



FACTORY AUTOMATION

SOLUTIONS IN

WELDING TECHNOLOGY





Let's say that you use many welding robots in basic construction operations, in which metallic components are accurately joined by spot or seam welding. Precision is required in the positioning of these components and a high quality welded connection is demanded. This is where sensor systems from Pepperl+Fuchs can make a decisive contribution to your process monitoring and control – and ensure high plant availability! Inductive interrogative systems for X or C electrodes signal the state “open” and “closed” and, where necessary, the working clearance stroke of the welding electrode. Our optical sensor system monitors the geometry you have defined for the welding tips after each machining sequence. The welding gun sensor makes sure that all studs are accurately seated.

Optimise basic construction quality – automatically!

Solutions in welding technology

MONITORING SYSTEMS FOR

WELDING ELECTRODES

Important quality prerequisites for welding robots are the monitored positioning of components and their secure location at the welding station. This is the only way of guaranteeing that the welding point will be correctly positioned. In the modern production process, sensors provide data on the state “open” and “closed” and, where necessary, the working clearance stroke of the welding electrode. This information is used to automatically control the welding process.

Pepperl+Fuchs offers a “tailor made” solution for both current welding systems – the “C” and “X” electrode forms.

NBN3-FXS7-3E2-2V1 for the X electrode

Sensor systems monitor the welding operation!

NBN3-FCS7-3E2-2V1 for the C electrode



Our sensor concept can be installed quickly and economically with just 2 screws. Electrical connection is by means of M12 x 1 plug connection. The monitoring module sensor peripherals can be flexibly adjusted to different electrode setting angles to completely satisfy your requirements.

- One LED indicator and one pnp N.O. output per sensor
- 2.4 mm assured operating distance
- 10 V DC ... 30 V DC operating voltage
- Mechanical and electrical resistance to welding

Technical features that are convincing!



PRECISION WITH THE WELDING GUN SENSOR



OBZ-30GK-E2-V1

Save costly reworking due to faulty studs!
The welding gun sensor monitors correct
welding of the studs. Bending and
breakages are detected
immediately.



*...and all studs are
seated precisely!*

CONSISTENT QUALITY WITH THE WELD TIP SENSOR

You need a consistent, accurately defined electrode form, to achieve high welding quality. With each welding operation the shape of the electrode changes slightly, so that after an individually defined number of welding points, the electrode must be re-dressed to its original form. The optical "Weld tip sensor" from Pepperl+Fuchs automatically checks the quality of the machining. Non-machined and poorly machined tips, due for example to a broken cutter or bent electrode arm, are directly detected. Thus immediate intervention is possible and costly and tedious re-working is avoided.

*Each welding point
is just like any other!*

WELDING-RESISTANT SENSORS

WITH REDUCTION FACTOR 1

Pepperl+Fuchs is your supplier for welding-resistant sensors with and without reduction factor 1. Sensors with reduction factor 1 or K-factor detect a variety of metals, such as sheet steel and aluminium components used in basic construction - and at the same distance. For these applications we offer cylindrical sensors in the configurations M12, M18 and M30, for embedded and non-embedded installation.

These products perform convincingly, due to their special characteristics:

- Electromagnetically resistant to external fields in welding operations
- Mechanically resistant to welding spray, thanks to a Teflon coating
- Reduction factor 1 for the same operating distance on all metals

NRB.../NRN... Series



The right sensor for all applications!

We also provide welding-resistant standard sensors in square-shaped housings:

Series	Operating distance	Dimensions (H x B x L)
F29A	4 mm, non embeddable	(9 x 10 x 27) mm
VariKont L	15 mm and 20 mm, embeddable 30 mm, non embeddable	(40 x 40 x 55) mm
VariKont	20 mm, non embeddable 40 mm, non embeddable	(40 x 40 x 118) mm (55 x 55 x 118) mm



MATING CONNECTORS AND CONNECTION

CABLES FOR BASIC CONSTRUCTION

In addition to the sensors themselves, Pepperl+Fuchs supply a complete range of mating connectors, cable plugs and the associated connection cables. Specially for the motor industry, we offer flame retardant mating connectors and cable in halogen and silicon-free materials, with a cross-braided cover in PUR and with a minimum bending radius of 40 mm. These are suitable for use between $-25\text{ }^{\circ}\text{C}$ and $+105\text{ }^{\circ}\text{C}$. The cables are orange coloured in accordance with motor industry specifications.

V1-...-PUR H/S-...

*Cross braided,
halogen-free and
highly flexible!*

Why do we go to this trouble? It's to make sure that in Pepperl+Fuchs you have a company that can provide the full support you require, with a complete range of sensors, the requisites for their installation and a service right through to the supply of appropriate electrical connectors.

<http://www.pepperl-fuchs.com>

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