



DIRECTIONAL DATA MODULE (DDM)

Designed to meet the demands of the borehole drilling environment, the DDM range of directional sensor modules provide a high accuracy cost effective solution for borehole survey and drilling applications. The DDM is available in a variety of industry standard configurations and can be incorporated into existing systems or supplied with application specific interfaces, such as wireline steering or battery powered memory multishot.

The module incorporates high reliability DMS sensor technology, which has been custom designed for borehole applications and provides a small diameter (1"), high accuracy MWD standard measurement package for OEM applications.

The DDM unit is designed to nominally provide measurement accuracies of 0.1° inclination and 0.5° azimuth, and is typically used in borehole measurement instruments for directional drilling and surveying applications, within the oil and gas industry.

The DDM has been specifically designed to be a direct replacement for industry standard directional modules, within existing systems. This provides a welcome cost saving to our customers whilst allowing them to continue to utilise existing system assets. The DDM therefore represents the first cost effective 'plug and play' alternative for existing systems and users.

Applications and Benefits

The DDM is the worlds smallest oilfield survey standard directional measurement package and can form the basis of any downhole directional measurement system. Its flexibility enables it to be used in numerous applications including wireline and battery powered steering tools, electronic multishot as well as MWD instruments.

The DDM offers a number of benefits including:

- *Field Proven design with high Accuracy incorporating state of the art technology*
- *High reliability and reduced operating and maintenance costs through the use of DMS sensor technology.*
- *Small Size (PeeWee) for slimhole and short radius applications.*
- *High Temperature capability with low power consumption.*
- *Advanced sensor calibration technique*
- *Standard interface providing multi sensor options.*

DATAFLOW MEASUREMENT SYSTEMS

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**Directional Data Module (DDM)
Typical Performance Summary**

Instrument Accuracy

Inclination : +/- 0.1°
Azimuth : +/- 0.5° (Inc >10°, Dip <70°)
Toolface : +/- 0.1°

Operating Features

Instrument OD : 1.0"
Instrument Length : 18"
Operating modes : User Defined
Digital Interface : TTL Serial RS 232 compatible
Data Storage : Calibration data only
Parameters Sampled : Gx,y,z, Bx,y,z, Temp, Voltage
Data Outputs : Raw or calibrated sensor output
 (user programmable data formats)

Electrical

Voltage Supply : +6-25v nominal
Max Power Consumption : 1.0 Watts (2mW standby)
Through conductors : 8 off (x2 power, x4 serial bus, x2 Uncommitted)
Uncommitted Inputs : 3 8 bit A/D, Event counter / Control line

Sensors

DMS Triax accelerometer (triaxial)
DMS high accuracy triaxial magnetometers.

Environmental

Temperature : 0 - 125°C (150°C available)
Shock : 1000g, 1/2 sine 3mS
Vibration : 20g rms