

More Precision

eddyNCDT // Inductive sensors based on eddy currents



Compact eddy current measuring system eddyNCDT 3005





Robust eddy current measuring system

The eddyNCDT 3005 is a powerful eddy current measuring system for fast, high precision displacement measurements. The system comprises a compact controller, a sensor and an integrated cable and is factory-calibrated for ferromagnetic or non-ferromagnetic materials.

As sensor and controller are temperature-compensated, high measurement accuracies can be achieved even in fluctuating temperatures. The sensors are designed for ambient temperatures up to max. +125 °C but can optionally be custom engineered for temperatures from -20 °C to 180 °C. The measuring system is pressure-resistant up to 10 bar and so is ideally suited to machine integration.

Integration into plant and machinery

The eddyNCDT 3005 provides ease of use and high measurement accuracy, offering an outstanding price/performance ratio. Therefore, the sensor is ideal for OEM integration and serial applications in machine building, particularly where pressure, dirt, oil and high temperatures are present. When large quantities are required, customer-specific designs can be tailored to suit individual requirements.

Its compact M12 design allows for the controller to be easily installed in restricted and difficult-to-access places.

Pin assignment for power supply and signal

| Pin | Assignment | Color (cable: PCx/5-M12) |
|-----|---------------------|-----------------------------|
| 1 | Supply +24 V | Brown |
| 2 | Displacement signal | White |
| 3 | GND | Blue |
| 4 | RS485 A+ | Black |
| 5 | RS485 B- | Gray |



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5-pin housing connector M12x1 View on pin side

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4

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| Model | | DT3005- U1-A-C1 | DT3005- U1-M-C1 | DT3005- S2-A-C1 | DT3005- S2-M-C1 | DT3005- U3-A-C1 | DT3005- U3-M-C1 | DT3005- U6-A-C1 | DT3005- U6-M-C1 | |
|---------------------------------|-------------------|--|--------------------|---------------------|--------------------|----------------------|--------------------|---------------------|--------------------|--|
| Measuring range | | 1 r | 1 mm 2 | | nm | m 3 m | | 6 mm | | |
| Start of measuring rang | е | 0.1 mm | | 0.2 mm | | 0.3 mm | | 0.6 mm | | |
| Resolution 1) | | 0.5 <i>µ</i> m | | 1 <i>µ</i> m | | 1.5 <i>µ</i> m | | 3 <i>µ</i> m | | |
| Frequency response (-3dB) | | 5 kHz | | | | | | | | |
| Measuring rate | Analog output | | 75 kSa/s (16 bit) | | | | | | | |
| | Digital interface | | 1 kSa/s (16 bit) | | | | | | | |
| Linearity | | $<\pm2.5\mu m$ | | $<\pm5\mu{ m m}$ | | $<\pm7.5\mu{ m m}$ | | $<\pm15\mu{ m m}$ | | |
| Repeatability | | < 0 | < 0.5 µm < 1 µm | | < 1. | 5 <i>µ</i> m | <3 µm | | | |
| Tomporaturo atability 2) | Sensor | $<$ 0.25 μm / K | | $<$ 0.5 μ m / K | | < 0.75 μm / K | | $<$ 1.5 μm / K | | |
| lemperature stability 29 | Controller | < 0.25 µm / K | | $<$ 0.5 μ m / K | | $<$ 0.75 μm / K | | < 1.5 µm / K | | |
| | Sensor | +10 +125 °C (optional -20 +180 °C) | | | | | | | | |
| Temperature compensa | Controller | +10 +60 °C (optional -20 +70 °C) | | | | | | | | |
| Sensor type | | unshielded | | shielded | | unshielded | | unshielded | | |
| Min. target size (flat) | | ø 24 mm | | ø 24 mm | | ø 48 mm | | ø 72 mm | | |
| Target material 3) | | Aluminum | Steel | Aluminum | Steel | Aluminum | Steel | Aluminum | Steel | |
| Supply voltage | | 12 32 VDC | | | | | | | | |
| Power consumption | | 0.6 W | | | | | | | | |
| Digital interface 4) | | RS485 / USB / Ethernet / EtherCAT / PROFINET / EtherNet/IP | | | | | | | | |
| Analog output | | 0.5 9.5V | | | | | | | | |
| Connection | | Sensor: integrated cable, length 1 m, min. bending radius 20 mm Supply/signal: 5-pole M12 connector (cable see accessories) | | | | | | | | |
| T | Storage | -20 +80 °C | | | | | | | | |
| lemperature range | Operation | Sensor: -20 +125 °C (optional -20 +180 °C), Controller: -20 +70 °C | | | | | | | | |
| Pressure resistance | | 10 bar (sensor, cable and controller) | | | | | | | | |
| Shock (DIN EN 60068-2-27) | | 15 g / 6 ms in 3 axes, 2 directions and 1000 shocks each | | | | | | | | |
| Vibration (DIN EN 60068-2-6) | | 5 g / 10 500 Hz in 3 axes, 2 directions and 10 cycles each | | | | | | | | |
| Protection class (DIN EN 60529) | | IP67 | | | | | | | | |
| Weight 5) | | 70 |) g | 75 g | | | g | 95 | i g | |

 $^{\rm p}$ RMS noise relates to mid of measuring range at a frequency response of 5 kHz $^{\rm p}$ Relates to the mid of the measuring range, in the compensated temperature range

³⁾ Steel: St37 steel DIN1.0037 / aluminum: AIMg3

⁴⁾ Connection via an interface module is required for USB, Ethernet, EtherCAT, PROFINET and EtherNet/IP

⁵⁾ Total weight for controller, cable and sensor



Mounting flange (optional) Article no: 0801058



Measurement direction



Accessories eddyNCDT

| Article | Description | DT3001 | DT3005 | DT3060 | DT3070 | DT3300 | DZ140 | SGS |
|-------------|---|--------|--------|--------|--------|--------|-------|-----|
| PCx/8-M12 | Supply and signal cable 8-pole with M12 connector Standard length: 3 m Optionally available: 5 m/ 10 m /15 m 10 m as drag-chain suitable variant | | | x | x | | | |
| PCx/5-M12 | Supply and signal cable 5-pole with M12 connector Standard length: 5 m Optionally available: 10 m / 20 m / 40 m / 80 m as drag-chain suitable variant | x | x | | | | | |
| PC4701-x | Supply and signal cable 8-pole with M12 connector Standard length: 10 m Optionally available: 15 m 10 m as drag-chain suitable variant | | | | | | | x |
| SCD2/4/RJ45 | Ethernet cable 4-pole with M12 connector on RJ45 connector Standard length: 2 m | | | x | x | | | |
| SCAx/5 | Signal cable, analog 5-pole with M16x0.75 connector Standard length: 3 m Optionally available: 6 m / 9 m | | | | | x | | |
| SCDx/8 | Signal cable for switching inputs and outputs: 8-pole with M16x0.75 connector Standard length: 0.3 m Optionally available: 1 m | | | | | x | | |
| PSCx | Supply and synchronization cable 5-pole with M9 connector Standard length: 0.3 m Optionally available: 1 m | | | | | x | | |
| ESCx | Synchronization cable 5-pole with M9 connector Standard length: 0.3 m Optionally available: 1 m | | | | | x | | |
| PC140-x | Supply and signal cable 8-pole connector Standard length: 3 m Optionally available: 6 m | | | | | | x | |
| PS2020 | Power supply unit Input 100-240 VAC output 24 VDC / 2.5 A; mounting onto symmetrical standard rail 35 mm x 7.5 mm, DIN 50022 | x | x | x | x | x | x | x |

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