

# The Next Generation MWD Kit Powered by Mudlink™ Telemetry

The ultimate in rugged design. The Vertex MWD kit has the highest mud pulse data rates available for directional companies. 4 bits/second, that's 24 second full surveys and 2-3 second telemetry updates.



The new benchmark in MWD platforms, rated to 175°C, rotary connectors, and in a retrievable system using a patented lock down muleshoe that is configurable for release. Other features include, continuous INC, continuous AZ while drilling, real time shock/vib, integrated gamma logging software, resistivity integration, integrated depth tracking, drilling dynamics, azimuthal gamma, and pressure options. No other pulse kit can compete.

Easy to learn, operate and assemble, with a low operating cost. Vertex has eliminated the need for expensive to operate, depth limited EM and dual telemetry systems. Get out of the legacy platform and in the new benchmark with Vertex Downhole.

**VERTEX**  
DOWNHOLE

## Rig Floor Display

- Class 1 div 2, Atex certified
- 19" touch screen display
- Wireless, with wired backup option
- Dual digitizer decoding
- Most advanced pulse recognition and detection on the market

## Pulser

- High speed brushless DC
- Full memory capability
- Configurable flow switch
- Strongest pilot valve on the market
- No depth or mudweight limitations
- High LCM capabilities, tested up to 100 lb/barrel

## MWD Specifications

Temperature .....	175°C
Survival temperature .....	(-40°C to 185°C)
Pressure .....	20,000 standard 30,000 option
Vibration, random.....	30G RMS 10-100 HZ
Shock .....	500G, 1m Sec, half-sine
Operating voltage.....	18-30 V
Memory .....	64 MB
Inclination accuracy.....	(+/- 0.10) while drilling (+/- 0.25)
Azimuth accuracy.....	Spread at 90 Deg Inc ..... (+/- 0.25) while drilling (+/- 0.50)
.....	Spread at 10 Deg Inc ..... (+/- 0.50) while drilling (+/- 1.00)
.....	Spread at 5 Deg Inc ..... (+/- 1.00) while drilling (+/- 2.00)
Dip angle spread .....	(+/- 0.50)
Total g field spread .....	2.50 mg
Toolface accuracy .....	gravity highside..... (+/- 0.50)
.....	magnetic toolface..... (+/- 1.00)
Total magnetic field accuracy.....	3.00 mgauss
RPM measurement.....	2-200 (+/- 2% of value)
Shock and Vib measurements .....	0-100 G
Pilot valve push pull .....	200 lbs push 160 lbs pull

## Pulse Positioning Method

### Pulse Widths Showing True Bits Per Second

	1.2	1.0	0.8	0.6	0.5	0.375	0.25	0.015
Legacy M-ary Pulsing	0.3	0.5	0.7	0.9	1.0	X	X	X
Newer M-ary Pulsing Decoders	0.3	0.5	0.7	0.9	1.0	1.5	X	X
Vertex Mudlink	0.36	0.6	0.86	1.08	1.2	1.8	2.4	4

■ Excellent decoding capabilities, 95% or better.

■ Limited decoding, 70% or better, limited to depth, limited pulse tracking. X Does not work.

## Tools vs. Depth

### Bit rate vs. Depth: true bits per second (based on industry feedback)

	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000
M-ary Pulse (Tensor based systems)										
Max bitrate	0.9	0.9	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3
Dual telemetry tools	12.0	10.0	8.0	4.0	0.7	0.7	0.7	0.7	0.7	0.5
Vertex Mudlink mud pulse only	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.4	2.4

## Estimated Cost to Operate

	Bit Rate	Tool Cost	Decoded Data Points	Cost of Data
M-ary Pulse Legacy Systems	1	\$250 per day	300 per hour	\$0.035 per hour
Newer M-ary Pulse Systems (new aftermarket decoders)	1.5	\$340 per day	450 per hour	\$0.031 per hour
Dual Telemetry Tools	8	\$2,000 per day	2,400 per hour	\$0.035 per hour
Vertex Downhole Mudlink	4	\$350 per day	1,200 per hour	\$0.012 per hour

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