

Features

- Full EM system with Extended Reach (ER) cable
- Able to drill with EM technology in any area or geology

Applications

- Underbalanced drilling
- Drilling in difficult area where EM technology was previously not available
- Low cost, reliable replacement to mud pulse systems

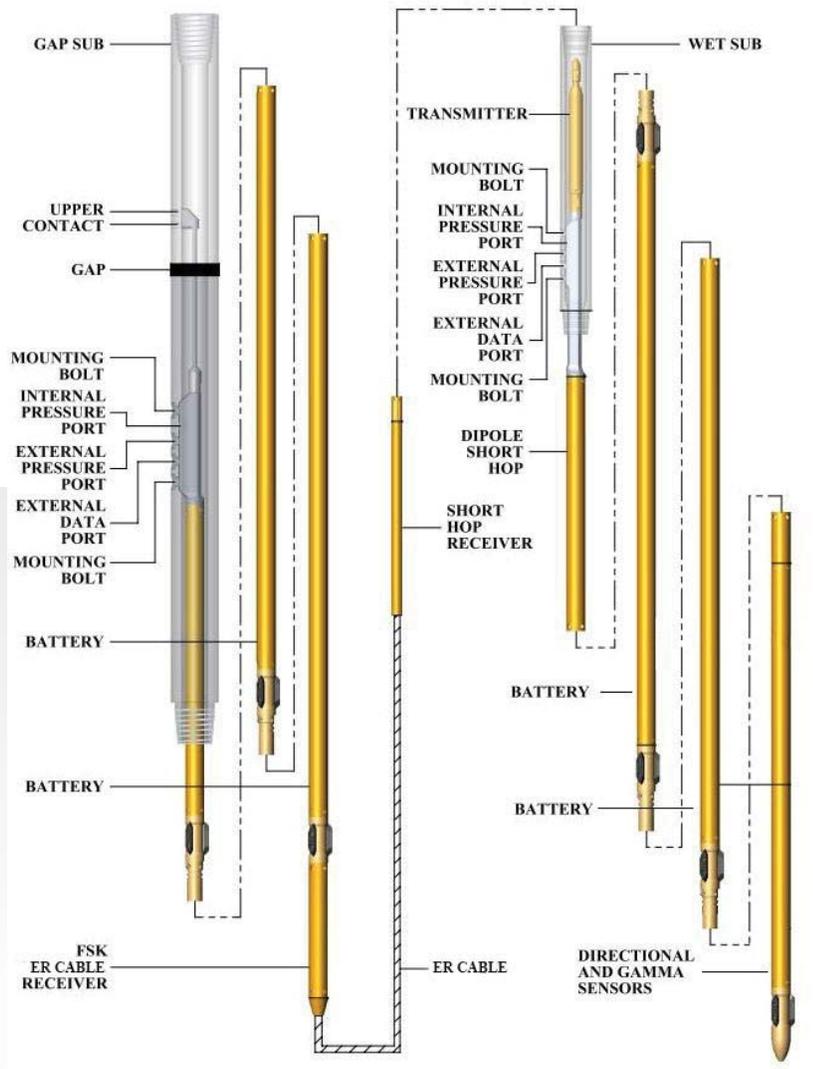
Complete and Redundant EM System

The Applied Physics Systems Model AP350 Extended Reach EM is a complete, redundant EM system with the unique capability to use an Extended Reach (ER) cable for situations where standard EM systems do not function due to geological conditions. The system meets the needs of drilling companies that want to use EM technology to drill in underbalanced applications. The Extended Reach EM can also replace the use of mud pulse telemetry, when possible, to increase reliability of the MWD system and reduce costs.

The Extended Reach EM System consists of a downhole assembly and an uphole assembly.

Downhole Assembly

The downhole assembly includes a directional sensor, gamma sensor, and a short hop transmission system all mounted in a 1.875" pressure barrel. The downhole assembly is fix mounted to the drill collars and is lowered into the well until the drillstring is positioned for the start of directional drilling. An ER cable mounted short hop receiver is then lowered through the drillstring until it is located near the downhole short hop transmitter. The ER cable is then cut off and mounted to the bottom of the uphole assembly.



Uphole Assembly

The uphole assembly consists of an ER cable data receiver, EM transmission electronics and batteries all mounted in pressure barrels. The EM transmission electronics powers the gap sub to transmit downhole data to the surface. The design of the Extended Reach EM System enables the highly reliable EM transmission technology to be used in all regions of the world because, by design, it places the EM transmitter closer to the surface, above the strata that either block or short out EM.

Model AP350

Extended Reach EM



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SPECIFICATIONS

DOWNHOLE SYSTEM

Short Hop Transmitter Type	Magnetic dipole
Short Hop Transmission Distance	10' (2.5 m)
Short Hop Transmission Rate	20 baud
Short Hop Transmitter Length	15' (3.8 m)
Battery Output Capacity	30 amps per hour
Battery Length	61.8" (157 cm) in pressure barrel
Sensor Accuracy	±0.1 degree for inclination and roll (toolface) ±0.3 degrees for azimuth
Sensor Output Data	Survey, toolface, gamma, real time annulus pressure, drill collar internal pressure, temperature, and vibration
Sensor Operating Temperature Range	0°C to 150°C
Dipole Head Annular and Bore Pressure Sensors	0 to 5000 PSI Tolerance ±2% Units: PSI, bar, kPa (user selectable in Detect MWD software)

UPHOLE SYSTEM

Gap Sub Outside Diameters	3.125", 4.125", or 4.75" (79.375 mm, 104.775 mm, or 120.65 mm)
Gap Sub Length	71.6" (182 cm)
Battery Output Capacity	30 amps per hours
Battery Dimensions	61.8" (157 cm) in pressure barrel
ER Cable Input Protocol	300 baud FSK
ER Cable Input Connector	0.8125" GO style female connector
ER Cable Length	15" (without ER cable connector)
Short Hop Receiver Pressure Barrel	1.125" OD beryllium copper
Short Hop Receiver Input Current	30 mA maximum
Short Hop Receiver Input Protocol	20 baud magnetic
Short Hop Receiver Length	42" (standard) Note: A 53" extended version is also available.

Specifications are subject to change without notice.