



# PDT

## Pulse Directional Technologies

# Annulus Pressure While Drilling (APWD)



## DESCRIPTION

The APWD is a fully calibrated and temperature compensated instrument that provides measurements while drilling. The sensors are also equipped to perform Formation Integrity Tests (FIT) and provide pressure measurements while the pumps are off. The tool is fully programmable allowing custom adjustment of sampling times and measurement start times. All measurements are logged to memory and can be sent up hole for real time analysis.

## FEATURES & BENEFITS

- Real Time Measurements of Annular Pressure.
- Memory Recordable Measurements.
- Fully Retrievable.
- Early Lost Circulation Detection.
- Early Detection of Well Blowouts.

## SENSOR MEASUREMENTS

The APWD can be run along with the MWD system in a NMDC in wide range of collar sizes (from 4.75in to 9.5in) and can provide the following measurements in several flexible configurations:

Eight real time variables (limit on Legacy tools).

14 total data points including:

- Average Pressure
- Peak Pressure
- Resting Pressure
- Z Vibration Flag
- X-Y Vibration Flag
- Z Shock Flag
- X-Y Shock Flag
- Peak Z Vibration (raw)
- Peak X-Y Vibration (raw)
- Annular Temperature
- Z Vibration (raw)
- X-Y Vibration (raw)
- Z Shock (Counts)

## APPLICATIONS

- Keeping the ECD inside a narrow operating margin.
- Detect and manage hole cleaning.
- Early shallow water flow detection.
- Underbalance Drilling.
- Kicks and Influx detection.
- Barite Sag monitoring.
- Accurate Leak off and formation integrity tests.
- Discriminate influx or weeping.

## CALIBRATION

- Pressure sensor and board are “burned in”.
- Calibrated over 7 pressures and 8 temperatures.
- Tools are temperature and pressure calibrated.
- Dead weight gives pressure accuracy under 1 psi.
- Two calibrated temp sensors placed on circuit board and transducer.
- Circuit boards and pressure transducers are calibrated together as a pair.

## SPECIFICATIONS

Module Diameter	1.875"
Module Length	34.9" (88cm)
End connections	10 pin Kintec connector
Max Temperature	175°C (347°F)
Max Pressure	20,000 psi
Transducer Rating	15,000 to 29,000 psi
Accuracy % Full Scale	0.1%
Repeatability	1 psi
Sub sizes OD	4.75-9.5"