

## Positive Pulse - MWD

### Features

- Tool string retrievable through 2.0" restriction
- Low overall cost of ownership, including single low cost battery
- Short tool string, only 14ft 1in length including sensors
- Optional Gamma/Vibration and Pressure sensors with memory
- High quality ruggedised tri-axial sensor
- Downhole Programmable

### Applications

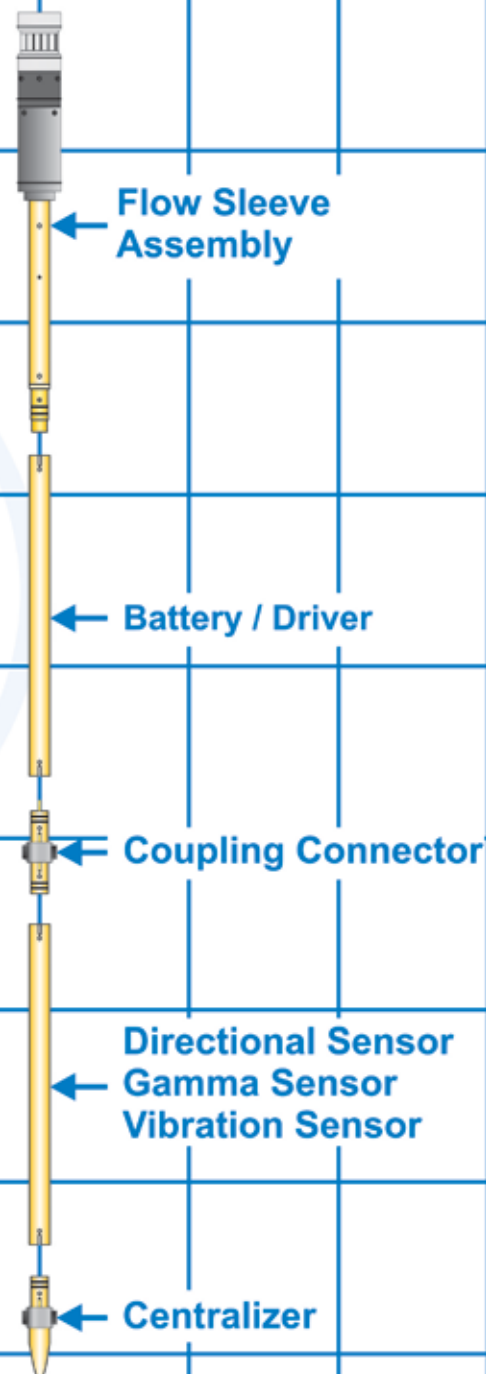
- Directional Drilling including horizontal wells
- Performance drilling - maximize ROP and WOB
- Correction Runs - Run behind motors
- Raw data available for magnetic corrections

### Telemetry

- Maxwell patented positive pulse transmitter
- Low power consumption saving on battery costs
- Self cleaning design protects against LCM, sand and drilling fines
- Simple self test of surface and downhole equipment
- Compact servo unit - fast maintenance cycle
- Unique efficient coding scheme provides fast updates

### Surface System

- Portable surface system using standard laptop
- Zone 1 graphical rig floor display
- Windows based software
- Depth tracking capability
- No license fees and dongle free software





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### Sensor Details

Parameter	Range	Resolution	Units
Inclination	0-180°	+/- 0.1	degree
Azimuth	0-360°	+/- 1.0	degree
Toolface	0-360°	+/- 1.0	degree
Gamma	0-500	+/- 1	AAPI
Temperature	0-150	2	Celcius
Vibration Lateral	0-16	0.0625	g
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Bus based electronics permits easy integration of sensors

### Environmental

Shock	1000g, 0.5msec, ½ sine
Vibration	30g Peak, 50 to 500 Hz
Temperature	0-150°C / 32-302°F
Pressure	15,000 psi
LCM tolerance	< 50ppb medium nut plug
Sand Content	<1% by volume recommended

### Collar Sizes

Collar OD	4.75	6.50	8.00	inch
Collar ID	2 11/16	3 1/2	4	inch
Min Flow (mud)	70	215	500	Usgall/min
Max Flow (mud)	290	715	1250	Usgall/min
Sand Content	← 60 - 150 psi →			

### Data Transmission

Type:	Positive Pulse
Coding:	Compact error checked transmission
Programming:	Four selectable states
Update Rates:	Toolface from 25s
Static Survey:	Computed or raw transmission

### Tool Details

#### Dimensions

Length	14ft, 1 inch / 4300 mm
Diameter	1.75 inches / 45 mm
Weight	62 lbs / 28 kg

#### Power

Long life 'DD' Lithium moderate rate cells  
Duration dependent on sensor and formation  
typical duration from 7 to 10 days

#### Memory

8Mbit (non-volatile) caters for storage of high resolution logging data

