

News

Machine safety without SIL: Wachendorff's WDG series redundant encoders provide cost-effective safety

Wachendorff, the German measurement systems manufacturer, has recently launched redundant versions of its well proven WDGR and WDGE series incremental and absolute encoders. Available from Variohm EuroSensor, Wachendorff's exclusive UK distributor, the new series combine disparate optical and magnetic measurement principles that are independently correlated yet fully synchronised through separate processing electronics. Providing true redundancy and utilising as few similar components as possible, Wachendorff see the new products as a compelling and cost effective alternative to expensive Performance Level d or SIL 3 based safety systems - with the two tried and tested measurement principles extensively used across thousands of industrial speed and position feedback tasks over many years.

Two encoder versions are available: the WDGR combines incremental magnetic and incremental optical encoders whilst the WDGE combines absolute magnetic and incremental optical technologies. Both have 58 mm diameter clamping flange mounting with a choice of shafts from 6 mm to 9.525 mm diameter. The resolution for the WDGR is up to 1024 ppr magnetic and up to 5000 ppr for the optical encoder. For the WDGE series the magnetic absolute encoder has a 16 bit single-turn and a 43 bit multi-turn resolution, whilst the incremental encoder resolution is up to 5000 ppr.

The 58 mm diameter WDG series is especially durable with high interference immunity thanks to a magnetically shielded and chrome plated steel housing. A zinc plated connector cover houses a choice of PG cable glands or M12 x1 connectors for each encoder. The entire housing has an IP67 protection rating with IP65 for the shaft assembly where a stainless steel shaft is supported on a pair of precision ball bearings for up to 220 N radial and 120 N axial load ratings. With a maximum operating speed to 8000 rpm, the nominal bearing life is 1×10^9 revs. at full load with 1×10^{11} revs. for 20% load.

The optical sensor technology used in both versions has a wide choice of industrial standard compatible power supply options which are completely separate for the two encoder types – further reinforcing the novel redundant design. Both encoder models have incremental encoders with output options that include TTL, HTL and 1 Vpp sin/cos. The magnetic encoder in the WDGR model has HTL and HTL-inv output whilst the WDGE's magnetic encoder output is CANopen with a CiA 301 communication profile. Specific details and application support for the new WDG redundant series encoders and Wachendorff's entire range of sensor products is available from [Variohm EuroSensor](#).

Following the principle that the different sensor platforms would react with differing sensitivities to disturbances and therefore would not fail simultaneously, these new dual redundant encoders offer high reliability with appropriate control systems where, for example, speed detection or loss of position would be problematical.

As a Wachendorff distribution partner, and with partnerships with many other leading sensor suppliers as well as its own design and assembly expertise, Variohm provides comprehensive sales and application support across a wide range of position, force, pressure, load, and temperature sensor technologies for demanding measurement application solutions in industry, construction, agriculture, motorsports, research and more.