Sensor & Connectivity Solutions ›
for Industrial Automation

CONTRINEX

molex

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Molex supports one of the largest portfolios of connectivity and wiring solutions in the industrial market and brings industry-leading expertise to deliver integrated interconnect solutions serving customers worldwide.

Through a combination of strategic acquisitions, collaborations and R&D, Molex has continued to expand its offerings for industrial automation to address customers' requirements for smart manufacturing and digital transformation.

Innovative Molex end-to-end solutions feature components, assemblies, sensors and software allowing machine and system builders to add value for manufacturing customers and re-think traditional business models in the era of digital transformation.

Introduction

CONTRINEX

Contrinex is a leading manufacturer of sensors for factory automation. The Swiss company, headquartered in Corminboeuf near Fribourg (CH), has a unique and innovative range of products whose features far surpass those of standard sensors.

Since its foundation in 1972 by Peter Heimlicher, Dipl Ing ETH, Contrinex has grown from a one-man operation to a multinational group with over 580 employees worldwide. More than 13 subsidiaries cover the core markets in Europe, Asia, North and South America.

At a glance

- Technology leading manufacturer of inductive and photoelectric sensors as well as safety and RFID systems
- World market leader for miniature sensors, sensors with long operating distances and devices for particularly demanding operating conditions (all-metal, high-pressure and high-temperature resistant sensors)
- Represented in over 60 countries worldwide, headquarters in Switzerland

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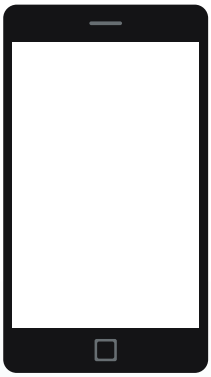

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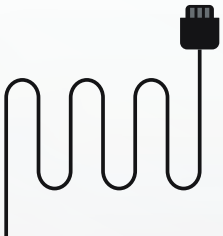

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Weld-Immune

TECHNOLOGY

Contrinex inductive devices work according to one of **three different technologies.** All involve the generation of an alternating magnetic field that emerges at the sensing face. The presence of a conductive, generally metallic, object influences this field in a way that can be detected and evaluated by built-in electronics. All Contrinex ASIC sensors are IO-Link enabled in PNP NO versions.

Technology families

CLASSICS FAMILY:

Conventional technology, engineered by Contrinex

The **Classics** family uses conventional inductive sensor technology, but with the benefit of a Contrinex ASIC (application specific integrated circuit). ASIC technology ensures reliability, stability and ease of commissioning, due to low variation. Sensors in this family achieve operating distances up to 2 x the industry standard. All ASIC sensors in the **Classics** family are IO-Link enabled in PNP NO versions.

Classics sensors have a conventional oscillator and coil generating a high-frequency magnetic field that emerges at the sensing face. Any metallic object found in this field absorbs some of the energy, which is in turn detected and evaluated by built-in electronics (Fig. 1).

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

The **Classics** technology family (series 600) includes devices from the **Basic** and **Miniature** ranges.

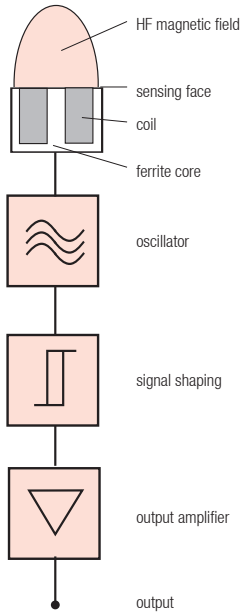


Fig. 1: Conventional inductive sensor technology, as used in the ***Classics*** family

EXTRA DISTANCE FAMILY: Increased stability for exceptionally long operating distance

The **Extra Distance** family is based on the Condist® oscillator developed by Contrinex. Sensors benefit from **up to 4x the standard** operating distance, keeping them out of harm's way in rugged, industrial environments. Sensor lifetime is therefore increased.

Like **Classics** family sensors, these also generate a high-frequency magnetic field that emerges at the sensing face (Fig. 2). Again, the resulting effect is that

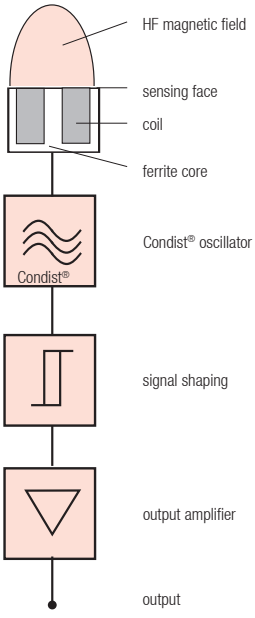


Fig. 2: Contrinex's Condist® inductive sensor technology, as used in the ***Extra Distance*** family

any metallic object entering the field absorbs energy from it.
However, the oscillator and the subsequent signal evaluation circuit are 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 Condist® oscillator.
Improved stability permits the switch point to be further away, leading to **long operating distances** on ferromagnetic metals (Fig. 3). Sensors with this technology also react particularly well to **narrow targets,** e.g. small screws, wires and foils.
Apart from the Condist® oscillator, all other assemblies are equivalent to the **Classics** family. Material dependencies and other properties are also the same as for **Classics** family 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 very good EMC resistance and on perfect sealing against liquid penetration.
The **Extra Distance** technology family includes devices from the **Basic** and **Analog Output** ranges. This technology is used in series 500 devices

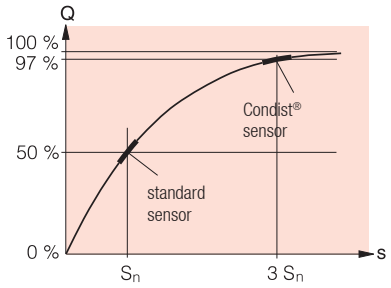


Fig. 3: ***Extra Distance*** family sensors have a longer operating distance, due to Condist® oscillator technology

FULL INOX FAMILY:

All-round stainless steel protection - practically indestructible

The **Full Inox** family is based on Contrinex's Condet® technology. These one-piece stainless steel sensors are not only the most durable on the market, they also offer long operating distances on any conductive metal.
Full Inox sensors 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).
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 subject to a number of undesirable environmental and material influences. Condet® technology allows the sensor, including its face, to be fully encapsulated in a protective, stainless steel housing, with the added security of long operating distances.
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**. Operating distances are therefore identical on steel and aluminum. Only metals which are non-ferromagnetic and also have poor electrical conductivity give a reduced usable signal.
The **Full Inox** family includes devices from the **Miniature**, **Extreme**, **Washdown** and **Weld-Immune** ranges.

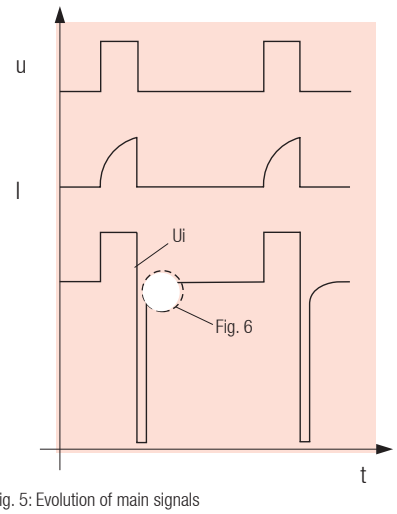


Fig. 5: Evolution of main signals

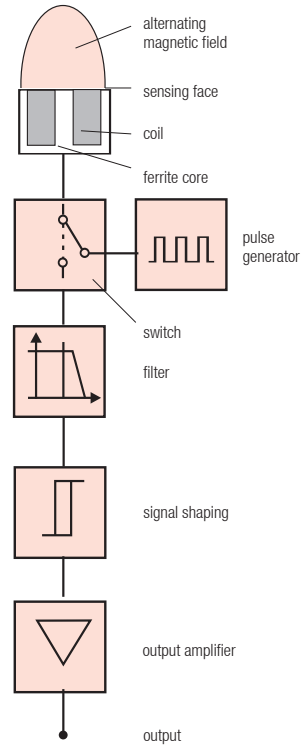


Fig. 4: ***Full Inox*** family sensors use Condet® pulse generator technology instead of an oscillator

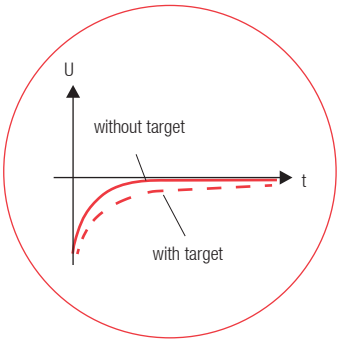


Fig. 6 (detail fig. 5): Effect of a target on the measured signal

Product ranges

BASIC

First choice in all environments

Contrinex **Basic** range inductive sensors have a worldwide and well-deserved reputation for uncompromising accuracy and exceptional reliability. With best-in-class sensing distances between **1.5 mm** and **40 mm**, the **Basic** range offers fit-and-forget operation, delivering world-class performance and a highly attractive total cost of ownership.

Available in sizes from M8 to M30 and C44, with optional Ø 6.5 plain and 8 mm square-section models, **Basic** range inductive sensors are ideal for general position-sensing and presence-sensing applications in almost any industry. Embeddable or non-embeddable variants are available, with either hard-wired, hermetically sealed connecting cables or integral metal connectors. **Basic** range devices, whether from the **Classics** (Fig. 1), **Extra Distance** (Fig. 2) or **Full Inox** (Fig. 4) technology families, all utilize Contrinex application-specific integrated circuits (ASICs) that ensure highly repeatable results at operating temperatures between -25°C and +70°C. An **IO-Link** interface is also available for communication in PNP NO versions.

MINIATURE

Full functionality, smallest size

Size is often a critical constraint when selecting sensors for position- or presence-sensing. The Contrinex **Miniature** range, which includes the smallest self-contained inductive sensors on the market, meets this constraint without compromising on functionality.

Sensors from this range use either **Classics** (Fig. 1), **Extra Distance** (Fig. 2) or **Full Inox** (Fig. 4) technology. Available in plain and threaded sizes from Ø 3 to M5 and as a 5 mm square-section type, **Miniature** range inductive sensors are ideal for applications where space is limited, including tool-selection, robotic position-sensing and control of micro-mechanisms.

Extremely robust, thanks to chip-scale package (CSP) technology, a glass-fiber reinforced substrate and vacuum encapsulation, the Contrinex **Miniature** range delivers long-term reliability and maximum uptime, even in the most demanding environments. The low mass and **high switching frequency** of these sensors makes them particularly suitable for high-dynamic applications where inertia is a major consideration.

These embeddable devices are available in 3-wire DC, NPN and PNP versions with a choice of NO or NC configurations. An LED output state indicator is standard. All the important protection functions are included, such as short-circuit and overload protection, full polarity reversal protection, induction protection, EMC protection, power-on reset, etc.

With a sensing range up to **3 mm**, Contrinex miniature inductive sensors combine world-class quality with a highly attractive total cost of ownership. An **IO-Link** interface is also available for communication in PNP NO versions.

EXTREME

Extreme durability in harsh environments

Only the toughest sensors survive the most extreme environments, and **Extreme** range inductive sensors from the **Full Inox** family are ideally equipped for the job. Thanks to one-piece stainless-steel (V2A/AISI 303) construction and a hermetically sealed cable entry, **Extreme** sensors are corrosion-resistant, impervious to oil, and pressure-resistant to **100 bar**. Rugged, reliable and highly accurate, the **Extreme** range is at home in the most challenging circumstances.

Developed to withstand the harshest industrial operating conditions, **Extreme** sensors are rated to **IP 68** and **IP 69K**, delivering fit-and-forget performance with minimal downtime. With operating distances up to **40 mm**, the **Extreme** range senses both ferrous and non-ferrous materials with **Factor 1** performance, and is available in sizes from M8 to M30 and C23. An **IO-Link** interface is also available for communication in PNP NO versions.

ANALOG OUTPUT

Continuous analog output for precision control

Engineers needing a reliable, repeatable, highly accurate means of measuring the position of a target object should look no further than Contrinex **Analog Output** inductive sensors. This range of sensors has been developed on the platform of **Extra Distance** (Fig. 2) technology for excellent temperature stability, repeat accuracy, and the best long-range sensing capability on the market. With a measurement range of **zero to 40 mm** and detection accuracy on the micron scale, the **Analog Output** sensor range is ideally suited for measuring linear, angular and rotational position (Fig. 7). They offer world-class performance and an attractive total cost of ownership in applications from vibration monitoring and end-position approach regulation, to position monitoring, metal sorting and sheet-metal forming.

Analog Output inductive sensors are available in sizes from M8 to M30, with the option of an 8 mm square-section model. Voltage outputs are included for all sizes, while sizes M12 and above feature both voltage and current outputs.

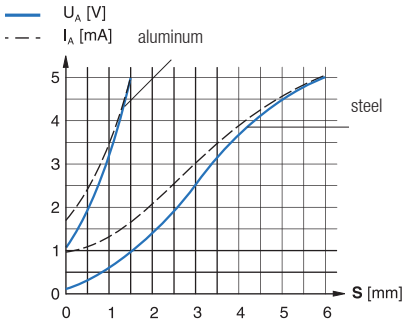


Fig. 7

WASHDOWN

Ecolab approved for strictest production hygiene

Washdown inductive sensors are certified to operate continuously and reliably in the harsh conditions of the food, beverage and pharmaceutical industries, ensuring uninterrupted production. With **Ecolab** approval and rated to **IP 68** and **IP 69K**, they are pressure resistant up to **80 bar**, **food safe** and **corrosion resistant**.

Washdown sensors are available in conventional **Classics** (Fig. 1) technology, size M12, or **Full Inox** (Fig. 4) technology, sizes M12, M18 and M30. **Full Inox** types have a totally impervious one-piece housing in stainless-steel (V4A / AISI 316L), including the sensing face. They are therefore highly resistant to the corrosive chemicals used for clean-in-place or wash-down processes. With Factor 1 on steel and aluminum and extended sensing ranges up to 40 mm, **Full Inox** technology minimizes the possibility of impact damage - a common hazard in confined operating spaces.

Washdown sensors meet the increasingly demanding sensing needs of the food, beverage and pharmaceutical industries, delivering best-in-class performance with an attractive total cost of ownership. An **IO-Link** interface is also available for communication in PNP NO versions.

WELD-IMMUNE

Immune to magnetic fields and resistant to weld spatter

Contrinex **Weld-Immune** inductive sensors are ideal for the hostile working environments found in automotive factories and other industrial welding plants.

Weld-Immune sensors built on the **Full Inox** platform have a long operating distance and Factor 1 on steel and aluminum. One-piece, stainless-steel (V2A / AISI 303) construction makes these sensors the most durable on the market, ensuring minimal down-time. These practically indestructible sensors withstand the welding environment for years, resisting electromagnetic fields, welding spatter, cleaning and impacts.

All **Weld-Immune** sensors are embeddable and have an integral M12 connector. Best-in-class sensing ranges of up to **15 mm** eliminate the risk of collision - a frequent hazard when operating in close proximity to moving machine parts.

Developed for extreme accuracy throughout the welding cycle, **Weld-Immune** sensors continuously detect part presence and machine position to ensure optimal equipment utilization and prevent errors in production. These sensors provide excellent repeatability at temperatures between -25°C and +70°C.

IO-Link functionality* with inductive sensors (PNP N.O. types)

1. **Data monitoring:**
Switching state is monitored continuously. This not only monitors the signal itself, but also the state at 80% of the switching distance. One can therefore ensure that the sensor is not working at the limit of its specifications.

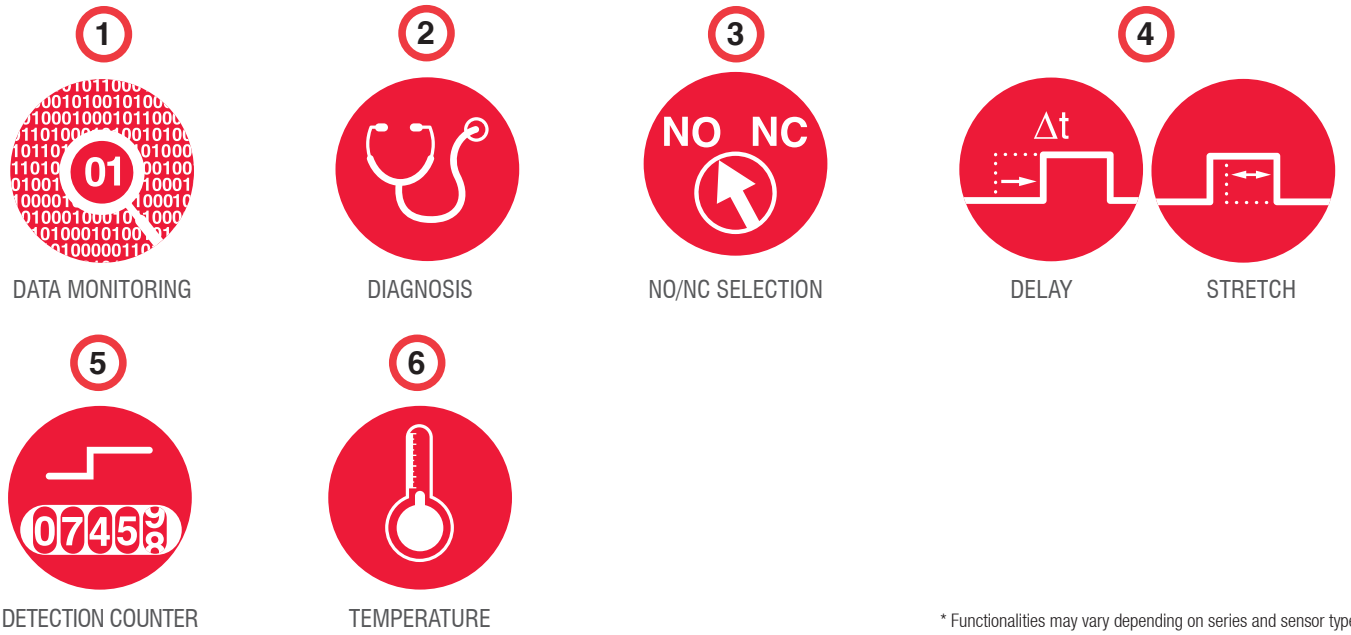
2. **Diagnosis:**
The operating state of the sensor is checked. In case of wire break, under-voltage, LC oscillator break or installation of the wrong sensor, information is provided directly through IO-Link to enable fast repair, maintenance and replacement.

3. **NO/NC selection:**
The output switching mode can be selected as NO or NC. A single sensor type is configurable for the various needs of an application. This helps reduce the number of different sensor types required in stock.

4. **Switching timer:**
The timing of output switching can be configured. Depending on the needs of an application, output switching can be delayed or the duration stretched through programming.

5. **Detection counter:**
Detection events are counted. By registering the number of detections, it is possible to calculate the speed or number of parts. The counter can be reset by means of a unique IO-Link message.

6. **Temperature:**
The internal temperature of the sensor is measured continuously, which provides an indication about the ambient temperature in the application. Moreover, the maximum temperature measured is saved for diagnosis and preventive maintenance purposes.



* Functionalities may vary depending on series and sensor type

Inductive sensors

Classics - 600 Series

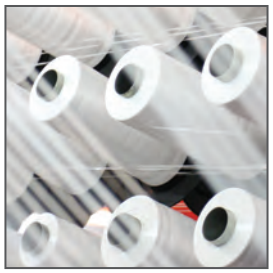
Product range - Basic

Contrinex BASIC inductive sensors have a worldwide and well-deserved reputation for uncompromising accuracy and exceptional reliability. With best-in-class sensing distances between 1.5 mm and 40 mm, the Contrinex BASIC range offers fit-and-forget operation, delivering world-class performance and a highly attractive total cost of ownership.

Specification / Key Advantages

Enclosure rating IP67
Operating distance up to 2x (Sn 1.5 mm - 40 mm)
Outstanding temperature stability -25... +70°C
IO-Link ready (PNP NO output)
High quality ASICs
Output current ≤ 200 mA
Supply voltage range 10...30 VDC

Automotive industry



Textile

Automated assembly lines

Machine tools

Packaging machines

Inductive sensors

Classics - 600 Series

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Ø6.5 - Normal

Ø6.5 - Short

Classics Basic

Standard Operating Distance (1x) - Ø6.5

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø6.5	Normal	Embeddable	1.5	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530186
			1.5	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530187
			1.5	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	IO-Link 1202530188
			1.5	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530189
			1.5	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	1202530190
			1.5	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530191
			1.5	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	IO-Link 1202530192
			1.5	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530193
			1.5	5000	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	1202530194
			1.5	5000	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530195
			1.5	5000	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	IO-Link 1202530196
			1.5	5000	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530197
Ø6.5	Short	Embeddable	1.5	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530270
			1.5	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530271
			1.5	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	IO-Link 1202530272
			1.5	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530273
			1.5	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	1202530274
			1.5	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530275
			1.5	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	IO-Link 1202530276
			1.5	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530277

Inductive sensors

Classics - 600 Series

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M8 - Normal

Classics Basic

Standard Operating Distance (1x) - M8

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Embeddable	1.5	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530198
			1.5	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530199
			1.5	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	IO-Link 1202530200
			1.5	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530201
			1.5	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	1202530202
			1.5	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530203
			1.5	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	IO-Link 1202530204
			1.5	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530205
			1.5	5000	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	1202530206
			1.5	5000	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530207
			1.5	5000	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	IO-Link 1202530208
			1.5	5000	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530209
		Non-embeddable	2.5	4500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530210
			2.5	4500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530211
			2.5	4500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	IO-Link 1202530212
			2.5	4500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530213
			2.5	4500	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	1202530214
			2.5	4500	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530215
			2.5	4500	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	IO-Link 1202530216
			2.5	4500	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530217
			2.5	4500	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	1202530218
			2.5	4500	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530219

Inductive sensors

Classics - 600 Series

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M8 - Normal

M8 - Short

Classics Basic

Standard Operating Distance (1x) - M8

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Non-emb.	2.5	4500	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	IO-Link 1202530220
			2.5	4500	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530221
M8	Short	Embeddable	1.5	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530278
			1.5	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530279
			1.5	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	IO-Link 1202530280
			1.5	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530281
			1.5	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	1202530282
			1.5	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530283
			1.5	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	IO-Link 1202530284
			1.5	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530285
		Non-embeddable	2.5	4500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	22	1202530286
			2.5	4500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	22	1202530287
			2.5	4500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	22	IO-Link 1202530288
			2.5	4500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	22	1202530289
			2.5	4500	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	32	1202530290
			2.5	4500	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	32	1202530291
			2.5	4500	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	32	IO-Link 1202530292
			2.5	4500	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	32	1202530293

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M12 - Normal

Classics Basic

Standard Operating Distance (1x) - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Normal	Embeddable	2	3000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530222
			2	3000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530223
			2	3000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530224
			2	3000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530225
			2	3000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	1202530226
			2	3000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530227
			2	3000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	IO-Link 1202530228
			2	3000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530229
		Non-embeddable	4	2000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530230
			4	2000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530231
			4	2000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530232
			4	2000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530233
			4	2000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	1202530234
			4	2000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530235
			4	2000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	IO-Link 1202530236
			4	2000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530237

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M12 - Short

Classics Basic

Standard Operating Distance (1x) - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Short	Embeddable	2	3000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530294
			2	3000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530295
			2	3000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530296
			2	3000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530297
			2	3000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	1202530298
			2	3000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530299
			2	3000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	IO-Link 1202530300
			2	3000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530301
		Non-embeddable	4	2000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530302
			4	2000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530303
			4	2000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530304
			4	2000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530305
			4	2000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	1202530306
			4	2000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530307
			4	2000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	IO-Link 1202530308
			4	2000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530309

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M18 - Normal

Classics Basic

Standard Operating Distance (1x) - M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Normal	Embeddable	5	2000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530238
			5	2000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530239
			5	2000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530240
			5	2000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530241
			5	2000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	1202530242
			5	2000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530243
			5	2000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	IO-Link 1202530244
			5	2000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530245
		Non-embeddable	8	2000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530246
			8	2000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530247
			8	2000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530248
			8	2000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530249
			8	2000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	1202530250
			8	2000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530251
			8	2000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	IO-Link 1202530252
			8	2000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530253

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M18 - Short

Classics Basic

Standard Operating Distance (1x) - M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Short	Embeddable	5	2000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530310
			5	2000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530311
			5	2000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530312
			5	2000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530313
			5	2000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	48.5	1202530314
			5	2000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	48.5	1202530315
			5	2000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	48.5	IO-Link 1202530316
			5	2000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	48.5	1202530317
		Non-embeddable	8	2000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530318
			8	2000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530319
			8	2000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530320
			8	2000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530321
			8	2000	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	48.5	1202530322
			8	2000	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	48.5	1202530323
			8	2000	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	48.5	IO-Link 1202530324
			8	2000	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	48.5	1202530325

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M30 - Normal

Classics Basic

Standard Operating Distance (1x) - M30

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Normal	Embeddable	10	1200	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530254
			10	1200	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530255
			10	1200	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	IO-Link 1202530256
			10	1200	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530257
			10	1200	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	1202530258
			10	1200	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530259
			10	1200	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	IO-Link 1202530260
			10	1200	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530261
		Non-embeddable	15	700	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530262
			15	700	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530263
			15	700	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	IO-Link 1202530264
			15	700	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530265
			15	700	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	1202530266
			15	700	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530267
			15	700	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	IO-Link 1202530268
			15	700	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530269

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M30 - Short

Classics Basic

Standard Operating Distance (1x) - M30

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Short	Embeddable	10	1200	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530326
			10	1200	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530327
			10	1200	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link 1202530328
			10	1200	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530329
			10	1200	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	1202530330
			10	1200	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530331
			10	1200	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	IO-Link 1202530332
			10	1200	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530333
		Non-embeddable	15	700	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530334
			15	700	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530335
			15	700	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link 1202530336
			15	700	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530337
			15	700	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	1202530338
			15	700	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530339
			15	700	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	IO-Link 1202530340
			15	700	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530341

Inductive sensors

Classics - 600 Series

CONTRINEX molex

C44 - Cubic

Classics Basic

Standard Operating Distance (1x) - C44

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing Dimension (mm)	Standard Order No
C44 (40x40)	Cubic	Emb.	15	100	PNP	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	IO-Link 1202530450
			15	100	NPN	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	1202530451
		Non-Emb.	30	100	PNP	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	IO-Link 1202530452
			30	100	NPN	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	1202530453

Inductive sensors

Classics - 600 Series

CONTRINEX molex

Ø6.5 - Normal

Ø6.5 - Short

Classics Basic

Extended Operating Distance (2x) - Ø6.5

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø6.5	Normal	Embeddable	2	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530342
			2	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530343
			2	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	IO-Link 1202530344
			2	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530345
			2	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	1202530346
			2	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530347
			2	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	IO-Link 1202530348
			2	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530349
			2	5000	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	1202530350
			2	5000	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530351
			2	5000	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	IO-Link 1202530352
			2	5000	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530353
Ø6.5	Short	Embeddable	2	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530410
			2	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530411
			2	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	IO-Link 1202530412
			2	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530413
			2	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	1202530414
			2	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530415
			2	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	IO-Link 1202530416
			2	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530417

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M8 - Normal

Classics Basic

Extended Operating Distance (2x) - M8

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Embeddable	2	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530354
			2	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530355
			2	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	IO-Link 1202530356
			2	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530357
			2	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	1202530358
			2	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530359
			2	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	IO-Link 1202530360
			2	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530361
			2	5000	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	1202530362
			2	5000	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530363
			2	5000	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	45	IO-Link 1202530364
			2	5000	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	45	1202530365
		Non-embeddable	4	3500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530366
			4	3500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530367
			4	3500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	IO-Link 1202530368
			4	3500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	35	1202530369
			4	3500	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	1202530370
			4	3500	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530371
			4	3500	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	45	IO-Link 1202530372
			4	3500	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	45	1202530373

Inductive sensors

Classics - 600 Series

M8 - Short

Classics Basic

Extended Operating Distance (2x) - M8

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Short	Embeddable	2	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530418
			2	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530419
			2	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	IO-Link 1202530420
			2	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	16	1202530421
			2	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	1202530422
			2	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530423
			2	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	29	IO-Link 1202530424
			2	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	29	1202530425

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M12 - Normal

Classics Basic

Extended Operating Distance (2x) - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Normal	Embeddable	4	2500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530374
			4	2500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530375
			4	2500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530376
			4	2500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530377
			4	2500	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	1202530378
			4	2500	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530379
			4	2500	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	IO-Link 1202530380
			4	2500	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530381
		Non-embeddable	8	1400	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530382
			8	1400	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530383
			8	1400	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530384
			8	1400	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530385
			8	1400	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	1202530386
			8	1400	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530387
			8	1400	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	60	IO-Link 1202530388
			8	1400	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	60	1202530389

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M12 - Short

Classics Basic

Extended Operating Distance (2x) - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Short	Embeddable	4	2500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530426
			4	2500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530427
			4	2500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530428
			4	2500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530429
			4	2500	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	1202530430
			4	2500	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530431
			4	2500	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	IO-Link 1202530432
			4	2500	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530433
		Non-embeddable	8	1400	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530434
			8	1400	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530435
			8	1400	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530436
			8	1400	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530437
			8	1400	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	1202530438
			8	1400	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530439
			8	1400	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	45	IO-Link 1202530440
			8	1400	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	45	1202530441

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M18 - Normal

Classics Basic

Extended Operating Distance (2x) - M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Normal	Embeddable	8	1500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530390
			8	1500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530391
			8	1500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530392
			8	1500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530393
			8	1500	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	1202530394
			8	1500	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530395
			8	1500	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	IO-Link 1202530396
			8	1500	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530397
		Non-embeddable	12	500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530398
			12	500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530399
			12	500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530400
			12	500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530401
			12	500	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	1202530402
			12	500	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530403
			12	500	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	IO-Link 1202530404
			12	500	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	63.5	1202530405

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M18 - Short

M30 - Normal

C44 - Cubic

Classics Basic

Extended Operating Distance (2x) - M18 - M30 - C44

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Short	Embeddable	8	1500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530442
			8	1500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530443
			8	1500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	35	IO-Link 1202530444
			8	1500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Nickel-plated brass	35	1202530445
			8	1500	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	48.5	1202530446
			8	1500	NPN	Normally closed (NC)	M12 4-pin	Nickel-plated brass	48.5	1202530447
			8	1500	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	48.5	IO-Link 1202530448
			8	1500	PNP	Normally closed (NC)	M12 4-pin	Nickel-plated brass	48.5	1202530449
M30	Normal	Non-embeddable	25	200	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	1202530406
			25	200	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Nickel-plated brass	50	IO-Link 1202530407
			25	200	NPN	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	1202530408
			25	200	PNP	Normally open (NO)	M12 4-pin	Nickel-plated brass	63.5	IO-Link 1202530409

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing dimension (mm)	Standard Order No
C44	Cubic	Emb.	20	100	PNP	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	IO-Link 1202530454
			20	100	NPN	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	1202530455
		Non-emb.	40	100	PNP	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	IO-Link 1202530456
			40	100	NPN	Changeover (NO/NC)	M12 4-pin	PA GF	40x40	1202530457

Inductive sensors

Classics - 600 Series

Product range – Miniature

Size is often a critical constraint when selecting sensors for position- or presence-sensing. The Contrinex MINIATURE range, which includes the smallest self-contained inductive sensors on the market, meets this constraint without compromising on functionality.

Specification / Key Advantages

Enclosure rating IP67
Operating distance up to 2x (Sn 0.6 mm - 1.5 mm)
Outstanding temperature stability -25... +70°C
IO-Link ready (PNP NO output)
High quality ASICs
Smallest self-contained inductive sensors on the market
High switching frequency up to 5000 Hz
Output current ≤ 200 mA
Supply voltage range 10...30 VDC

Machine tools

Robotic, grippers

Electronic production

Spindles

Inductive sensors

Classics - 600 Series

CONTRINEX molex

Ø3 - Normal

Ø4 - Normal

Classics Miniature

Standard Operating Distance (1x) - Ø3 - Ø4

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø3	Normal	Embeddable	0.6	5000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530458
			0.6	5000	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530459
			0.6	5000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	IO-Link 1202530460
			0.6	5000	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530461
			0.6	5000	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530462
			0.6	5000	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530463
			0.6	5000	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	IO-Link 1202530464
			0.6	5000	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530465
Ø4	Normal	Embeddable	0.8	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530474
			0.8	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530475
			0.8	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	IO-Link 1202530476
			0.8	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530477
			0.8	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	1202530478
			0.8	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530479
			0.8	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	IO-Link 1202530480
			0.8	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530481

Inductive sensors

Classics - 600 Series

CONTRINEX molex

Classics Miniature

Standard Operating Distance (1x) - M4 - M5

M4 - Normal

M5 - Normal

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M4	Normal	Embeddable	0.6	5000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530466
			0.6	5000	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530467
			0.6	5000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	IO-Link 1202530468
			0.6	5000	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530469
			0.6	5000	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530470
			0.6	5000	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530471
			0.6	5000	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	IO-Link 1202530472
			0.6	5000	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530473
M5	Normal	Embeddable	0.8	5000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530482
			0.8	5000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530483
			0.8	5000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	IO-Link 1202530484
			0.8	5000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530485
			0.8	5000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	1202530486
			0.8	5000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530487
			0.8	5000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	IO-Link 1202530488
			0.8	5000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530489

Inductive sensors

Classics - 600 Series

CONTRINEX molex

Ø3 - Normal

Ø3 - Short

Classics Miniature

Extended Operating Distance (2x) - Ø3

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø3	Normal	Embeddable	1	3000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530490
			1	3000	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530491
			1	3000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	IO-Link 1202530492
			1	3000	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530493
			1	3000	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530494
			1	3000	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530495
			1	3000	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	IO-Link 1202530496
			1	3000	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530497
Ø3	Short	Embeddable	1	8000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	12	1202530498
			1	8000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	12	IO-Link 1202530499
			1	8000	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	12	1202530500
			1	8000	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	12	IO-Link 1202530501

Inductive sensors

Classics - 600 Series

CONTRINEX molex

Classics Miniature

Extended Operating Distance (2x) - Ø4 - M4

Ø4 - Normal

M4 - Normal

M4 - Short

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø4	Normal	Embeddable	1.5	3000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530514
			1.5	3000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530515
			1.5	3000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	IO-Link 1202530516
			1.5	3000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530517
			1.5	3000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	1202530518
			1.5	3000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	IO-Link 1202530519
			1.5	3000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530520
M4	Normal	Embeddable	1	3000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530502
			1	3000	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530503
			1	3000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	IO-Link 1202530504
			1	3000	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	22	1202530505
			1	3000	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530506
			1	3000	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530507
			1	3000	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	IO-Link 1202530508
			1	3000	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	22	1202530509
M4	Short	Embeddable	1	8000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	12	1202530510
			1	8000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	12	IO-Link 1202530511
			1	8000	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	12	1202530512
			1	8000	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	12	IO-Link 1202530513

Inductive sensors

Classics - 600 Series

CONTRINEX molex

M5 - Normal

Classics Miniature

Extended Operating Distance (2x) - M5

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M5	Normal	Embeddable	1.5	3000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530521
			1.5	3000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530522
			1.5	3000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	IO-Link 1202530523
			1.5	3000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Stainless-steel V2A	25	1202530524
			1.5	3000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	1202530525
			1.5	3000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530526
			1.5	3000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	38	IO-Link 1202530527
			1.5	3000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	38	1202530528

Inductive sensors

Extra Distance - 500 Series

Product range - Basic

Contrinex EXTRA DISTANCE (500 series) inductive sensors allow best-in-class sensing distances up to 40mm without compromising accuracy, robustness or reliability. Sized from M8 to M30 and ø6.5 plain, the Extra Distance family includes cable and connector versions with a choice of PNP or NPN output configurations.

Specification / Key Advantages

Enclosure rating IP67
Long operating distance (Sn 3 mm - 40 mm)
Outstanding temperature stability -25... +70°C
IO-Link ready (PNP NO output)*
High quality ASICs
Excellent accuracy
Outstanding temperature compensation
Output current ≤ 200 mA
Supply voltage range 10...30 VDC

*available in 2019

Automotive industry

Green energy and environment

Mobile equipment

Machine tools

Textile

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

Ø6.5 - Normal

Extra Distance Basic

Operating Distance (3x) - Ø6.5

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø6.5	Normal	Quasi-embeddable	3	1000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	45	1202530000
			3	1000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	45	1202530001
			3	1000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	45	IO-Link* 1202530002
			3	1000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	45	1202530003
			3	1000	NPN	Normally open (NO)	M8 3-pin	Chrome-plated brass	60	1202530004
			3	1000	NPN	Normally closed (NC)	M8 3-pin	Chrome-plated brass	60	1202530005
			3	1000	PNP	Normally open (NO)	M8 3-pin	Chrome-plated brass	60	IO-Link* 1202530006
			3	1000	PNP	Normally closed (NC)	M8 3-pin	Chrome-plated brass	60	1202530007
			3	1000	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	66	1202530008
			3	1000	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	66	1202530009
			3	1000	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	66	IO-Link* 1202530010
			3	1000	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	66	1202530011

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

M8 - Normal

Extra Distance Basic

Operating Distance (3x) - M8

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Embeddable	3	1000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	45	1202530012
			3	1000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	45	1202530013
			3	1000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	45	IO-Link* 1202530014
			3	1000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	45	1202530015
			3	1000	NPN	Normally open (NO)	M8 3-pin	Chrome-plated nickel silver	60	1202530016
			3	1000	NPN	Normally closed (NC)	M8 3-pin	Chrome-plated nickel silver	60	1202530017
			3	1000	PNP	Normally open (NO)	M8 3-pin	Chrome-plated nickel silver	60	IO-Link* 1202530018
			3	1000	PNP	Normally closed (NC)	M8 3-pin	Chrome-plated nickel silver	60	1202530019
			3	1000	NPN	Normally open (NO)	M12 4-pin	Chrome-plated nickel silver	66	1202530020
			3	1000	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated nickel silver	66	1202530021
			3	1000	PNP	Normally open (NO)	M12 4-pin	Chrome-plated nickel silver	66	IO-Link* 1202530022
			3	1000	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated nickel silver	66	1202530023
		Non-embeddable	6	500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	45	1202530024
			6	500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	45	1202530025
			6	500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	45	IO-Link* 1202530026
			6	500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	45	1202530027
			6	500	NPN	Normally open (NO)	M8 3-pin	Chrome-plated brass	60	1202530028
			6	500	NPN	Normally closed (NC)	M8 3-pin	Chrome-plated brass	60	1202530029
			6	500	PNP	Normally open (NO)	M8 3-pin	Chrome-plated brass	60	IO-Link* 1202530030
			6	500	PNP	Normally closed (NC)	M8 3-pin	Chrome-plated brass	60	1202530031
			6	500	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	66	1202530032
			6	500	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	66	1202530033

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

M8 - Normal

M8 - Short

Extra Distance Basic

Operating Distance (3x) - M8 - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Non-emb.	6	500	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	66	IO-Link* 1202530034
			6	500	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	66	1202530035
M8	Short	Embeddable	3	1000	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	35	1202530084
			3	1000	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	35	1202530085
			3	1000	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	35	IO-Link* 1202530086
			3	1000	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated nickel silver	35	1202530087
		Non-embeddable	6	500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530088
			6	500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530089
			6	500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link* 1202530090
			6	500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530091

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

M12 - Normal

Extra Distance Basic

Operating Distance (3x) - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Normal	Quasi-embeddable	6	800	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530036
			6	800	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530037
			6	800	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	IO-Link* 1202530038
			6	800	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530039
			6	800	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	60	1202530040
			6	800	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	60	1202530041
			6	800	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	60	IO-Link* 1202530042
			6	800	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	60	1202530043
		Non-embeddable	10	400	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530044
			10	400	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530045
			10	400	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	50	IO-Link* 1202530046
			10	400	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202530047
			10	400	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	60	1202530048
			10	400	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	60	1202530049
			10	400	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	60	IO-Link* 1202530050
			10	400	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	60	1202530051

Inductive sensors

Extra Distance - 500 Series

M12 - Short

Extra Distance Basic

Operating Distance (3x) - M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Short	Quasi-embeddable	6	800	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530092
			6	800	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530093
			6	800	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link* 1202530094
			6	800	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530095
			6	800	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	45	1202530096
			6	800	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	45	1202530097
			6	800	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	45	IO-Link* 1202530098
			6	800	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	45	1202530099
		Non-embeddable	10	400	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530100
			10	400	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530101
			10	400	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link* 1202530102
			10	400	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530103
			10	400	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	45	1202530104
			10	400	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	45	1202530105
			10	400	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	45	IO-Link* 1202530106
			10	400	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	45	1202530107

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

M18 - Normal

Extra Distance Basic

Operating Distance (3x) - M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Normal	Quasi-embeddable	12	600	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	51	1202530052
			12	600	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	51	1202530053
			12	600	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	51	IO-Link* 1202530054
			12	600	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	51	1202530055
			12	600	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	1202530056
			12	600	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530057
			12	600	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	IO-Link* 1202530058
			12	600	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530059
		Non-embeddable	20	500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	51	1202530060
			20	500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	51	1202530061
			20	500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	51	IO-Link* 1202530062
			20	500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	51	1202530063
			20	500	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	1202530064
			20	500	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530065
			20	500	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	63.5	IO-Link* 1202530066
			20	500	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	63.5	1202530067

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

M18 - Short

Extra Distance Basic

Operating Distance (3x) - M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Short	Quasi-embeddable	12	600	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	36	1202530108
			12	600	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	36	1202530109
			12	600	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	36	IO-Link* 1202530110
			12	600	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	36	1202530111
			12	600	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	1202530112
			12	600	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530113
			12	600	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	IO-Link* 1202530114
			12	600	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530115
		Non-embeddable	20	500	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	36	1202530116
			20	500	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	36	1202530117
			20	500	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	36	IO-Link* 1202530118
			20	500	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	36	1202530119
			20	500	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	1202530120
			20	500	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530121
			20	500	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	IO-Link 1202530122
			20	500	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530123

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

M30 - Normal

Extra Distance Basic

Operating Distance (3x) - M30

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Normal	Quasi-embeddable	22	200	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	60	1202530068
			22	200	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	60	1202530069
			22	200	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	60	IO-Link* 1202530070
			22	200	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	60	1202530071
			22	200	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	73.5	1202530072
			22	200	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	73.5	1202530073
			22	200	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	73.5	IO-Link* 1202530074
			22	200	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	73.5	1202530075
		Non-embeddable	40	100	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	60	1202530076
			40	100	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	60	1202530077
			40	100	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	60	IO-Link* 1202530078
			40	100	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	60	1202530079
			40	100	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	73.5	1202530080
			40	100	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	73.5	1202530081
			40	100	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	73.5	IO-Link* 1202530082
			40	100	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	73.5	1202530083

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

Extra Distance Basic

Operating Distance (3x) - M30

M30 - Short

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Short	Quasi-embeddable	22	200	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530124
			22	200	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530125
			22	200	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link* 1202530126
			22	200	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530127
			22	200	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	1202530128
			22	200	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530129
			22	200	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	IO-Link* 1202530130
			22	200	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530131
M30	Short	Non-embeddable	40	100	NPN	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530132
			40	100	NPN	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530133
			40	100	PNP	Normally open (NO)	PVC, 2 m, 3 wire	Chrome-plated brass	35	IO-Link* 1202530134
			40	100	PNP	Normally closed (NC)	PVC, 2 m, 3 wire	Chrome-plated brass	35	1202530135
			40	100	NPN	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	1202530136
			40	100	NPN	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530137
			40	100	PNP	Normally open (NO)	M12 4-pin	Chrome-plated brass	48.5	IO-Link* 1202530138
			40	100	PNP	Normally closed (NC)	M12 4-pin	Chrome-plated brass	48.5	1202530139

Inductive sensors

Extra Distance - 500 Series

Product range – Analog Output

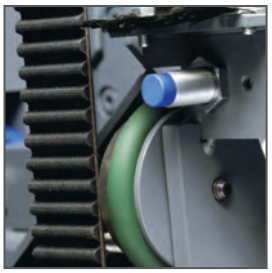
Engineers needing a reliable, repeatable, highly accurate means of measuring the position of a target object should look no further than Contrinex ANALOG OUTPUT inductive sensors. Best-in-class temperature stability and a measurement range of zero to 40mm make the Contrinex analog sensor range ideally suited for measuring linear, angular and rotational position. With detection accuracy in the micron range and the best long-range sensing capability on the market, Contrinex analog sensors offer world-class performance with an attractive total cost of ownership.

Specification / Key Advantages

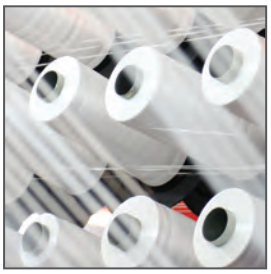
Longest measurement ranges
Best temperature stability
Excellent repeat accuracy
Resolution in μm range
High quality Asics
Enclosure rating IP67
Long operating distance (0 ... 4 mm / 0 ... 40 mm)
Outstanding temperature stability -25... +70°C
Supply voltage range 10 ... 30 VDC / 15 ... 30 VDC (-390)

Machine tools

Mobile equipment



Drive-belt tension monitoring



Textile

Position control

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

Extra Distance Analog Output

M8 - M12

M8 - Normal

M12 - Normal

M12 - Short

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Polarity	Output	Voltage output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Quasi-emb.	0...4	Analog	Voltage	0...5 V	PUR, 2 m, 3 wire	Chrome-plated brass	45	1202530140
			0...4	Analog	Voltage	0…10 V	PUR, 2 m, 3 wire	Chrome-plated brass	45	1202530141
			0...4	Analog	Voltage	0...5 V	M8 3-pin	Chrome-plated brass	60	1202530142
			0...4	Analog	Voltage	0…10 V	M8 3-pin	Chrome-plated brass	60	1202530143
			0...4	Analog	Voltage	0...5 V	M12 4-pin	Chrome-plated brass	66	1202530144
			0...4	Analog	Voltage	0…10 V	M12 4-pin	Chrome-plated brass	66	1202530145
M12	Normal	Quasi-emb.	0...6	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	50	1202530146
			0...6	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	50	1202530147
			0...6	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	60	1202530148
			0...6	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	60	1202530149
M12	Short	Quasi-emb.	0...6	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	35	1202530166
			0...6	Analog	Voltage	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	35	1202530167
			0...6	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	45	1202530168
			0...6	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	45	1202530169

Inductive sensors

Extra Distance - 500 Series

CONTRINEX molex

Extra Distance Analog Output

M18

M18 - Normal

M18 - Short

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Polarity	Output	Voltage output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Normal	Quasi-embeddable	0...10	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 3 wire	Chrome-plated brass	51	1202530150
			0...10	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 3 wire	Chrome-plated brass	51	1202530151
			0...10	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	63.5	1202530152
			0...10	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	63.5	1202530153
		Non-embeddable	0...20	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	51	1202530154
			0...20	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	51	1202530155
			0...20	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	63.5	1202530156
			0...20	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	63.5	1202530157
M18	Short	Quasi-embeddable	0...10	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 3 wire	Chrome-plated brass	36	1202530170
			0...10	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	36	1202530171
			0...10	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	48.5	1202530172
			0...10	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	48.5	1202530173
		Non-embeddable	0...20	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	36	1202530174
			0...20	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	36	1202530175
			0...20	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	48.5	1202530176
			0...20	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	48.5	1202530177

Inductive sensors

Extra Distance - 500 Series

M30 - Normal

M30 - Short

Extra Distance Analog Output

M30

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Polarity	Output	Voltage output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Normal	Quasi-embeddable	0...20	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	60	1202530158
			0...20	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	60	1202530159
			0...20	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	73.5	1202530160
			0...20	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	73.5	1202530161
		Non-embeddable	0...40	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	60	1202530162
			0...40	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	60	1202530163
			0...40	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	73.5	1202530164
			0...40	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	73.5	1202530165
M30	Short	Quasi-embeddable	0...20	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	35	1202530178
			0...20	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	35	1202530179
			0...20	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	48.5	1202530180
			0...20	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	48.5	1202530181
		Non-embeddable	0...40	Analog	Voltage/ Current	0...5 V	PUR, 2 m, 4 wire	Chrome-plated brass	35	1202530182
			0...40	Analog	Voltage/ Current	0…10 V	PUR, 2 m, 4 wire	Chrome-plated brass	35	1202530183
			0...40	Analog	Voltage/ Current	0...5 V	M12 4-pin	Chrome-plated brass	48.5	1202530184
			0...40	Analog	Voltage/ Current	0…10 V	M12 4-pin	Chrome-plated brass	48.5	1202530185

Inductive sensors

Full Inox - 700 Series

Product range - Extreme

Only the toughest sensors survive the most extreme environments, and Contrinex EXTREME inductive sensors from the Full Inox family are ideally equipped for the job. Thanks to one-piece stainless-steel (V2A/AISI 303) construction and a hermetically sealed cable entry, Extreme sensors are corrosion-resistant, impervious to oil, and pressure-resistant to 100 bar. Rugged, reliable and highly accurate, the EXTREME range is at home in the most challenging circumstances.

Specification / Key Advantages

Mechanically and Chemically extremely robust
Extremely rugged Full Inox types (one piece stainless-steel housing)
Corrosion resistant
IP 68 and IP 69K
Pressure resistant up to 100 bar (1451 psi)
IO-Link ready (PNP NO output)
Long operating distance (Sn 3 mm - 40 mm)
Outstanding temperature stability -25... +85°C

High quality ASICs
Output current ≤ 200 mA
Supply voltage range 10 ... 30 VDC
Factor 1 on Steel and aluminium

Automotive Industry

Mobile equipment

Machine tools

Cranes

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

M8 - Normal

Full Inox Extreme

M8

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Embeddable	3	1000	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	1202530529
			3	1000	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	1202530530
			3	1000	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	IO-Link 1202530531
			3	1000	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	1202530532
			3	1000	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	60	1202530533
			3	1000	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	60	1202530534
			3	1000	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	60	IO-Link 1202530535
			3	1000	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	60	1202530536
			3	1000	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	1202530537
			3	1000	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530538
			3	1000	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	IO-Link 1202530539
			3	1000	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530540
		Non-embeddable	6	700	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	1202530541
			6	700	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	1202530542
			6	700	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	IO-Link 1202530543
			6	700	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	45	1202530544
			6	700	NPN	Normally open (NO)	M8 3-pin	Stainless-steel V2A	60	1202530545
			6	700	NPN	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	60	1202530546
			6	700	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	60	IO-Link 1202530547
			6	700	PNP	Normally closed (NC)	M8 3-pin	Stainless-steel V2A	60	1202530548
			6	700	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	1202530549
			6	700	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530550

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

Full Inox Extreme

M8 - M12

M8 - Normal

M12 - Normal

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Non-emb.	6	700	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	IO-Link 1202530551
			6	700	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530552
M12	Normal	Embeddable	6	600	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530553
			6	600	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530554
			6	600	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	IO-Link 1202530555
			6	600	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530556
			6	600	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	1202530557
			6	600	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530558
			6	600	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	IO-Link 1202530559
			6	600	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530560
		Non-embeddable	10	400	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530561
			10	400	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530562
			10	400	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	IO-Link 1202530563
			10	400	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530564
			10	400	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	1202530565
			10	400	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530566
			10	400	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	IO-Link 1202530567
			10	400	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	60	1202530568

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

M18 - Normal

Full Inox Extreme

M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Normal	Embeddable	10	200	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	51	1202530569
			10	200	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	51	1202530570
			10	200	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	51	IO-Link 1202530571
			10	200	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	51	1202530572
			10	200	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	1202530573
			10	200	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	63.5	1202530574
			10	200	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	IO-Link 1202530575
			10	200	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	63.5	1202530576
		Non-embeddable	20	200	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530577
			20	200	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530578
			20	200	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	IO-Link 1202530579
			20	200	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530580
			20	200	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	1202530581
			20	200	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	63.5	1202530582
			20	200	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	IO-Link 1202530583
			20	200	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	63.5	1202530584

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

Full Inox Extreme

M30

M30 - Normal

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Normal	Embeddable	20	125	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530585
			20	125	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530586
			20	125	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	IO-Link 1202530587
			20	125	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	50	1202530588
			20	125	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	1202530589
			20	125	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	63.5	1202530590
			20	125	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	IO-Link 1202530591
			20	125	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	63.5	1202530592
		Non-embeddable	40	90	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	60	1202530593
			40	90	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	60	1202530594
			40	90	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	60	IO-Link 1202530595
			40	90	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	60	1202530596
			40	90	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V2A	73.5	1202530597
			40	90	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	73.5	1202530598
			40	90	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	73.5	IO-Link 1202530599
			40	90	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V2A	73.5	1202530600

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

C23 - Normal

Full Inox Extreme

C23

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing dimension (mm)	Standard Order No
C23 (20x32)	Normal	Embeddable	7	180	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	20x32	1202530617
			7	180	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	20x32	1202530618
			7	180	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	20x32	IO-Link 1202530619
			7	180	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	20x32	1202530620
			7	180	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	20x32	1202530621
			7	180	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	20x32	1202530622
			7	180	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	20x32	IO-Link 1202530623
			7	180	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	20x32	1202530624

Inductive sensors

Full Inox - 700 Series

Product range - Miniature

Size is often a critical constraint when selecting sensors for position- or presence-sensing. The Contrinex MINIATURE Full Inox range, meets this constraint without compromising on functionality.
Available in plain and threaded sizes from Ø 4 to M5, Contrinex MINIATURE Full Inox inductive sensors are ideal for applications where space is limited, including tool-selection, robotic position-sensing and control of micro-mechanisms.

Specification / Key Advantages

Extremely robust one-piece stainless-steel housing corrosion resistant
IP 68 and IP 69K, sea water resistant
Pressure resistant up to 80 bar (1160 psi)
3 mm operating distance
IO-Link ready (PNP NO output)
Outstanding temperature stability -25... +85°C
High quality ASICs
Output current ≤ 200 mA
Supply voltage range 10 ... 30 VDC
Factor 1 on Steel and aluminium

Robotics

Machine tools

Automotive industry

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

Full Inox Miniature

Ø4 - M5

Ø4 - Normal

M5 - Normal

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
Ø4	Normal	Non-embeddable	3	1200	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	1202530601
			3	1200	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	1202530602
			3	1200	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	IO-Link 1202530603
			3	1200	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	1202530604
			3	1200	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	1202530605
			3	1200	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	1202530606
			3	1200	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	IO-Link 1202530607
			3	1200	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	1202530608
M5	Normal	Non-embeddable	3	1200	NPN	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	1202530609
			3	1200	NPN	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	1202530610
			3	1200	PNP	Normally open (NO)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	IO-Link 1202530611
			3	1200	PNP	Normally closed (NC)	PUR, 2 m, 3 wire	Stainless-steel V2A	30	1202530612
			3	1200	NPN	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	1202530613
			3	1200	NPN	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	1202530614
			3	1200	PNP	Normally open (NO)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	IO-Link 1202530615
			3	1200	PNP	Normally closed (NC)	PUR, 0.2 m + M8 3-pin	Stainless-steel V2A	30	1202530616

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

Product range - Washdown

WASHDOWN inductive sensors are certified to operate continuously and reliably in the harsh conditions of the food, beverage and pharmaceutical industries, ensuring uninterrupted production. With Ecolab approval and rated to IP 68 and IP 69K, they are pressure resistant up to 80 bar, food safe and corrosion resistant.
WASHDOWN sensors meet the increasingly demanding sensing needs of the food, beverage and pharmaceutical industries, delivering best-in-class performance with an attractive total cost of ownership.

Specification / Key Advantages

Corrosion resistant
Food safe (FDA approved stainless steel V4A)
Ecolab approved
IP 68 / IP 69K protection, (sea water resistant)
IO-Link ready (PNP NO output)
Extremely rugged Full Inox types (one piece stainless-steel housing)
factor 1 on steel and aluminum
Long operating distance (Sn 2 mm - 40 mm)
Outstanding temperature stability -25... +85°C
High quality ASICs
Fully submersible

ASIC | IO-Link | CE | IP 68 69K | CONDET | cULus LISTED | ECOLAB

Green energy and environment

Food processing

Marine applications

Medical

Food & beverage

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

M12 - Normal

Full Inox Washdown

M12

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M12	Normal	Embeddable	6	600	NPN	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	1202530625
			6	600	NPN	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	1202530626
			6	600	PNP	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	IO-Link 1202530627
			6	600	PNP	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	1202530628
			6	400	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V4A	60	1202530629
			6	400	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	60	1202530630
			6	400	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V4A	60	IO-Link 1202530631
			6	400	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	60	1202530632
		Non-embeddable	10	400	NPN	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	1202530633
			10	400	NPN	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	1202530634
			10	400	PNP	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	IO-Link 1202530635
			10	400	PNP	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	69.2	1202530636
			10	600	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V4A	60	1202530637
			10	600	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	60	1202530638
			10	600	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V4A	60	IO-Link 1202530639
			10	600	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	60	1202530640

Inductive sensors

Full Inox - 700 Series

CONTRINEX molex

M18 - Normal

Full Inox Washdown

M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M18	Normal	Embeddable	10	300	NPN	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530641
			10	300	NPN	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530642
			10	300	PNP	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	IO-Link 1202530643
			10	300	PNP	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530644
			10	300	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	1202530645
			10	300	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530646
			10	300	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	IO-Link 1202530647
			10	300	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530648
		Non-embeddable	20	200	NPN	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530649
			20	200	NPN	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530650
			20	200	PNP	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	IO-Link 1202530651
			20	200	PNP	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530652
			20	200	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	1202530653
			20	200	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530654
			20	200	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	IO-Link 1202530655
			20	200	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530656

Inductive sensors

Full Inox - 700 Series

Full Inox Washdown

M18

M30 - Normal

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M30	Normal	Embeddable	20	100	NPN	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530657
			20	100	NPN	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530658
			20	100	PNP	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	IO-Link 1202530659
			20	100	PNP	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530660
			20	100	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	1202530661
			20	100	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530662
			20	100	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	IO-Link 1202530663
			20	100	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530664
		Non-embeddable	40	90	NPN	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530665
			40	90	NPN	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530666
			40	90	PNP	Normally open (NO)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	IO-Link 1202530667
			40	90	PNP	Normally closed (NC)	TPE-S, 2 m, 3 wire	Stainless-steel V4A	70.2	1202530668
			40	90	NPN	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	1202530669
			40	90	NPN	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530670
			40	90	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V4A	63.5	IO-Link 1202530671
			40	90	PNP	Normally closed (NC)	M12 4-pin	Stainless-steel V4A	63.5	1202530672

Inductive sensors

Full Inox - 700 Series

Product range - Weld-Immune

Contrinex WELD-IMMUNE inductive sensors are ideal for the hostile working environments found in automotive factories and other industrial welding plants. One-piece, stainless-steel (V2A/AISI 304) construction ensures that weld-immune sensors withstand direct contact with weld spatter and are easily cleaned, ensuring minimal down-time. Best-in-class sensing ranges of up to 10mm eliminate the risk of collision damage – a frequent occurrence when operating in close proximity to moving machine parts.

Specification / Key Advantages

Resistant to electromagnetic fields of up to 40 millitesla
Extremely robust and Resistant to welding spatter
Easy to clean - even using harsh methods
No false switching caused by metal dust or chips
Factor 1 on steel and aluminium
No extra protection needed
Long operating distance (Sn 3 mm - 10 mm)
Outstanding temperature stability -25... +85°C
High quality ASICs
Output current ≤ 200 mA

Automotive industry

Welding equipment

Inductive sensors

Full Inox - 700 Series

M8 - Normal

M12 - Normal

M18 - Normal

Full Inox Weld-Immune

M8 - M12 - M18

Housing size	Body Type	Mounting	Operating distance (Sn mm)	Switching frequency (Hz)	Polarity	Output	Connection type	Housing material	Housing length (mm)	Standard Order No
M8	Normal	Emb.	3	15	PNP	Normally open (NO)	M8 3-pin	Stainless-steel V2A	60	1202530673
M12	Normal	Emb.	6	15	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	60	1202530674
M18	Normal	Emb.	10	15	PNP	Normally open (NO)	M12 4-pin	Stainless-steel V2A	63.5	1202530675

PHOTOELECTRIC SENSORS

Operating principle

The light-emitting diode (LED) emits a beam of modulated light towards the target. This beam is interrupted by the target, causing partial reflection. A part of the reflected light reaches the sensing face of the receiver. Depending on the operating principle, either the interrupted beam or the reflected light is used for further processing.

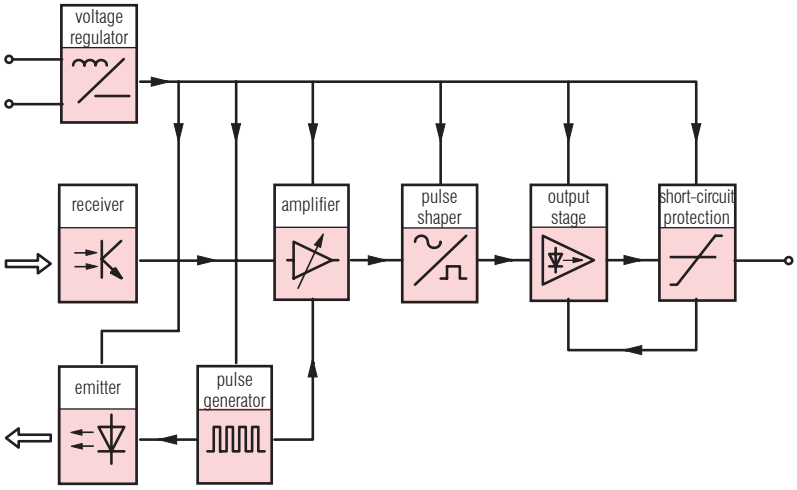


Fig. 8: Functional blocks of a photoelectric sensor

Technology families

Contrinex photoelectric devices are divided into four **technology families**, depending on their operating principle. The program includes energetic **diffuse** sensors, diffuse sensors with **background suppression**, **reflex** sensors and **through-beam** sensors.

DIFFUSE

Versatile and cost-effective

A diffuse-mode, or energetic-diffuse, photoelectric sensor is a reflective sensor, containing a transmitter and a receiver in a single housing. The sensor emits a light beam toward a distant target that acts as a reflector, returning part of the transmitted light to the sensor. The receiver detects the amount of light reflected by the target, triggering the sensor when the light intensity reaches a threshold value. Diffuse-mode sensors are cost-effective as they do not require separate reflectors or receivers, and detect reflective targets with ease. Sensing range depends on the target's size, shape, color and surface finish, although sensor sensitivity is adjustable during installation to compensate for targets with poor reflective qualities.

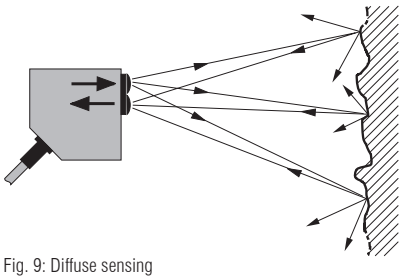


Fig. 9: Diffuse sensing

BACKGROUND SUPPRESSION

Excellent suppression of light-colored backgrounds

Diffuse-mode photoelectric sensors with background suppression emit a focused light beam toward a distant target. Part of the beam is reflected from the target and returns to the sensor, striking a position-sensitive receiver. The receiver distinguishes between reflections from the target and reflections from background objects, only triggering the sensor when the signal reaches a value that relates to the preset target distance.
The sensing range is practically insensitive to the target's size, color, shape and surface finish, and background-suppression sensors provide highly reliable detection of "difficult" targets, even against a light background. Stable, accurate detection of small, fast-moving parts on conveyors or automated machinery is possible over the entire sensing range, eliminating false triggering by objects in the background.

REFLEX

Long sensing range in a single-housing device

A reflex, or reflective, photoelectric sensor contains a transmitter and a receiver in a single housing, and emits a pulsed, focused light beam toward a distant reflector. Reflected light returns to the sensor, arriving at the receiver. When a target object interrupts the light beam, the receiver detects the reduced light intensity and triggers the sensor.

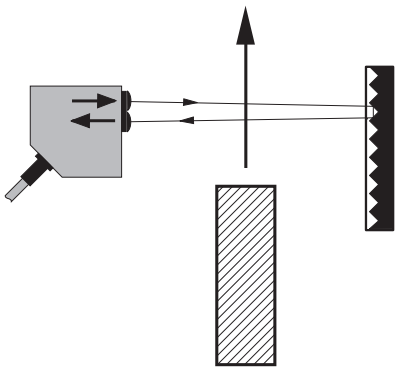


Fig. 10: Reflex sensing

The relatively high level of reflected light allows reflex sensors to achieve sensing distances up to eight meters. For applications where the target object itself reflects light back toward the sensor, models with polarization filters are available. The filters ensure that only light returned from the reflector reaches the receiver, ensuring reliable detection, even with reflective targets.

THROUGH-BEAM

Emitter and receiver in separate housings for sensing ranges from 0 to 50 m

A through-beam photoelectric sensor comprises an emitter and receiver, each mounted in a separate housing. The emitter is aligned so that the greatest possible amount of pulsed light from its emitting diode reaches the receiver (Fig. 11). The receiver, which is mounted beyond the target area, processes incoming light in such a way that it is clearly separated from ambient and other light sources. Any interruption of the light beam by a target triggers the sensor, causing its output signal to switch. For reliable operation, the target must be completely opaque, and its size should be at least equal to the diameter of the receiver's aperture.

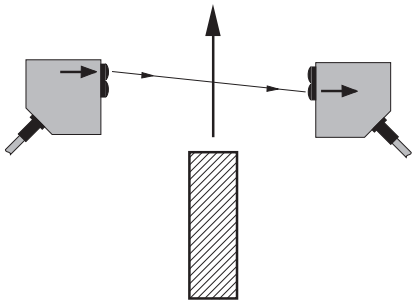


Fig. 11: Through-beam sensing

Contrinex through-beam photoelectric sensors are ideal for industrial applications where sensing components must be mounted some distance from the target area. Through-beam sensors utilize infrared, visible and laser light sources to detect opaque and semi-transparent targets, reliably and repeatably, at extended distances. They are available in cylindrical versions from subminiature (Ø 4) to small (M18) and cubic versions from miniature (20 mm x 30 mm x 10 mm) to small (40 mm x 50 mm x 15 mm).

MINIATURE

Smallest on the market

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

The **C12** Series (13.5 mm x 21.8 mm x 7.7 mm) with small visible light spot thanks to red pinpoint LED offers long sensing ranges up to 2000 mm in a through-beam type and 3000 mm in a polarized reflex type. Two background suppression types are available with fixed sensing ranges up to 15 mm or 30 mm. A third type with 3-turn potentiometer (13.5 mm x 27.5 mm x 7.7 mm) reliably detects objects up to 120 mm.

Product ranges

STANDARD

First-class performance for general use

Contrinex **Standard** photoelectric sensors are ideal for general position- and presence-detection in almost any industry. With first-class sensing ranges and outstanding background suppression characteristics, the Standard range of sensors delivers very high accuracy and reliability. Light sources include infrared, laser and pinpoint LED.

The **Standard** range offers a wide choice of cubic sizes: **C23** (20 x 30 x10 mm) and **4050** (40 x 50 x 15 mm). Cylindrical types are available in sizes **M12** and **M18**, including some M18 types with housings adapted for right-angle detection.

Standard C23 and **M18P** series are high quality ASIC sensors with an integral **IO-Link** interface in PNP types. This makes them particularly suitable for smart factory applications. IO-Link extends sensor functionality to include continuous monitoring of process data, continuous diagnosis of sensor status, advanced parameter settings, sensitivity adjustment, a remote teach function and easy checking of sensor ID, to ensure the right sensor is at the right place.

TRANSPARENT OBJECT

Outstanding reliability and ease of adjustment

The Contrinex **TRU-C23** photoelectric sensor is ideally suited for the presence control of transparent objects. Its patented technology uses **UV light**. Since transparent materials like plastic or glass absorb large amounts of polarized UV light, it is very easy to set the threshold at which the sensor switches. The shape or thickness of the target has no influence on detection. In addition, sensor performance is unaffected by dirt, water drops or aging.

The sensor system comprises an LED that emits polarized UV light and a UV reflector. Overall, the sensor's operating range is around **1200 mm**. Special optics with autocollimation ensure reliable detection and no blind zone, even close to the sensor or through a small notch.

For applications requiring the detection of thicker or larger transparent objects, the **C23 Transparent Standard** can be the ideal solution. It operates with polarized, red light and has a maximum operating range up to **5000 mm**. Typical fields of application can be found in the food, pharmaceutical and packaging industries. Both sensor types include an IO-Link interface.

COLOR AND CONTRAST

Excellent resolution for smallest variations

Color photoelectric sensors utilize energetic-diffuse sensing technology to detect variations in target color, allowing color sorting or color control. A "teach-in" function is used to program up to three separate outputs. Contrinex color photoelectric sensors also feature five selectable tolerance levels for each output, enabling the sensor to recognize or ignore even the smallest variations of color.

Contrast sensors are ideal for detecting print marks in printing, labelling and packaging processes. Using a narrowly focused light beam and RGB emission technology, contrast sensors automatically select the best emission color (red, green or blue) during the teach-in procedure. Excellent contrast resolution, a high switching frequency (up to 10 kHz) and five tolerance levels ensure accurate detection and positioning, even when contrast differences are minimal. The integral **IO-Link** interface may be used to reduce changeover times through remote teach-in and parameterization. Other control functions, including monitoring, diagnosis and switching timer adjustment are also available.

Contrinex color and contrast sensors have a rugged PBTP housing (40 mm x 50 mm x 15 mm) with **IP67** enclosure rating and are available in cable or adjustable (0°, 45° or 90°) connector versions.

IO-Link functionality* with photoelectric sensors (PNP types)

1. **Data monitoring:**
Detection status is monitored and continuously transmitted through IO-Link process data. This data contains both the detection state and the stability of detection (sufficient detection margin). It is possible, therefore, to determine whether the sensor is working too close to its detection threshold, for example due to window contamination.

2. **Diagnosis**:
The operating state of the sensor is checked. In case of wire break, under-voltage, disturbances on the receiver, sensor malfunction or installation of the wrong sensor, information is provided directly through IO-Link to enable fast repair, maintenance and replacement.

3. **Sensitivity and teach:**
The sensitivity of the sensor can be adjusted remotely by changing the threshold. Alternatively, the teach function can be used to adapt the threshold to the application. Calibrated sensing ranges ensure easy sensor replacement by uploading the existing sensitivity to the replacement sensor.

4. **Light-on/Dark-on selection:**
The output switching mode can be selected as light-on or dark-on. A single sensor type is configurable for the various needs of an application. This helps reduce the number of different sensor types required in stock.

5. **Switching timer:**
The timing of output switching can be configured. Depending on the needs of an application, output switching can be delayed or the duration stretched.

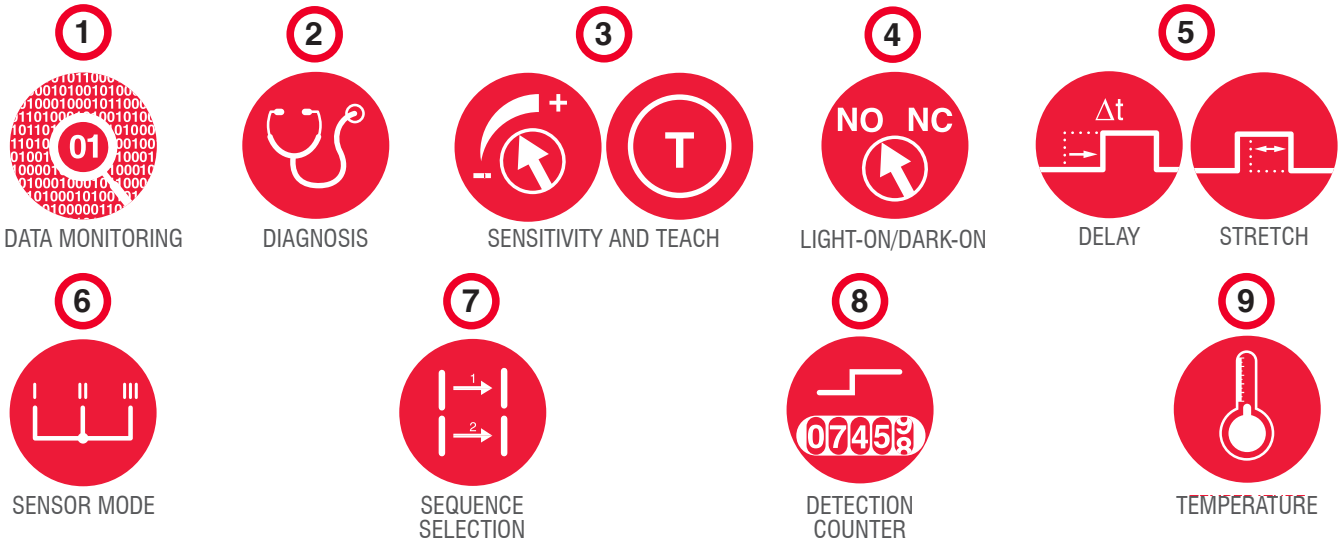
6. **Sensor mode:**
3 different modes are selectable depending on the application needs: “Normal”, “Fast” and “Fine”. “Normal” mode is a good balance of speed and precision. In “Fast” mode, speed is higher and in “Fine” mode precision is higher.

7. **Sequence selection:**
For cross-talk immunity with through-beam sensors, up to 9 different emitting sequences can be selected to pair the emitter with the receiver.

8. **Detection counter:**
Detection events are counted. By registering the number of detections, it is possible to calculate the speed or number of parts. The counter can be reset by means of a unique IO-Link message.

9. **Temperature:**
The internal temperature of the sensor is measured continuously, which provides an indication about the ambient temperature in the application. Moreover, the maximum temperature measured is saved for diagnosis and preventive maintenance purposes.

* Functionalities may vary depending on series and sensor type



Photoelectric sensors
Cylindrical housing

CONTRINEX molex

Product range - Miniature (M5/Ø4)

Contrinex miniature diffuse sensors pack exceptional position- and presence-sensing performance into the smallest self-contained photoelectric sensors on the market. Designers have the choice of through-beam or diffuse sensors in ø4 and M5 cylindrical metal housings that offer multiple mounting methods and beam orientation.

Specification / Key Advantages

Rugged stainless steel housing
Diffuse and through-beam operating principles
Shock & vibration resistant
Embeddable
High quality ASICs
IO-Link*
Accurate target detection due to cylindrical light beam
High system reserves (excess gain)
Pre-failure warning (pollution monitoring)

*available in 2019

Machine tools

Micromechanical grippers

Detection of wires or small parts

PCB component presence check

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

Ø4 - Through-beam

Ø4 - Diffuse

Miniature

Ø4 - M5

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Miniature	Ø4 (smooth barrel)	Through-beam (Receiver)	Emitter	-	LED, infrared 880 nm	No	-	-	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540066
			250 mm	250	LED, infrared 880 nm	No	NPN	Dark-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540062
			250 mm	250	LED, infrared 880 nm	No	PNP	Dark-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540063
			Emitter	-	LED, infrared 880 nm	No	-	-	M8 3-pin	Stainless steel V2A	45	1202540067
			250 mm	250	LED, infrared 880 nm	No	NPN	Dark-on	M8 3-pin	Stainless steel V2A	45	1202540064
			250 mm	250	LED, infrared 880 nm	No	PNP	Dark-on	M8 3-pin	Stainless steel V2A	45	1202540065
Miniature	Ø4 (smooth barrel)	Diffuse	10 mm	250	LED, infrared 880 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540076
			10 mm	250	LED, infrared 880 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540077
			20 mm	250	LED, infrared 880 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540072
			20 mm	250	LED, infrared 880 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540073
			50 mm	250	LED, infrared 880 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540068
			50 mm	250	LED, infrared 880 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540069
			10 mm	250	LED, infrared 880 nm	No	NPN	Light-on	M8 3-pin	Stainless steel V2A	45	1202540078
			10 mm	250	LED, infrared 880 nm	No	PNP	Light-on	M8 3-pin	Stainless steel V2A	45	1202540079
			20 mm	250	LED, infrared 880 nm	No	NPN	Light-on	M8 3-pin	Stainless steel V2A	45	1202540074
			20 mm	250	LED, infrared 880 nm	No	PNP	Light-on	M8 3-pin	Stainless steel V2A	45	1202540075
			50 mm	250	LED, infrared 880 nm	No	NPN	Light-on	M8 3-pin	Stainless steel V2A	35	1202540070
			50 mm	250	LED, infrared 880 nm	No	PNP	Light-on	M8 3-pin	Stainless steel V2A	45	1202540071

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

Miniature

Ø4 - M5

M5 - Through-beam

M5 - Diffuse

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Miniature	M5	Through-beam (Receiver)	Emitter	-	LED, infrared 880 nm	No	-	-	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540084
			250 mm	250	LED, infrared 880 nm	No	NPN	Dark-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540080
			250 mm	250	LED, infrared 880 nm	No	PNP	Dark-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540081
			Emitter	-	LED, infrared 880 nm	No	-	-	M8 3-pin	Stainless steel V2A	45	1202540085
			250 mm	250	LED, infrared 880 nm	No	NPN	Dark-on	M8 3-pin	Stainless steel V2A	45	1202540082
			250 mm	250	LED, infrared 880 nm	No	PNP	Dark-on	M8 3-pin	Stainless steel V2A	45	1202540083
Miniature	M5	Diffuse	10 mm	250	LED, infrared 880 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540094
			10 mm	250	LED, infrared 880 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540095
			20 mm	250	LED, infrared 880 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540090
			20 mm	250	LED, infrared 880 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540091
			50 mm	250	LED, infrared 880 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540086
			50 mm	250	LED, infrared 880 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Stainless steel V2A	35	1202540087
			10 mm	250	LED, infrared 880 nm	No	NPN	Light-on	M8 3-pin	Stainless steel V2A	45	1202540096
			10 mm	250	LED, infrared 880 nm	No	PNP	Light-on	M8 3-pin	Stainless steel V2A	45	1202540097
			20 mm	250	LED, infrared 880 nm	No	NPN	Light-on	M8 3-pin	Stainless steel V2A	45	1202540092
			20 mm	250	LED, infrared 880 nm	No	PNP	Light-on	M8 3-pin	Stainless steel V2A	45	1202540093
			50 mm	250	LED, infrared 880 nm	No	NPN	Light-on	M8 3-pin	Stainless steel V2A	45	1202540088
			50 mm	250	LED, infrared 880 nm	No	PNP	Light-on	M8 3-pin	Stainless steel V2A	35	1202540089

Photoelectric sensors
Cylindrical housing

Product range - Standard M12

Contrinex M12 photoelectric sensors provide market-leading performance and reliability in a rugged miniature package that ensures excellent resistance to shock and accidental impact. Best-in-class sensing distances are achieved utilizing through-beam, diffuse or polarized reflex sensing principles. Easy adjustment due to visible red light. Particularly suited for rough industrial environments and where space is limited.

Specification / Key Advantages

Sensing range up to 10m
Rugged metal housing
Shock & vibration resistant due to fully potted electronics
High system reserves (excess gain)
Easy adustment (due to visible red light)
IO-Link*

*available in 2019

Textile spinning machine automation

Beverage filling machines

Conveyor systems

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

M12 - Through-beam

M12 - Diffuse

M12 - Reflex

Standard

M12

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Standard	M12	Through-beam	Emitter	-	LED, red 660 nm	No	-	Test input	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540110
			10000 mm	1000	LED, red 660 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540106
			10000 mm	1000	LED, red 660 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540107
			Emitter	-	LED, red 660 nm	No	-	Test input	M12 4-pin	Chrome-plated brass	60	1202540111
			10000 mm	1000	LED, red 660 nm	No	NPN	Light-on	M12 4-pin	Chrome-plated brass	60	1202540108
			10000 mm	1000	LED, red 660 nm	No	PNP	Light-on	M12 4-pin	Chrome-plated brass	60	1202540109
Standard	M12	Diffuse	300 mm	1000	LED, red 660 nm	potentiometer	NPN	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540098
			300 mm	1000	LED, red 660 nm	potentiometer	PNP	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540099
			300 mm	1000	LED, red 660 nm	potentiometer	NPN	Light-on	M12 4-pin	Chrome-plated brass	60	1202540100
			300 mm	1000	LED, red 660 nm	potentiometer	PNP	Light-on	M12 4-pin	Chrome-plated brass	60	1202540101
Standard	M12	Reflex	1500 mm	1000	LED, red 660 nm	No	NPN	Dark-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540102
			1500 mm	1000	LED, red 660 nm	No	PNP	Dark-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540103
			1500 mm	1000	LED, red 660 nm	No	NPN	Dark-on	M12 4-pin	Chrome-plated brass	60	1202540104
			1500 mm	1000	LED, red 660 nm	No	PNP	Dark-on	M12 4-pin	Chrome-plated brass	60	1202540105

Photoelectric sensors

Cylindrical housing

Product range - Standard M18 Plastic

Small, flexible and easy to integrate into different machine environments: all these requirements are met by the new photoelectric sensors of Contrinex's short M18 series. This includes reflex, through-beam and diffuse sensors with or without background suppression. The small plastic housings with M18 diameter are only 33 mm long in the cable version or 37 mm in the connector type. Sensors are embeddable and easy to install even in confined spaces. Background suppression types feature a pinpoint LED and specially adapted optics, ensuring excellent characteristics. All PNP versions include IO-Link communication, a key enabling technology for Industry 4.0 and the Industrial Internet of Things.

Specification / Key Advantages

Sensing range up to 30m
First-class sensing ranges
Short housing: M18 x 33 mm (cable version), M18 x 37 mm (connector version)
Excellent background suppression characteristics with pinpoint LED
Mutual interference immunity on all PNP sensors
Easy flush mounting
Easy-to-mount special accessories for right-angle emission
High quality ASICs
IO-Link

Textile spinning machine automation

Beverage filling machines

Conveyor systems

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

M18 Plastic - Through-beam

Standard

M18 Plastic

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Standard	M18 Plastic	Through-beam	Emitter	-	LED, red 630 nm	IO-Link	-	IO-Link	PVC, 2 m, 3 wire	ABS	33	IO-Link 1202540122
			0...25000 mm	1000	LED, red 630 nm	-	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	33	1202540119
			0...25000 mm	1000	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	33	IO-Link 1202540118
			Emitter	-	LED, red 630 nm	IO-Link	-	IO-Link	M12 4-pin	ABS	37	IO-Link 1202540123
			0...25000 mm	1000	LED, red 630 nm	-	NPN	Light-on + Dark-on	M12 4-pin	ABS	37	1202540121
			0...25000 mm	1000	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	M12 4-pin	ABS	37	IO-Link 1202540120

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

M18 Plastic - Diffuse

M18 Plastic - Reflex

Standard

M18 Plastic

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Standard	M18 Plastic	Diffuse	5...1000 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link	PVC, 2 m, 3 wire	ABS	33	IO-Link 1202540112
			5...1000 mm	1500	LED, red 630 nm	potentiometer	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	33	1202540115
			5...1000 mm	1500	LED, red 630 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	33	IO-Link 1202540114
			5...1000 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link	M12 4-pin	ABS	37	IO-Link 1202540113
			5...1000 mm	1500	LED, red 630 nm	potentiometer	NPN	Light-on + Dark-on	M12 4-pin	ABS	37	1202540117
			5...1000 mm	1500	LED, red 630 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	M12 4-pin	ABS	37	IO-Link 1202540116
Standard	M18 Plastic	Reflex	30...5500 mm	1500	LED, red 630 nm	-	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	33	1202540125
			30...5500 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	33	IO-Link 1202540124
			30...5500 mm	1500	LED, red 630 nm	-	NPN	Light-on + Dark-on	M12 4-pin	ABS	37	1202540127
			30...5500 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	M12 4-pin	ABS	37	IO-Link 1202540126

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

Standard

M18 Plastic

M18 Plastic - Background suppression

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Standard	M18 Plastic	Background suppression	15...210 mm	700	Pinpoint LED, red 640 nm	potentiometer	NPN	Light-on + Dark-on	PVC, 2 m, 3 wire	ABS	33	1202540133
			15...210 mm	700	Pinpoint LED, red 640 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 3 wire	ABS	33	IO-Link 1202540132
			15...210 mm	700	Pinpoint LED, red 640 nm	potentiometer	NPN	Light-on + Dark-on	M12 4-pin	ABS	37	1202540135
			15...210 mm	700	Pinpoint LED, red 640 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	M12 4-pin	ABS	37	IO-Link 1202540134
			15...210 mm	700	Pinpoint LED, red 640 nm	Teach	NPN	Light-on + Dark-on	PVC, 2 m, 3 wire	ABS	33	1202540129
			15...210 mm	700	Pinpoint LED, red 640 nm	Teach	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 3 wire	ABS	33	IO-Link 1202540128
			15...210 mm	700	Pinpoint LED, red 640 nm	Teach	NPN	Light-on + Dark-on	M12 4-pin	ABS	37	1202540131
			15...210 mm	700	Pinpoint LED, red 640 nm	Teach	PNP	Light-on/ IO-Link + Dark-on	M12 4-pin	ABS	37	IO-Link 1202540130

Photoelectric sensors

Cylindrical housing

Product range - Standard M18

Small, rugged and highly reliable, Contrinex M18 photoelectric sensors are ideal for demanding industrial environments, including automotive assembly, packaging machinery, conveyor systems and general automation equipment. A comprehensive range comprises diffuse sensors (both energetic and background-suppression variants), reflex sensors and through-beam sensors with the option of either axial or lateral sensing.

Specification / Key Advantages

M18 sensor series
Models for lateral sensing
Rugged metal housing
Shock & vibration resistant due to fully potted electronics
Sensing range up to 20 m
IO-Link*
High quality ASICs

*available in 2019

Textile spinning machine automation

Beverage filling machines

Conveyor systems

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

M18 - Through-beam

M18 - Diffuse

Standard

M18

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Standard	M18	Through-beam	Emitter	-	LED, red 660 nm	No	-	Test input	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540148
			20000 mm	1000	LED, red 660 nm	No	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	Chrome-plated brass	50	1202540144
			20000 mm	1000	LED, red 660 nm	No	PNP	Light-on + Dark-on	PVC, 2 m, 4 wire	Chrome-plated brass	50	1202540145
			Emitter	-	LED, red 660 nm	No	-	Test input	M12 4-pin	Chrome-plated brass	63.5	1202540149
			20000 mm	1000	LED, red 660 nm	No	NPN	Light-on + Dark-on	M12 4-pin	Chrome-plated brass	63.5	1202540146
			20000 mm	1000	LED, red 660 nm	No	PNP	Light-on + Dark-on	M12 4-pin	Chrome-plated brass	63.5	1202540147
Standard	M18	Diffuse	40...600 mm	1000	LED, red 660 nm	potentiometer	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	Chrome-plated brass	50	1202540136
			40...600 mm	1000	LED, red 660 nm	potentiometer	PNP	Light-on + Dark-on	PVC, 2 m, 4 wire	Chrome-plated brass	50	1202540137
			40...600 mm	1000	LED, red 660 nm	potentiometer	NPN	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540140
			40...600 mm	1000	LED, red 660 nm	potentiometer	PNP	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540141
			40...600 mm	1000	LED, red 660 nm	potentiometer	NPN	Light-on + Dark-on	M12 4-pin	Chrome-plated brass	63.5	1202540138
			40...600 mm	1000	LED, red 660 nm	potentiometer	PNP	Light-on + Dark-on	M12 4-pin	Chrome-plated brass	63.5	1202540139
			40...600 mm	1000	LED, red 660 nm	potentiometer	NPN	Light-on	M12 4-pin	Chrome-plated brass	63.5	1202540142
			40...600 mm	1000	LED, red 660 nm	potentiometer	PNP	Light-on	M12 4-pin	Chrome-plated brass	63.5	1202540143

Photoelectric sensors

Cylindrical housing

CONTRINEX molex

M18 - Background suppression

M18 -Reflex

Standard

M18

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing length	Standard Order No
Standard	M18	Background suppression	10...120 mm	500	LED, red 660 nm	potentiometer	NPN	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540154
			10...120 mm	500	LED, red 660 nm	potentiometer	PNP	Light-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540155
			10...120 mm	500	LED, red 660 nm	potentiometer	NPN	Light-on	M12 4-pin	Chrome-plated brass	63.5	1202540156
			10...120 mm	500	LED, red 660 nm	potentiometer	PNP	Light-on	M12 4-pin	Chrome-plated brass	63.5	1202540157
Standard	M18	Reflex	2000 mm	1000	LED, red 660 nm	No	NPN	Dark-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540150
			2000 mm	1000	LED, red 660 nm	No	PNP	Dark-on	PVC, 2 m, 3 wire	Chrome-plated brass	50	1202540151
			2000 mm	1000	LED, red 660 nm	No	NPN	Dark-on	M12 4-pin	Chrome-plated brass	63.5	1202540152
			2000 mm	1000	LED, red 660 nm	No	PNP	Dark-on	M12 4-pin	Chrome-plated brass	63.5	1202540153

Photoelectric sensors
Cubic housing

Product range - Miniature Cubic C12

The C12 Series (13.5 mm x 21.8 mm x 7.7 mm) with small visible light spot thanks to red pinpoint LED offers long sensing ranges up to 2000 mm in a through-beam type and 3000 mm in a polarized reflex type. Two background suppression types are available with fixed sensing ranges up to 15 mm or 30 mm. A third type with 3-turn potentiometer (13.5 mm x 27.5 mm x 7.7 mm) reliably detects objects up to 120 mm.

Specification / Key Advantages

Long sensing ranges
Background suppression up to 120 mm
Excellent background suppression characteristics
45° angle cable outlet for easy installation
Plastic housing, 13 mm x 21 mm / 27 mm x 7 mm
Red pinpoint LED, small visible light spot

Micromechanical grippers

Detection of wires or small parts

PCB component presence check

Photoelectric sensors

Cubic housing

CONTRINEX molex

Miniature

Cubic C12

C12 -Through-beam

C12 -Reflex

C12 -Background suppression

C12 -Background suppression

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing dim. (mm)	Standard Order No
Cubic housing	C12 (13.5x18.9)	Through-beam	Emitter	-	Pinpoint LED, red 640 nm	No	-	-	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540004
			0...1500 mm	800	Pinpoint LED, red 640 nm	No	NPN	Dark-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540001
			0...1500 mm	800	Pinpoint LED, red 640 nm	No	PNP	Dark-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540000
			Emitter	-	Pinpoint LED, red 640 nm	No	-	-	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540005
			0...1500 mm	800	Pinpoint LED, red 640 nm	No	NPN	Dark-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540003
			0...1500 mm	800	Pinpoint LED, red 640 nm	No	PNP	Dark-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540002
Cubic housing	C12 (13.5x18.9)	Reflex	30...2500 mm	800	Pinpoint LED, red 640 nm	No	NPN	Dark-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540006
			30...2500 mm	800	Pinpoint LED, red 640 nm	No	PNP	Dark-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540007
			30...2500 mm	800	Pinpoint LED, red 640 nm	No	NPN	Dark-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540008
			30...2500 mm	800	Pinpoint LED, red 640 nm	No	PNP	Dark-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540009
Cubic housing	C12 (13.5x18.9)	Background suppression	1...15 mm	800	Pinpoint LED, red 640 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540011
			1...15 mm	800	Pinpoint LED, red 640 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540010
			1...15 mm	800	Pinpoint LED, red 640 nm	No	NPN	Light-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540013
			1...15 mm	800	Pinpoint LED, red 640 nm	No	PNP	Light-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540012
			1...30 mm	800	Pinpoint LED, red 640 nm	No	NPN	Light-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540015
			1...30 mm	800	Pinpoint LED, red 640 nm	No	PNP	Light-on	PVC, 2 m, 3 wire	ABS	13.5x18.9	1202540014
			1...30 mm	800	Pinpoint LED, red 640 nm	No	NPN	Light-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540017
			1...30 mm	800	Pinpoint LED, red 640 nm	No	PNP	Light-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x18.9	1202540016
Cubic housing	C12 (13.5x27.5)	Background suppression	20...90 mm	800	Pinpoint LED, red 640 nm	potentiometer	NPN	Light-on	PVC, 2 m, 3 wire	ABS	13.5x27.5	1202540019
			20...90 mm	800	Pinpoint LED, red 640 nm	potentiometer	PNP	Light-on	PVC, 2 m, 3 wire	ABS	13.5x27.5	1202540018
			20...90 mm	800	Pinpoint LED, red 640 nm	potentiometer	NPN	Light-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x27.5	1202540021
			20...90 mm	800	Pinpoint LED, red 640 nm	potentiometer	PNP	Light-on	PVC, 0.2 m + M8 3-pin	ABS	13.5x27.5	1202540020

Photoelectric sensors
Cylindrical housing

Product range - Cubic C23

Whatever the application, C23 series sensors meet its highest demands. Their miniature size (20 x 30 x 10 mm), first-class sensing ranges and practical accessories are ideal for limited spaces. Housings have an IP67 enclosure rating and are Ecolab-approved for use in hygienic areas. Versions with background suppression and pinpoint LED ensure high reliability and extended detection ranges. All PNP types include IO-Link communication, a key enabling technology for Industry 4.0 and the Industrial Internet of Things.

Specification / Key Advantages

First-class sensing ranges
Small plastic housing, 20 mm x 30 mm x 10 mm
Excellent background suppression characteristics with pinpoint LED
IO-Link interface available on PNP types
Mutual interference immunity
Versions available with stability alarm as second output
Enclosure rating IP67, Ecolab approved
Versatile mounting brackets for ease of installation

Sensing range up to 5000 mm

Micromechanical grippers

Detection of wires or small parts

PCB component presence check

Photoelectric sensors

Cubic housing

CONTRINEX molex

C23 - Diffuse

C23 - Through-beam

C23 - Reflex

Standard

Cubic C23

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing dim. (mm)	Standard Order No
Cubic housing	C23 (20x30)	Through-beam	Emitter	-	LED, red 630 nm	IO-Link	-	IO-Link	PVC, 2 m, 3 wire	ABS	20x30	IO-Link 1202540032
			0...25000 mm	1000	LED, red 630 nm	-	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540029
			0...25000 mm	1000	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540028
			Emitter	-	LED, red 630 nm	IO-Link	-	IO-Link	M8 3-pin	ABS	20x30	IO-Link 1202540033
			0...25000 mm	1000	LED, red 630 nm	-	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540031
			0...25000 mm	1000	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540030
Cubic housing	C23 (20x30)	Diffuse	5...1200 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link	PVC, 2 m, 3 wire	ABS	20x30	IO-Link 1202540022
			5...1200 mm	1500	LED, red 630 nm	potentiometer	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540025
			5...1200 mm	1500	LED, red 630 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540024
			5...1200 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link	M8 3-pin	ABS	20x30	IO-Link 1202540023
			5...1200 mm	1500	LED, red 630 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540026
			5...1200 mm	1500	LED, red 630 nm	potentiometer	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540027
Cubic housing	C23 (20x30)	Reflex	30...6000 mm	1500	LED, red 630 nm	-	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540035
			30...6000 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540034
			30...6000 mm	1500	LED, red 630 nm	-	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540037
			30...6000 mm	1500	LED, red 630 nm	IO-Link	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540036

Photoelectric sensors

Cubic housing

Standard

Cubic C23

C23 - Background suppression

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing dim. (mm)	Standard Order No
Cubic housing	C23 (20x30)	Background suppression	15...250 mm	1000	Pinpoint LED, red 640 nm	potentiometer	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540043
			15...250 mm	1000	Pinpoint LED, red 640 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540042
			15...250 mm	1000	Pinpoint LED, red 640 nm	potentiometer	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540045
			15...250 mm	1000	Pinpoint LED, red 640 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540044
			15...250 mm	1000	Pinpoint LED, red 640 nm	teach	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540039
			15...250 mm	1000	Pinpoint LED, red 640 nm	teach or IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540038
			15...250 mm	1000	Pinpoint LED, red 640 nm	teach	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540041
			15...250 mm	1000	Pinpoint LED, red 640 nm	teach or IO-Link	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540040

Photoelectric sensors

Cubic housing

Photoelectric sensors
Cubic housing

Product range - Transparent Cubic C23

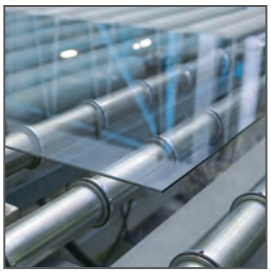
For applications requiring the detection of thicker or larger transparent objects, the C23 Transparent Standard can be the ideal solution. It operates with polarized, red light and has a maximum operating range up to 5000 mm. This sensor provides a highly favorable price-performance ratio. Typical fields of application can be found in the food, pharmaceutical and packaging industries, for example when filling glass or plastic bottles, packing in plastic or when the detection of clear packaging film is required.

Specification / Key Advantages

Sensing range up to 5000 mm
Red polarized light
Suitable for thicker or larger transparent objects
Adjustment by potentiometer or by teach button or IO-Link
Enclosure rating IP 67, Ecolab approved

Detection of clear plastic bottles

Pharmaceutical vial processing



Detection of glass sheet on conveyor

Photoelectric sensors

Cubic housing

CONTRINEX molex

C23 - Transparent reflex

Transparent

Cubic C23

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing dim. (mm)	Standard Order No
Cubic housing	C23 (20x30)	Transparent reflex	20...4200 mm	1500	LED, red 630 nm	teach	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540047
			20...4200 mm	1500	LED, red 630 nm	teach or IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540046
			20...4200 mm	1500	LED, red 630 nm	teach	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540049
			20...4200 mm	1500	LED, red 630 nm	teach or IO-Link	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540048
			20...4200 mm	1500	LED, red 630 nm	potentiometer	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540051
			20...4200 mm	1500	LED, red 630 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540050
			20...4200 mm	1500	LED, red 630 nm	potentiometer	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540053
			20...4200 mm	1500	LED, red 630 nm	potentiometer	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540052

Photoelectric sensors
Cubic housing

Product range - Transparent UV Cubic C23

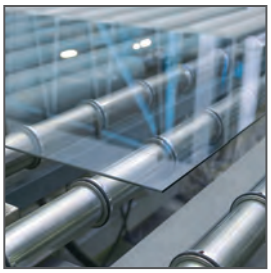
The Contrinex TRU-C23 photoelectric sensor is ideally suited for the presence control of transparent objects. Its patented technology uses UV light. Since transparent materials like plastic or glass absorb large amounts of polarized UV light, it is very easy to set the threshold at which the sensor switches. This makes commissioning much easier. The shape or thickness of the target has no influence on detection. In addition, sensor performance is unaffected by dirt, water drops or aging. Multiple switching for the same object is eliminated.

Specification / Key Advantages

Extremely reliable detection thanks to strong absorption of UV light by plastic and glass material
Easy sensor set-up, even for thinnest transparent objects
Low environmental sensitivity minimizes threshold adjustments and maximizes uptime
Autocollimated, polarized UV light beam eliminates blind zone, allowing detection of targets close to the sensor or through a small notch
Sensing range up to 1200 mm
Adjustment by teach button or IO-Link
Mutual interference immunity
Enclosure rating IP 67, Ecolab approved

Detection of clear plastic bottles

Pharmaceutical vial processing



Detection of glass sheet on conveyor

Photoelectric sensors

Cylindrical housing

Transparent UV

Cubic C23

C23 - Transparent reflex

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing dim. (mm)	Standard Order No
Cubic housing	C23 (20x30)	Transparent reflex	0...1000 mm	1000	Led, UV 275 nm, Risk Group 2	teach	NPN	Light-on + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	1202540055
			0...1000 mm	1000	Led, UV 275 nm, Risk Group 2	teach or IO-Link	PNP	Light-on/ IO-Link + Dark-on	PVC, 2 m, 4 wire	ABS	20x30	IO-Link 1202540054
			0...1000 mm	1000	Led, UV 275 nm, Risk Group 2	teach	NPN	Light-on + Dark-on	M8 4-pin	ABS	20x30	1202540057
			0...1000 mm	1000	Led, UV 275 nm, Risk Group 2	teach or IO-Link	PNP	Light-on/ IO-Link + Dark-on	M8 4-pin	ABS	20x30	IO-Link 1202540056

Photoelectric sensors

Cubic housing

Product range - Color and Contrast

Color photoelectric sensors utilize energetic-diffuse sensing technology to detect variations in target color, allowing color sorting or color control. Contrinex color photoelectric sensors feature five selectable tolerance levels for each output, enabling the sensor to recognize or ignore even the smallest variations of color.

Contrast sensors are ideal for detecting print marks in printing, labelling and packaging processes. The IO-Link interface may be used to reduce changeover times through remote teach-in and parameterization. Other control functions, including monitoring, diagnosis and switching timer adjustment are also available.

Specification / Key Advantages

Rugged housing, 40 mm x 50 mm x 15 mm
Connector adjustable at 0°, 45° and 90°
5 switching tolerance levels

Color sensors
3 color teach channels with independent outputs
High positioning tolerance
High switching frequency: up to 4 kHz

Contrast sensors
Detection of very small print marks thanks to a narrow, collimated light spot
RGB emission technology with best emission color automatically selected
Excellent tolerance to target distance variations
High switching frequency: up to 10 kHz
IO-Link
*on contrast sensor only

IO-Link *

IP 67

Color sorting on drinks conveyor

Detection of anodized products

Detection of marks on cartons

Print-mark detection on label machine

Photoelectric sensors

Cubic housing

CONTRINEX molex

Color and Contrast

4155

4155 - Color **4155 - Contrast**

Housing size	Housing dimensions	Operating principle	Sensing range (mm)	Switching frenquency (Hz)	Light source	Setup	Polarity	Output	Connection type	Housing material	Housing dim. (mm)	Standard Order No
Cubic	4155 (40 x 50)	Color	30...40 mm	4000	LED, white	Teach-in	NPN	Light-on + Light-on + Light-on	M12 5-pin	PBTP	40 x 50	1202540058
			30...40 mm	4000	LED, white	Teach-in	PNP	Light-on + Light-on + Light-on	M12 5-pin	PBTP	40 x 50	1202540059
Cubic	4155 (40 x 50)	Contrast	12 mm	10000	LED, RGB	Teach-in	Push-pull	Light-on/ Dark-on + Teach/ Selector input	PVC, 2 m, 4 wire	PBTP	40 x 50	IO-Link 1202540060
			12 mm	10000	LED, RGB	Teach-in	Push-pull	Light-on/ Dark-on + Teach/ Selector input	M12 4-pin	PBTP	40 x 50	IO-Link 1202540061

ACCESSORIES

Reflectors

Mounting

Accessories
Sensor Tester

Product range - Sensor Tester

Save time on installation and ensure perfect sensor stability by using Contrinex sensor clamps and clamp bases. Then test your system with the Contrinex sensor tester for fast, efficient commissioning and maintenance.

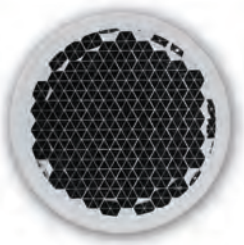
Specification / Key Advantages

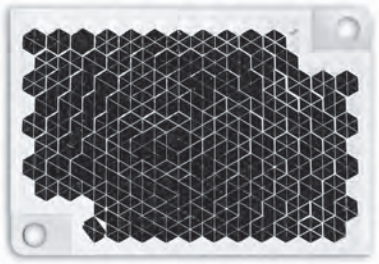
Up to 100 mA sensor current supply
Output switching information
Adapted to PNP, NPN and push-pull outputs
Automatic switch off after ~120 seconds (30 seconds on actual tester) to provide enough time to do teaching and configuration
Adapted to standard and more complex sensors thanks to current supply up to 100 mA
Rechargeable LiPo battery 9V 600 mAh (included)
Battery life longer than 2 hours at 50 mA current supply
Integrated metal target for inductive sensors test
Micro-USB interface to recharge battery with universal mobile phone charger (charger not included)

Housing dimensions	Sensor type	Sensor supply voltage	Max. sensor supply current	Output types	Rechargeable battery type	Battery life	Charger type	Enclosure rating (IP)	Standard Order No
106 x 61 x 22	All	24 VDC	100 mA	PNP, NPN, push-pull	LiPo 9V 500 mAh	>2 hours at 50 mA	Universal mobile phone charger	IP 40	1202550000

Accessories
Reflectors

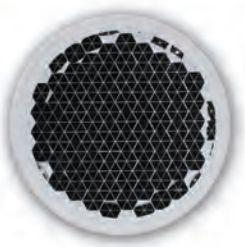
Product range - Reflector

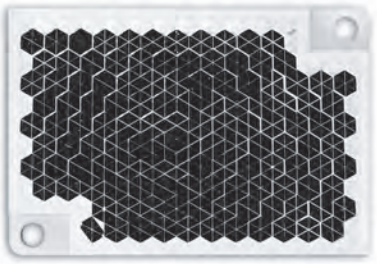




Body type	Housing dimensions	Sensor type	Material	Enclosure rating (IP)	Type	Self adhesive	Temperature	Standard Order No
Round	Ø26.4	Photoelectric	PMMA housing with adhesive	IP 67	Standard	Yes	-25...70 °C	1202550001
Round	Ø46.5	Photoelectric	PMMA housing with adhesive	IP 67	Standard	Yes	-25...70 °C	1202550002
Round	Ø82.0	Photoelectric	PMMA housing with adhesive	IP 67	Standard	No	-25...70 °C	1202550003
Rectangular	60x41	Photoelectric	PMMA housing with adhesive	IP 67	Standard	No	-40...70 °C	1202550004
Rectangular	32x20	Photoelectric	PMMA housing with adhesive	IP 67	Standard	No	-40...70 °C	1202550005
Rectangular	60x20	Photoelectric	PMMA housing with adhesive	IP 67	Standard	No	-40...70 °C	1202550006
Rectangular	60.3x51.4	Photoelectric	PMMA housing with adhesive	IP 67	Standard	No	-40...70 °C	1202550007

Accessories
Reflectors



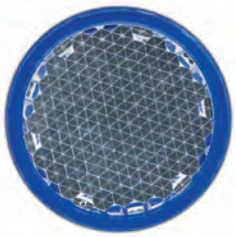


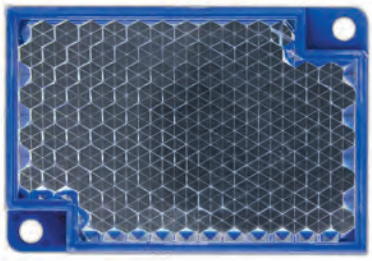
Body type	Housing dimensions	Sensor type	Material	Enclosure rating (IP)	Type	Self adhesive	Temperature	Standard Order No
Round	85x85	Photoelectric	PMMA housing with adhesive	IP 67	Standard	No	-40...70 °C	1202550008
Round	100x100	Photoelectric	Self-adhesive tape	IP 67	Standard foil	Yes	-40...80 °C	1202550009

Accessories

UV Reflectors

Product range - UV Reflectors





Body type	Housing dimensions	Sensor type	Material	Enclosure rating (IP)	Type	Self adhesive	Temperature	Standard Order No
Round	Ø26.4	Photoelectric	Plastic housing with adhesive	IP 67	Standard UV	Yes	-40...70 °C	1202550010
Round	Ø82.0	Photoelectric	Plastic housing with adhesive	IP 67	Standard UV	No	-40...70 °C	1202550011
Rectangular	60x41	Photoelectric	Plastic housing with adhesive	IP 67	Standard UV	No	-40...70 °C	1202550012
Rectangular	32x20	Photoelectric	Plastic housing with adhesive	IP 67	Standard UV	No	-40...70 °C	1202550013

Accessories

Special mounting 90° M18PA

Product range - Special mounting 90° M18PA

Product type	Housing dimensions	Sensor type	Compatibility	Material	Standard Order No
Special Mounting for 90°	15.7x25.6	Photoelectric	For M18PA background suppression series	ABS/PMMA	1202550014
			For M18PA through-beam and reflex series	ABS/PMMA	1202550015
			For M18PA diffuse series	ABS/PMMA	1202550016

Product range - Mounting Bracket Inductive/photoelectric

Product type	Diameter	Sensor type	Material	Type	Standard Order No
Mounting Bracket	Ø3	Inductive	PA 6 black	Without limit stop	1202550017
Mounting Bracket	Ø4	Inductive/Photoelectric	PA 6 black	Without limit stop	1202550018
Mounting Bracket	Ø5	Inductive/Photoelectric	PA 6 black	Without limit stop	1202550019
Mounting Bracket	Ø6.5	Inductive	PA 6 black	Without limit stop	1202550020
Mounting Bracket	Ø8	Inductive	PA 6 black	Without limit stop	1202550021
			PA 6 black	With limit stop	1202550022
			Stainless steel V2A (AISI 304)	Quick tube	1202550029

Accessories
Mounting Bracket

Product type	Diameter	Sensor type	Material	Type	Standard Order No
Mounting Bracket	Ø12	Inductive/Photoelectric	PA 6 black	Without limit stop	1202550023
			PA 6 black	With limit stop	1202550024
			Stainless steel V2A (AISI 304)	Quick tube	1202550030
Mounting Bracket	Ø18	Inductive/Photoelectric	PA 6 black	Without limit stop	1202550025
			PA 6 black	With limit stop	1202550026
			Stainless steel V2A (AISI 304)	Quick tube	1202550031
Mounting Bracket	Ø30	Inductive	PA 6 black	Without limit stop	1202550027
			PA 6 black	With limit stop	1202550028

Product range - Mounting bracket Photoelectric

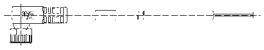
Product type	Sensor type	Material	Type	Standard Order No	Picture
Mounting Bracket	Photoelectric	Stainless steel V2A (AISI 304)	For C23PA	1202550032	
		Stainless steel V2A (AISI 304)	For C23PA	1202550033	
		Stainless steel V2A (AISI 304)	For C23PA	1202550034	
		Stainless steel V2A (AISI 304)	For C23PA	1202550035	

Brad Nano-Change M8 Sensor/Actuator Connectivity

molex

Brad Nano-Change M8 connectivity provides a rugged and space-saving solution to wire a wide range of sensors and actuators from proximity switches to rotary encoders in harsh environments.

Brad Nano-Change M8 Single-Ended Cordsets



E02 PVC Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	2m	403000E02M020	1200270066	403001E02M020	1200270090
	5m	403000E02M050	1200270068	403001E02M050	1200270092
	10m	403000E02M100	1200270070	403001E02M100	1200270093

E02 PVC Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	2m	404000E02M020	1200270127	404001E02M020	1200270152
	5m	404000E02M050	1200270129	404001E02M050	1200270153
	10m	404000E02M100	1200270131	404001E02M100	1200270154

H08 PUR Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	2m	403000H08M020	1200868045	403001H08M020	1200868052
	5m	403000H08M050	1200868101	403001H08M050	1200868054
	10m	403000H08M100	1200868115	403001H08M100	1200868004

H08 PUR Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	2m	404000H08M020	1200868207	404001H08M020	1200271328
	5m	404000H08M050	1200868053	404001H08M050	1200868211
	10m	404000H08M100	1200868117	404001H08M100	1200868077

Brad Nano-Change M8 Sensor/Actuator Connectivity

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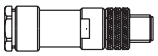
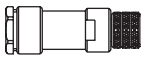
Brad Nano-Change M8 Double-Ended Cordsets

E02 PVC Cable			
		Female to Male Straight	
Poles	Length	Engineering No.	Standard Order No.
3	0,6m	443030E02M006	1200875035
	2m	443030E02M020	1200280321
	5m	443030E02M050	1200280462

H08 PUR Cable			
		Female Straight	
Poles	Length	Engineering No.	Standard Order No.
3	0,6m	443030H08M006	1200878558
	2m	443030H08M020	1200878149
	5m	443030H08M050	1200878127

Brad Nano-Change M8 Field-Attachable





			Female Straight		Male Straight	
Poles	Cable Size	Wire Gage	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	3.50 - 5.00	AWG24	N03FA03124	1200910001	N03MA03124	1200910004
4	3.50 - 5.00	AWG24	N04FA03124	1200910007	N04MA03124	1200910010

Brad Nano-Change M8 Double-Ended Cordsets w/LED

H08 PUR Cable		
	Female Straight	
Length	Engineering No.	Standard Order No.
2m	4030P1H08M020	1200868219

Brad Nano-Change M8 Sensor/Actuator Connectivity

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Brad M8 to M12 Double-Ended 3 pole Cordsets

E02 PVC Cable		
	Female to Male Straight	
Length	Engineering No.	Standard Order No.
2m	483030E02M020	1200878039

Brad M8 to M12 Double-Ended 4 pole Cordsets

E02 PVC Cable		
	Female to Male Straight	
Length	Engineering No.	Standard Order No.
2m	484030E02M020	1200878463

Brad M8 to M12 Double-Ended 3 pole Cordsets

H08 PUR Cable		
	Female to Male Straight	
Length	Engineering No.	Standard Order No.
2m	483030H08M020	1200878255

Brad M8 to M12 Double-Ended 4 pole Cordsets

H08 PUR Cable		
	Female to Male Straight	
Length	Engineering No.	Standard Order No.
0,6m	484030H08M006	1200878565

Brad Micro-Change M12 Sensor/Actuator Connectivity

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Brad Micro-Change M12 connectivity is a ready-to-use solution based on the A-Code M12 standard with IP67/68 rating to wire a wide range of sensors and actuators from proximity switches to rotary encoders in harsh environments.

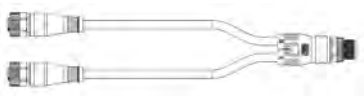
Brad Micro-Change M12 Single-Ended Cordsets

E03 PVC Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	2m	803000E03M020	1200060001	803001E03M020	1200060007
	5m	803000E03M050	1200060002	803001E03M050	1200060008
	10m	803000E03M100	1200060003	803001E03M100	1200060009

E03 PVC Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	2m	804000E03M020	1200060014	804001E03M020	1200060021
	5m	804000E03M050	1200060015	804001E03M050	1200060022
	10m	804000E03M100	1200060016	804001E03M100	1200060023

E03 PVC Cable			
		Female Straight	
Poles	Length	Engineering No.	Standard Order No.
5	2m	805000E03M020	1200060634
	10m	805000E03M100	1200060638

Brad M12 4 pole Cable Splitters



E03 PVC Cable		
	2 x Female to Male Straight	
Length	Engineering No.	Standard Order No.
0,3m	884A30E03M003	1200688096

Brad Micro-Change M12 Sensor/Actuator Connectivity

molex

Brad Micro-Change M12 Single-Ended Cordsets

H09 PUR Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	2m	803000H09M020	1200658175	803001H09M020	1200658715
	5m	803000H09M050	1200658176	803001H09M050	1200658718
	10m	803000H09M100	1200658177	803001H09M100	1200658719

H09 PUR Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	2m	804000H09M020	1200658178	804001H09M020	1200658513
	5m	804000H09M050	1200658179	804001H09M050	1200658193
	10m	804000H09M100	1200658190	804001H09M100	1200658194

Brad Micro-Change M12 Single Ended for AC Sensors (230 V MAX)

H09 PUR Cable				
	Female Straight		Female 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	803000H09M020	1200658175	803001H09M020	1200658715
5m	803000H09M050	1200658176	803001H09M050	1200658718

Brad Micro-Change M12 Single-Ended Cordsets with LED Wiring

H09 PUR Cable		
	Female Straight	
Length	Engineering No.	Standard Order No.
5m	8030P1H09M050	1200678310

E03 PVC Cable		
	Female Straight	
Length	Engineering No.	Standard Order No.
5m	8030P1E03M050	1200675060

Brad Micro-Change M12 Sensor/Actuator Connectivity

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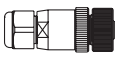
Brad Micro-Change M12 Double-Ended 4 pole Cordsets

E03 PVC Cable			
		Female to Male Straight	
Poles	Length	Engineering No.	Standard Order No.
4	0,6m	884030E03M006	1200070472
	2m	884030E03M020	1200070474
	5m	884030E03M050	1200060049

H09 PUR Cable			
		Female to Male Straight	
Poles	Length	Engineering No.	Standard Order No.
4	0,6m	884030H09M006	1200668378
	2m	884030H09M020	1200668234
	5m	884030H09M050	1200668244

Brad Micro-Change M12 Field-Attachable for Sensors and Actuators



			Female Straight		Male Straight	
Poles	Cable Size	Wire Gage	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	3.30 - 6.60	<AWG18	8A4000-31	1200710035	8A4006-31	1200710038
4	4.10 - 8.10	<AWG18	8A4000-32	1200710036	8A4006-32	1200710039
5	4.10 - 8.10	<AWG18	8A5000-32	1200710043	8A5006-32	1200710047

			Female 90°		Male 90°	
Poles	Cable Size	Wire Gage	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	3.30 - 6.60	<AWG18	8A4001-31	1200710037	-	-
4	4.10 - 8.10	<AWG18	8A4001-32	1200715010	8A4007-32	1200715011
5	4.10 - 8.10	<AWG18	8A5001-32	1200710070	8A5007-32	1200710071

Brad MPIS Sensor/Actuator Distribution Boxes

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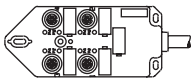
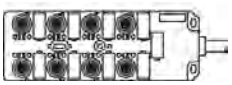
Brad M12 Distribution Boxes with WSOR Home Run Cable





		4 Ports		8 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Dual IO	5m	BTB405P-FBW-05	1202480031	BTB805P-FBW-05	1202480049
Dual IO	10m	BTB405P-FBW-10	1202480032	BTB805P-FBW-10	1202480050

Brad Ultra-Lock M12 Stainless Steel Distribution Box with Home Run Cable

		8 Ports	
IO Type	Length	Engineering No.	Standard Order No.
	10m	BTS805P-FSE-10	1201190043

GLOSSARY

inductive sensors

photoelectric sensors

A

Adjustment (potentiometer)

The sensitivity is adjusted by means of the built-in single or multi-turn potentiometer (if provided). Turning it clockwise increases the sensitivity. Multi-turn potentiometers cannot be turned over their end position (no stops).

Through-beam sensors / reflex sensors

The potentiometer is normally set to the maximum sensitivity (turned clockwise). This provides the maximum system reserve (excess-gain) signal.

Diffuse sensors

Set the sensitivity so that the target is reliably detected; for reliable operation, the green LED should light up, or the yellow LED should not flash (series 1040/1050). On removing the object, if the output remains ON (detection of the background), the sensitivity must be reduced slightly.

Diffuse sensors with background suppression

The setup must ensure that the target is clearly identified, and any background excluded. The target should first be positioned at the maximum foreseen distance from the emitter, and the potentiometer adjusted so that the output just switches. The target is then removed and the potentiometer adjusted so that the background just causes the output to switch. Finally, the potentiometer is set to half way between the two previous readings. Where there is no background, the potentiometer should be set to the maximum distance.

Alignment

Through-beam sensors

First place the receiver and fix it in its final position. Then align the emitter accurately onto the receiver.

Reflex sensors

First place the reflector as required and fix it firmly in position. Fit the reflex sensor with the optical axis aligned on the reflector so that it switches reliably. Test with target. Reduce sensitivity if necessary.

Diffuse sensors

Align the unit's optical axis with the target so that switching occurs reliably. Check that enough system reserves (excess gain) are available, i.e. the green LED must light up (series 1120, 1180, 1180W and C23). Finally, fix the device firmly.

Diffuse sensors with background suppression

Line up the beam on the center of the target, before fixing the device firmly.

Ambient light limit

Ambient light is that which is produced by external light sources. The illumination intensity is measured on the light incidence surface. The sensors are basically insensitive to ambient light due to the use of modulated light. There is nevertheless an upper limit for the intensity of any external light and this is referred to as the ambient light limit. It is given for sunlight (unmodulated light) and halogen lamps (light modulated at twice the mains frequency). Reliable operation of the units is no longer possible at light intensities above the relevant ambient light limit.

Ambient temperature

The specified ambient temperature range **must not be exceeded** in order to avoid damaging the sensor and rendering its performance unreliable.

Analog Output

Devices with analog output deliver an analog output signal approximately proportional to the target distance. For most models, voltage and current outputs are available **simultaneously**.

Autocollimation

Photoelectric sensors using the autocollimation principle are characterized by the fact that the optical axes of the emitting and receiving channels are identical. This is possible with light from one of the channels being deflected by means of a semi-transparent mirror (Fig. 12). This principle completely eliminates the interfering blind zone often found in the proximity of the sensor, which is of special advantage when using reflex sensors.

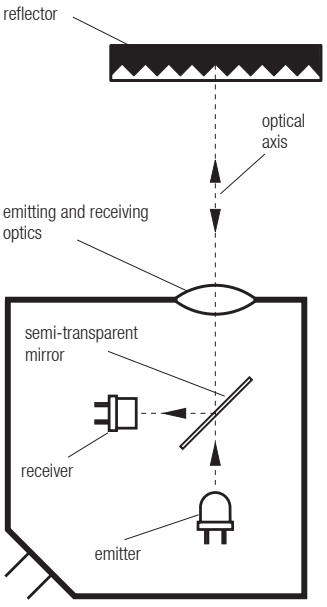


Fig. 12

B

Background suppression

The light pulse from the emitting diode leaves the optical system as a focused, almost parallel, light beam. On meeting an object in its path, part of the beam is diffusely reflected, and in turn, part of this reflected light falls on the PSD (**P**osition-**S**ensitive **D**evice) housed in the same sensor (Fig. 13).
Depending on the distance of the target from the device, the light falls on a particular spot of

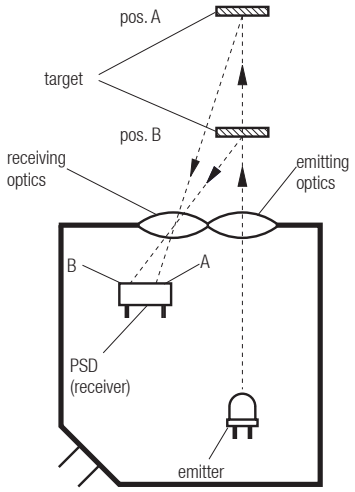


Fig. 13

the PSD, and a corresponding reception signal is emitted, indicating that an object is present at a certain distance from the device. The analyzing circuit compares the signal received with the preset operating distance (adjusted by means of the built-in potentiometer), and, if the distance of the object is less than, or equal to, the preset operating distance, the output is switched. Contrary to an energetic diffuse sensor, the operating distance depends only to a very small extent on the target's size or color, or on the nature of its surface. The object can therefore be easily discerned, even against a light background.

C

Capacitance

The maximum switchable capacitance is the greatest permissible total capacitance at the device's output so that **reliable switching i**s still guaranteed. Contributing to this total capacitance in particular are the lead capacitance (approx. 100 ... 200 pF per m) and the load's input capacitance. The value is given in the individual data sheets.

CE mark

All sensors in this catalog meet the requirements of European standards EN 60947-1 and EN 60947-5-2, and therefore correspond to EMC directive 2004/108/EC, as well as low-voltage directive 2006/95/EC. Consequently, they are labeled with the CE mark.

However, this mark is **neither a quality seal, nor an official test label** certified by any authority. By applying the CE mark, the manufacturer confirms (under his own responsibility) that the protective requirements for the product meet the applicable EU directives, and consequently that the corresponding EU standards have been complied with. The CE mark enables the free importation of goods into the EU, as well as their free circulation within the EU.

Changeover

Devices with changeover outputs provide one output for the light-ON or NO signal, and another for the dark-ON or NC signal. Both functions are available simultaneously for maximum connection flexibility to the control unit. Moreover, logical connections may be implemented without using series connection. Connecting both outputs to the control unit allows additional security monitoring.

Classics family

The **Classics** family (600 series) is one of three inductive sensing technologies offered by Contrinex. **Classics** family sensors rely on conventional inductive oscillator and coil technology.
Sensors are sized from Ø 3 up to M30 and C44 (40 mm x 40 mm). PNP, NPN output configurations are available, combined with sensing distances between 0.6 mm and 40 mm.

The **Classics** technology family includes devices from the following ranges: **Basic** and **Miniature.**

Clearance

Inductive sensors must not mutually influence each other. For this reason, a minimum distance **A** between devices of diameter **D** must be observed (Fig. 14).

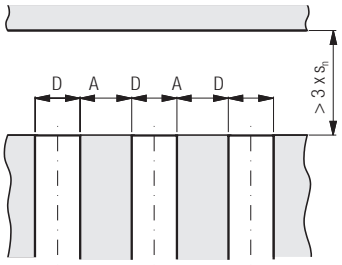


Fig. 14

Extra Distance (Series 500, 520*)

Size D	(quasi)-embed. A (mm)	non-emb. A (mm)
Ø 4	6 (embeddable)	---
M5	5 (embeddable)	---
Ø 6.5	9.5	---
M8	8 / *16	20
C8	8	---
M12	18 / *34	30
M18	26	60
M30	50	120

Classics (Series 600, 620*)

Size D	embeddable A (mm)	non-emb. A (mm)
Ø 3	0 / *2	---
M4	0 / *1	---
Ø 4	0 / *1	---
M5	0 / *1	---
Ø 6.5	3 / *3.5	--- / *15.5
M8	2 / *4	10 / *14
M12	4 / *12	28 / *33
M18	7 / *22	32
M30	10	50
C44	35	120

Full Inox (Series 700)

Size D	embeddable A (mm)	non-emb. A (mm)
M8	14	52
M12	38	108
M18	42	182
M30	80	270

Photoelectric sensors must not mutually influence each other. For this reason, a minimum distance **"a"** between them has to be respected, which depends strongly on the model used and the actual sensitivity setting. The following values should therefore be considered as rough guidelines only. The values given are for maximum sensitivity.

Diffuse sensors with background suppression

Series	distance a (mm)
Series 1180 / 1180W	50

Diffuse sensors (FIG. 15)

Series	distance a (mm)
Series 1040 / 50	50
Series 1040 / 50...505	15
Series 1040 / 50...506	30

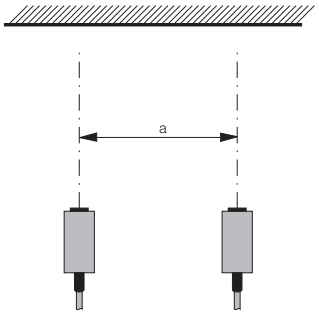


Fig. 15

Reflex sensors (FIG. 16)

Series	distance a (mm)
Series 1120	150
Series 1180 / 1180W	250

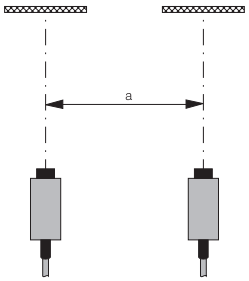


Fig. 16

Through-beam sensors (FIG. 17)

Series	distance a (mm)
Series 1040 / 50	50
Series 1120	150
Series 1180 / 1180W	250

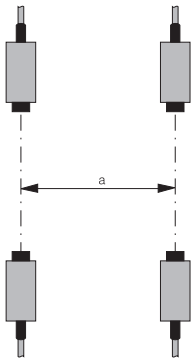


Fig. 17

Condet® technology

An innovative technology for producing inductive sensors. Contrary to conventional technology, in which a high-frequency magnetic field is generated in front of the sensing face, here the coil is triggered by an alternating polarity **pulsed current**. This technology is used in the Full Inox family (700 series). It permits:

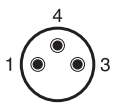
- generally long operating distances
- long operating distances also on non-ferrous metals, such as aluminum, brass, copper, etc.
- **one-piece** stainless steel housing (sensing face included)

Condist® technology

Developed by Contrinex, this innovative technology makes use of a high-performance oscillator for inductive sensors. Operating distances from **2.2 to 4 times** the standard values are possible thanks to excellent temperature and voltage stability. Devices of the Extra distance family (500 work with such an oscillator

Connectors

Pin assignment size S8:



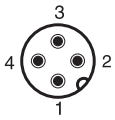
NO and NC

$+U_B$	pin 1	brown
0V	pin 3	blue
output	pin 4	black

Analog Output

$+U_B$	pin 1	brown
0V	pin 3	blue
voltage output	pin 4	black

Pin assignment size S12:



NO

$+U_B$	pin 1	brown
0V	pin 3	blue
output	pin 4	black

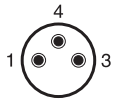
NC

$+U_B$	pin 1	brown
0V	pin 3	blue
output	pin 2	white

Analog Output

$+U_B$	pin 1	brown
0V	pin 3	blue
voltage output	pin 4	black
current output	pin 2	white

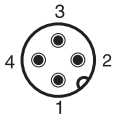
Pin assignment size S8 3 pole:



NO and NC

$+U_B$	pin 1	brown
0V	pin 3	blue
output	pin 4	black

Pin assignment size S12 3 pole:



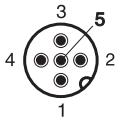
NO

$+U_B$	pin 1	brown
0V	pin 3	blue
output	pin 4	black

NC

$+U_B$	pin 1	brown
0V	pin 3	blue
output	pin 2	white

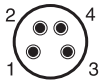
Pin assignment size S12 5 pole:



NO and NC

$+U_B$	pin 1	brown
output 2	pin 2	white
0V	pin 3	blue
output 1	pin 4	black
test	pin 5	gray

Pin assignment size S8 4 pole:



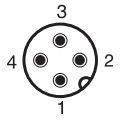
NO and NC

$+U_B$	pin 1	brown
output 2	pin 2	white
0V	pin 3	blue
output 1	pin 4	black

Teach

$+U_B$	pin 1	brown
output 2	pin 2	white
0V	pin 3	blue
output 1	pin 4	black

Pin assignment size S12 4 pole:



NO and NC

$+U_B$	pin 1	brown
output 2	pin 2	white
0V	pin 3	blue
output 1	pin 4	black

Correction factors

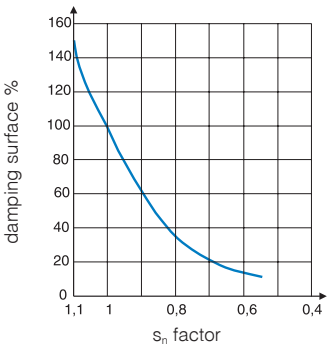
The specified operating distances of inductive sensors refers to exactly defined measuring conditions (see **OPERATING DISTANCE**).
Other arrangements generally result in a reduction of the operating distance. The following data are to be considered as **guidelines** only; according to size and version, there can be wide variations. Exact values are given in the individual data sheets.

classics (Series 600 / 620)

Material influence (indicative values):

Target material	Operating distance
Steel type FE 360	s_n x 1.00
Aluminum	s_n x 0.55
Brass	s_n x 0.64
Copper	s_n x 0.51
Stainless steel (V2A)	s_n x 0.85

Geometrical influence:



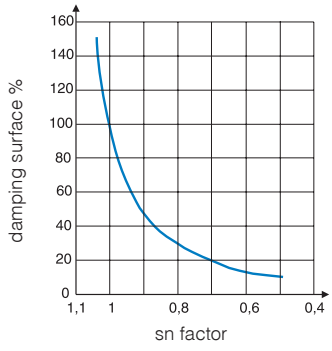
When using foils, an increase in the usable operating distance can be expected.

Extra Distance (Series 500)

Material influence (indicative values):

Target material	Operating distance
Steel type FE 360	s_n x 1.00
Aluminum	s_n x 0.36 / *0.28
Brass	s_n x 0.44 / *0.37
Copper	s_n x 0.32 / * 0.24
Stainless steel (V2A)	s_n x 0.69

Geometrical influence:



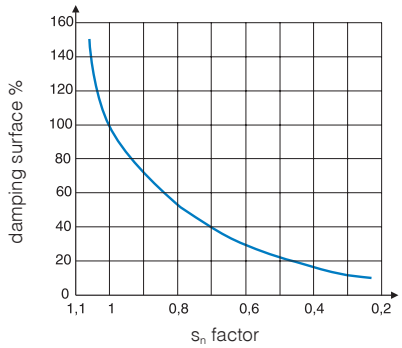
When using foils, an increase in the usable operating distance can be expected.

Full Inox (Series 700)

Material influence (indicative values):

Target material	Operating distance
Steel type FE 360	s_n x 1.0
Aluminum	s_n x 1.0
Brass	s_n x 1.3
Copper	s_n x 0.8
Stainless steel (1 mm thick)	s_n x 0.5
Stainless steel (2 mm thick)	s_n x 0.9

Geometrical influence:



When using foils, a **decrease** in the usable operating distance can be expected.

Test card (Kodak paper, white)	100%
Paper, white	80%
PVC, gray	57%
Newspaper, printed	60%
Wood, lightly colored	73%
Cork	65%
Plastic, white	70%
Plastic, black	22%
Neoprene, black	20%
Automobile tires	15%
Aluminum sheet, untreated	200%
Aluminum sheet, black anodized	150%
Aluminum sheet, matt (brushed finish)	120%
Stainless steel, polished	230%

The specified sensing ranges of energetic diffuse sensors are achieved using standard matt white paper of the specified dimensions as the target surface. For other target surface materials, the correction factors listed here apply (these are guideline values only).

D

Dark-on

The "dark-ON" function means that the relevant output is switched (carrying current) when **no** light is reaching the receiver.

Degrees of protection

The IP degrees of protection are defined in DIN 40050 / IEC 60529. The meaning of the **first numeral** is:

6 The housing provides complete protection against contact with electrically conducting or moving parts, and full protection against dust penetration.

and the **second numeral:**

4 Protection against water splashes: water splashed against the housing from any direction must have no harmful effect.

Test conditions: spraying with oscillating tube or spray nozzle; water pressure 1 bar; delivery rate 10 l/min ± 5%; duration 5 minutes.

5 Protection against water jets: water projected by a nozzle from any direction under specified conditions must have no harmful effect.

Test conditions: nozzle with 6.3 mm diameter; delivery rate 12.5 l/min ± 5%; distance 3 m; duration 3 minutes.

7 Protection against water when device is immersed in water under specified pressure and time conditions. Water must not penetrate in damaging quantities.

Test conditions: immersion depth in water 1 m; duration 30 minutes.

8 Protection against water when device is immersed in water indefinitely under specified pressure conditions. Water must not penetrate in damaging quantities.

Test conditions used by Contrinex: immersion depth in water 5 m; duration ≥ 1 month.

9K Protection against water which, if directed against the housing from any direction and under considerably increased pressure, must have no harmful effect.

Test conditions: sensor mounted on table turning at 5 ± 1 rpm; spraying with flat nozzle; delivery rate 14 - 16 l/min; distance 100 - 150 mm; angles 0°, 30°, 60° and 90°; temperature 80 ± 5°C (176 ± 41°F); pressure 8,000 - 10,000 kPa (80 - 100 bar / 1160.8 - 1451 psi); duration 30 sec per position.

Devices with degree of protection **IP 67** are thus **not intended for prolonged operation in water**, or in prolonged humid conditions. Tolerance to liquids other than water must be examined from case to case.

E

Embeddable mounting

See **MOUNTING**.

EMC

The EMC (**E**lectro**m**agnetic **C**ompatibility) resistance of the devices satisfies the highest demands. For exact values, please refer to the data sheets. All devices comply with the EU directive no. 2004/108/EC. In addition, they undergo severe field testing.

Excess-gain indication (system reserve indication)

The excess-gain indication circuit detects the excess radiation power which falls on the light incidence surface and is processed by the light receiver. The excess gain can decrease in time due to dirt, a change in the target's reflection factor, and aging of the emitter diode, so that reliable operation can no longer be guaranteed. Some devices are therefore equipped with a second LED (green), which lights up when less than approximately 80% of the available operating distance is used. Models with an excess-gain output make the excess-gain signal available to the user for further processing. Thus, operating conditions which are no longer reliable can be recognized in time.

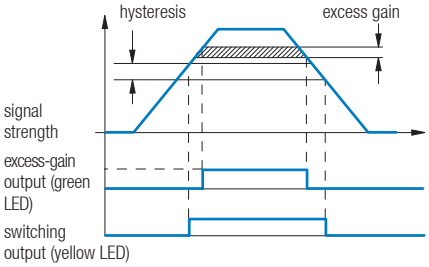


Fig. 18

Extra Distance family

The **Extra Distance** family (series 500) is one of three inductive sensing technologies offered by Contrinex. **Extra Distance** family sensors rely on conventional inductive oscillator and coil technology, but with a completely different signal evaluation circuit for better stability and therefore **long operating distances**. The most important contribution to this comes from the Contrinex Condist® oscillator.
Sensors are sized from Ø 4 to M30, with long operating distances up to 40 mm.
The Extra Distance technology family includes devices from the **Basic** and **Analog Output** ranges.

F

Full Inox family

The **Full Inox** family (series 700) is one of three inductive sensing technologies offered by Contrinex. **Full Inox** family sensors rely on Contrinex's patented Condet® technology.
Full Inox sensors have a one-piece, stainless steel housing and are exceptionally robust and chemically resistant. They are not only the most durable inductive sensors on the market, but also offer long operating distances on any conductive metal.
Sensors are sized from Ø 4 to M30 and cuboid variant of 20 x 32 x 8 mm, with long operating distances up to 40 mm and protection class IP 67 and IP 69K
The **Full Inox** technology family includes devices from the **Miniature, Extreme, Washdown** and **Weld-immune ranges.**

H

Hysteresis

Hysteresis (differential travel) causes a defined switching behavior of the device (Fig. 19). The sensing range always refers to the switch-on point. Distance hysteresis is only useful for the diffuse sensor model and its related fiber version.

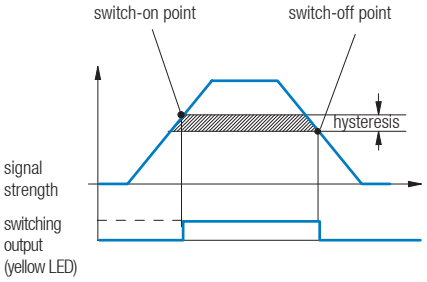


Fig. 19

Hysteresis (differential travel) causes a defined switching behavior of the device (Fig. 20). The operating distance always refers to the switch-on point. Namur devices and those with analog output have continuous transmission behavior, i.e. there is no hysteresis.

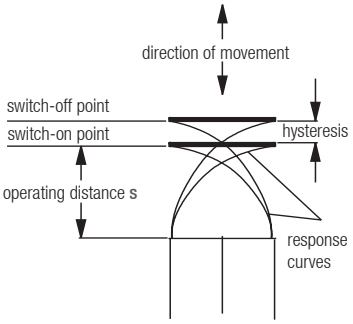


Fig. 20

I

Induction protection

When inductive loads are switched off, the output voltage, without a protective circuit, would increase to a high value, which could destroy the output transistor. Contrinex sensors therefore contain a **Zener diode** at the output to limit the switch-off voltage to a safe value (3-wire types). When connecting an inductive load with a current >100 mA and simultaneously a switching frequency >10 Hz, the mounting of a **free-wheeling diode** directly to the load is recommended (due to the leakage power in the built-in Zener diode).

Installation

Photoelectric sensors can be easily and reliably installed in any position, using the mounting accessories supplied with most devices. The installation position should preferably protect the units against dirt and other contamination.

For inductive sensors, see **MOUNTING**.

Insulation voltage

The devices in this catalog are designed for an insulation voltage (between connecting leads and housing) of 75 VDC / 50 VAC (for supply voltages up to 75 VDC / 50 VAC) or 300 VDC / 250 VAC (for supply voltages between 75 VDC / 50 VAC and 300 VDC / 250 VAC).

IP 64 / IP 65 / IP 67 / IP 68 / IP 69K

Refer to **DEGREES OF PROTECTION**.

IR light

IR is the abbreviation of "**I**nfra-**R**ed". This refers to any electromagnetic radiation with a wavelength exceeding that of normal visible light, which is approx. 380 to 780 nm. Wavelengths of approx. 780 to 1500 nm are typically used. IR light cannot be used with synthetic fibers, due to high attenuation. Instead, visible red light is used. As the usual polarization filters cannot be used in the IR range, visible red light is also used for reflex sensors.

L

Lead lengths

For the sensor, long leads mean:

- a capacitive load at the output (see **CAPACITANCE**)
- increased influence of interference signals Even under favorable conditions, lead lengths should not exceed **300 m**.

Leads

The standard built-in leads are **not** suitable for **repeated bending stresses**. In such cases, high-flexibility PUR cables (special executions) or connectors with corresponding connecting cables must be used.

Leakage current

Leakage current is the current that flows through the output transistor and thereby through the load when the output is OFF (to be taken into account particularly where switches are connected in parallel).

LED

Most of the inductive devices in this catalog are equipped with a built-in yellow light-emitting diode (LED). It indicates the switching state: **output activated = yellow LED on**.

All photoelectric sensors have one or two **L**ight **E**mitting **D**iodes (LEDs) built in. The yellow LED lights up when the output is switched (for switches with 2 outputs: the light-ON output). During a short-circuit or overload, the yellow LED does not operate. The green LED (if provided) lights up when enough system reserves (excess gain) for reliable operation are available, i.e. when an object is present in the reliable sensing area (diffuse sensors), or when enough light from the uninterrupted beam reaches the receiver (reflex and through-beam sensors).

Light-on

Light-ON means that the relevant output is switched (carrying current) when light is reaching the receiver.

Load resistance

From the selected supply voltage U_B and the specified maximum output current of the sensor, the lowest permissible load resistance for trouble-free operation can be calculated.
Example: With a voltage of 24 V and a specified maximum permissible output current of 200 mA, the minimum load resistance is 120 ohm; at 15 V, it is 75 ohm.

M

Magnetic fields

Strong fields can saturate the ferrite core of inductive sensors, thereby increasing the operating distance, or even provoking false switching. However, no lasting damage is caused. **High-frequency fields** of several kHz (700 series), or several hundred kHz (other series), may seriously interfere with the switch functioning, since the oscillator frequency of the devices lies in this range. If difficulties with interfering magnetic fields are encountered, shielding is recommended.

Modulated light

The photoelectric sensors listed in this catalog operate with modulated light, i.e. the light emitter is switched on only for a short period and remains switched off for much longer (ratio approx. 1:25). In diffuse and reflex sensors, the receiver is only active during the light pulse, and is disabled during the pulse gap. Operation with modulated light provides the following advantages:

- The devices are largely insensitive to ambient light
- Longer sensing ranges are possible
- Heat generation is reduced, which prolongs the operating life of the emitting diodes

Modulation frequency

The photoelectric devices in this catalog are operated with modulated light, which makes them largely insensitive to ambient light. The modulation frequency f_{cy} is in the range of several kHz.
If a device is operated in the proximity of another device with the same modulation frequency, interference can occur.

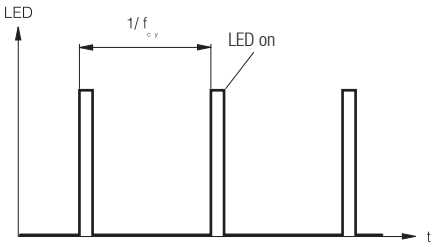


Fig. 21

Mounting

For photoelectric sensors, see **INSTALLATION**.

Embeddable sensors

Embeddable sensors may be flush mounted in all metals. For trouble-free operation, a free zone according to Fig. 22 should be observed.

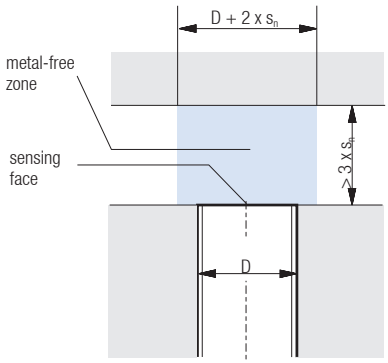


Fig. 22

Quasi-embeddable sensors

When installing quasi-embeddable Extra Distance sensors (500) in conductive materials (metals), the devices must **protrude** by a distance **X**, according to Fig. 23 Further, a free zone of 3 x s_n must be observed. Flush mounting in non-conducting materials is permitted.

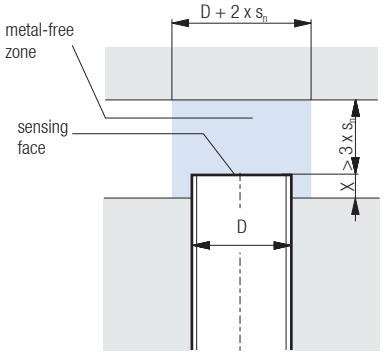


Fig. 23

Mounting in steel and in non-ferrous metals:

Housing size D	X (mm)
Ø 6.5	1
C8	1
M12	2
M18	4
M30	6

Mounting in stainless steel:

Housing size D	X (mm)
Ø 6.5	0.0
C8	0.0
M12	1.0
M18	1.5
M30	2.0

Non-embeddable sensors

When mounting non-embeddable sensors in conducting materials (metals), minimum distances to the conducting material must be maintained according to Fig. 24. Flush mounting in non-conducting materials is permitted.

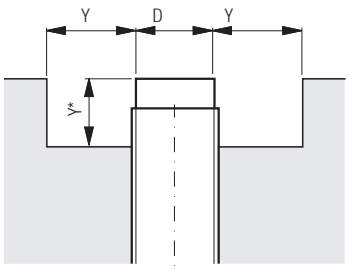


Fig. 24

Housing size D	Y (mm)
M8	8
M12	12
M18	22
M30	40
C44	60 / *40

N

NC

The output is closed when the switch is not activated. It is open when the switch is activated.

NO

The output is open when the switch is not activated. It is closed when the switch is activated.

No-load supply current

No-load supply current is understood as the inherent consumption of the sensor for operating the LED, amplifier, etc., in the non-activated state. It does not include the current flowing through the load.

Non-embeddable mounting

See **MOUNTING**.

NPN configuration

The output device contains an NPN transistor, which switches the load towards zero voltage. The load is connected between the output terminal and the positive supply voltage $+U_B$ (Fig. 25).

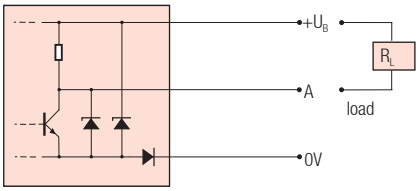


Fig. 25

O

Oil resistance

Long-term contact with any oils may affect plastics and weaken their resistance. However, inductive Full Inox sensors (series 700) and high-pressure-resistant (series P) types can be used in **oily environments** without restriction. For all other types, this is not necessarily the case.
Thus, please observe the following:

Lubricating oils:

Generally cause no problems. Use versions with oil-resistant PUR cable (special executions).

Hydraulic oils, cutting oils:

These attack most plastics. In particular, PVC cables discolor and become brittle. Measures:

- Wherever possible, avoid contact with these liquids, particularly at the sensing face.
- Use versions with oil-resistant PUR cable.

For photoelectric sensors, housing, optical unit, and cable should be considered separately:

Housing

The PBTP / polybutyleneterephthalate (Crastin®) used for the housing is highly resistant to all conventional types of oil, in particular, to cutting and hydraulic oils, as well as drilling emulsions.

Optics

The windows are generally of glass (with the exception of series 4150 and 5050), and are therefore not affected. However, oil on the light in- and outputs changes their optical properties. The effects should be examined from case to case.

Cable

The PVC cable used as standard is not resistant to most types of oil, and becomes brittle in long-term use. The optional PUR cable should therefore be used in oily environments.

Operating distance

The operating distance of inductive sensors is the distance at which a target approaching the sensing face triggers a signal change. The operating distance is measured according to IEC 60947-5-2 / EN 60947-5-2, using a **standard square target** moving **axially** (Fig. 26). This target is made of steel, e.g. type FE 360 in accordance with ISO 630, with a smooth surface, square shape, and thickness of 1 mm (Fig. 27). The sides equal the **diameter** of the inscribed circle of the sensing face or **three times the rated operating distance s_n** of the sensor, whichever is the greater.

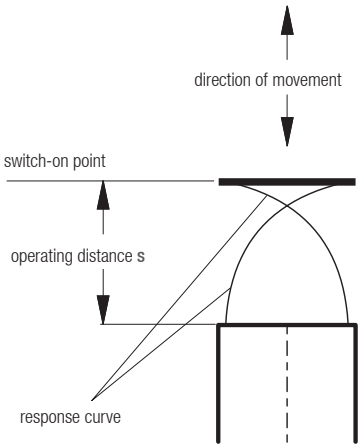


Fig. 26

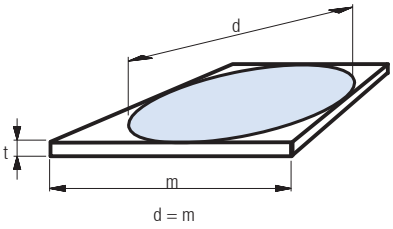


Fig. 27

Rated operating distance sn

This is the operating distance for which the sensor is designed. It can be found under “technical data”.

Effective operating distance sr

The measured operating distance for a given switch according to IEC 60947-5-2 / EN 60947-5-2.

$$0.9\ sn \leq sr \leq 1.1\ sn$$

This means that the manufacturing tolerance must not exceed ± 10%.

Usable operating distance su

This distance takes into account expected additional deviations caused by temperature and supply voltage fluctuations within the specified range.

0.9 sr ≤ su ≤ 1.1 sr
The temperature and supply voltage ranges can be found under “technical data”.

Assured operating distance sa
$0 \leq s_a \leq 0.81$ sn
This operating distance is guaranteed by the manufacturer for all specified operating conditions. It is the **basis for a safe design**.

See **SENSING RANGE**.

Output current

The devices are designed for a given maximum output current. If this current is exceeded, even for only a short time, the **overload protection** trips. Incandescent lamps, capacitors, and other heavily capacitative loads (e.g. long leads) have a similar effect to overload (see also **CAPACITANCE**).

Output resistance

In order that the output voltage, even without external load, follows the switching state, Contrinex sensors contain a built-in output resistance (pull-up or pull-down resistor). For operation at high switching frequencies, an additional external load resistor must be added (to reduce the electrical time constant).

Overvoltage protection

For maximum operating reliability and ease of use, Contrinex sensors feature a built-in protection circuit against very short, non-periodic supply voltage peaks, which complies with the requirements of IEC 60947-5-2.

P

Parallel connection

Connecting sensors in parallel, in order to perform logic functions, is possible without any problem (Figs. 28 and 29).

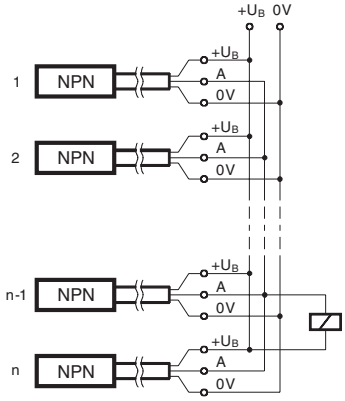


Fig. 28

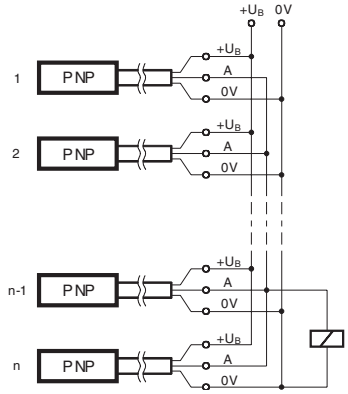


Fig. 29

Please note:

– The no-load supply current increases.
– Leakage currents add up, so that, even when closed, an inadmissible voltage drop can occur at the output.

PNP configuration

The output device contains a PNP transistor, which switches the load towards the positive supply voltage $+U_B$. The load is connected between the output terminal and the negative supply voltage 0V (Fig. 30).

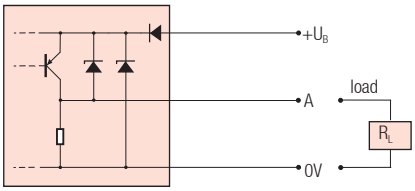


Fig. 30

Polarity reversal protection

Virtually all sensors in this catalog are protected against **any polarity reversal** at all terminals.

Polarization filter

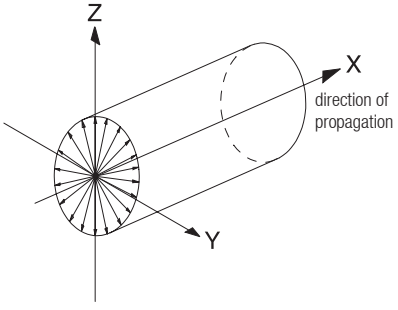


Fig. 31

Natural light (including the light from the emitter diodes) is not polarized (Fig. 31). When light has passed through a polarizing filter however, only that part of the original light which oscillates in the filter polarization direction is still present (Fig. 32). Polarization is retained after reflection by mirrored surfaces, only the direction of polarization may be altered. Diffuse reflection, on the other hand, destroys polarization. This difference can be used to suppress the disruptive effects caused by mirrored surfaces, by means of selection and configuration of suitable filters.

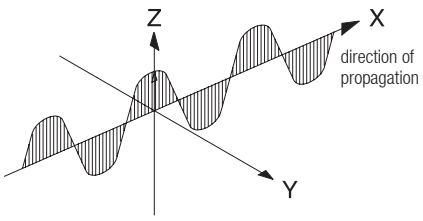


Fig. 32

Power-on reset

When switched on, the sensor output is activated for a short time due to physical reasons, even without the presence of a target in front of the sensing face. Sensors with power-on reset therefore include an additional circuit that closes the output for a short time during the switching-on phase, so suppressing an error signal (this function is also known as “switch-on pulse suppression”).

Power supply units

Circuit recommendations for suitable power supply units are shown in Figs. 35 and 36.

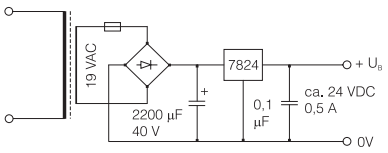


Fig. 33

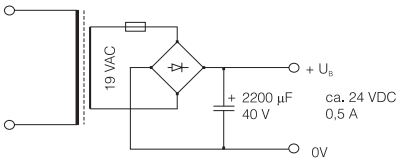


Fig. 34

Please observe:

– Unsuitable power supply units are the most frequent reason for sensor problems!
– A transformer and rectifier are not sufficient; at least a smoothing capacitor is essential (due to the ripple content).
– Transformers with a 24 V output, rear-position rectifier and smoothing capacitor deliver a no-load voltage of well above 30 V. Consequently, devices with a maximum supply voltage of 30 V can be damaged.

R

Reflectors

By means of built-in polarization filters, polarized reflex sensors are designed so that they respond only to the light reflected from special reflectors. These operate according to the principle of the 3-way mirror (Fig. 35). The choice of the correct reflector for a specific application is determined by the required operating distance and installation possibilities. The reflector must be installed perpendicularly to the optical axis (tolerance ± 15°).

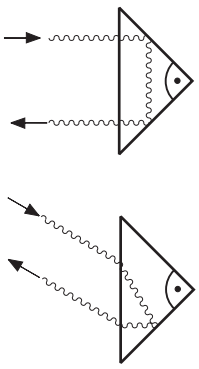


Fig. 35

Repeat accuracy

Repeat accuracy (according to IEC 60947-5-2 / EN 60947-5-2) is understood to be the repeat accuracy of the effective operating distance s_r over an 8-hour period at an ambient temperature of 23 ± 5°C (73.4 ± 41°F) and with a specified supply voltage U_B. The specified repeat accuracy refers to this definition. Successive measurements made immediately one after the other generally lead to much better repeat accuracy.

Response diagram

The specified values for the operating distance refer to an **axial** approach of the target. For staggered or lateral movements, type-specific response curves are valid. Two typical examples are shown below (Fig. 36 and Fig. 37):

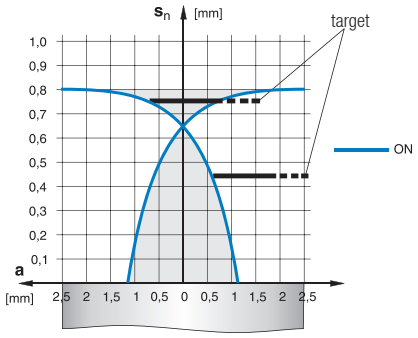


Fig. 36 DW-AD-603-M5

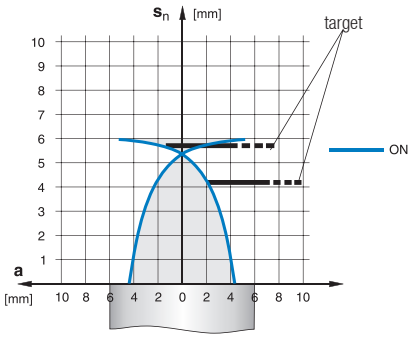


Fig. 37 DW-AD-503-M12

Depending on series, size, and mounting type (embeddable or non-embeddable), the response diagrams differ.

Ripple content

Too much ripple content causes undefined switching behavior. To remedy this, use a larger smoothing capacitor, or a stabilized power supply unit. The specified maximum supply voltage U_B must not be exceeded, not even during U_{SS} peaks.

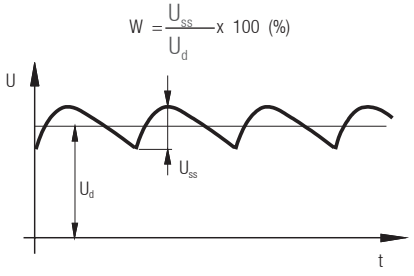


Fig. 38

S

Safety

The devices in this catalog have not been designed for safety-relevant use. In cases where the safety of people is dependent on their functioning, it is the user's responsibility to ensure that the relevant standards, in particular ISO 13849-1, and regulations are complied with. Contrinex assumes no liability for personal injury.

Sensing range

The specified sensing range of photoelectric sensors is the maximum usable distance between the device and the standard target (diffuse sensors); between the device and the reference reflector (reflex sensors), and between the emitter and the receiver (through-beam sensors). The potentiometer must be set for maximum sensitivity, or for diffuse sensors with background suppression, for maximum sensing range. Moreover, the specified reflector (reflex sensors) or standard target (diffuse sensors) must be used.

Series connection

The connection of sensors in series in order to achieve logic functions is possible, but not recommended. The same effect can be achieved by the **parallel connection** of sensors with **NC function** (instead of the series connection of models with NO function), or vice versa. However, please note that, as a result, the output signal is inverted.

Shock resistance

The sensors in this catalog are tested for resistance to a shock of 30 g (30 times gravitational acceleration) for a period of 11 ms, according to IEC 60068-2-27.

Short-circuit protection

The devices in this catalog feature built-in pulse protection against short-circuits and overloads, which alternately closes and opens the output when the maximum output current is exceeded, until the short-circuit is eliminated. Short-circuits between the output and the supply voltage terminals do not damage the sensor, and are allowed in permanence. The same applies to overloads. During short-circuits, the LEDs do not function.

Standards

The sensors in this catalog comply, either completely or to a great extent, with the following standards:

- IEC 60947-5-1, **IEC 60947-5-2**, EN 60947-5-1, **EN 60947-5-2**
- IEC 61000-4-1, 61000-4-2, 61000-4-3, 61000-4-4, DIN EN 55011, DIN EN 55081-2, DIN EN 50140
- IEC 60529 / DIN 40050
- IEC 60947-1 / EN 60947-1 / DIN VDE 0660, part 100, part 100 A3, part 200, part 208
- DIN EN 50008, 50010, 50025, 50026, 50032, 50036, 50037, 50038, 50040, 50044

Supply voltage u

The specified maximum supply voltages must **not be exceeded**. For maximum operating reliability and ease of use, Contrinex sensors contain a built-in protection circuit against very short, non-periodic, supply voltage peaks, which complies with the requirements of IEC 60947-5-2. Operating voltages below the lower specified limit, even for short periods, do not damage the switches, but impede their operation.

Switching frequency

The maximum switching frequency of inductive sensors indicates the highest permissible number of pulses per second for a constant pulse/pause ratio of 1 : 2 at **half the rated operating distance s_n**. Measurement is according to IEC 60947-5-2 / EN 60947-5-2 (Fig. 39).

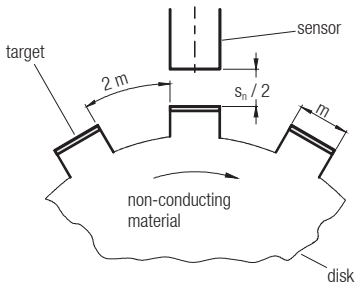


Fig. 39

In the case of photoelectric sensors, the frequency of operating cycles (f) is determined from the formula:

$$f = \frac{1}{t_{on} + t_{off}}$$

where:
t_{on} is the turn on time
t_{off} is the turn off time

t_{on} and t_{off} are measured in accordance with IEC60947-5-2 2007 paragraph 8.5.3. (see also **Turn-on/turn-off time**, in this glossary).

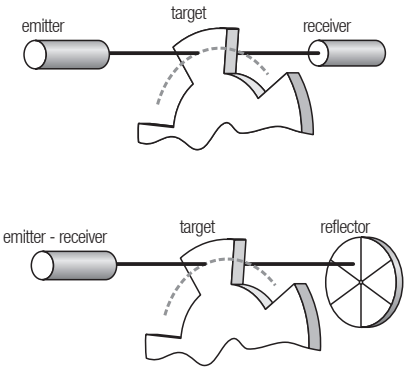


Fig. 40: Through-beam and reflex modes: the light beam must be fully broken by the target.

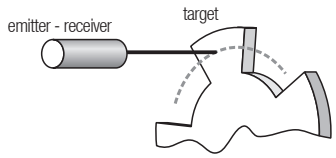


Fig. 41: Diffuse mode: the target must be of the same material as the standard target.

T

Teach-in

Some devices have a teach-in capability instead of a potentiometer to adjust their sensing range, etc. Teach-in is achieved either directly by pressing a button or remotely via IO-Link.

Temperature drift

The specified operating distances refer to a nominal ambient temperature of 23°C (73.4°F). The operating distance, as a function of ambient temperature, follows approximately the curve shown in Fig. 42.

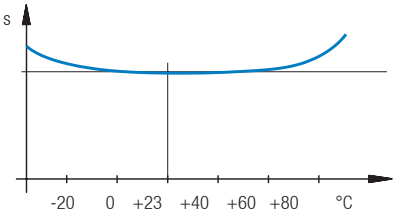


Fig. 42

The temperature of the target itself has practically no influence on the operating distance. Within the permitted temperature range of, as a rule, -25°C to + 70°C (-13°F to + 158°F), the operating distance varies by a maximum of ± 10% compared to its value at 23°C (73.4°F).

Test input

The emitters of through-beam sensors are provided with a test input. Light emission can be switched on and off by means of this input, which, together with the corresponding evaluation of the receiver reaction, permits very efficient sensor monitoring.

Tightening torque

Over-tightening of the nuts can mechanically damage cylindrical sensors. The specified maximum permissible tightening torques must therefore not be exceeded.

Classics / Extra Distance (Series 500*, 520*, 600, 620)

Housing size D	M (Nm)
M4	0.8
M5	1.5
C5	0.2
M8	8 / *4
C8	1
M12	10**
M18	25
M30	70
C44	2.5

** 6 Nm for the first 10 mm

Full Inox (Series 700)

Housing size D	M (Nm)
M8	8
M12	20
M18	50
M30	150

Series 1040 / 50, 1120, 1180, 1180W

Housing size D	M (Nm)
M5	1.5
M12	10
M18 / M18W	20

Time delay before availability

The time delay before availability is the maximum time the sensor requires for **operating readiness** after the supply voltage has been switched on.

Turn-on / turn-off time

The output **turn-on** time t_{on} is the minimum period of time required for a sensor to detect the **presence** of a light beam and output an ON signal.

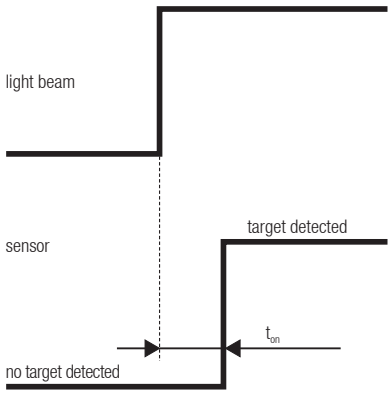


Fig. 43: Output turn-on time

The output **turn-off** time t_{off} is the minimum period of time required for a sensor to detect the **absence** of a light beam and output an OFF signal.

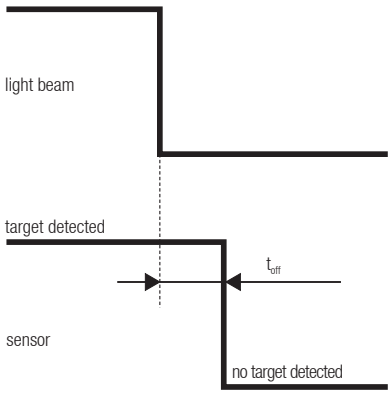


Fig. 44: Output turn-off time

t_{on} and t_{off} are measured in accordance with IEC60947-5-2 2007 paragraph 8.5.3.

V

Vibration resistance

The sensors in this catalog are tested for resistance to vibrations of 1 mm amplitude at 55 Hz, according to IEC 60068-2-6.

Voltage drop

In the switched-through condition, a (current dependent) voltage drop develops across the output transistor; the output voltage, therefore, does not entirely reach the corresponding supply voltage (to be particularly taken into account with series connection and electronic inputs).

W

Wire-break protection

All sensors in this catalog are equipped with wire-break protection. If a voltage supply lead breaks, the output is disabled, thus avoiding an error signal.

Wiring

Sensor cables must not be laid in parallel in the same cable runs as cables connected to **inductive loads** (i.e. protection solenoids, magnetic rectifiers, motors, etc.), or which conduct currents from **electronic motor drives**. Leads should be kept as short as possible; however, with suitable wiring (low coupling capacitance, small interference voltages), they can be up to 300 m long.
To reduce electromagnetic interference, apply the following measures:

- Maintain the distance to interfering cables > 100 mm
- Use shields
- Install inductances (contactors, magnetic rectifiers, relays) with RC networks or varistors

Get more insights at: www.molex.com/link/contrinex-sensors.html

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Order No. 987651-9691 Printed in Germany/500/BD/YE/2018.11