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

### Standard versions

<table>
<thead>
<tr>
<th>Ident no.</th>
<th>M8 x 1 Ø 4.6</th>
<th>M12 x 1 Ø 4.9</th>
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<tr>
<td>1600609</td>
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<td>Stainless steel with TiN coating</td>
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<td>1600611</td>
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### Comprehensive portfolio

With the NIMFE series, Turck provides an established line of sensors for the detection of weld nuts. The devices made of brass or stainless steel are available in different tip diameters from 4 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.
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 assembly process that is free from rejects, the availability of weld nuts or spacer sleeves is continually monitored throughout the process.

Spacer sleeves and weld nuts are essential for the assembly process so that vehicle elements, such as the frame, beams, or sleeves, can be assembled according to design requirements. If individual nuts or sleeves are not present in the required locations, the production process stops and no assembly is possible. If these screws 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 due to missing weld nuts or spacer sleeves.

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 sensors are used to detect the presence and position of weld nuts and spacer sleeves, ensuring that the availability of these parts is continually monitored.

The teach-in process is performed via a teach adapter (VB2-SP1) in no time. How to teach the sensors:

1. Attach the component (e.g. nut) to the sensor.
2. Press the key of the teach adapter until the green LED flashes.
3. Wait until calibration and error checking are complete.
4. Successful calibration (yellow LED illuminates)
5. Press the key of the teach adapter until the yellow LED flashes.
6. Wait until the yellow LED is illuminated.
7. Screw on the protective cap (optional).
8. Connect the supply voltage for output NC.
9. Press the key of the teach adapter until the green LED flashes.
10. Wait until the yellow LED is illuminated.
11. Press the key of the teach adapter until the yellow LED flashes.
12. Wait until the yellow LED is illuminated.
13. Measurement error or sensor replacement (e.g. yellow LED flashes quickly).
14. Successful calibration (yellow LED illuminates)

Teach-in Process

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

Turck weld nut sensors are produced from high-quality stainless steel and coated with a robust titanium nitride (TiN) coating. The sensors are capable of detecting ferromagnetic target objects through non-ferromagnetic materials, ensuring that only metal 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. 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 four 4 LEDs reliably indicate the current switching state, including the presence of target objects and any errors that have occurred.

High levels of reliability

Technology based on many years of experience coupled with optimum materials and sensor models tailored to your 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 easily replace Turck weld nut sensors. These sensors are far from cost savings thanks to low investment costs and simple calibration.

Simple teach-in process on site

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

Optional 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.

No additional tools required

Use of the weld nut sensors requires no additional tooling or electronics. Therefore, the investment costs are the same as the total costs.

High operational safety

The Turck weld nut sensor uses the same contactless design and the robust stainless steel allows for appropriate safety to comply with the automotive safety standards.