

Info card

efector100®

Inductive sensors

ifm electronic

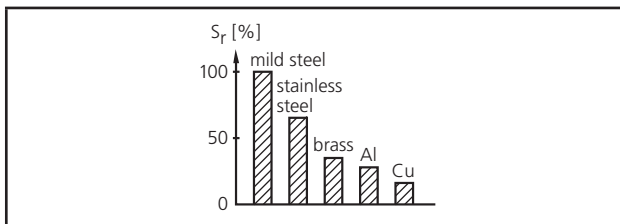


Correction factors

Values → data sheet

Exception K1 units:

Constant sensing range on all metals



Configuration of cables and connectors

Colours: BK: black, BN: brown, BU: blue, WH: white

Standard configuration for 3-wire DC:

| | Cable | Terminal chamber | US-100-plug |
|--------|-------|------------------|--------------------------|
| L+ | BN | 1 / 3 | pin 1 / BN |
| L- | BU | 2 / 4 | pin 3 / BU |
| Output | BK | X | pin 2 / WH pin 4 / BK |

2-wire quadronorm units:

| | Cable | Terminal chamber | US-100-plug |
|--|-------|------------------|-------------|
| | WH | — | 1 / 4 |
| | BK | — | 1 / 4 |

Pin configuration of the US-100 connectors (view onto the plug at the unit)

pin 4: BK pin 3: BU
pin 1: BN pin 2: WH

For the cable and the pin configuration as well as the unit data of special versions please refer to the wiring diagrams in our main position sensors catalogue or on our website.



This info card is to be regarded as a supplement to the main position sensors catalogue and to the individual data sheets. For further information and contact addresses please visit our homepage at www.ifm.com.

Important terms

| | |
|---------------------------|---|
| Active Zone / Active face | Area over the sensing face in which the sensor reacts to the approach of the target. |
| Output function | Normally open: Object within the active zone – output switched. Normally closed: Object within the active zone – output blocked. Programmable: Choice between normally closed or normally open. Positive switching: Positive output signal (to L-). Negative switching: Negative output signal (to L+). |
| Power-on delay time | The time the sensor needs to be ready for operation after application of the operating voltage (in the millisecond range). |
| Hysteresis | The difference between the switch-on and the switch-off point. |
| Leakage current | Current for the internal supply of 2-wire units, also flows through the load when the output is unswitched. |
| Current consumption | Current for the internal supply of 3-wire DC units. |
| Switch point drift | The shifting of the switch point owing to changes in the ambient temperature. |
| Short circuit protection | ifm sensors which are protected against excessive current by means of a pulsed short-circuit protection. The inrush current of incandescent lamps, electronic relays and low resistance loads may cause this protection to cut in and turn the switch off! |
| Operating voltage | The voltage range in which the sensor functions safely. A stabilised and smoothed direct voltage should be used! Take into account residual ripple! |
| Switching frequency | Damping with standard target (mild steel) at half nominal sensing range. The damped – undamped ratio is 1 : 2. |

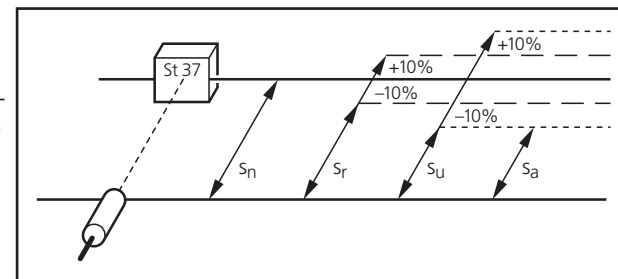
Sensing range

Nominal sensing range s_n : design range of the unit

Real sensing range s_r : individual deviations at room temperature between 90 % and 110 % of s_n

Useful sensing range s_u : switch point drift between 90 % and 110 % of s_r

Operating distance s_a : safe switching between 0 and 81 % of s_n



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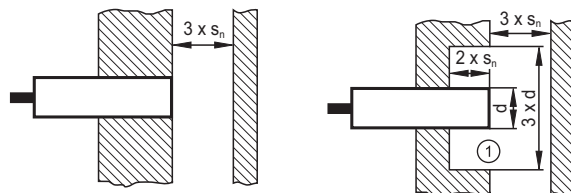
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Tips on flush and non-flush mounting in metal

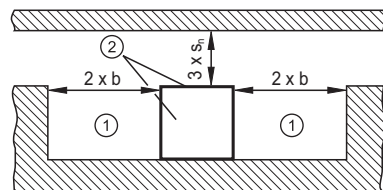
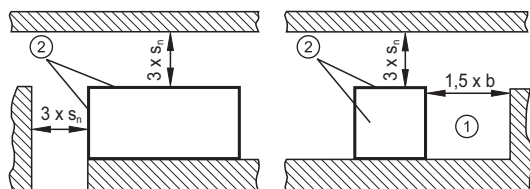
Mounting instructions
cylindrical designs



flush

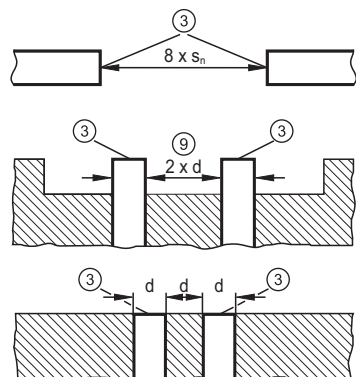
non flush

Mounting instructions
rectangular designs



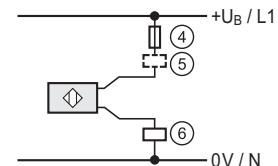
When mounting units of the same type, certain minimum distances have to be adhered to if the units are mounted opposite each other or in parallel.

Applies to cylindrical and rectangular sensors

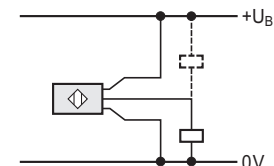


If non-flush mountable units are mounted flush the device will be permanently switched!

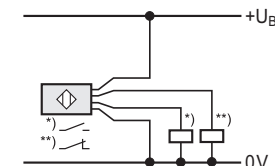
Connection systems



2-wire technology
(negative or positive switching)

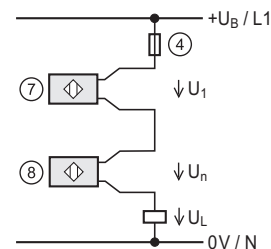


3-wire technology
(negative or positive switching)



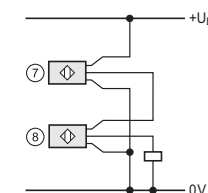
4-wire technology
(positive switching, normally closed and normally open)

Series connection



Series connection of 2-wire units

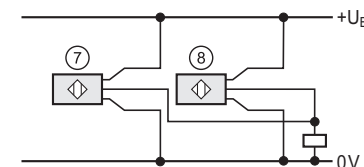
Not recommended, as output undefined in undamped state. Use special types which can be connected in series (max. 2 units). Voltage drops add up.



Series connection of 3-wire units

Max. 4 units. Power-on delay times, voltage drops and current consumptions add up. U_{Bmin} (sensor) and $U_{HIGHmin}$ (load) must remain stable.

Parallel connection



Parallel connection 2-wire units

Not possible.

Parallel connection 3-wire units

The current consumption of all non-switched units adds up. The units can be used in combination with mechanical switches.

- ① Clear space
- ② Active zone
- ③ Sensing face
- ④ Miniature fuse according to the technical data sheet, if specified. Recommendation: check the unit for reliable function after a short circuit.
- ⑤ Negative switching

- ⑥ Positive switching
- ⑦ Sensor 1
- ⑧ Sensor n
- ⑨ In individual cases deviating value → data sheet

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