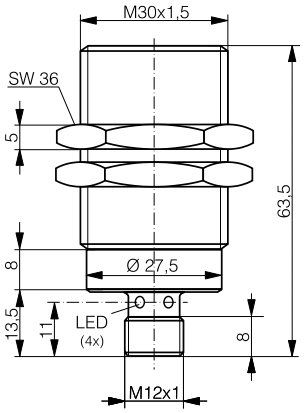
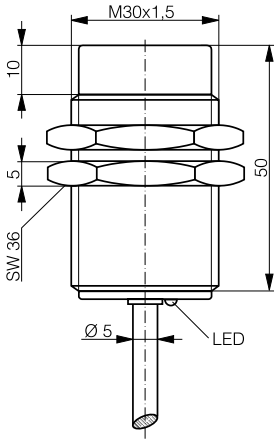
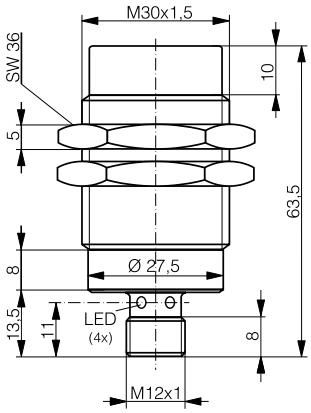
TECHNICAL DATA			
Connection [1]	PUR cable type 11	Connector S12	PUR cable type 11
Degree of protection	IP 68 & IP 69K	IP 68 & IP 69K	IP 68 & IP 69K
Mounting	Non-embeddable	Non-embeddable	Embeddable
Max. switching frequency	200 Hz	200 Hz	100 Hz
Wiring [2]	Diagram 1	Diagram 2	Diagram 1
LED	Built-in	Built-in	Built-in
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-AD-711-M18**	**DW-AS-711-M18-002**	**DW-AD-701-M30**
NPN N.C.	DW-AD-712-M18	DW-AS-712-M18-002	DW-AD-702-M30
PNP N.O.	**DW-AD-713-M18**	**DW-AS-713-M18-002**	**DW-AD-703-M30**
PNP N.C.	DW-AD-714-M18	DW-AS-714-M18-002	DW-AD-704-M30
Compatible connectors [3]		G, H, M, N (N.O.); M, N (N.C.)	

* versions with 8 mm operating distance on request

** versions with 10 mm operating distance on request

M30

20*	40**	40**	
			
ALL-METAL / 40 BAR	**ALL-METAL / 40 BAR**	**ALL-METAL / 40 BAR**	
			
Connector S12	PUR cable type 11	Connector S12	
IP 68 & IP 69K	IP 68 & IP 69K	IP 68 & IP 69K	
Embeddable	Non-embeddable	Non-embeddable	
100 Hz	90 Hz	90 Hz	
Diagram 2	Diagram 1	Diagram 2	
Built-in	Built-in	Built-in	
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	
DW-AS-701-M30-002	**DW-AD-711-M30**	**DW-AS-711-M30-002**	
DW-AS-702-M30-002	DW-AD-712-M30	DW-AS-712-M30-002	
DW-AS-703-M30-002	**DW-AD-713-M30**	**DW-AS-713-M30-002**	
DW-AS-704-M30-002	DW-AD-714-M30	DW-AS-714-M30-002	
G, H, M, N (N.O.); M, N (N.C.)		G, H, M, N (N.O.); M, N (N.C.)	

* versions with 10 mm operating distance on request

** versions with 15 mm operating distance on request

INDUCTIVE SENSORS: FOOD & SEA WATER SERIES 700L

- ✓ **Corrosion resistant**
- ✓ **Food safe (V4A/AISI 316L)**
- ✓ **IP 68 & IP 69K, sea-water resistant**
- ✓ Mechanically and chemically **rugged**
- ✓ **All-metal housing** (incl. sensing face)
- ✓ **Factor 1:** operating distances up to **40 mm**

TECHNICAL DATA

(according to IEC 60947-5-2)	
Housing material	V4A/AISI 316L/DIN 1.4435 (food safe)
Degree of protection	IP 68 & IP 69K
Supply voltage range U_B	10 ... 30 VDC
Ambient temperature	-25 ... +85 °C
Output current	200 mA
Max. ripple content	≤ 20 % U_B
No-load supply current	≤ 10 mA
Leakage current at output	≤ 0,1 mA
Voltage drop, switched state	≤ 2,0 V
Temperature drift % s_r	≤ 10 %
Hysteresis % s_r	≤ 15 %
Repeat accuracy % s_r	≤ 5 %
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

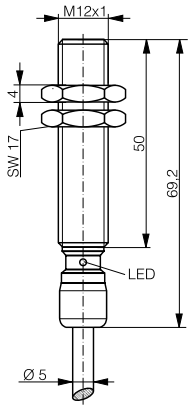
Corrosion-resistant and food-safe all-metal sensors in V4A (incl. sensing face). ECOLAB tested: fully impervious, resistant to cleaning and high-pressure water jets (IP 68 & IP 69K). Pressure resistant up to 80 bar and thus usable down to depths of 800 m. Factor 1: long operating distances on ferromagnetic and non-ferromagnetic metals with good conductivity as well as identical operating distances on steel and aluminum. Particularly suited for

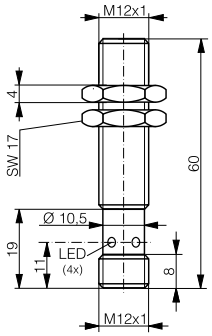
- ✓ **dairies**
- ✓ **food processing**
- ✓ **beverage manufacture & filling machines**
- ✓ **winery machines**
- ✓ **slaughterhouses & meat processing**
- ✓ **animal farming**
- ✓ **gastronomy machines**
- ✓ **ships & submarines**
- ✓ **harbor installations**
- ✓ **locks & docks**
- ✓ **offshore installations**
- ✓ **wave energy power plants**
- ✓ **fish processing**
- ✓ **sewage treatment plants**

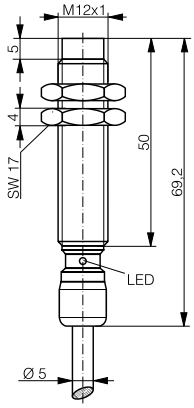
HOUSING SIZE	M12		
OPERATING DISTANCE MM	6	6	10



ALL-METAL FOOD SAFE & CORROSION RESISTANT / IP 68 + IP 69K







[1] Standard cable length 2 m.
Non-standard cable lengths and types on request.
Cable type see page 271.
[2] see page 133
[3] see page 269

TECHNICAL DATA

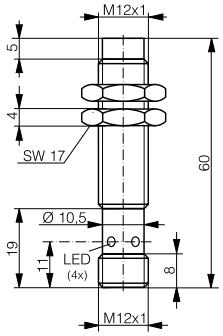
Connection [1]	TPE-S cable type 13	Connector S12	TPE-S cable type 13
Degree of protection	IP 68 + IP 69K	IP 68 + IP 69K	IP 68 + IP 69K
Max. operating pressure	80 bar	80 bar	80 bar
Mounting	Embeddable	Embeddable	Non-embeddable
Max. switching frequency	600 Hz	600 Hz	400 Hz
Wiring [2]	Diagram 1	Diagram 2	Diagram 1
LED	Built-in	Built-in	Built-in
Approvals	CE, RoHS, Ecolab	CE, RoHS, Ecolab	CE, RoHS, Ecolab

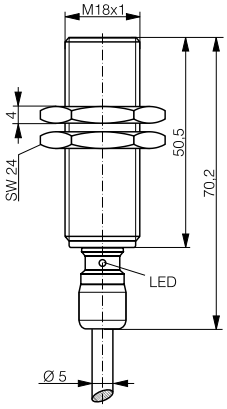
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

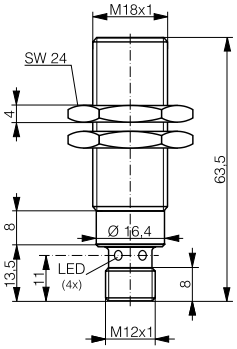
NPN N.O.	**DW-LD-701-M12**	**DW-LS-701-M12**	**DW-LD-711-M12**
NPN N.C.	DW-LD-702-M12	DW-LS-702-M12	DW-LD-712-M12
PNP N.O.	**DW-LD-703-M12**	**DW-LS-703-M12**	**DW-LD-713-M12**
PNP N.C.	DW-LD-704-M12	DW-LS-704-M12	DW-LD-714-M12
Compatible connectors [3]		U	

HOUSING SIZE	M12	M18	
OPERATING DISTANCE MM	10	10	10

ALL-METAL FOOD SAFE & CORROSION RESISTANT / IP 68 + IP 69K







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 269

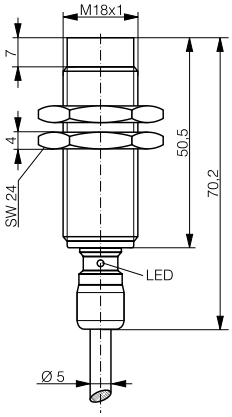
TECHNICAL DATA			
Connection [1]	Connector S12	TPE-S cable type 13	Connector S12
Degree of protection	IP 68 + IP 69K	IP 68 + IP 69K	IP 68 + IP 69K
Max. operating pressure	80 bar	60 bar	60 bar
Mounting	Non-embeddable	Embeddable	Embeddable
Max. switching frequency	400 Hz	300 Hz	300 Hz
Wiring [2]	Diagram 2	Diagram 1	Diagram 2
LED	Built-in	Built-in	Built-in
Approvals	CE, RoHS, Ecolab	CE, RoHS, Ecolab	CE, RoHS, Ecolab

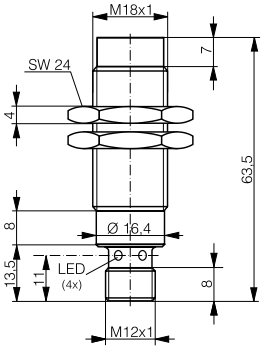
PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-LS-711-M12**	**DW-LD-701-M18**	**DW-LS-701-M18-002**
NPN N.C.	DW-LS-712-M12	DW-LD-702-M18	DW-LS-702-M18-002
PNP N.O.	**DW-LS-713-M12**	**DW-LD-703-M18**	**DW-LS-703-M18-002**
PNP N.C.	DW-LS-714-M12	DW-LD-704-M18	DW-LS-704-M18-002
Compatible connectors [3]	U		U

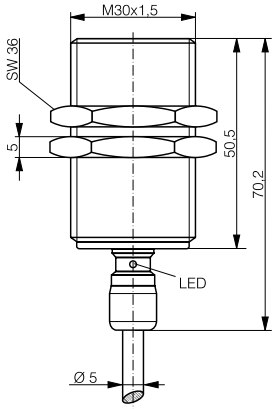
M18		M30	
20	20	20	20

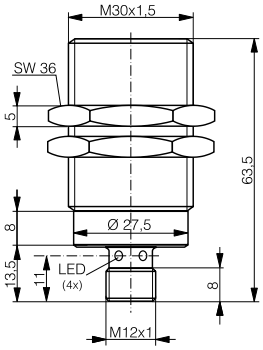



ALL-METAL FOOD SAFE & CORROSION RESISTANT / IP 68 + IP 69K







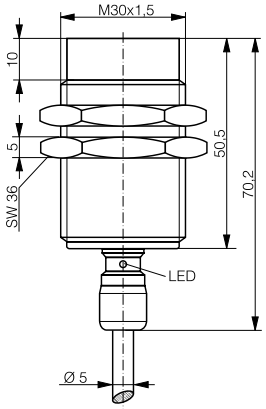


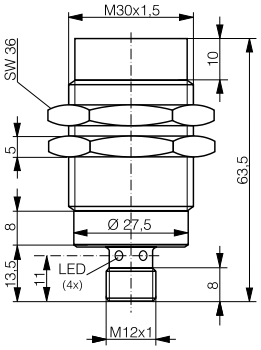
TPE-S cable type 13	Connector S12	TPE-S cable type 13	Connector S12
IP 68 + IP 69K	IP 68 + IP 69K	IP 68 + IP 69K	IP 68 + IP 69K
60 bar	60 bar	40 bar	40 bar
Non-embeddable	Non-embeddable	Embeddable	Embeddable
200 Hz	200 Hz	100 Hz	100 Hz
Diagram 1	Diagram 2	Diagram 1	Diagram 2
Built-in	Built-in	Built-in	Built-in
CE, RoHS, Ecolab	CE, RoHS, Ecolab	CE, RoHS, Ecolab	CE, RoHS, Ecolab

DW-LD-711-M18	**DW-LS-711-M18-002**	**DW-LD-701-M30**	**DW-LS-701-M30-002**
DW-LD-712-M18	DW-LS-712-M18-002	DW-LD-702-M30	DW-LS-702-M30-002
DW-LD-713-M18	**DW-LS-713-M18-002**	**DW-LD-703-M30**	**DW-LS-703-M30-002**
DW-LD-714-M18	DW-LS-714-M18-002	DW-LD-704-M30	DW-LS-704-M30-002
	U		U

HOUSING SIZE	M30		
OPERATING DISTANCE MM	40	40	

ALL-METAL FOOD SAFE & CORROSION RESISTANT / IP 68 + IP 69K





[1] Standard cable length 2 m.
Non-standard cable lengths and types on request.
Cable type see page 271.
[2] see page 133
[3] see page 269

TECHNICAL DATA			
Connection [1]	TPE-S cable type 13	Connector S12	
Degree of protection	IP 68 + IP 69K	IP 68 + IP 69K	
Max. operating pressure	40 bar	40 bar	
Mounting	Non-embeddable	Non-embeddable	
Max. switching frequency	90 Hz	90 Hz	
Wiring [2]	Diagram 1	Diagram 2	
LED	Built-in	Built-in	
Approvals	CE, RoHS, Ecolab	CE, RoHS, Ecolab	

PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-LD-711-M30**	**DW-LS-711-M30-002**	
NPN N.C.	DW-LD-712-M30	DW-LS-712-M30-002	
PNP N.O.	**DW-LD-713-M30**	**DW-LS-713-M30-002**	
PNP N.C.	DW-LD-714-M30	DW-LS-714-M30-002	
Compatible connectors [3]		U	

INDUCTIVE SENSORS: ALL-METAL & HIGH-PRESSURE RESISTANT, SERIES 700P

- ✓ **500 bar** high-pressure resistant
- ✓ **Corrosion resistant**
- ✓ **IP 68 & IP 69K**
- ✓ **Sea-water resistant**, usable down to **depths of 1000 m**
- ✓ Mechanically and chemically **rugged**
- ✓ **All-metal housing** (incl. sensing face)
- ✓ Excellent detection of **metals with good conductivity**

TECHNICAL DATA

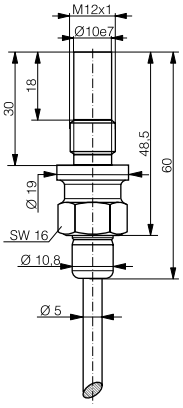
(according to IEC 60947-5-2)	
Housing material	V4A / AISI 316L / DIN 1.4404
Degree of protection	IP 68 & IP 69K
Supply voltage range U_B	10 ... 30 VDC
Ambient temperature	-25 ... +70 °C
Output current	200 mA
Max. ripple content	≤ 20 % U_B
No-load supply current	≤ 10 mA
Leakage current at output	≤ 0,1 mA
Voltage drop, switched state	≤ 2,0 V
Temperature drift % s_r	≤ 10 %
Hysteresis % s_r	≤ 15 %
Repeat accuracy % s_r	≤ 5 %
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

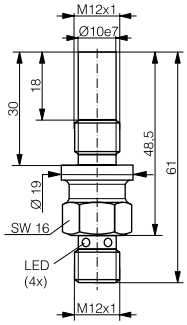
Rugged, corrosion and up to 500 bar high-pressure-resistant all-metal sensors in V4A. Impervious (IP 68) and sea-water resistant. Usable down to depths of 1000 m. Excellent detection of ferromagnetic and non-ferromagnetic metals with good conductivity. Particularly suited for

- ✓ **underwater applications**
- ✓ **hydraulic pumps**
- ✓ **hydraulic cylinders**
- ✓ **hydraulic valves**
- ✓ **lubrication systems**
- ✓ **construction machinery**
- ✓ **offshore installations**
- ✓ **harbor cranes**
- ✓ **concrete pumps & mixers**
- ✓ **plastic injection machines**

HOUSING SIZE	M12		
OPERATING DISTANCE MM	1.5	1.5	

ALL-METAL & HIGH-PRESSURE RESISTANT UP TO 500 BAR / IP 68 + IP 69K





[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 269

TECHNICAL DATA

Connection [1]	PUR cable type 11	Connector S12	
Degree of protection	IP 68 + IP 69K	IP 68 + IP 69K	
Max. operating pressure	500 bar / 100 bar (cable exit)	500 bar (sensing face)	
Mounting	Embeddable	Embeddable	
Max. switching frequency	1,000 Hz	1,000 Hz	
Wiring [2]	Diagram 1	Diagram 2	
LED	---	---	
Approvals	CE, RoHS	CE, RoHS	

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.			
NPN N.C.			
PNP N.O.	**DW-LD-703-P12G-003***	**DW-LS-703-P12G***	
PNP N.C.	DW-LD-704-P12G-003*	DW-LS-704-P12G*	
Compatible connectors [3]		U	

* available 4Q/2010

INDUCTIVE SENSORS: HIGH-PRESSURE RESISTANT SERIES 500P

- ✓ **500 bar** high-pressure resistant
- ✓ **1 million pressure cycles**
- ✓ Fail-safe for peak pressures of up to **1000 bar**
- ✓ Temperature resistant **up to 100 °C**
- ✓ Long operating distances of up to **3 mm**
- ✓ Stainless steel housing with **solid ceramic disk**
- ✓ Sensing face **gas tight & IP 68**

TECHNICAL DATA

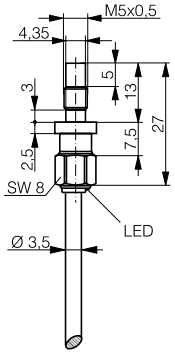
(according to IEC 60947-5-2)	
Max. operating pressure	500 bar
Peak pressure	1000 bar
Sensing face	Ceramic ZrO_2
Supply voltage range U_B	10 ... 30 VDC
Output current	≤ 200 mA
Max. ripple content	≤ 20 % U_B
No-load supply current	≤ 10 mA / ≤ 12 mA (changeover)
Leakage current at output	≤ 0,1 mA
Voltage drop, switched state	≤ 2,0 V
Temperature drift % s_r	≤ 15 %
Hysteresis % s_r	8 % typical
Repeat accuracy	≤ 5 % s_r
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

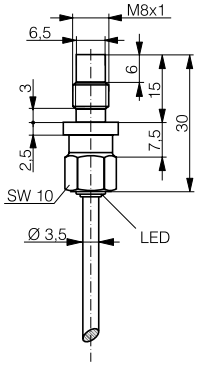
Rugged high-pressure-resistant sensors for permanent operating pressures of up to 500 bar and peak pressures of up to 1000 bar. Temperature resistant up to 100 °C with gas-tight and IP 68 sensing face. Operating distances of up to 3 mm. Particularly suited for

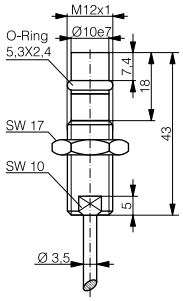
- ✓ **hydraulic pumps**
- ✓ **hydraulic cylinders**
- ✓ **hydraulic valves**
- ✓ **lubrication systems**
- ✓ **construction machinery**
- ✓ **offshore installations**
- ✓ **harbor cranes**
- ✓ **concrete pumps & mixers**
- ✓ **plastic injection machines**
- ✓ **water-jet cutting machines**
- ✓ **high-vacuum pumps**

HOUSING SIZE	M5	M8	M12
OPERATING DISTANCE MM	1.0	1.5	1.5

500 BAR (TESTED AT 1000 BAR)







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA			
Housing material	Stainless steel Phynox	Stainless steel V4A	Stainless steel V2A
Connection [1]	PUR cable type 3	PUR cable type 3	PUR cable type 3
Degree of protection	IP 68	IP 68	IP 68
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	600 Hz	800 Hz	600 Hz
Wiring [2]	Diagram 1	Diagram 1	Diagram 1
LED	Built-in	Built-in	---
Ambient temperature range	-25 ... +80 °C	-25 ... +100 °C	-25 ... +80 °C
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

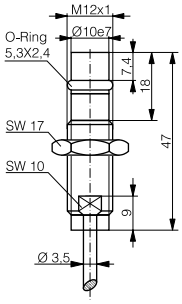
PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-AD-501-P5***	**DW-AD-501-P8**	**DW-AD-501-P12-639**
NPN N.C.			
PNP N.O.	**DW-AD-503-P5***	**DW-AD-503-P8**	**DW-AD-503-P12-639**
PNP N.C.			
NPN changeover			
PNP changeover			
Compatible connectors [3]			

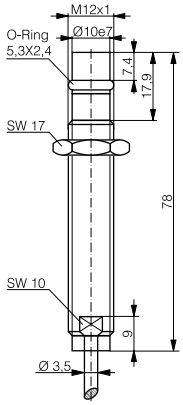
* available 4Q/2010

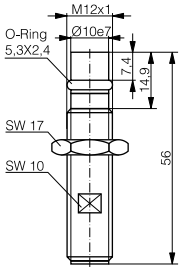
M12

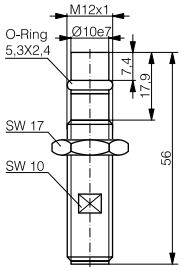
1.5	1.5	1.5	1.5
			

500 BAR (TESTED AT 1000 BAR)









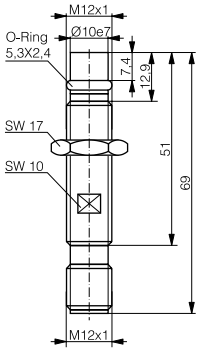
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PUR cable type 3	PUR cable type 3	Connector S12	Connector S12
IP 68	IP 68	IP 68	IP 68
Embeddable	Embeddable	Embeddable	Embeddable
600 Hz	600 Hz	600 Hz	600 Hz
Diagram 1	Diagram 1	Diagram 2	Diagram 2
---	---	---	---
-25 ... +80 °C	-25 ... +80 °C	-25...+80 °C / -25...+100 °C*	-25...+80 °C / -25...+100 °C*
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS

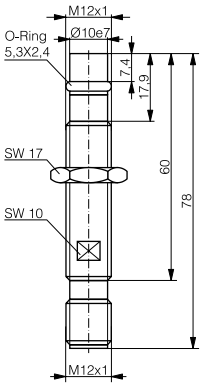
DW-AD-501-P12-625	**DW-AD-501-P12-627**	**DW-AS-501-P12-624**	**DW-AS-501-P12-630**
			DW-AS-502-P12-630
DW-AD-503-P12-625	**DW-AD-503-P12-627**	**DW-AS-503-P12-624**	**DW-AS-503-P12-630**
			DW-AS-504-P12-630
		DW-AS-50B-P12-624	**DW-AS-50B-P12-630**
		DW-AS-50A-P12-624	**DW-AS-50A-P12-630**
		G, H, M, N; M, N (changeover)	G,H,M,N (N.O.); M,N (N.C.); M,N*

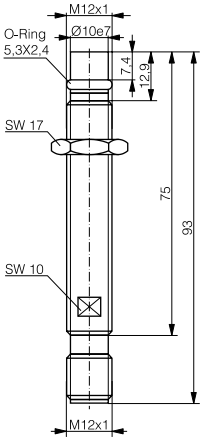
* changeover

HOUSING SIZE	M12		
OPERATING DISTANCE MM	1.5	1.5	1.5

500 BAR (TESTED AT 1000 BAR)







[1] Standard cable length 2 m.
Non-standard cable lengths and types on request.
Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

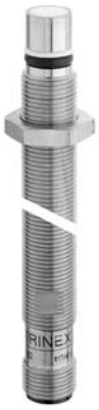
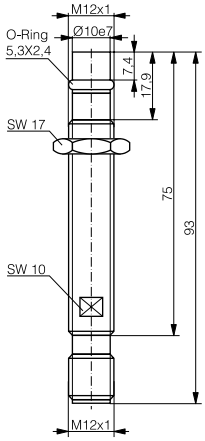
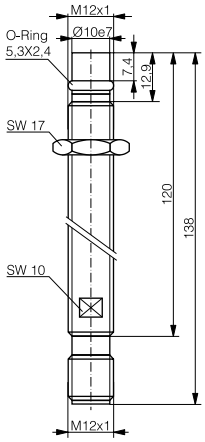
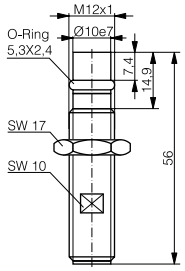
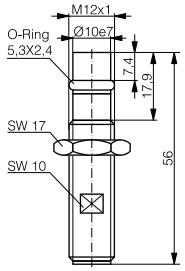
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S12	Connector S12	Connector S12
Degree of protection	IP 68	IP 68	IP 68
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	600 Hz	600 Hz	600 Hz
Wiring [2]	Diagram 2	Diagram 2	Diagram 2
LED	---	---	---
Ambient temperature range	-25...+80 °C / -25...+100 °C*	-25...+80 °C / -25...+100 °C*	-25...+80 °C / -25...+100 °C*
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-AS-501-P12**	**DW-AS-501-P12-627**	**DW-AS-501-P12-621**
NPN N.C.	DW-AS-502-P12		
PNP N.O.	**DW-AS-503-P12**	**DW-AS-503-P12-627**	**DW-AS-503-P12-621**
PNP N.C.	DW-AS-504-P12		
NPN changeover	**DW-AS-50B-P12**	**DW-AS-50B-P12-627**	**DW-AS-50B-P12-621**
PNP changeover	**DW-AS-50A-P12**	**DW-AS-50A-P12-627**	**DW-AS-50A-P12-621**
Compatible connectors [3]	G,H,M,N (N.O.); M,N (N.C.); M,N*	G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)

* changeover

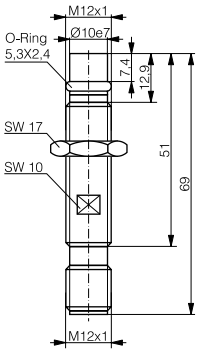
M12

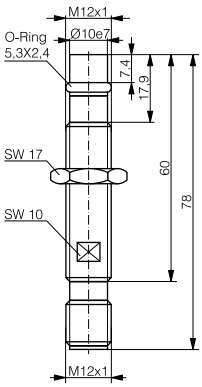
1.5	1.5	2.5	2.5
			
500 BAR (TESTED AT 1000 BAR)		LONG OPERATING DISTANCE / 500 BAR (TESTED AT 1000 BAR)	
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connector S12	Connector S12	Connector S12	Connector S12
IP 68	IP 68	IP 68	IP 68
Embeddable	Embeddable	Embeddable	Embeddable
600 Hz	600 Hz	600 Hz	600 Hz
Diagram 2	Diagram 2	Diagram 2	Diagram 2
---	---	---	---
-25...+80 °C / -25...+100 °C*	-25...+80 °C / -25...+100 °C*	-25...+100 °C	-25...+100 °C
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
DW-AS-501-P12-635	**DW-AS-501-P12-622**	**DW-AS-521-P12-624**	**DW-AS-521-P12-630**
DW-AS-503-P12-635	**DW-AS-503-P12-622**	**DW-AS-523-P12-624**	**DW-AS-523-P12-630**
DW-AS-50B-P12-635	**DW-AS-50B-P12-622**	**DW-AS-52B-P12-624**	**DW-AS-52B-P12-630**
DW-AS-50A-P12-635	**DW-AS-50A-P12-622**	**DW-AS-52A-P12-624**	**DW-AS-52A-P12-630**
G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)

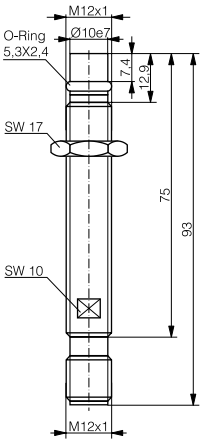
* changeover

HOUSING SIZE	M12		
OPERATING DISTANCE MM	2.5	2.5	2.5

LONG OPERATING DISTANCE / 500 BAR (TESTED AT 1000 BAR)







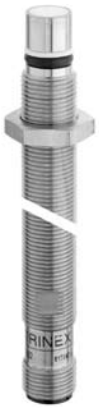
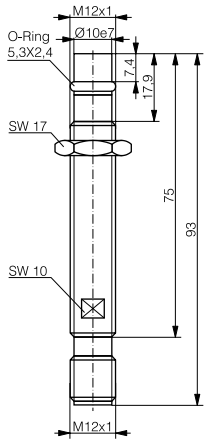
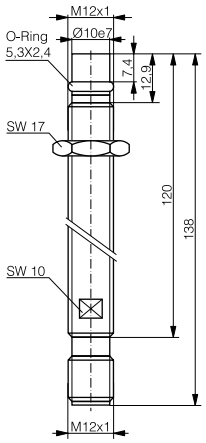
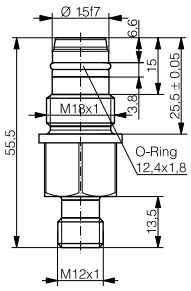
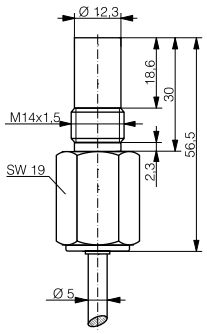
[1] Standard cable length 2 m.
Non-standard cable lengths and types on request.
Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S12	Connector S12	Connector S12
Degree of protection	IP 68	IP 68	IP 68
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	600 Hz	600 Hz	600 Hz
Wiring [2]	Diagram 2	Diagram 2	Diagram 2
LED	---	---	---
Ambient temperature range	-25 ... +100 °C	-25 ... +100 °C	-25 ... +100 °C
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

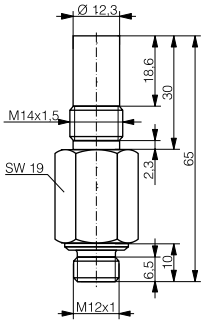
NPN N.O.	**DW-AS-521-P12**	**DW-AS-521-P12-627**	**DW-AS-521-P12-621**
NPN N.C.			
PNP N.O.	**DW-AS-523-P12**	**DW-AS-523-P12-627**	**DW-AS-523-P12-621**
PNP N.C.			
NPN changeover	**DW-AS-52B-P12**	**DW-AS-52B-P12-627**	**DW-AS-52B-P12-621**
PNP changeover	**DW-AS-52A-P12**	**DW-AS-52A-P12-627**	**DW-AS-52A-P12-621**
Compatible connectors [3]	G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)

M12		M18	P20 (M14)
2.5	2.5	1.5	3.0
			
LONG OPERATING DISTANCE / 500 BAR (TESTED AT 1000 BAR)		500 BAR (TESTED AT 1000 BAR)	LONG OP. DISTANCE / 500 BAR*
			
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V4A
Connector S12	Connector S12	Connector S12	PUR cable type 11
IP 68	IP 68	IP 68	IP 68
Embeddable	Embeddable	Embeddable	Embeddable
600 Hz	600 Hz	800 Hz	500 Hz
Diagram 2	Diagram 2	Diagram 2	Diagram 1
---	---	---	---
-25 ... +100 °C	-25 ... +100 °C	-25 ... +80 °C	-25 ... +80 °C
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
DW-AS-521-P12-635	**DW-AS-521-P12-622**	**DW-AS-501-P18**	**DW-AD-501-P20**
		DW-AS-502-P18	DW-AD-502-P20
DW-AS-523-P12-635	**DW-AS-523-P12-622**	**DW-AS-503-P18**	**DW-AD-503-P20**
			DW-AD-504-P20
DW-AS-52B-P12-635	**DW-AS-52B-P12-622**		
DW-AS-52A-P12-635	**DW-AS-52A-P12-622**		
G, H, M, N; M, N (changeover)	G, H, M, N; M, N (changeover)	G, H, M, N (N.O.); M, N (N.C.)	

* tested at 1000 bar

HOUSING SIZE	P20 (M14)		
OPERATING DISTANCE MM	3.0		

LONG OPERATING DISTANCE / 500 BAR (TESTED AT 1000 BAR)



[1] Standard cable length 2 m.
Non-standard cable lengths and types on request.
Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA			
Housing material	Stainless steel V4A		
Connection [1]	Connector S12		
Degree of protection	IP 68		
Mounting	Embeddable		
Max. switching frequency	500 Hz		
Wiring [2]	Diagram 2		
LED	---		
Ambient temperature range	-25 ... +80 °C		
Approvals	CE, RoHS		

PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-AS-501-P20**		
NPN N.C.	DW-AS-502-P20		
PNP N.O.	**DW-AS-503-P20**		
PNP N.C.	DW-AS-504-P20		
NPN changeover			
PNP changeover			
Compatible connectors [3]	G, H, M, N (N.O.); M, N (N.C.)		

INDUCTIVE SENSORS: SEALED, SERIES E

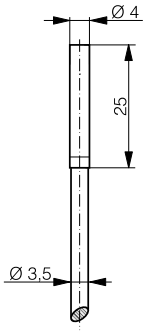
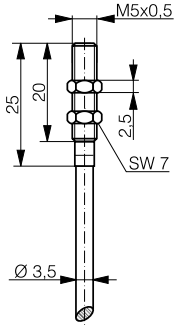
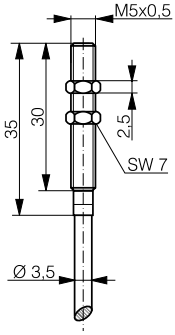
- ✓ **Miniature devices**
- ✓ **100 bar** permanent pressure resistant
- ✓ Usable down to **water depths of 1000 m**
- ✓ Operating distances of up to **2.5 mm**
- ✓ **Ceramic** or **sapphire-glass** sensing face
- ✓ **Stainless steel housing**
- ✓ **IP 68**

TECHNICAL DATA

(according to IEC 60947-5-2)	
Housing material	Stainless steel V2A
Degree of protection	IP 68
Supply voltage range U_B	10 ... 30 VDC
Ambient temperature	-25 ... +70 °C
Output current	≤ 200 mA
Max. ripple content	≤ 20 % U_B
No-load supply current	≤ 10 mA
Leakage current at output	≤ 0,1 mA
Voltage drop, switched state	≤ 2,0 V
Temperature drift % s_r	≤ 10 %
Hysteresis % s_r	≤ 10 %
Repeat accuracy	≤ 5 % s_r
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

Pressure resistant miniature sensors in stainless steel housings with ceramic or sapphire-glass sensing face. For demanding environments with permanent pressures of up to 100 bar (sensing face). Usable down to water depths of 1000 m. Particularly suited for

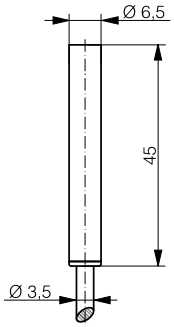
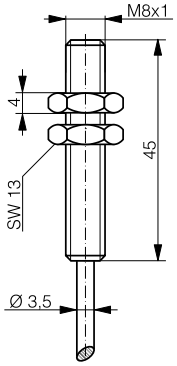
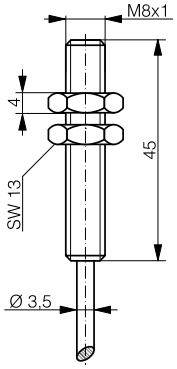
- ✓ **offshore installations**
- ✓ **lubrication systems of motors**
- ✓ **chemical industry**
- ✓ **atomic power plants:** fuel element monitoring
- ✓ **vacuum applications**

HOUSING SIZE	Ø 4	M5	
OPERATING DISTANCE MM	0.6	0.6	0.8
			
	IP 68 / 20 BAR	IP 68 / 20 BAR	IP 68 / 100 BAR
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 133
[3] see page 268

TECHNICAL DATA			
Max. operating pressure	20 bar	20 bar	100 bar
Sensing face	Sapphire glass	Sapphire glass	Ceramic ZrO_2
Connection [1]	PUR cable type 3	PUR cable type 3	PUR cable type 3
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	3,000 Hz
Wiring [2]	Diagram 1	Diagram 1	Diagram 1
LED	---	---	---
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NPN N.O.	**DW-AD-401-04E**	**DW-AD-401-M5E**	
NPN N.C.	DW-AD-402-04E	DW-AD-402-M5E	
PNP N.O.	**DW-AD-403-04E**	**DW-AD-403-M5E**	**DW-AD-603-M5E-652**
PNP N.C.	DW-AD-404-04E	DW-AD-404-M5E	DW-AD-604-M5E-652
Compatible connectors [3]			

Ø 6.5	M8	
2.5	1.5	2.5
		
IP 68 / 20 BAR	IP 68 / 100 BAR	IP 68 / 20 BAR
		

20 bar	100 bar	20 bar
Ceramic ZrO_2	Ceramic ZrO_2	Ceramic ZrO_2
PUR cable type 3	PUR cable type 3	PUR cable type 3
Embeddable	Embeddable	Embeddable
1,000 Hz	3,000 Hz	1,000 Hz
Diagram 1	Diagram 1	Diagram 1
---	---	---
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AD-501-065E		**DW-AD-501-M8E**
DW-AD-502-065E		DW-AD-502-M8E
DW-AD-503-065E	**DW-AD-603-M8E-652**	**DW-AD-503-M8E**
DW-AD-504-065E	DW-AD-604-M8E-652	DW-AD-504-M8E

INDUCTIVE SENSORS: HIGH-TEMPERATURE

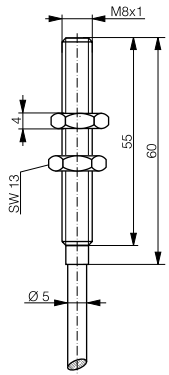
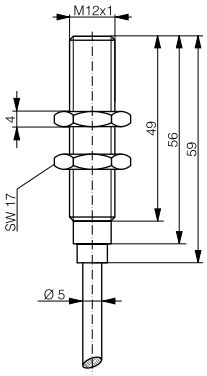
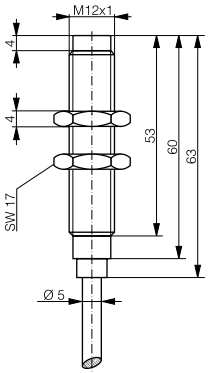
- ✓ For ambient temperatures of up to **+230 °C**
- ✓ With **integrated electronics**, up to +180 °C
- ✓ With **external electronics**, up to +230 °C
- ✓ Excellent **long-term reliability**

TECHNICAL DATA

(according to IEC 60947-5-2)	
Housing material	Stainless steel V2A
Degree of protection	IP 67
Max. ripple content	≤ 15 % U_B / ≤ 20 % U_B (amplifier)
No-load supply current	≤ 10 mA / ≤ 5 mA (amplifier)
Leakage current at output	≤ 0,1 mA
Voltage drop, switched state	≤ 2,0 V
Temperature drift % s_r	≤ 15 %
Hysteresis % s_r	see data sheets
Repeat accuracy	≤ 0,02 mm
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	---

Sensors for ambient temperatures of up to +230 °C with high long-term reliability, even in difficult operating conditions. Models for temperatures of up to +180 °C with integrated electronics; for devices up to +230 °C, electronics are built into a separate housing, and thus removed from the hot area. Particularly suited for

- ✓ **galvanizing**
- ✓ **Paint shops in automotive industry**
- ✓ **glass manufacturing**
- ✓ **brick factories**
- ✓ **bakery machines**
- ✓ **carbon-fiber production**
- ✓ **food processing**

HOUSING SIZE	M8	M12	
OPERATING DISTANCE MM	2	3	4
			
	0 ... +140 °C	0 ... +150 °C	0 ... +150 °C
			

[1] Non-standard cable lengths and types on request.
[2] see page 133
[3] see page 268

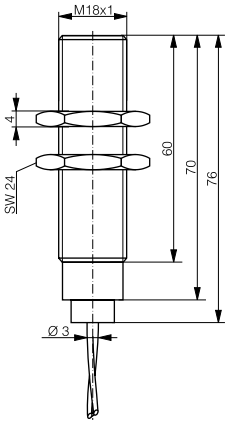
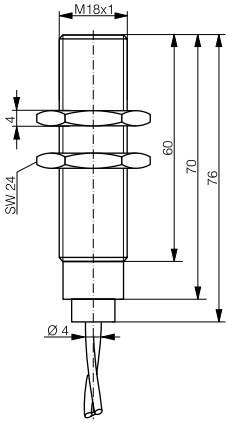
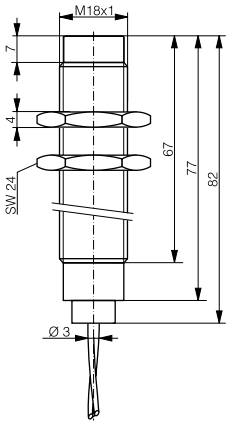
TECHNICAL DATA

Connection [1]	Silicone cable 2 m*	Silicone cable 2 m*	Silicone cable 2 m*
Amplifier	Built-in	Built-in	Built-in
Mounting	Embeddable	Embeddable	Non-embeddable
Max. switching frequency	600 Hz	500 Hz	500 Hz
Wiring [2]	Diagram 1	Diagram 1	Diagram 1
LED	---	---	---
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Ambient temperature range	0 ... +140 °C	0 ... +150 °C	0 ... +150 °C
Output current	120mA (≤100°C)/80mA (>100°C)	120mA (≤100°C)/70mA (>100°C)	120mA (≤100°C)/70mA (>100°C)
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

NPN N.O.	**DW-HD-621-M8-100**	**DW-HD-601-M12-200**	**DW-HD-611-M12-200**
NPN N.C.			
PNP N.O.	**DW-HD-623-M8-100**	**DW-HD-603-M12-200**	**DW-HD-613-M12-200**
PNP N.C.			
Compatible connectors [3]			

* Teflon cable on request

HOUSING SIZE	M18		
OPERATING DISTANCE MM	5	5	8
			
	0 ... +180 °C	0 ... +230 °C	0 ... +180 °C
			

[1] Non-standard cable lengths and types on request.
[2] see page 133
[3] see page 268

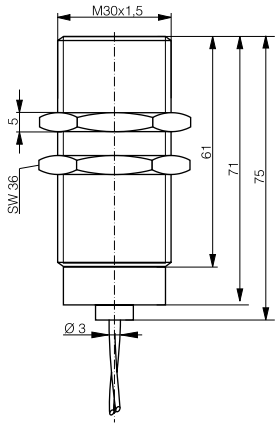
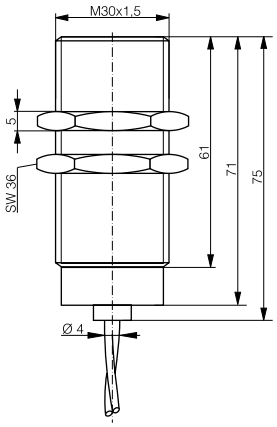
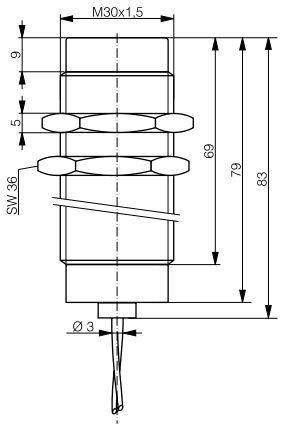
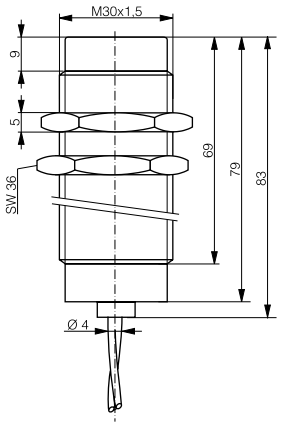
TECHNICAL DATA

Connection [1]	Teflon cable 2 m	Teflon cable 3 m + PUR 2 m	Teflon cable 2 m
Amplifier	Built-in	In cable	Built-in
Mounting	Embeddable	Embeddable	Non-embeddable
Max. switching frequency	400 Hz	300 Hz	400 Hz
Wiring [2]	Diagram 1	Diagram 1	Diagram 1
LED	---	Yellow (amplifier)	---
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC (amplifier)	10 ... 30 VDC
Ambient temperature range	0 ... +180 °C	0 ... +230 °C	0 ... +180 °C
Output current	≤ 150 mA	≤ 200 mA (amplifier)	≤ 150 mA
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

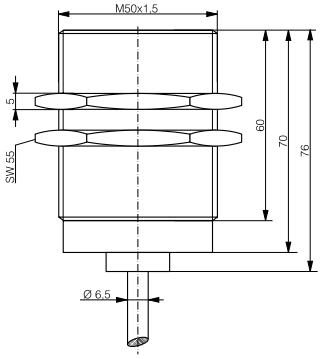
NPN N.O.	**DW-HD-601-M18-310**	**DW-HD-601-M18-411**	**DW-HD-611-M18-310**
NPN N.C.			
PNP N.O.	**DW-HD-603-M18-310**	**DW-HD-603-M18-411**	**DW-HD-613-M18-310**
PNP N.C.			
Compatible connectors [3]			

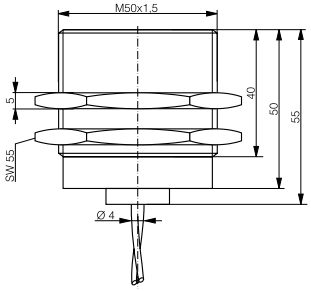
M30

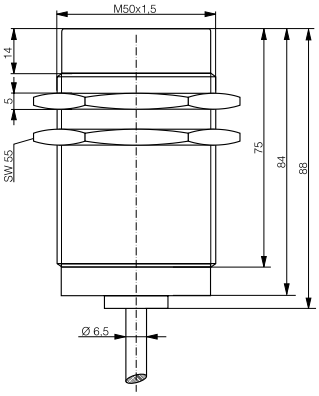
10	10	15	15
			
0 ... +180 °C	0 ... +230 °C	0 ... +180 °C	0 ... +230 °C
			
Teflon cable 2 m	Teflon cable 3 m + PUR 2 m	Teflon cable 2 m	Teflon cable 3 m + PUR 2 m
Built-in	In cable	Built-in	In cable
Embeddable	Embeddable	Non-embeddable	Non-embeddable
200 Hz	200 Hz	200 Hz	150 Hz
Diagram 1	Diagram 1	Diagram 1	Diagram 1
---	Yellow (amplifier)	---	Yellow (amplifier)
10 ... 30 VDC	10 ... 30 VDC (amplifier)	10 ... 30 VDC	10 ... 30 VDC (amplifier)
0 ... +180 °C	0 ... +230 °C	0 ... +180 °C	0 ... +230 °C
≤ 150 mA	≤ 200 mA (amplifier)	≤ 150 mA	≤ 200 mA (amplifier)
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
DW-HD-601-M30-310	**DW-HD-601-M30-411**	**DW-HD-611-M30-310**	**DW-HD-611-M30-411**
DW-HD-603-M30-310	**DW-HD-603-M30-411**	**DW-HD-613-M30-310**	**DW-HD-613-M30-411**

HOUSING SIZE	M50		
OPERATING DISTANCE MM	20	20	25

0 ... +180 °C	0 ... +230 °C	0 ... +180 °C







[1] Non-standard cable lengths and types on request.
[2] see page 133
[3] see page 268

TECHNICAL DATA

Connection [1]	Silicone cable 2 m*	Teflon cable 3 m + PUR 2 m	Silicone cable 2 m*
Amplifier	Built-in	In cable	Built-in
Mounting	Quasi-embeddable	Quasi-embeddable	Non-embeddable
Max. switching frequency	100 Hz	150 Hz	100 Hz
Wiring [2]	Diagram 1	Diagram 1	Diagram 1
LED	---	Yellow (amplifier)	---
Supply voltage range	10 ... 30 VDC	10 ... 30 VDC (amplifier)	10 ... 30 VDC
Ambient temperature range	0 ... +180 °C	0 ... +230 °C	0 ... +180 °C
Output current	≤ 150 mA	≤ 200 mA (amplifier)	≤ 150 mA
Approvals	CE, RoHS	CE, RoHS	CE, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

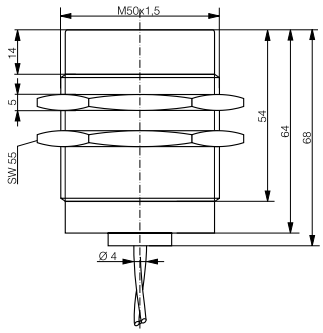
NPN N.O.	**DW-HD-601-M50-300**	**DW-HD-601-M50-411**	**DW-HD-611-M50-300**
NPN N.C.			
PNP N.O.	**DW-HD-603-M50-300**	**DW-HD-603-M50-411**	**DW-HD-613-M50-300**
PNP N.C.			
Compatible connectors [3]			

* Teflon cable on request

M50

25			

0 ... +230 °C



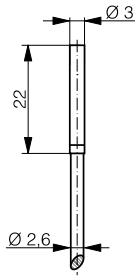
Teflon cable 3 m + PUR 2 m			
In cable			
Non-embeddable			
150 Hz			
Diagram 1			
Yellow (amplifier)			
10 ... 30 VDC (amplifier)			
0 ... +230 °C			
≤ 200 mA (amplifier)			
CE, RoHS			

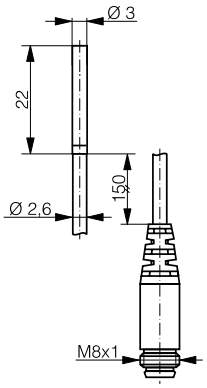
DW-HD-611-M50-411			
DW-HD-613-M50-411			

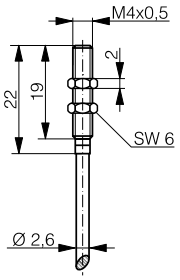
HOUSING SIZE	Ø 3		M4
OPERATING DISTANCE MM	0.6	0.6	0.6

INDUCTIVE SENSORS: NAMUR

NAMUR







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA			
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	PUR cable type 1	PUR cable type 1 / Connector S8	PUR cable type 1
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	10,000 Hz	10,000 Hz	10,000 Hz
Additional technical data [2]	Table 5	Table 5	Table 5
Wiring [3]	Diagram 4	Diagram 4	Diagram 4
LED	---	---	---
Supply voltage range	7.7 ... 9 VDC	7.7 ... 9 VDC	7.7 ... 9 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

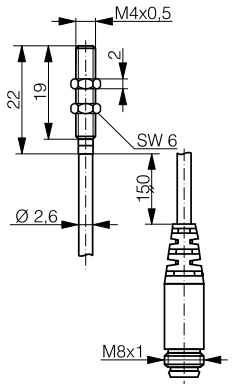
PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
NAMUR	**DW-AD-305-03**	DW-AS-305-03	**DW-AD-305-M4**
Compatible connectors [4]		A, B	

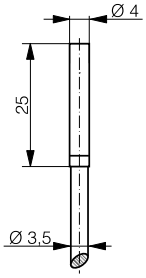
* damped / non-damped

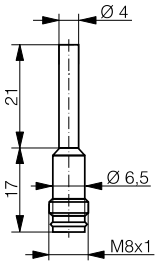
M4	Ø 4		
0.6	0.8	0.8	0.8

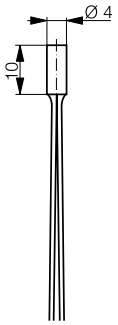



NAMUR









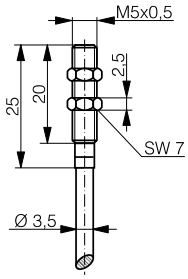
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PUR cable type 1 / Connector S8	PVC cable type 2	Connector S8	Single wires
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
10,000 Hz	10,000 Hz	10,000 Hz	10,000 Hz
Table 5	Table 5	Table 5	Table 5
Diagram 4	Diagram 4	Diagram 4	Diagram 4
---	---	---	---
7.7 ... 9 VDC	7.7 ... 9 VDC	7.7 ... 9 VDC	7.7 ... 9 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

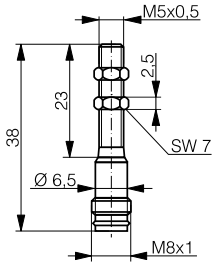
DW-AS-305-M4	**DW-AD-405-04**	**DW-AS-405-04**	**DW-AD-405-04K**
A, B		A, B	

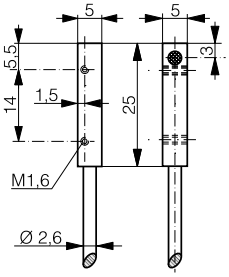
* damped / non-damped

HOUSING SIZE	M5		5 X 5
OPERATING DISTANCE MM	0.8	0.8	0.8

NAMUR







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

Housing material	Stainless steel V2A	Stainless steel V2A	Chrome-plated brass
Connection [1]	PVC cable type 2	Connector S8	PUR cable type 2
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	10,000 Hz	10,000 Hz	10,000 Hz
Additional technical data [2]	Table 5	Table 5	Table 5
Wiring [3]	Diagram 4	Diagram 4	Diagram 4
LED	---	---	---
Supply voltage range	7.7 ... 9 VDC	7.7 ... 9 VDC	7.7 ... 9 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

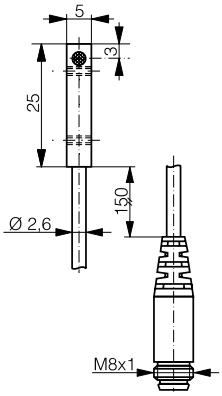
NAMUR	**DW-AD-405-M5**	**DW-AS-405-M5**	**DW-AD-405-C5**
Compatible connectors [4]		A, B	

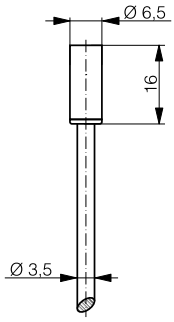
* damped / non-damped

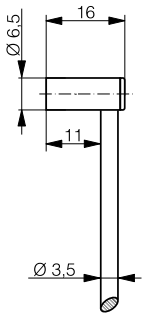
⧄ 5 X 5	Ø 6.5		
0.8	1.5	1.5	1.5

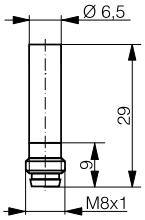



NAMUR









Chrome-plated brass	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PUR cable type 1 / Connector S8	PVC cable type 2	PVC cable type 2	Connector S8
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
10,000 Hz	10,000 Hz	10,000 Hz	10,000 Hz
Table 5	Table 5	Table 5	Table 5
Diagram 4	Diagram 4	Diagram 4	Diagram 4
---	---	---	---
7.7 ... 9 VDC	7.7 ... 9 VDC	7.7 ... 9 VDC	7.7 ... 9 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

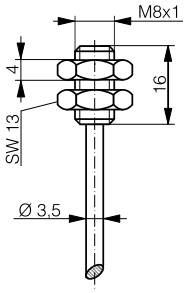
DW-AS-405-C5	**DW-AD-425-065**	DW-AD-425-065-400	DW-AS-425-065-001
A, B			A, B

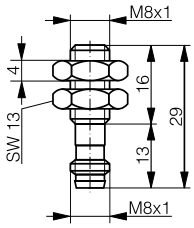
* damped / non-damped

HOUSING SIZE	M8		HOUSING SIZE
OPERATING DISTANCE MM	1.5	1.5	OPERATING DISTANCE MM

INDUCTIVE SENSORS: 2-WIRE

NAMUR





[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

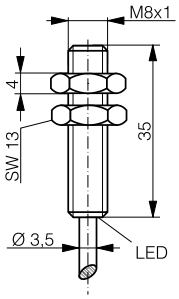
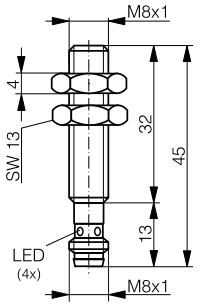
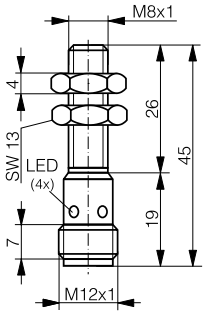
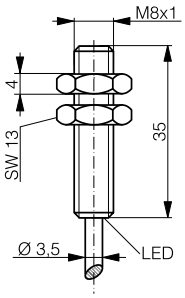
Housing material	Stainless steel V2A	Stainless steel V2A	Housing material
Connection [1]	PVC cable type 2	Connector S8	Connection [1]
Degree of protection	IP 67	IP 67	Degree of protection
Mounting	Embeddable	Embeddable	Mounting
Max. switching frequency	10,000 Hz	10,000 Hz	Max. switching frequency
Additional technical data [2]	Table 5	Table 5	Additional technical data [2]
Wiring [3]	Diagram 4	Diagram 4	Wiring [3]
LED	---	---	LED
Supply voltage range	7.7 ... 9 VDC	7.7 ... 9 VDC	Supply voltage range
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	Ambient temperature range
Output current	≤ 1 / ≥ 2.2 mA*	≤ 1 / ≥ 2.2 mA*	Output current
Approvals	CE, UL, RoHS	CE, UL, RoHS	Approvals

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

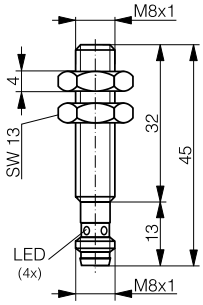
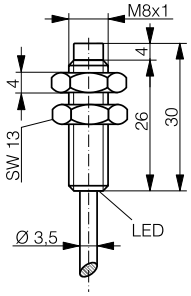
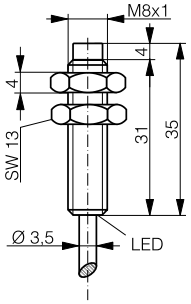
			DC 2-wire N.O.
NAMUR	**DW-AD-425-M8**	**DW-AS-425-M8-001**	DC 2-wire N.C.
			AC / DC 2-wire N.O.
			AC / DC 2-wire N.C.
Compatible connectors [4]		A, B	Compatible connectors [4]

* damped / non-damped

M8

1.5	1.5	1.5	2
			
2-WIRE DC			2-WIRE DC / INCREASED OP. DIST.
			

Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PVC cable type 2	Connector S8	Connector S12	PVC cable type 2
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	5,000 Hz	5,000 Hz
Table 9	Table 9	Table 9	Table 9
Diagram 7	Diagram 7	Diagram 7	Diagram 7
Built-in	Built-in	Built-in	Built-in
10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS
DW-DD-605-M8	**DW-DS-605-M8-001**	**DW-DS-605-M8**	**DW-DD-625-M8**
DW-DD-606-M8	DW-DS-606-M8-001	DW-DS-606-M8	DW-DD-626-M8
	A, B	G, H, M, N (N.O.); M, N (N.C.)	

HOUSING SIZE	M8		
OPERATING DISTANCE MM	2	2.5	2.5
			
	2-WIRE DC / INCREASED OP. DIST.	2-WIRE DC	
			

[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

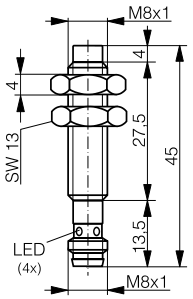
Housing material	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
Connection [1]	Connector S8	PVC cable type 2	PVC cable type 2
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	5,000 Hz	5,000 Hz	5,000 Hz
Additional technical data [2]	Table 9	Table 9	Table 9
Wiring [3]	Diagram 7	Diagram 7	Diagram 7
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 100 mA	≤ 100 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

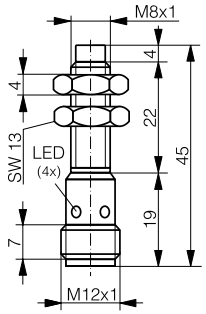
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

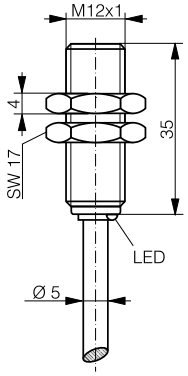
DC 2-wire N.O.	**DW-DS-625-M8-001**	**DW-DD-615-M8-122**	**DW-DD-615-M8**
DC 2-wire N.C.	DW-DS-626-M8-001	DW-DD-616-M8-122	DW-DD-616-M8
AC / DC 2-wire N.O.			
AC / DC 2-wire N.C.			
Compatible connectors [4]	A, B		

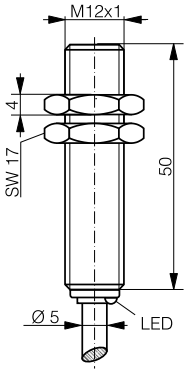
M8		M12	
2.5	2.5	2	2
			

2-WIRE DC







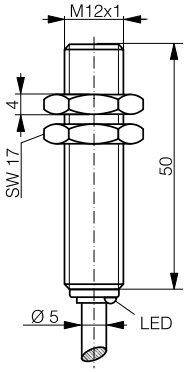


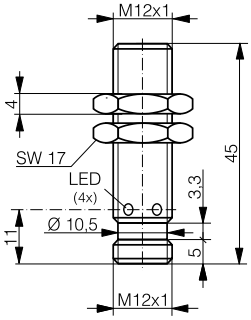
Stainless steel V2A	Stainless steel V2A	Chrome-plated brass	Chrome-plated brass
Connector S8	Connector S12	PVC cable type 14	PVC cable type 14
IP 67	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Embeddable	Embeddable
5,000 Hz	5,000 Hz	3,000 Hz	3,000 Hz
Table 9	Table 9	Table 9	Table 9
Diagram 7	Diagram 7	Diagram 7	Diagram 7
Built-in	Built-in	Built-in	Built-in
10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

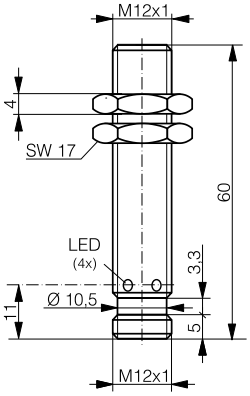
DW-DS-615-M8-001	**DW-DS-615-M8**	**DW-DD-605-M12-120**	**DW-DD-605-M12**
DW-DS-616-M8-001	DW-DS-616-M8	DW-DD-606-M12-120	DW-DD-606-M12
A, B	G, H, M, N (N.O.); M, N (N.C.)		

HOUSING SIZE	M12		
OPERATING DISTANCE MM	2	2	2

	2-WIRE AC/DC	2-WIRE DC	





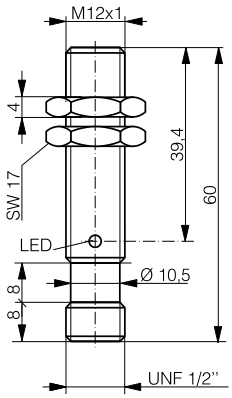
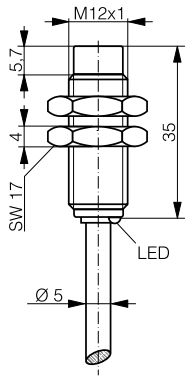
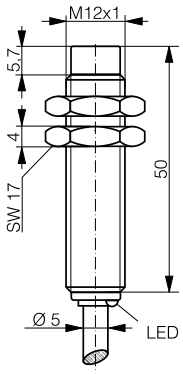
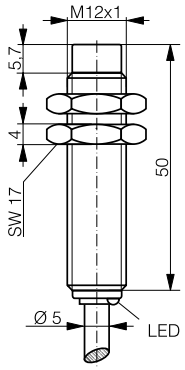


[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA			
Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	PVC cable type 14	Connector S12	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	25 Hz (AC) / 3,000 Hz (DC)	3,000 Hz	3,000 Hz
Additional technical data [2]	Table 6	Table 9	Table 9
Wiring [3]	Diagram 3	Diagram 7	Diagram 7
LED	Built-in	Built-in	Built-in
Supply voltage range	20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC	10 ... 65 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 100 mA	≤ 100 mA
Approvals	CE, CCC, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)			
DC 2-wire N.O.		**DW-DS-605-M12-120**	**DW-DS-605-M12**
DC 2-wire N.C.		DW-DS-606-M12-120	DW-DS-606-M12
AC / DC 2-wire N.O.	**DW-AD-607-M12**		
AC / DC 2-wire N.C.	DW-AD-608-M12		
Compatible connectors [4]		G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)

M12

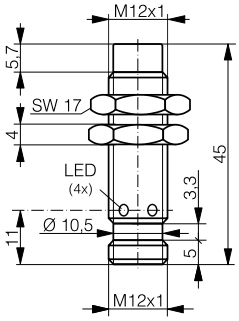
2	4	4	4
			
2-WIRE AC/DC	**2-WIRE DC**		**2-WIRE AC/DC**
			

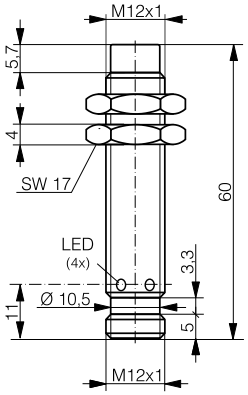
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector 1/2"	PVC cable type 14	PVC cable type 14	PVC cable type 14
IP 67	IP 67	IP 67	IP 67
Embeddable	Non-embeddable	Non-embeddable	Non-embeddable
25 Hz (AC) / 3,000 Hz (DC)	2,500 Hz	2,500 Hz	25 Hz (AC) / 2,000 Hz (DC)
Table 6	Table 9	Table 9	Table 6
Diagram 3	Diagram 7	Diagram 7	Diagram 3
Built-in	Built-in	Built-in	Built-in
20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 100 mA	≤ 100 mA	≤ 200 mA
CE, CCC, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS

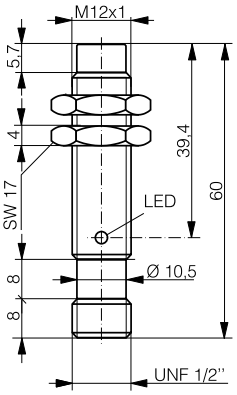
	DW-DD-615-M12-120	**DW-DD-615-M12**	
	DW-DD-616-M12-120	DW-DD-616-M12	
DW-AS-607-M12-069			**DW-AD-617-M12**
DW-AS-608-M12-069			DW-AD-618-M12
Q, R			

HOUSING SIZE	M12		
OPERATING DISTANCE MM	4	4	4

	2-WIRE DC		2-WIRE AC/DC







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

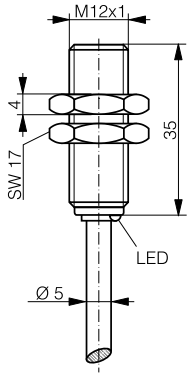
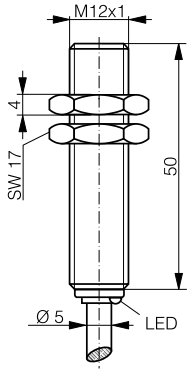
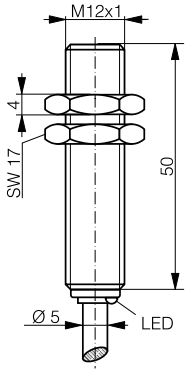
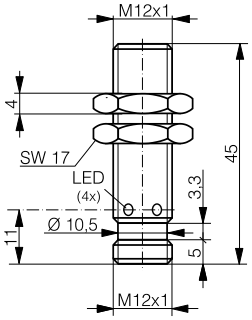
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	Connector S12	Connector 1/2"
Degree of protection	IP 67	IP 67	IP 67
Mounting	Non-embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	2,500 Hz	2,500 Hz	25 Hz (AC) / 2,000 Hz (DC)
Additional technical data [2]	Table 9	Table 9	Table 6
Wiring [3]	Diagram 7	Diagram 7	Diagram 3
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 100 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

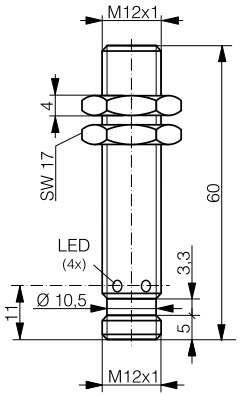
DC 2-wire N.O.	**DW-DS-615-M12-120**	**DW-DS-615-M12**	
DC 2-wire N.C.	DW-DS-616-M12-120	DW-DS-616-M12	
AC / DC 2-wire N.O.			**DW-AS-617-M12-069**
AC / DC 2-wire N.C.			DW-AS-618-M12-069
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)	Q, R

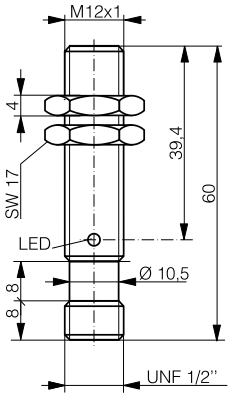
M12

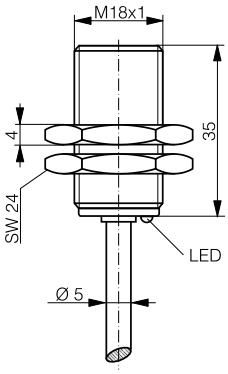
4	4	4	4
			
2-WIRE DC / INCREASED OPERATING DISTANCE		**2-WIRE AC/DC / INCREASED OP. DIST.**	**2-WIRE DC / INCREASED OP. DIST.**
			
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
PVC cable type 14	PVC cable type 14	PVC cable type 14	Connector S12
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
2,000 Hz	2,000 Hz	25 Hz (AC) / 2,000 Hz (DC)	2,000 Hz
Table 9	Table 9	Table 6	Table 9
Diagram 7	Diagram 7	Diagram 3	Diagram 7
Built-in	Built-in	Built-in	Built-in
10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 100 mA	≤ 200 mA	≤ 100 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS	CE, CCC, UL, RoHS
DW-DD-625-M12-120	**DW-DD-625-M12**		**DW-DS-625-M12-120**
DW-DD-626-M12-120	DW-DD-626-M12		DW-DS-626-M12-120
		DW-AD-627-M12	
		DW-AD-628-M12	
			G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M12		M18
OPERATING DISTANCE MM	4	4	5

2-WIRE DC / INCREASED OP.DIST.	2-WIRE AC/DC / INCREASED OP. DIST.	2-WIRE DC







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

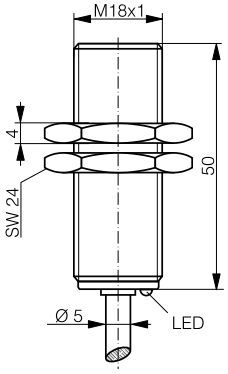
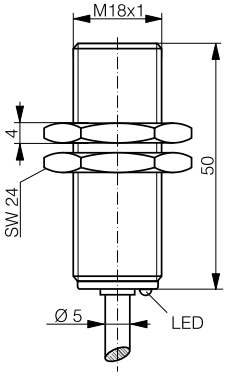
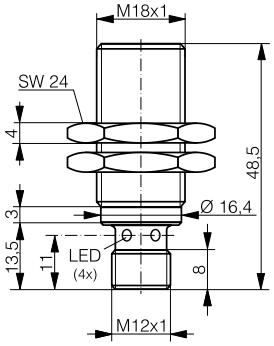
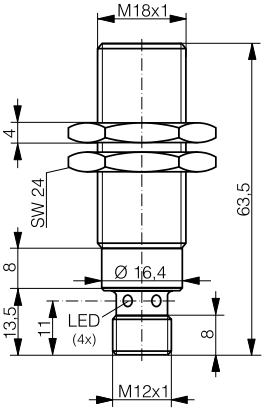
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	Connector 1/2"	PVC cable type 14
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	2,000 Hz	25 Hz (AC) / 2,000 Hz (DC)	1,500 Hz
Additional technical data [2]	Table 9	Table 6	Table 9
Wiring [3]	Diagram 7	Diagram 3	Diagram 7
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 200 mA	≤ 100 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

DC 2-wire N.O.	**DW-DS-625-M12**		**DW-DD-605-M18-120**
DC 2-wire N.C.	DW-DS-626-M12		DW-DD-606-M18-120
AC / DC 2-wire N.O.		**DW-AS-627-M12-069**	
AC / DC 2-wire N.C.		DW-AS-628-M12-069	
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)	Q, R	

M18

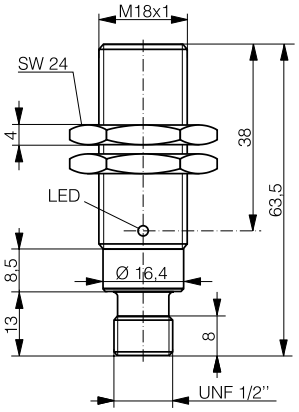
5	5	5	5
			
2-WIRE DC	**2-WIRE AC/DC**	**2-WIRE DC**	
			

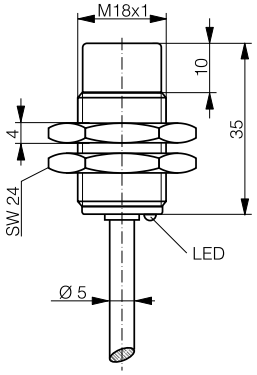
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
PVC cable type 14	PVC cable type 14	Connector S12	Connector S12
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Embeddable	Embeddable
1,500 Hz	25 Hz (AC) / 1,500 Hz (DC)	1,500 Hz	1,500 Hz
Table 9	Table 6	Table 9	Table 9
Diagram 7	Diagram 3	Diagram 7	Diagram 7
Built-in	Built-in	Built-in	Built-in
10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC	10 ... 65 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 200 mA	≤ 100 mA	≤ 100 mA
CE, CCC, UL, RoHS	CE, CCC, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

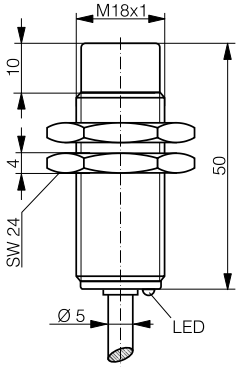
DW-DD-605-M18		**DW-DS-605-M18-120**	**DW-DS-605-M18-002**
DW-DD-606-M18		DW-DS-606-M18-120	DW-DS-606-M18-002
	DW-AD-607-M18		
	DW-AD-608-M18		
		G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M18		
OPERATING DISTANCE MM	5	8	8

	2-WIRE AC/DC	2-WIRE DC	







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

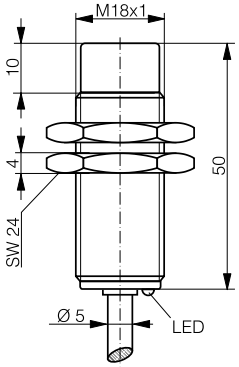
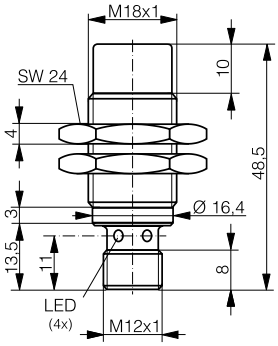
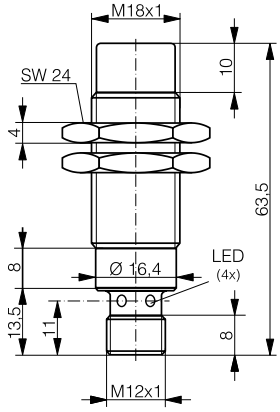
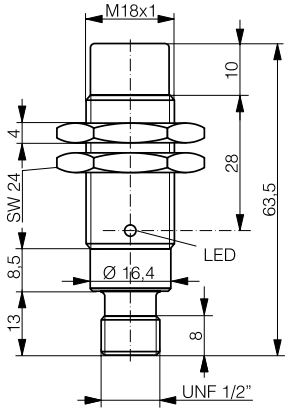
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector 1/2"	PVC cable type 14	PVC cable type 14
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Non-embeddable	Non-embeddable
Max. switching frequency	25 Hz (AC) / 1,500 Hz (DC)	1,200 Hz	1,200 Hz
Additional technical data [2]	Table 6	Table 9	Table 9
Wiring [3]	Diagram 3	Diagram 7	Diagram 7
LED	Built-in	Built-in	Built-in
Supply voltage range	20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC	10 ... 65 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 200 mA	≤ 100 mA	≤ 100 mA
Approvals	CE, CCC, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

DC 2-wire N.O.		**DW-DD-615-M18-120**	**DW-DD-615-M18**
DC 2-wire N.C.		DW-DD-616-M18-120	DW-DD-616-M18
AC / DC 2-wire N.O.	**DW-AS-607-M18-069**		
AC / DC 2-wire N.C.	DW-AS-608-M18-069		
Compatible connectors [4]	Q, R		

M18

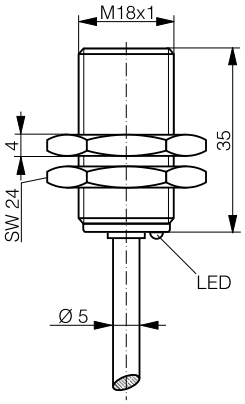
8	8	8	8
			
2-WIRE AC/DC	**2-WIRE DC**		**2-WIRE AC/DC**
			

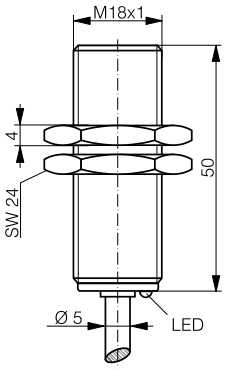
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
PVC cable type 14	Connector S12	Connector S12	Connector 1/2"
IP 67	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
25 Hz (AC) / 1,200 Hz (DC)	1,200 Hz	1,200 Hz	25 Hz (AC) / 1,200 Hz (DC)
Table 6	Table 9	Table 9	Table 6
Diagram 3	Diagram 7	Diagram 7	Diagram 3
Built-in	Built-in	Built-in	Built-in
20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 200 mA	≤ 100 mA	≤ 100 mA	≤ 200 mA
CE, CCC, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS

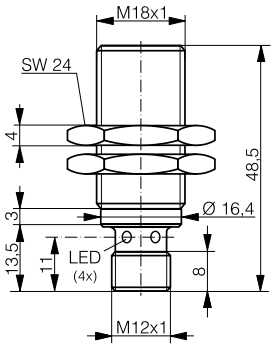
	DW-DS-615-M18-120	**DW-DS-615-M18-002**	
	DW-DS-616-M18-120	DW-DS-616-M18-002	
DW-AD-617-M18			**DW-AS-617-M18-069**
DW-AD-618-M18			DW-AS-618-M18-069
	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)	Q, R

HOUSING SIZE	M18		
OPERATING DISTANCE MM	8	8	8

2-WIRE DC / INCREASED OPERATING DISTANCE







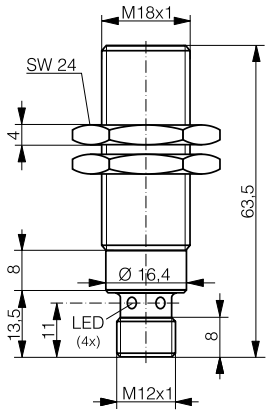
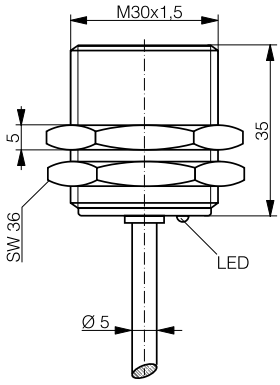
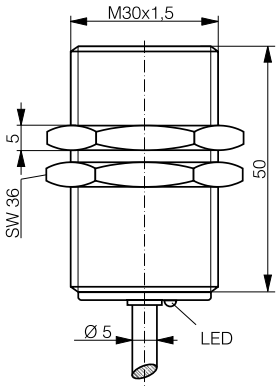
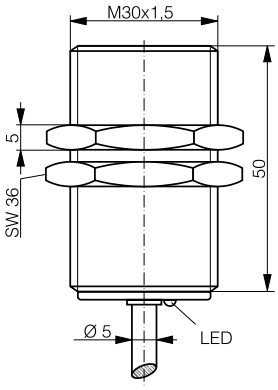
[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	PVC cable type 14	PVC cable type 14	Connector S12
Degree of protection	IP 67	IP 67	IP 67
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Max. switching frequency	1,000 Hz	1,000 Hz	1,000 Hz
Additional technical data [2]	Table 9	Table 9	Table 9
Wiring [3]	Diagram 7	Diagram 7	Diagram 7
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 100 mA	≤ 100 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS

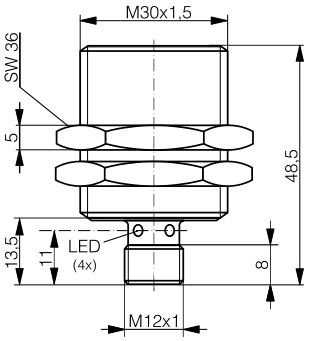
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

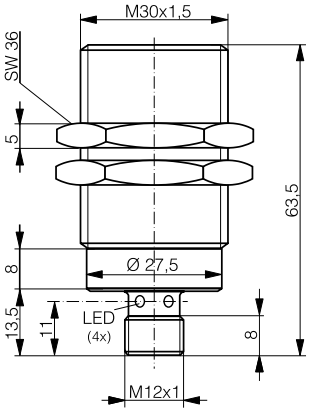
DC 2-wire N.O.	**DW-DD-625-M18-120**	**DW-DD-625-M18**	**DW-DS-625-M18-120**
DC 2-wire N.C.	DW-DD-626-M18-120	DW-DD-626-M18	DW-DS-626-M18-120
AC / DC 2-wire N.O.			
AC / DC 2-wire N.C.			
Compatible connectors [4]			G, H, M, N (N.O.); M, N (N.C.)

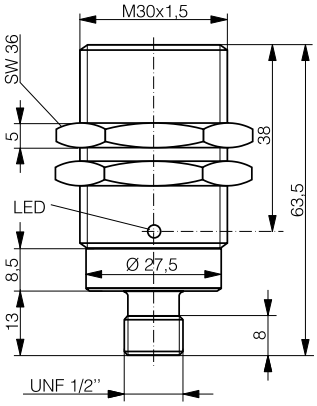
M18	M30		
8	10	10	10
			
2-WIRE DC / INCREASED OP. DIST.	2-WIRE DC		2-WIRE AC/DC
			
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connector S12	PVC cable type 14	PVC cable type 14	PVC cable type 14
IP 67	IP 67	IP 67	IP 67
Quasi-embeddable	Embeddable	Embeddable	Embeddable
1,000 Hz	600 Hz	600 Hz	25 Hz (AC) / 600 Hz (DC)
Table 9	Table 9	Table 9	Table 6
Diagram 7	Diagram 7	Diagram 7	Diagram 3
Built-in	Built-in	Built-in	Built-in
10 ... 65 VDC	10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 200 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS
DW-DS-625-M18-002	**DW-DD-605-M30-120**	**DW-DD-605-M30**	
DW-DS-626-M18-002	DW-DD-606-M30-120	DW-DD-606-M30	
			DW-AD-607-M30
			DW-AD-608-M30
G, H, M, N (N.O.); M, N (N.C.)			

HOUSING SIZE	M30		
OPERATING DISTANCE MM	10	10	10


	2-WIRE DC	2-WIRE DC	2-WIRE AC/DC







[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

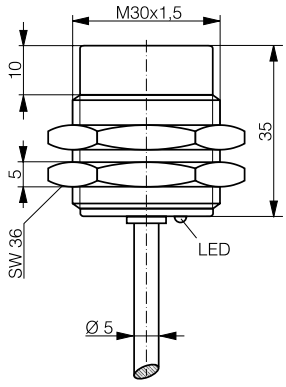
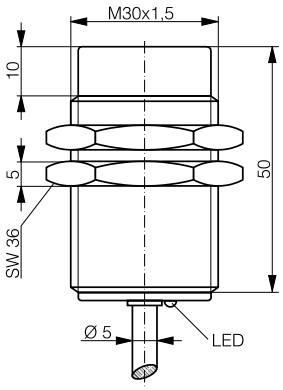
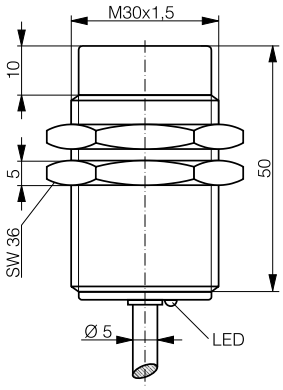
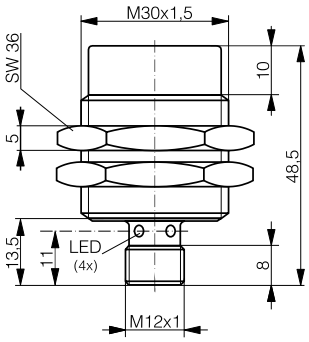
TECHNICAL DATA

Housing material	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
Connection [1]	Connector S12	Connector S12	Connector 1/2"
Degree of protection	IP 67	IP 67	IP 67
Mounting	Embeddable	Embeddable	Embeddable
Max. switching frequency	600 Hz	600 Hz	25 Hz (AC) / 600 Hz (DC)
Additional technical data [2]	Table 9	Table 9	Table 6
Wiring [3]	Diagram 7	Diagram 7	Diagram 3
LED	Built-in	Built-in	Built-in
Supply voltage range	10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Output current	≤ 100 mA	≤ 100 mA	≤ 200 mA
Approvals	CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS

PART REFERENCES: (**BOLD:** PREFERRED TYPES)

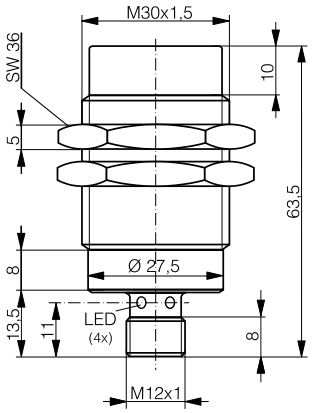
DC 2-wire N.O.	**DW-DS-605-M30-120**	**DW-DS-605-M30-002**	
DC 2-wire N.C.	DW-DS-606-M30-120	DW-DS-606-M30-002	
AC / DC 2-wire N.O.			**DW-AS-607-M30-069**
AC / DC 2-wire N.C.			DW-AS-608-M30-069
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)	G, H, M, N (N.O.); M, N (N.C.)	Q, R

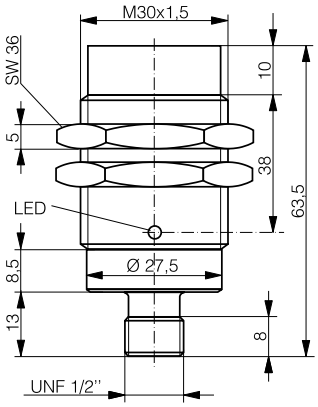
M30

15	15	15	15
			
2-WIRE DC		**2-WIRE AC/DC**	**2-WIRE DC**
			
Chrome-plated brass	Chrome-plated brass	Chrome-plated brass	Chrome-plated brass
PVC cable type 14	PVC cable type 14	PVC cable type 14	Connector S12
IP 67	IP 67	IP 67	IP 67
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
500 Hz	500 Hz	25 Hz (AC) / 500 Hz (DC)	500 Hz
Table 9	Table 9	Table 6	Table 9
Diagram 7	Diagram 7	Diagram 3	Diagram 7
Built-in	Built-in	Built-in	Built-in
10 ... 65 VDC	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC	10 ... 65 VDC
-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
≤ 100 mA	≤ 100 mA	≤ 200 mA	≤ 100 mA
CE, CCC, UL, RoHS	CE, CCC, UL, RoHS	CE, CCC, RoHS	CE, CCC, UL, RoHS
DW-DD-615-M30-120	**DW-DD-615-M30**		**DW-DS-615-M30-120**
DW-DD-616-M30-120	DW-DD-616-M30		DW-DS-616-M30-120
		DW-AD-617-M30	
		DW-AD-618-M30	
			G, H, M, N (N.O.); M, N (N.C.)

HOUSING SIZE	M30		
OPERATING DISTANCE MM	15	15	

	2-WIRE DC	2-WIRE AC/DC	





[1] Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
[2] see page 132
[3] see page 133
[4] see page 268

TECHNICAL DATA

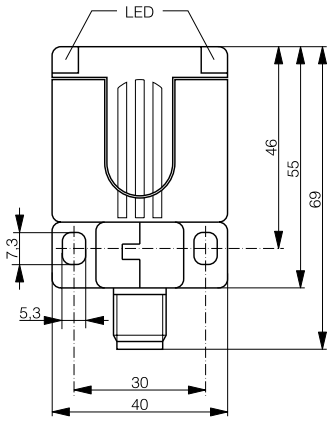
Housing material	Chrome-plated brass	Chrome-plated brass	
Connection [1]	Connector S12	Connector 1/2"	
Degree of protection	IP 67	IP 67	
Mounting	Non-embeddable	Non-embeddable	
Max. switching frequency	500 Hz	25 Hz (AC) / 500 Hz (DC)	
Additional technical data [2]	Table 9	Table 6	
Wiring [3]	Diagram 7	Diagram 3	
LED	Built-in	Built-in	
Supply voltage range	10 ... 65 VDC	20 ... 265 VAC / 10 ... 320 VDC	
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	
Output current	≤ 100 mA	≤ 200 mA	
Approvals	CE, CCC, UL, RoHS	CE, CCC, RoHS	

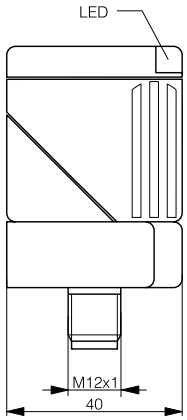
PART REFERENCES: (**BOLD:** PREFERRED TYPES)

DC 2-wire N.O.	**DW-DS-615-M30-002**		
DC 2-wire N.C.	DW-DS-616-M30-002		
AC / DC 2-wire N.O.		**DW-AS-617-M30-069**	
AC / DC 2-wire N.C.		DW-AS-618-M30-069	
Compatible connectors [4]	G, H, M, N (N.O.); M, N (N.C.)	Q, R	

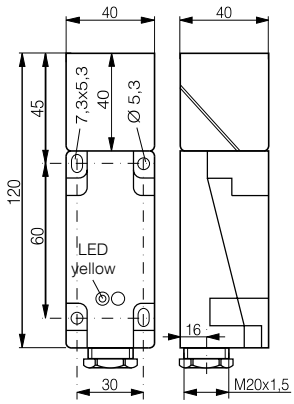
Ø 40 X 40		Ø 40 X 120
15	35	15

2-WIRE AC/DC





Sensing face can be rotated to 5 different sides.



Sensing face can be rotated to 5 different sides.

PBTP	PBTP	PBTP
Connector S12	Connector S12	Screw terminal
IP 67	IP 67	IP 65
Embeddable	Non-embeddable	Embeddable
25 Hz (AC) / 50 Hz (DC)	25 Hz (AC) / 30 Hz (DC)	25 Hz (AC) / 150 Hz (DC)
Table 8	Table 8	Table 4
Diagram 8	Diagram 8	Diagram 8
Built-in	Built-in	Built-in
20 ... 265 VAC / 20 ... 320 VDC	20 ... 265 VAC / 20 ... 320 VDC	20 ... 265 VAC / 20 ... 320 VDC
-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
≤ 300 mA	≤ 300 mA	≤ 300 mA
CE, RoHS	CE, RoHS	CE, RoHS
DW-AS-607-C44	**DW-AS-617-C44**	**DW-AD-607-C40***
G, H, M, N	G, H, M, N	

* N.O. / N.C. switchable

TECHNICAL DATA

	Table 1	Table 2	Table 3	Table 4	Table 5
Permissible ripple content	≤ 20 %	≤ 20 %	≤ 20 %	---	≤ 20 %
No-load supply current	≤ 10 mA	≤ 17 mA (24V) /	≤ 20 mA	≤ 1.5 mA	---
		≤ 30 mA (34V)			
Leakage current at output	≤ 0.1 mA	≤ 0.1 mA	≤ 0.1 mA	---	---
Voltage drop, switched state	≤ 2.0 V	≤ 2.5 V	≤ 2.5 V	≤ 8 V	---
Temperature drift % s_r	≤ 10 %	≤ 10 %	≤ 10 %	≤ 10 %	≤ 10 %
Hysteresis % s_r	1...15% (10% typ.)	≤ 20 %	≤ 20 %	≤ 20 %	---
Repeat accuracy	≤ 5 % s_r	≤ 5 % s_r	≤ 5 % s_r	≤ 5 % s_r	≤ 5 % s_r
(according to IEC 60947-5-2)					
Short-circuit protection	Built-in	Built-in	Built-in	---	Built-in
Polarity reversal protection	Built-in	Built-in	Built-in	Built-in	---
Power-on reset	Built-in	Built-in	Built-in	Built-in	---

	Table 6	Table 7	Table 8	Table 9	
Permissible ripple content	---	≤ 10 %	---	≤ 20 %	
No-load supply current	≤ 1.0 mA	30 mA (24 VDC)	Typ. 1.5 mA (24 V)	≤ 0.6 mA	
		40 mA (34 VDC)	≤ 2.0 mA (U_{max})		
Leakage current at output	---	0.01 mA	≤ 2.0 mA	---	
Min. output current	2.0 mA	---	---	---	
Voltage drop, switched state	≤ 6.0 V	≤ 2.5 V	≤ 8 V	≤ 5.0 V	
Temperature drift % s_r	≤ 10 %	≤ 10 %	≤ 10 %	≤ 10 %	
Hysteresis % s_r	1...15% (10% typ.)	1 ... 15 %	1 ... 15 %	1...15% (10% typ.)	
Repeat accuracy	≤ 5 % s_r	≤ 5 % s_r	≤ 5 % s_r	≤ 5 % s_r	
(according to IEC 60947-5-2)					
Short-circuit protection	Built-in	Built-in	---	Built-in	
Polarity reversal protection	---*	Built-in	---	---*	
Power-on reset	Built-in	Built-in	Built-in	Built-in	

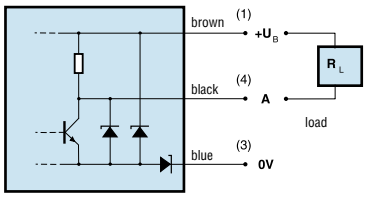
* non-polarized devices

Further data can be obtained from individual data sheets, which may be retrieved from the Contrinex website (www.contrinex.com).

WIRING DIAGRAMS

Diagram 1

NPN normally open (N.O.) / normally closed (N.C.)



PNP normally open (N.O.) / normally closed (N.C.)

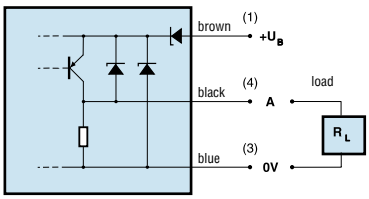
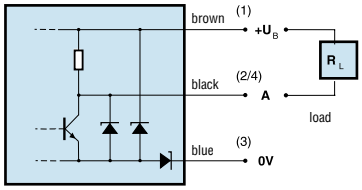


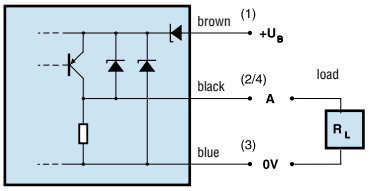
Diagram 2

NPN normally open (N.O.) / normally closed (N.C.)



2 N.C. / 4 N.O.

PNP normally open (N.O.) / normally closed (N.C.)



2 N.C. / 4 N.O.

Diagram 3

2-wire AC/DC N.O. / N.C.

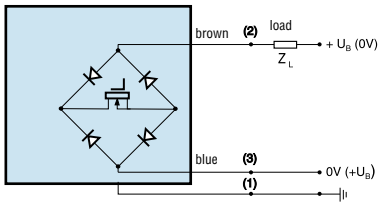


Diagram 4

2-wire NAMUR

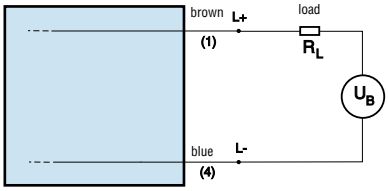
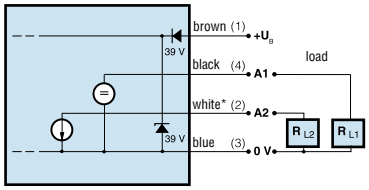


Diagram 5

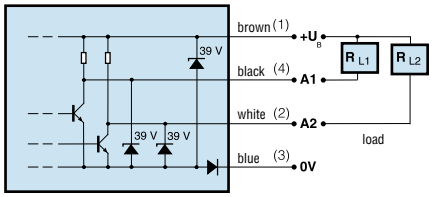
Analog output



* only for models with current output

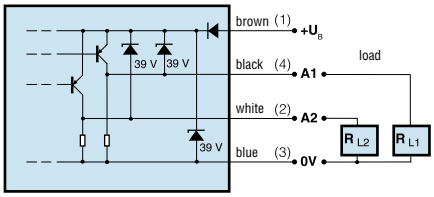
Diagram 6

NPN normally open (N.O.) + normally closed (N.C.)



2 N.C. / 4 N.O.

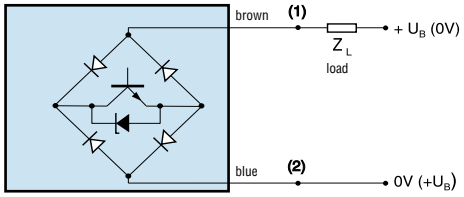
PNP normally open (N.O.) + normally closed (N.C.)



2 N.C. / 4 N.O.

Diagram 7

2-wire DC normally closed (N.C.)



2-wire DC normally open (N.O.)

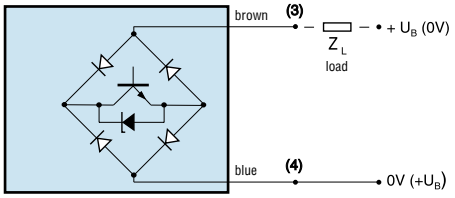


Diagram 8

2-wire AC/DC normally open (N.O.)