

High-temperature Turbine Alternator

The APS Turbine Alternator[†] is a high-temperature, axial flow design for use in measurement-while-drilling (MWD) and logging-while-drilling (LWD) systems. This development, partially supported by Sandia Laboratories, provides reliable, ongoing power at temperatures of up to 200°C, taking the place of expensive, short-lived disposable batteries. The turbine is configurable to match the required flow rates for typical BHA/hole size combinations.



Specifications

Operating Temperature: 347°F (175°C); 390°F (200°C) option

Output Power: 150 W

Voltage, Regulated (Configurable): 28 - 60 VDC

Housing Dia.: 1.875 in. (48 mm) / 2.06 in. (52 mm) / 1.875 in. (48 mm)

Overall Length: 60 in. (1,524 mm) **Weight:** approx. 45 lbs. (20.4 kg)

Turbine Housing Diameter:

- 2.5 in. (64 mm) for 3.5 in. (89 mm) drill collar
- 3.125 in. (79 mm) for 4.75 in. (121 mm) drill collar
- 3.75 in. (95 mm) for 6.5 in. (165 mm) & 6.75 in. (171 mm) drill collar
- 5 in. (127 mm) for 8 in. (203 mm) & larger drill collar

Connections: The uphole and downhole connections use the robust APS 1.625-10 Stub Acme shouldered connections. Male threads are copper plated for galling resistance. Other connections or crossovers can be supplied for different architectures.

Connectors & Feed-Through Conductors:

- Deutsch 22 conductor connectors with 4 x 26 AWG and 5 x 30 AWG braided shielded feed-through conductors, plus 2 power and 2 ground lines and a frequency line

[†] U.S. Patent #7,201,239

