

# Rotary Pulsar

## *Fixed-mount, Retrievable or Floating Positive Mud Pulse Transmitter*

APS Technology's patented Rotary Pulsar\* is the toughest, most advanced mud pulse transmitter in the industry. Our Rotary Pulsar chews through LCM content which would choke any other pulsar, over a wide range of mud weights and conditions.

APS's commitment to continuous improvement has increased reliability and decreased power consumption in our pulsar. Recent improvements include an ultra-reliable, high-efficiency DC brushless motor and controller which can run thousands of hours without a failure. The motor/controller combo is 30% more efficient when pulsing and consumes 1/3 the quiescent power of the previous generation. Other improvements include more durable shafts and seals, and better serviceability.

The APS Rotary Pulsar is designed to operate with batteries or with the APS Turbine Alternator.† It offers a reliable, economical alternative to pulsars from other OEMs. Crossovers to other popular MWD systems are available, or can be custom-designed. All materials are highly wear-resistant to provide exceptional reliability and service life in demanding drilling environments.

Features	Advantages	Benefits
New DC brushless motor	<ul style="list-style-type: none"> <li>&gt; Increased reliability</li> <li>&gt; Improved power consumption</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Improved MTBF</li> <li>&gt; Works with 8 DD cell (28v) and 10 DD cell (36v) systems</li> </ul>
Oscillating rotary motion	<ul style="list-style-type: none"> <li>&gt; Self-clearing</li> <li>&gt; Low shaft speed</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Reliable operation with high LCM concentrations</li> <li>&gt; Improved seal reliability/life</li> </ul>
Open flowpath	<ul style="list-style-type: none"> <li>&gt; No screens to plug</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Enhanced reliability in wells with poor solids control</li> </ul>
Direct-drive magnetic coupling	<ul style="list-style-type: none"> <li>&gt; Rugged drive train</li> <li>&gt; No rotating seals in mud</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Enhanced service reliability</li> <li>&gt; Reduced service cost</li> </ul>
Tungsten carbide flow surfaces	<ul style="list-style-type: none"> <li>&gt; Superior fluid erosion properties</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Extended component life</li> <li>&gt; Reduced service cost</li> </ul>
Adjustable pulse width and magnitude	<ul style="list-style-type: none"> <li>&gt; Adaptable to all flow rates, depths and mud weights</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Extends the range of reliable operation</li> </ul>
Wide range of pulsar sizes for 3.125 in. (79 mm) to 9.5 in. (241 mm) or larger BHAs	<ul style="list-style-type: none"> <li>&gt; Easily convertible between sizes, and between fixed-mount or retrievable configurations</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Reliable operation in any hole size</li> <li>&gt; Reduced inventory</li> </ul>
Retrievable or fixed-mount options	<ul style="list-style-type: none"> <li>&gt; Basic design and construction are consistent without regard to configurations</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Adaptable to fit customer needs</li> <li>&gt; Reliable service in all configurations</li> </ul>

\*U.S. Patents#6,714,138 and #7,327,634      †U.S. Patent#7,201,239



Fixed-mount Pulsar

Retrievable Pulsar with Stinger

## Rotary Pulsar

Fixed-mount, Retrievable or Floating Positive Mud Pulse Transmitter

### SureShot-MP

Fixed-mount Pulsar



Retrieval Pulsar with Stinger



### Product Specifications

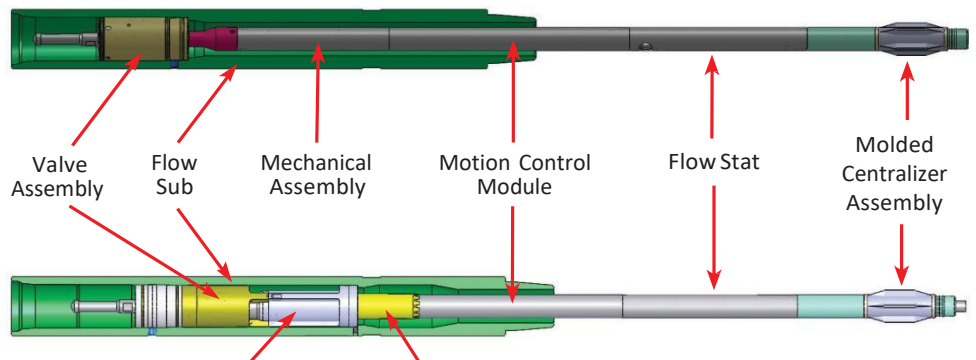
Signal Transmission	Positive Mud Pulse	
Pulsar Mounting	Fixed mount, Retrievable or Floating (string anchored at bottom)	
Operating Manner	Reciprocating oscillating shear	
Pulse Height	Adjustable	
Activation	Electromechanical	
Operating Voltage	28 - 40 VDC	
Current Generation	G4 & G5 (More power efficient and higher transmission rate)	
Pulsar Sub O.D.	9.5 $\frac{1}{8}$ , 8, 6.25 to 6.75, 4.75, 3.5 & 3.125 in**	241 $\frac{1}{8}$ , 203, 159 to 171, 121, 89 & 79 mm**
Flow Ranges	9.5" or larger: 650 ~ 1200 gpm 8": 300 ~ 1200 gpm 6.25" ~ 6.75": 150 ~ 750 gpm 4.75": 125 ~ 350 gpm 3.125" & 3.5": 70 ~ 250 gpm	241mm or larger: 41 ~ 76 L/Sec 203mm: 18.9 ~ 76 L/Sec 159mm ~ 171mm: 9 ~ 47 L/Sec 121mm: 7.9 ~ 22 L/Sec 79mm & 89mm: 4 ~ 16 L/Sec
LCM Tolerance	50 lb. per bbl medium nut plug	143 kg/m <sup>3</sup> medium nut plug
Sand Content	Sand $\geq$ 3% by volume recommended	
Data Rate	$\geq$ 1bps	
Operating Temperature	-25° to 150°C; 175°C option	
Maximum Pressure	Standard: 20,000 Psi (140MPa); High pressure: 25,000 Psi (175MPa) or Ultrahigh pressure: 30,000 Psi (210Mpa) (Option)	
Differential Pressure	No requirement	
Dogleg Capability	API connection limited	

\* Specifications subject to change without notice

<sup>§</sup> Larger O.D. subs can be accommodated using the pulsar for 9.5 in. (241 mm) O.D.

\*\* Pulsars for 3.125 in. (79 mm) & 3.5 in. (89 mm) BHAs are available in fixed-mount only

### Fixed-mount Pulsar



Valve Assembly

Flow Sub

Mechanical Assembly

Motion Control Module

Flow Stat

Molded Centralizer Assembly

Stinger and Muleshoe Assembly

Mechanical Assembly and Fin Cutter

### Retrieval Pulsar

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