



**Wolverine**  
Oilfield Technologies

# NEUTRINO™

## HIGH SPEED TELEMETRY

### High Speed Telemetry

- 4.0 bits per second standard data rate.
- Data rate can be adjusted via Downlink to optimize detection and battery usage.
- Future upgrade to 5.0 bits per second.

### Proprietary Combinatorial Encoding

- Transmits 40% more data than standard systems at the same pulse width.
- A massive array of parallel processing algorithms provides accurate and efficient pulse pattern recognition.
- Flexible pulse width and pulse spacing can be adjusted to handle any environment.

### Noise Reduction

- State of the art pump noise removal.
- Pump noise analysis determines health and efficiency of the pumps.
- Special filters remove surge & swab noise and baseline drift.

### Unique Sync Pattern

- Proprietary sync pattern provides a much more accurate synchronization over traditional sync patterns while eliminating the possibility of early or late synchronization.
- Synchronization is accomplished in the same amount of time as industry standard sync patterns.

### Other Features

- Parity can be placed on any or all data items to confirm data quality.
- Jitter statistics are logged to determine health of the pulser and downhole clock.
- Phased-locked loop maintains synchronization with downhole clock.
- WITS IN and WITS OUT compatible.
- Short collar algorithm.
- High sample rate data acquisition hardware.
- Ability to select pulse reference shape to fine-tune pattern recognition output.



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# IN TOUCH WITH TOMORROW HIGH SPEED PULSER

## Technical Specifications

Tool Size (OD)	4 3/4"	6 1/2"	6 3/4"	8"
Type	Positive Pules			
Hight	Adjustable			
Fixed Mount	Yes			
Operating Voltage	18-36 VDC	18-36	18-36	18-36
Flow Range	200-400 gpm	200-650 gpm	200-650 gpm	400-1000 gpm
Max Pressure	20,000 psi			
Max Temperature	175C			
Sand Content	1% by volume recommended			
LCM Tolerance	25lb/barrel med nut plug			

## 8 Times Faster

## 4 Bits/Sec

Transmission Rate

## 2 Minutes

Full Survey

### WITH NEUTRINO™ HIGH SPEED TELEMETRY,

the Wolverine Top Mount Pulser can deliver at 8 times the speed of other MWD systems. Neutrino™ includes simple upgrades components for your downhole tool and surface system that allow you to receive data at 4 bits/sec you get differentiation while your customers get to drill faster, save time, and stay on plan.



Wolverine Oilfield Technologies is a subsidiary of NewTech Services Holding Limited, an international oilfield services company founded in 2009.

NewTech Services Holding Limited develops technology and expertise within 4 Business Divisions: Drilling Services, Completion Systems, Integrated Project Management and Capital Equipment.

NewTech Services Holding Limited supplies technology products and services to the oil and gas exploration and production industry in Russia and CIS, Europe, Middle East, North and South America.

Wolverine Oilfield Technologies is a subsidiary of NewTech Services Holding Limited specializing in drilling technology products such as MWD/LWD/RSS.

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