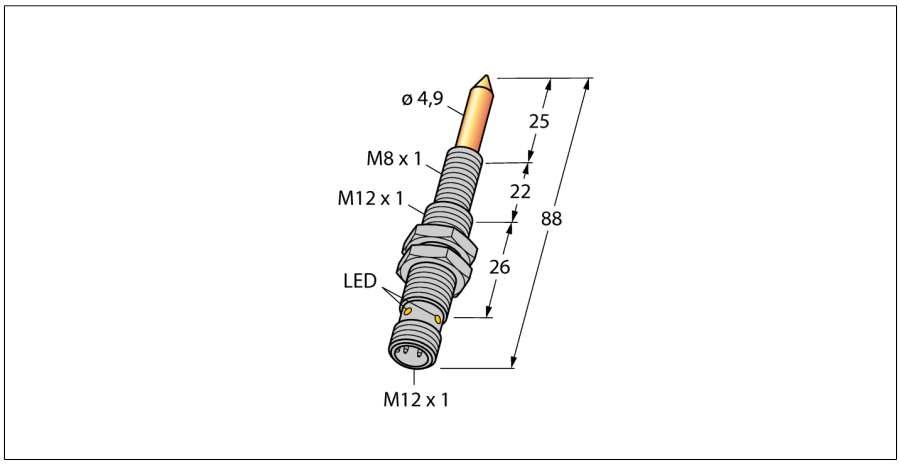
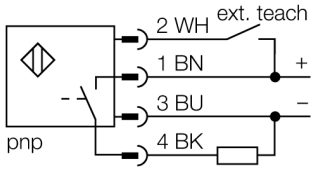
Magnetic field sensor
For detection of M6 weld nuts
For Detection of Ferromagnetic Parts
NIMFE-EM12/4.9L88-UP6X-H1141/S1182



- **Threaded barrel, M12 x 1**
- **Stainless steel, 1.4301**
- **DC 3-wire, 10…30 VDC**
- **NC/NO parametrizable with teach adapter VB2-SP1**
- **M12 x 1 male connector**

Wiring Diagram



Type designation	NIMFE-EM12/4.9L88-UP6X-H1141/S1182
Ident no.	1600616
Ambient temperature	-25…+70 °C
Operating voltage	10…30 VDC
Residual ripple	≤ 10 % U_{ss}
DC rated operational current	≤ 100 mA
No-load current I_0	≤ 15 mA
Residual current	≤ 0.1 mA
Isolation test voltage	≤ 0.5 kV
Short-circuit protection	yes/ Cyclic
Voltage drop at I_e	≤ 1 V
Wire breakage/Reverse polarity protection	yes/ Complete
Output function	3-wire, Connection programmable, PNP
Design	Threaded barrel, M12 × 1
Dimensions	88 mm
Housing material	Stainless steel, V2A (1.4301)
Active area material	Stainless steel, V2A (1.4301), TIN coating
Max. tightening torque housing nut	10 Nm
Electrical connection	Connector, M12 × 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
MTTF	874 years acc. to SN 29500 (Ed. 99) 40 °C
Power-on indication	LED green
Switching state	LED yellow

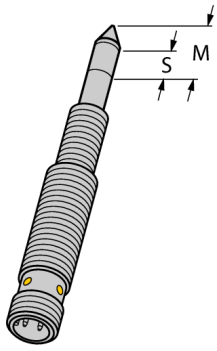
The weld sensors are available in different versions, with different signal intensities and diameters. Ferromagnetic parts which differ strongly in their material properties and diameters can thus be detected. A target part has to be located within the so called sensitive area in order to be detected. The internal sensor signal reaches the maximum intensity if the sensitive area is completely covered by the target. Partial coverage is also possible.

Sensitive area S = 9 mm

Within this area the sensor signal changes when components are connected.

Maximum range M = 13 mm

In case of complete coverage of the sensitive area the maximum signal intensity is achieved.



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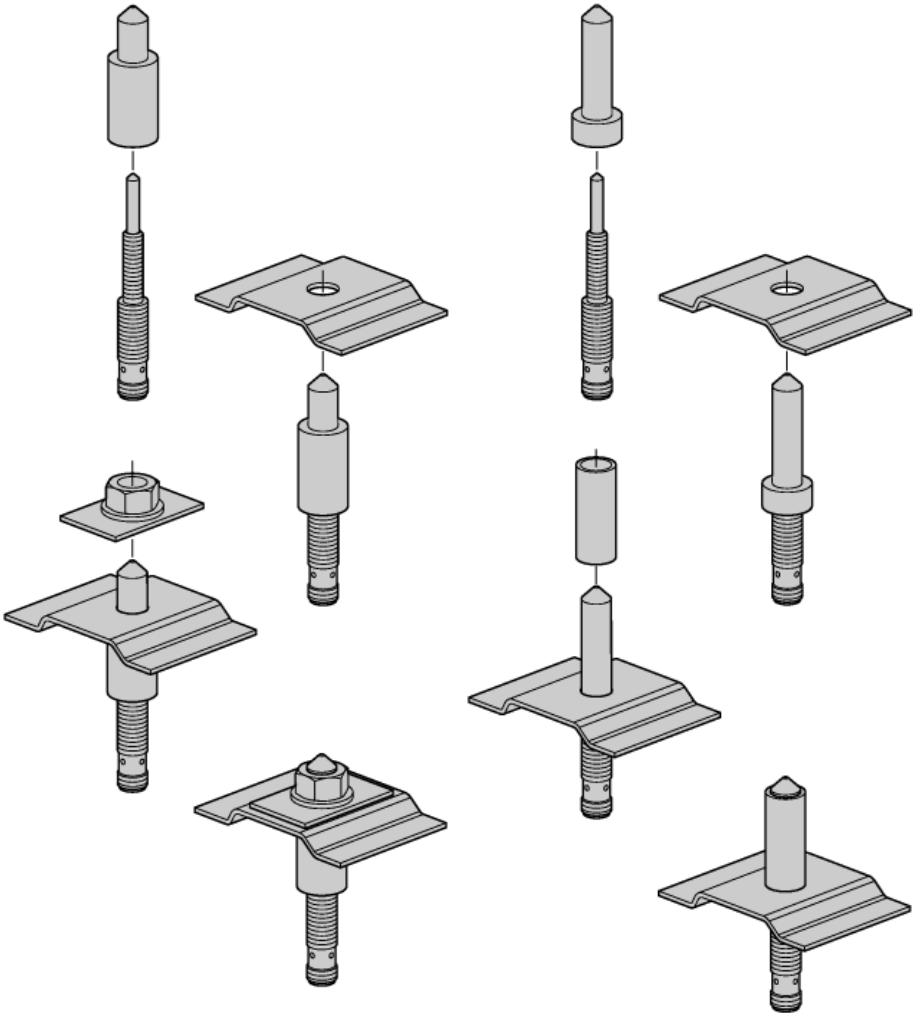
examples of use



The magnetic field sensor for detection of ferromagnetic spares is espcially suited for the detection of welding nuts as well as spacer or restraining sleeves. The spares have to be made of ferromagnetic material in order to guarnatee correct performance. Most applications need center bolts to retain the welding nuts and restraining sleeves and thus provide mechanical protection of the sensors. Theses bolts have to be made of non-ferromagnetic material, like stainless steel for example. Center bolts are not available at Turck, as these have to be individually produced for and adjusted to the correspondent application.

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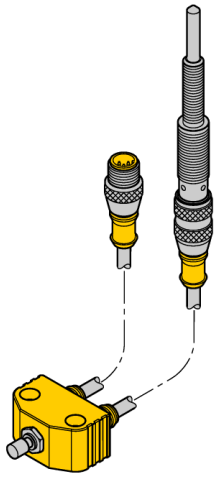
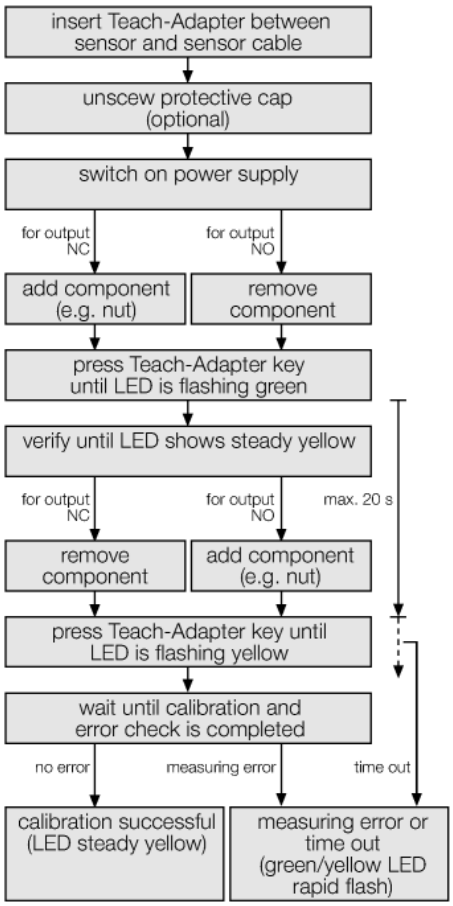
Parameterisation with the teach adapter:





The measuring signal in the sensor is influenced by the diameter and the material characteristics of the center bolt, but also by the cover of the sensitive area. Therefore each sensor has to be conditioned to the operating environment, i.e. to the applied sleeves or protective caps and the target (nut, sleeve etc.) In order to calibrate a sensor, the teach adapter VB2-SP1 made by Turck is needed.

Error display

If the output is in switch-on state and the error messages 'overload' i.e. 'short circuit' are signaled, the output is immediately switched off. Within one second the sensor checks if the state of short circuit still remains, if not, the output is switched-on again. The states of 'overload' or 'short circuit' are signaled yellow by the LED with 1 Hz. Each sensor monitors the internal signals and hardware components. The output is switched-off by the following errors:

- Interruption of the sensor signal (e.g. by a magnetic field)
- Excess temperature (internal device temperature >100°C)
- Defective hardware

Sensor errors are indicated by alternate flashing green and yellow LEDs. The sensor errors are usually self-resetting, i.e. the sensor changes automatically to the normal operating state, after the error was corrected. After switching on the operating voltage the sensor checks its operating parameters. If errors occur during the checking process, the sensor remains in the error state (green LED blinking). The output cannot be switched-on in this state. A new calibartion with the teach adapter is required.

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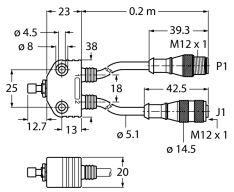
Accessories

Type code	Ident no.	Description	
VB2-SP1	A3501-29	Teach adapter	

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