

New Digitized Sensor, NDS

The MicroTesla NDS, New Digitized Sensor, is a completely new “drop-in” replacement sensor for QDT products. It has a one piece chassis made from a solid billet of 6061-T6 aluminum and it uses NO end adapters. The ends are machined to fit the Customers snubber (shock isolator) and MWD controller chassis ends. No end adapters means no “loose” end adapters and no end adapter misalignment. The NDS has (1) electronic board for all functions including core drive, mag sense, analog to digital conversion and power control. The NDS uses (3) Q-flex accelerometers and (2) two-axis MicroTesla magnetometers. The ultra-strong, stiff chassis means that the accelerometer and magnetometer misalignments are eliminated. The NDS is a 175 deg C instrument which uses the many new high temperature (210 deg C +) electronic components.

Physical

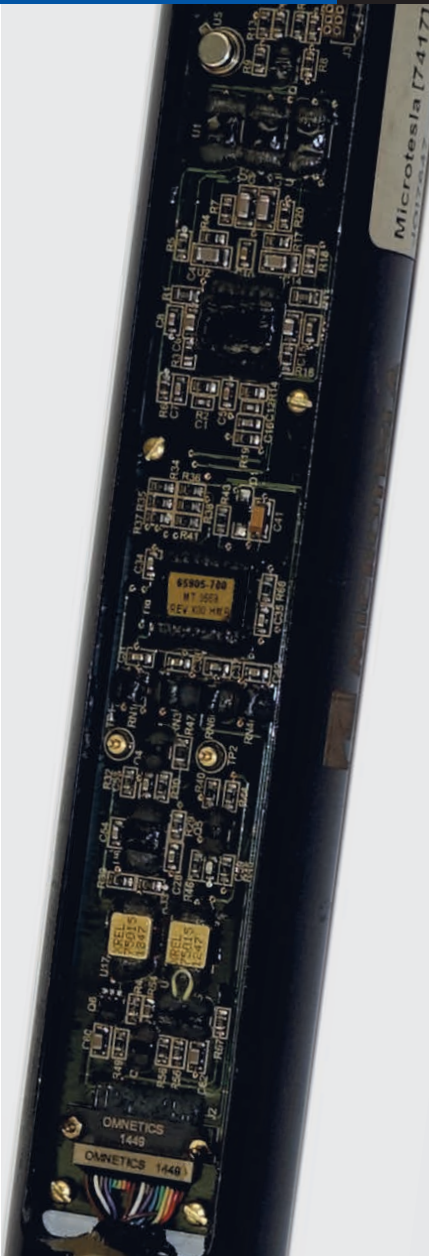
- Length: Min 24”, Max 29.3” Nominal
- Diameter: 1.37”
- (2) MicroTesla proprietary two-axis fluxgate magnetometers
- (3) Q-flex accelerometers
- Compatible with all QDT, MWD/Em Systems

Electrical

- Surface mount high temp electronics with Sylgard Encapsulation
- Voltage requirement: +/-12V to +/-15V
- Power Usage: .7W peak, 0.3W idle
- Digital interface: SPI
- Calibration coefficients downloaded directly into the sensor’s digital interface serial memory or the MWD Controller

Environmental

- All boards qualified for high-temp applications, 175°C
- QFlex accelerometers qualified, 185°C
- MicroTesla magnetometers qualified, 210°C
- Stronger stiffer chassis for improved resistance to bend and torsion twist

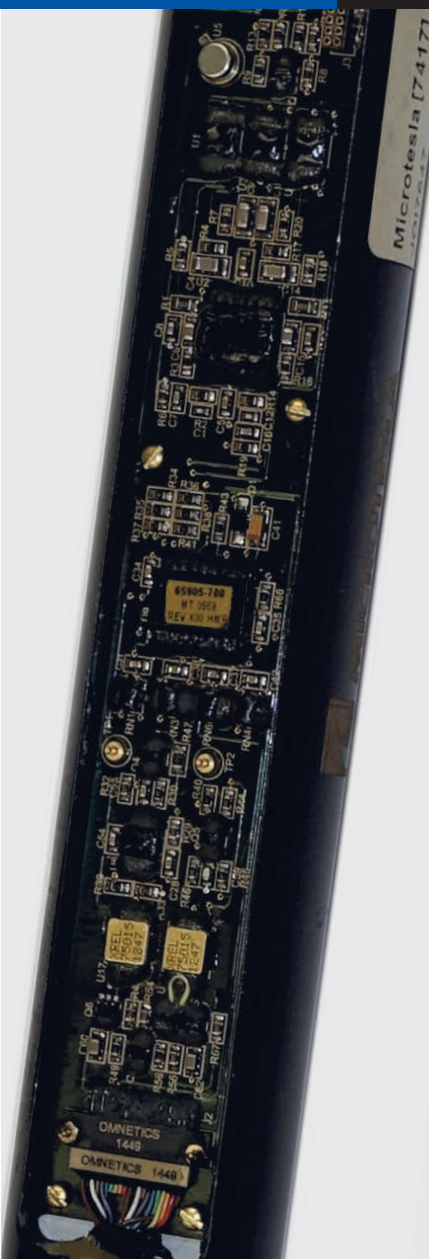


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Mechanical and Environmental Specifications

| Parameter | Minimum | Maximum | Units |
|-----------------------|---------|---------|-------------------|
| Outside Diameter* | | 1.37 | inches |
| | | 3.5 | cm |
| Length* | | 29.3 | inches |
| | | 74.4 | cm |
| Operating Temperature | 0 | 175 | °C |
| | + 32 | 347 | °F |
| Survival Temperature | - 40 | 190 | °C |
| | - 40 | 374 | °F |
| Vibration, Random | | 25 | g RMS, 25-500 Hz |
| Shock | | 1000 | ½ msec and ½ sine |

* Dimensions do not include running gear, centralizers, or axial shock absorbers

Instrument Accuracy Specifications

| Parameter | Minimum | Units |
|---|---------|---------|
| Inclination accuracy, absolute* | ± 0.08 | degrees |
| Inclination spread on axial rotation at 90° Inc | < 0.08 | degrees |
| Azimuth accuracy, absolute, 90° Inc | ± 0.4 | degrees |
| Azimuth spread axial rotation, 45° through 90° | < 0.35 | degrees |
| Total face accuracy, axial rotation at 90° Inc | ± 0.7 | degrees |
| Total g field accuracy | ± 2.5 | mG |
| Total H field accuracy, absolute | ± 180 | nT |
| Total H field spread | < 150 | nT |
| Magnetic dip accuracy | ± 0.2 | degrees |
| Dip angle spread | < .25 | degrees |

* Absolute accuracy is achieved when the instrument is tested in a controlled environment using a calibrated and certified reference position

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