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**TURCK**

# NIMFE Weld Nut Sensors

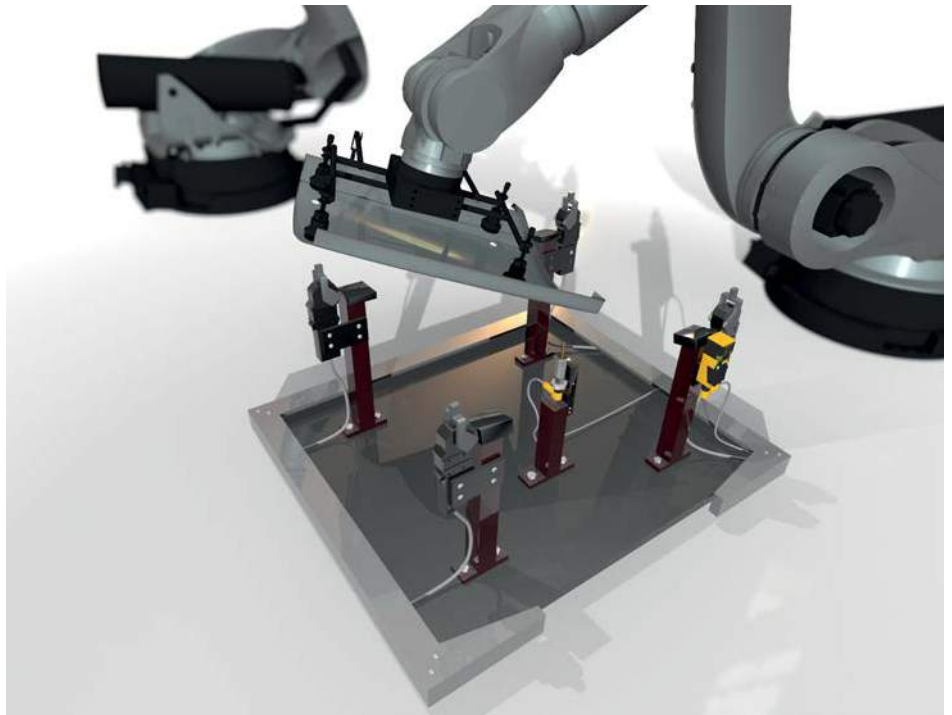


# NIMFE – Weld Nut Sensors

In the automotive industry, spacer sleeves or reinforcing sleeves and weld nuts are often used to assemble sheet metal elements. In order to guarantee a smooth production process that is free from rejects, the availability of these parts must be continually monitored.

Spacer sleeves and weld nuts are used to ensure that vehicle elements, such as the frame, U-beams, car seats or tanks, are assembled to meet design requirements. If individual nuts or sleeves are not present in the required locations, the production process stops and the workpiece is a reject. If these errors are not detected and the unsuitable parts are passed down the line for further processing, the manufacturer incurs considerable costs. Even complete car body shells may be rendered unsuitable for further processing if the stabilizing elements are not welded in position.

In order to avoid these costs, it is essential that the availability of weld nuts or spacer sleeves is continually monitored during the assembly process.

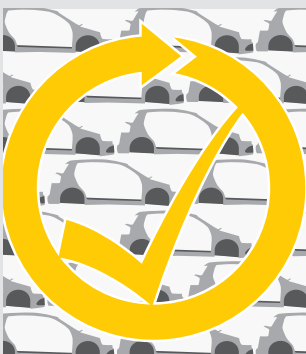


## Reliable detection

The Turck weld nut sensor not only detects metal, but also replaces the location bolt. The sensor is designed to detect damping caused by weld nuts and detects ferromagnetic components such as sleeves, nuts and washers. The product features a brass housing and fulfills the requirements of protection class IP67. 4 LEDs reliably indicate the current switching status, including the presence of target objects and any errors that have occurred.

## Robust sensor solution

As the detection of weld nuts takes place under extremely challenging production conditions—and because employees don't always work as carefully as they should—the centering pin and the sensor must be fitted with adequate mechanical protection. This protection is provided by selected sensor materials or stainless steel centering sleeves, which are placed on the sensor and hold the nut in position.



### High levels of reliability

Technology based on many years of experience, paired with optimum materials and sensor models tailored to the application — all of these factors guarantee a reliable detection system for weld nuts. The robust sensors offer a high level of security.

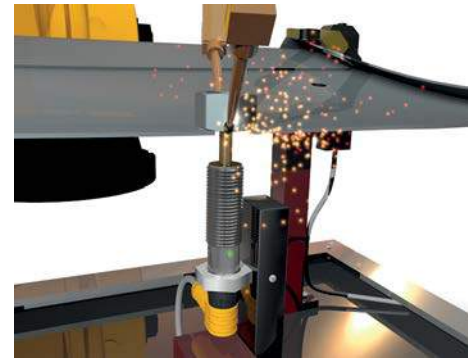
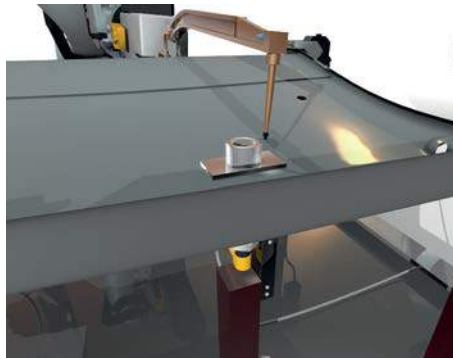


### Cost-effective detection method

Camera systems and other optical sensing solutions can be easily replaced by Turck weld nut sensors. Benefit from significant cost savings thanks to low investment costs and simple calibration.

Turck weld nut sensors are produced from high-quality stainless steel and sealed with a robust titanium nitride (TiN) coating. The sensors are capable of detecting ferromagnetic target objects through non-ferromagnetic material, meaning that they only emit a signal when the presence of magnetic metals is detected. As weld nuts are made of steel, they are a perfect target object for this type of sensor.

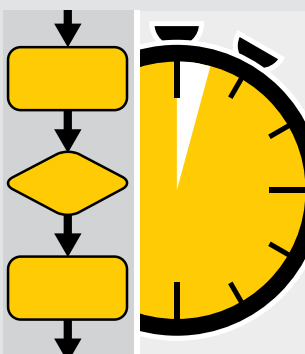
A temperature compensation system balances out the extreme fluctuations in temperature that occur during the welding process.



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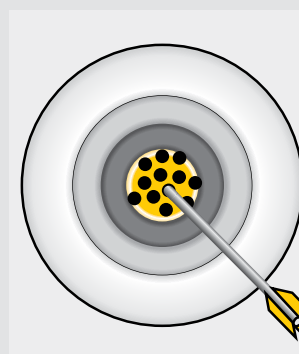
Reduce your production costs significantly and increase process reliability with Turck weld nuts

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#### Simple teach-in process on site

The sensors are configured via a teach adapter, which can be used with all the weld nut sensors used within a system. The teach-in process takes less than a minute, ensuring that the sensors are back up and running cost-effectively in no time.



#### Optimal integration

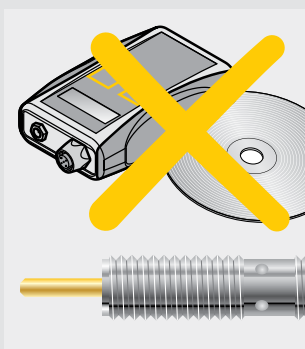
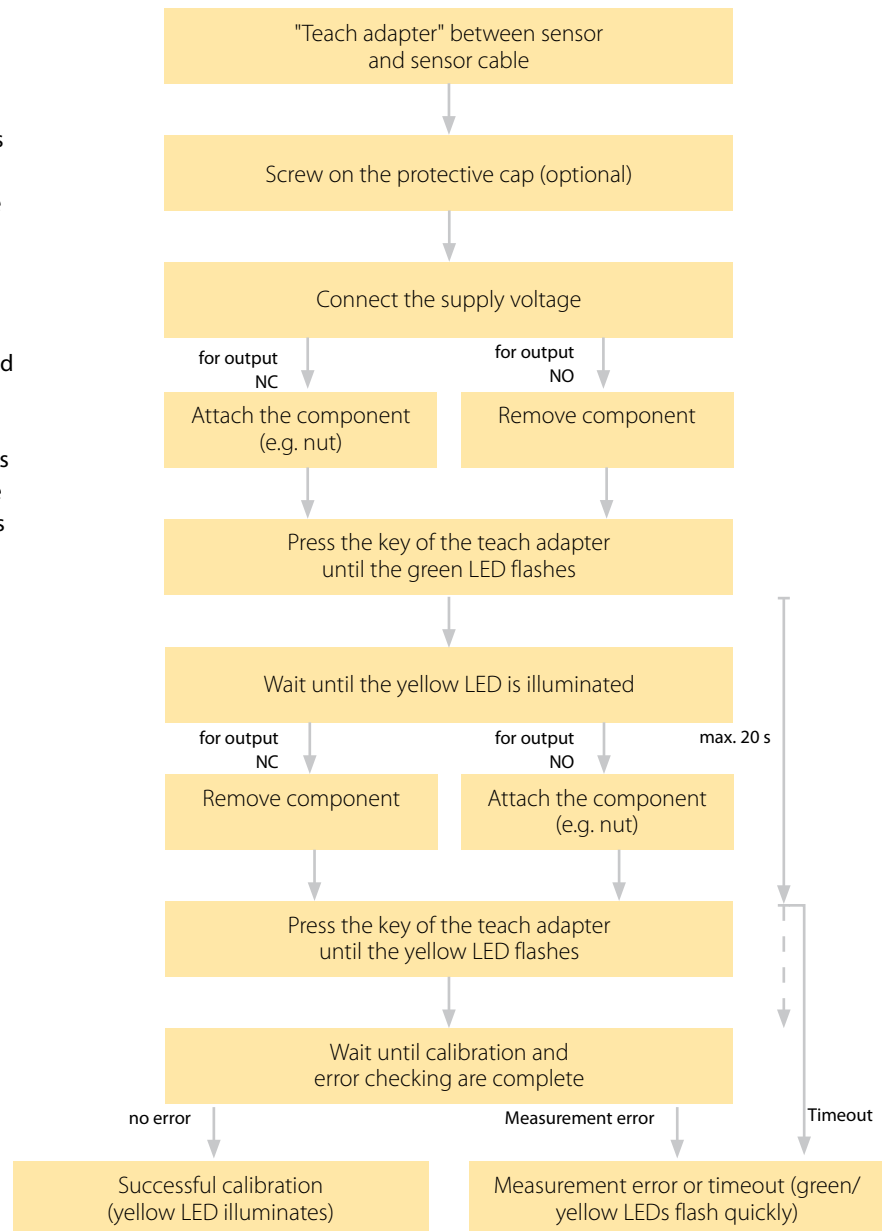
The sensors are tailored for the detection of weld nuts in the harsh production environments. They can be integrated into the existing application seamlessly. Weld-resistant materials protect the sensor and guarantee a long service life in the automotive production environment.

# Teach-in Process

## How to teach the sensors

To ensure that the Turck sensor only detects the nut and not the metal sheet, the sensor parameters can be taught in via pin 2 of the M12x1 male connector and an additional teach adapter (VB2-SP1) in no time.

At the push of a button the sensor "learns" to differentiate between the metal sheet and the metal sheet plus welding nut, this way the presence/absence of the welding nut is safely detected. Once the sensor parameters have been set, the "learned" parameters are memorized until another teach-in process is performed.



**No additional tools required**  
Use of the weld nut sensors requires no further electronics or software. Therefore, the investment costs are the same as the total costs.



**High operational safety**  
The titanium nitride coating of the sensor tips increases the wear protection and the scratch resistance of the devices and significantly increases the service life of the NIMFE sensors.

# NIMFE – Types and Features

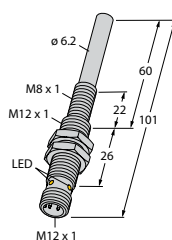
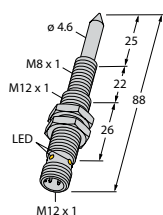
The NIMFE weld nut sensors are available in different versions, with various signal intensities and diameters, enabling the detection of ferromagnetic parts with wide-ranging material properties and diameters. For an

object to be detected, it must be within the sensitive area. This area is marked by laser engraving, to ensure that installation and configuration is a simple and fast process. The internal sensor signal reaches the

maximum intensity if the sensitive area is completely covered by the component. Partial coverage is also possible.

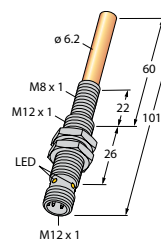
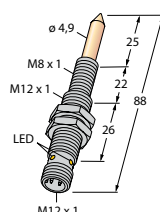
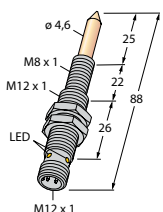
## Standard versions

Ident no.	1600608* 1600610*	1600609 1600611*
Type code	NIMFE-M12/4.6L88-UP6X-H1141 NIMFE-M12/4.6L88-UN6X-H1141	NIMFE-M12/6.2L101-UP6X-H1141 NIMFE-M12/6.2L101-UN6X-H1141

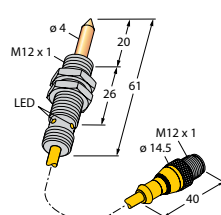
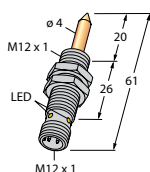


## Stainless steel with TiN coating

Ident no.	1600620* 1600617	1600616*	1600612*
Type code	NIMFE-EM12/4.6L88-UP6X-H1141/S1182 NIMFE-EM12/4.6L88-UN6X-H1141/S1182	NIMFE-EM12/4.9L88-UP6X-H1141/S1182	NIMFE-EM12/6.2L101-UP6X-H1141/S1182



Ident no.	1600621* 1600622	1600623* 1600624
Type code	NIMFE-EM12/4.0L61-UP6X-H1141/S1182 NIMFE-EM12/4.0L61-UN6X-H1141/S1182	NIMFE-EM12/4.0L61-UP6X-0,3XYE-RS4/S1182 NIMFE-EM12/4.0L61-UN6X-0,3XYE-RS4/S1182



The variants marked with \* are priority items and are available from stock.

Optimized for:	M5-M10	M6-M12	M6-M12	M6-M12	M10-M20	M10-M20
Diameter	4.0 mm	4.6 mm	4.6 mm	4.9 mm	6.2 mm	6.2 mm



UP6X 3 wire PNP 10-30 VDC  
 UN6X 3 wire NPN 10-30 VDC

## Comprehensive portfolio

With the NIMFE series, Turck provides an established series of sensors for the detection of weld nuts. The devices made of brass or stainless steel are available with different tip diameters from 4.0 mm to 6.2 mm and are optimized for the dimensions of the weld nuts used. The sensors are suitable for detecting weld nuts in sizes M5 to M20.

The tips of the stainless steel sensors have a coating of titanium nitride (TiN). The ceramic material, which has exceptional hardness and corrosion resistance, makes the devices more resistant to scratches and provides additional protection against wear. It also protects the sensors from weld splatter. The chemically resistant tips of the TiN-coated sensors can

withstand high temperatures and feature good non-stick properties.

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