



**Zone Direct**

MWD SERVICES LTD.

**2019 Products and Services Guide**

# WHAT WE CAN DO FOR YOU

## 10 Years Providing Measurement While Drilling Services

**Zone Direct is a value driven supplier of quality Measurement While Drilling (MWD) tools and equipment. Listening to the needs of our customers is what really sets us apart in the industry.**

Zone Direct offers MWD equipment rentals, sales and support services, backed by years of experience from drilling over 1000 wells throughout North America.

Our MWD systems provide down-hole telemetry data such as wellbore surveys, shock, vibration, and gamma logging information to the surface in real-time.

Our quality MWD service has given us an established customer base of directional drilling companies that rely on our ability to get the job done right. Equipment maintenance and service is exceptional and we do everything possible to ensure your tools are in optimal condition for every run.

We can offer several types of MWD telemetry systems to our customers, positive Mud Pulse (MP) and Electro-Magnetic (EM). And our newest HDR MWD system combines EM and Mud Pulse technology together to ensure that wellbore telemetry is delivered to the surface under any conditions.

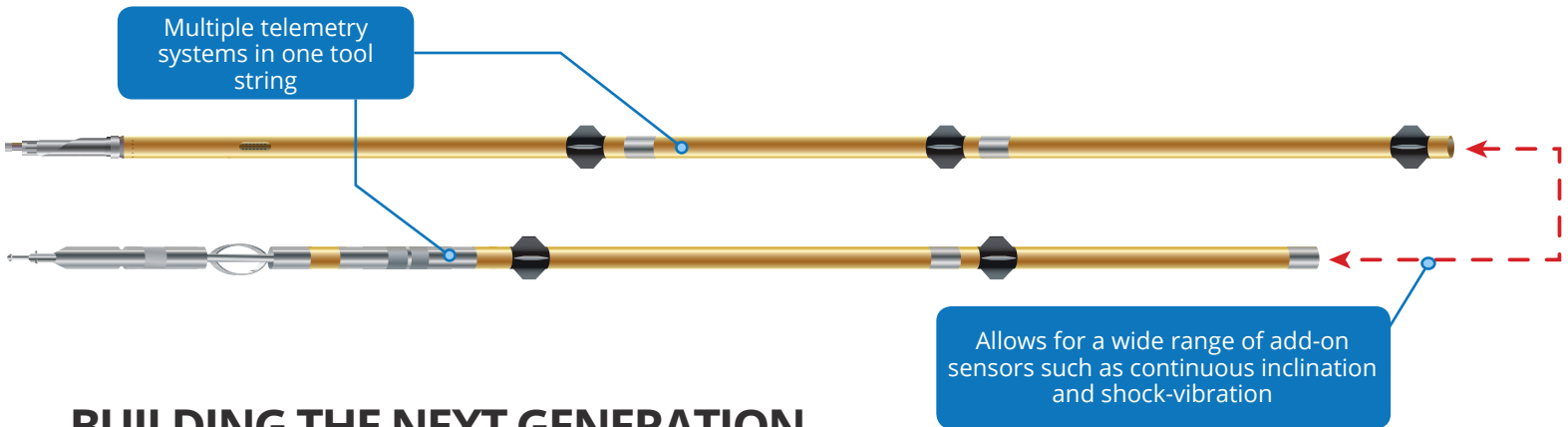
Extreme drilling environments can make survival of any electronic equipment a challenge so our engineers have developed significant enhancements to help our tools better withstand even the harshest drilling conditions.

To ensure we ready for the challenge we consistently subject our tools to heat, pressure and vibration tests to ensure they meet our strict standards.

Zone Direct is committed to providing the most outstanding MWD services we can offer. We have the perfect combination of reliable tools, experienced personnel, and technical expertise to ensure your next drilling project is a success!



# DEVELOPMENT TRENDS IN MWD TECHNOLOGY



## BUILDING THE NEXT GENERATION MWD TOOLS

The next generation of MWD tools are going to be a combination of both EM and mud pulse telemetry in one tool. The performance advantage of having both EM and Mud Pulse in the hole at the same time is huge. Multi-telemetry systems will allow operators to drill deeper without tripping and significantly reduce non-productive time (NPT).

## WHAT WE'RE DOING

### Combining Two Telemetry Systems

Originally we designed a way to mechanically connect two independent tools together and still remain retrievable. The first version of the HDR tool combined a complete mud pulse tool and a complete EM tool bolted together while remaining electronically separated. This was a good option for some drilling situations but required twice as many modules on the same tool.

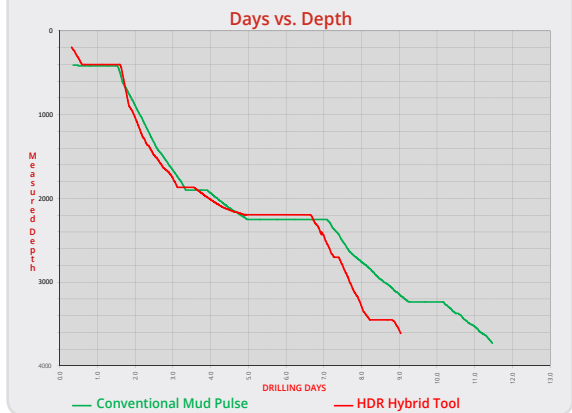
### Integrating Mud Pulse and EM with the Pulse-Link

Thanks to the Pulse-Link interface, the latest revision of HDR is a fully integrated multi-telemetry MWD system that seamlessly combines both Mud Pulse and EM. The Pulse-Link receives sensor data from the CAN bus and encodes it in to a M-ary Mud Pulse signal. The two telemetry systems working together allow for higher data rates and less tripping than with single telemetry systems.

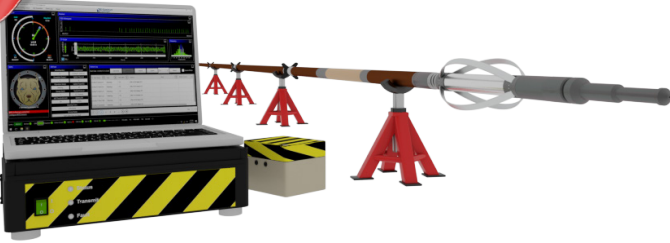
### Spend More Time Drilling

An essential performance advantage necessary to remain competitive in this market is having two telemetry systems in your BHA.

- **Faster data rates** means higher density logs and more overall information
- **Reduce Survey Times** by using the faster EM tool to survey and the mud pulse system to log
- **Full Redundancy** can prevent unnecessary tripping by using mud pulse while drilling through formations where EM signals aren't working



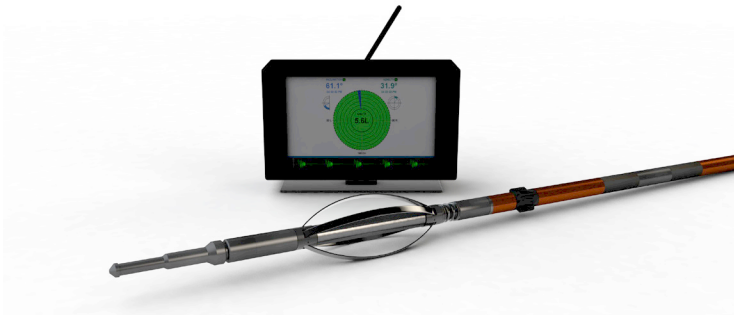
**NEW**



## HDR MWD System

### WHAT YOU GET

- Combined Mud Pulse and EM Telemetry
- Inclination, Azimuth, Toolfaces, Gamma
- Optional real-time shock and vibration
- Fully retrievable



## HDR MWD - EM Only

### WHAT YOU GET

- Inclination, Azimuth, Toolfaces, Gamma
- Fast telemetry
- Fully Retrievable



## POSITIVE PULSE

### WHAT YOU GET

- Inclination, Azimuth, Toolfaces, Gamma
- Real-time shock and vibration
- 3<sup>rd</sup> Party data using generic variables
- Compatible with legacy



## ULTRALIGHT MWD

### WHAT YOU GET

- Inclination, Azimuth, Toolfaces
- Survey on the connection with No downtime
- Configurable for any flow rate
- Optional remote monitoring available

**MWD SYSTEMS** CHOOSE THE RIGHT TOOL

## Save time and money with mud pulse and EM in one tool

### BASIC SPECIFICATIONS

Length (m)	9.4m - 12.5m
Battery Life	250 hours (per tool)
Maximum Temperature	150°C
Drill Collar Size	89mm - 203mm
Operating Flow Rate	0.28 - 4.45 m <sup>3</sup> /min
L.C.M. Tolerance	High

## Increased Speed and Reliability

Introducing HDR, a new generation of MWD tools intended to keep you on bottom drilling for as long as possible. The system combines EM and Mud Pulse technology to ensure that wellbore telemetry is delivered to the surface in nearly any drilling environment.

## Faster data rates for most drilling applications

### BASIC SPECIFICATIONS

Length (m)	8.5m - 9,2m
Battery Life	250 hours
Maximum Temperature	150°C
Drill Collar Size	89mm - 203mm
Operating Flow Rate	0.28 - 4.45 m <sup>3</sup> /min
L.C.M. Tolerance	High

## Underground Wireless Telemetry

The best option for vertical and horizontal wells or especially in unconventional drilling environments such as underbalanced and coal bed methane. No moving parts means less wear and tear for simpler maintenance.

## Proven, reliable and fully customizable

### BASIC SPECIFICATIONS

Length (m)	6.2m - 7.36m
Battery Life	400 hours
Maximum Temperature	150°C
Drill Collar Size	89mm - 203mm
Operating Flow Rate	0.28 - 4.45 m <sup>3</sup> /min
L.C.M. Tolerance	Medium

## Tried and True

Simple to operate using a wide range of flow rates and rotary speeds. Adjustable sensor positions and down-linking capabilities are just a few of the many great features.

*Available in both top and bottom mounted systems.*

## No MWD expertise necessary

### BASIC SPECIFICATIONS

Length (m)	5.8m
Battery Life	400 hours
Maximum Temperature	150°C
Drill Collar Size	89mm - 203mm
Operating Flow Rate	0.28 - 4.45 m <sup>3</sup> /min
L.C.M. Tolerance	Medium

## Simplified MWD

A compact MWD system for wellbore logging with minimal supervision.

*Available in both top and bottom mounted systems.*

# FIELD READY MWD KITS

## MUD PULSE

The positive mud pulse MWD system is a complete solution to transmit surveys, directional telemetry, gamma ray and vibration data to the surface in real-time using pressure signals in the wellbore. The bottom mounted tool is fully retrievable and has a modular design for easy transportation and assembly at the rig site.

The system includes electronics, sensors, pulsers, gamma probes and batteries that are customizable to fit your needs. Adjustable module layouts allow for alternative sensor positions and ensure operational flexibility.

Operators can customize the tool configuration and down-linking allows for adjustable logging sequences. Precision trimmed centralizers ensure the tool stays in place while drilling and shock mitigation technology absorbs vibration, decreases wear and improves overall MTBF. A reliable and robust MWD system for today's aggressive drilling conditions.



### Features

- ✓ Rugged and dependable field proven design, temperature rated up to 175°C
- ✓ Simple operation using a wide range of flow rates and rotary speeds
- ✓ Motor driven pulser with anti-plugging technology, excellent performance in LCM and high solid environments
- ✓ Available in **both top and bottom mounted** positive pulse systems

## GET YOUR MWD TOOLS PRE-LOADED IN A COLLAR

Our Collar Mounted MWD system is a cost-effective solution that has the same capabilities as the complete mud pulse kit but instead the tools arrive on location pre-loaded in non-magnetic drill collars. The system requires *minimal MWD expertise to setup and operate*, just pick up a collar tool, measure the toolface offset and run it in the hole.

The tool is turned off until it is picked up so no power is consumed while the tool is sitting idle. The on-site EDR can be configured so our personnel can remotely monitor tool performance and log all surveys automatically.

- **No survey downtime**, just make the connection and the survey will decode when drilling continues
- **Over 300 hours on a single tool string**, higher capacity options are available upon request
- **Multiple collar sizes available**, this MWD system can be used from spud to TD



## HDR MWD SYSTEM



The tool is fully adjustable for any drilling application and can be assembled as a standalone Mud Pulse tool, EM tool, or a combination of both. Each telemetry system can be active at the same time which gives you the benefit of load sharing logging data and there are no delays when switching between EM and Mud Pulse.

The EM transmitter is capable of operating at higher speeds and at greater depths than legacy EM MWD systems and a robust receiver contains advanced decoding innovations to handle logging through even the most challenging formations. Two-way communication allows operators to adjust parameters of the down-hole tool on the fly and the EM transmitter can be placed in idle mode to save power.

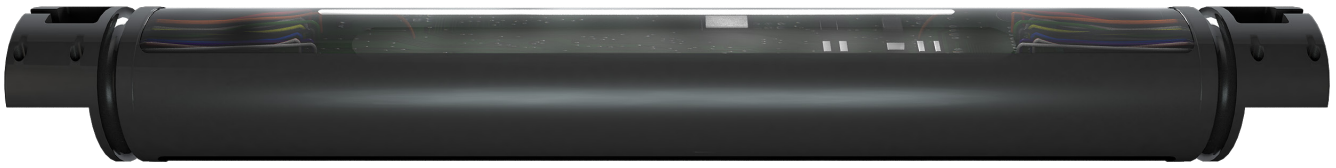
The standard bottom mounted tool string is fully retrievable but a non-retrievable, top mounted assembly is optionally available. Additional logging sensors such as shock, vibration, continuous inclination and pressure are also available to extend the capabilities of this powerful platform.

The HDR MWD system is cost-effective, reliable and has the best overall performance on the market, period.

### Features

- ✓ **Fully retrievable**, the entire tool can be mounted into a standard non-magnetic drill collar for easy installation
- ✓ **Fully redundant**, both tools have independent power supplies and directional sensors allowing the transmission of two surveys at each station
- ✓ Ability to configure the mud pulse and EM tools to split the telemetry workload, using different sequences in each tool, increasing data resolution
- ✓ The two-way EM Communications Link allows tool parameters to be altered during pumps-off to accommodate for changing down-hole conditions without tripping to reprogram.

## ▶ Linear Pulsar Driver (175°C)



The latest generation of our universal Pulsar is now even better with high speed mud pulse telemetry and optimized power utilization.

It can be used with most pulser mechanical sections and many advanced firmware features such as servo poppet recalibration and travel distance recovery can help to prevent jamming down-hole and improve pulser survivability.

Gamma sensors can be connected directly to the driver and share a single pressure housing which eliminates a tool connection and a potential point of failure.

### FEATURES

- ✓ Rugged and dependable field proven design, temperature rated up to 175°C
- ✓ Advanced power optimization with an idle current draw of 7mA
- ✓ Advanced logging features with performance memory and diagnostics
- ✓ Digital/Analog controls and programmable operating parameters such as automatic servo poppet re-calibration and smart servo motor control features
- ✓ Connects directly to any gamma probe reducing the length of the tool

UP TO  
3X  
FASTER  
THAN  
0.8!

### HIGH PERFORMANCE MUD PULSE

Achieve faster Mud Pulse data rates by using our Pulsar Driver with Fast Pulse capable mechanical components. Improved valve actuation and enhanced durability increases the down-hole endurance and longevity of the pulser.

## ▶ Flow Switch

Designed to replace legacy electronic flow switches or operate as a standalone module.

Our rugged electronic switch detects flow by monitoring vibration using a 3-axis sensor. Once flow is detected, the component will apply 5V on the flow line.



### FEATURES

- ✓ Rugged and dependable field proven design
- ✓ Adaptive sensitivity and configurable delays
- ✓ Less than 2mA current draw
- ✓ Temperature rated up to 150°C, survivable up to 175°C



# Vibration Monitoring Tool

Extend the down-hole lifespan of tools and reduce vibration damage resulting in premature failures.

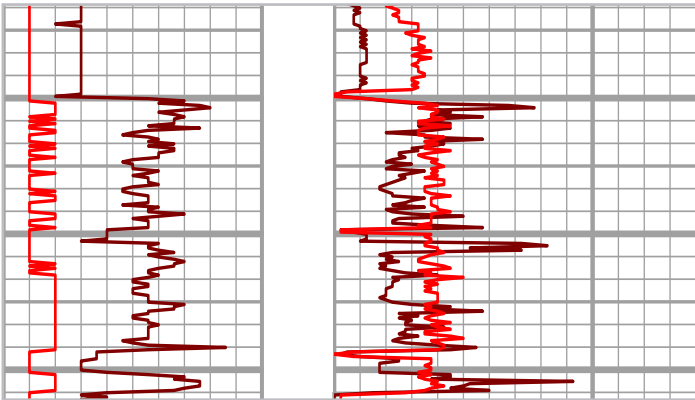
The Vibration Monitoring Tool (VMT) can accurately measure and record shock and vibration in the full range of dynamic motion. Onboard memory stores high density readings for detailed post-well logs and real-time data can be transmitted to the surface using generic variables.

Real-time telemetry can be configured to display exact shock and vibration values or just severity flags with adjustable thresholds. Changes can then be made to optimize drilling parameters before severe damage occurs to the MWD tool or Bottom Hole Assembly.



## FEATURES

- ✓ 3-axis accelerometer with +/- 100g range, sampling rates up to 660Hz and vibration frequency response from 2Hz to 80Hz
- ✓ Over 600 hours of logging memory with user adjustable sampling periods
- ✓ Optional software package can display graphical representation of shock and vibration data on the MWD computer
- ✓ Optimize drilling parameters and maximize BHA down-hole longevity



# Transorb

Customizable Protection for your MWD System

Designed to replace legacy electronic transorbs with solid current spike protection. Completely customizable for any wiring configuration and mounting system.

## FEATURES

- ✓ Temperature rated up to 150°C, survivable up to 175°C



## MWD TESTER



The MWD Tester allows technicians to accurately diagnose and function test pulser and gamma modules on the bench without assembling an entire tool string.

Verify real-time gamma counts and flow line voltage on a bright OLED display.

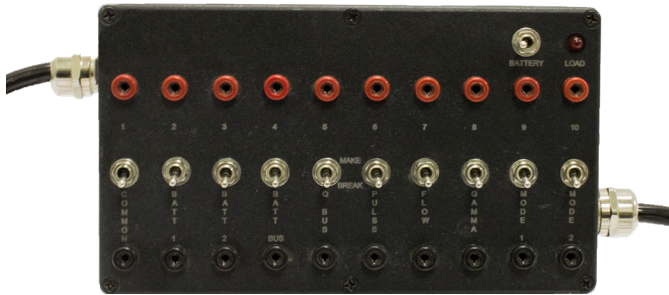
## AUTOMATIC LINE TESTER



This incredibly useful device performs a complete line ring-out and high voltage insulation test of interconnects, cables and wiring assemblies up to 15 lines.

What normally can take a shop technician minutes to do is done in only seconds.

## BREAKOUT BOX



The breakout box is built with quality components and comes field ready. Read and switch up to ten standard MWD tool lines with this integrated testing solution. Can be configured to work with any type of connector.

A necessity for every MWD kit.

## TRANSDUCER TESTER



Check the functionality of your standpipe pressure sensors and cables with this all-in-one transducer assembly testing system. It is easy to use and ensures the function and calibration of pressure sensors. Pressure values are viewable in PSI on a bright LED display.

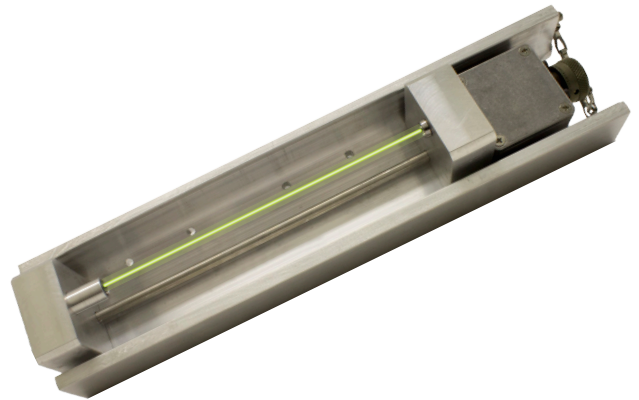
## ▶ MWD FLOW SIMULATOR



The MWD Flow Simulator allows you to test an assembled MWD string & surface system functionality in the shop and in the field. The system provides pump flow on/off states using the flow line.

The device electrically generates a 2000psi signal that emulates standpipe pressure for input into a your mud pulse receiver.

## ▶ OPTICAL PULSE SENSOR



The Optical Pulse Sensor allows technicians to measure the physical plate movement of a *top mounted pulser* and deliver a signal which can be decoded by a surface system.

The chassis is made with aluminum so it is light and durable making it easy to function test a complete tool string on the well site.

## ▶ MECHANICAL PULSE SENSOR



The Mechanical Pulse Sensor measures the physical servo poppet movement of a bottom mounted pulser and delivers a signal which can be decoded by the mud pulse receiver.

Perform a true function test by mechanically decoding telemetry data on the surface.

## ▶ TOOL MODULE BLANKETS



Each blanket is made with fire retardant canvas and insulation so they don't crack or break apart easily and the stitching is high quality and built to last.

On the inside they have a self-regulating heat trace so at 10°C they consume only 90W of power. If the temperature drops below 0°C they draw a maximum of 250W.



**Zone Direct**

MWD SERVICES LTD.

SALES • RENTALS • SERVICE

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