

Overview

The 2PCA-1000 PolyCaliper probe measures borehole diameter with three linked arms operating a single resistive sensor. The 3 Arm Caliper can be scaled and calibrated in inches or in centimeters. The output of the caliper has been optimized with a microprocessor generated linearization scheme to improve the accuracy of the probe over the full range of motion. The output from the probe is an anti-coincidence pulse train which has been a single conductor standard for many years. The 2PCA-1000 requires 80-85 volts D. C. at 85 mA max. The probe can be operated with MGXII series logger which manages the power requirements automatically.

Options

The 2PCA-1000 PolyCaliper probe can be equipped with a fluid resistivity - temperature extension (2SFB-1000) allowing the tool to log down with fluid resistivity and temperature and log up with caliper and gamma using the 2PGA-1000 PolyGamma probe. The PolyCaliper probe can also be run without the gamma probe by using the 2ADP-1000 Poly probe to a single conductor adapter. Without this adapter, the PolyCaliper probe can only be run with the PolyGamma probe on the MGXII logging system. Using the 2ADP-1000 adapter the 2PCA-1000 can be operated on the older MGX logging systems.

The fluid resistivity - temperature extension is a factory installed option. Contact Terraplus for details.

Caliper arm extensions are available for measuring holes larger than 17". The caliper arm can be unscrewed from the short pivot arm and can be replaced with an extension. The arms are then screwed on to the end of the extension. This will allow the caliper to measure up to 30 inches. The minimum hole diameter in which the caliper can be run with the extension arms is 2.25".

Specifications

2PCA-1000

Length: 120 cm
Diameter: 44 mm
Weight: 4 kg.

The PolyGamma probe adds 2.73 Kg and 24" (61cm)

The temperature - fluid resistivity extension adds 3 lbs (1.36Kg) about 12.25" (31cm)

Caliper measurement: 1.5" to 17", 38.1mm to 431.8mm

2PCA-1000 PolyCaliper Probe

Theory of Operation

The caliper measurement is made with arms attached to a mechanical assembly that drives a linear potentiometer. A constant reference voltage is applied across the potentiometer. The D. C. output voltage from the wiper of the potentiometer is converted to a frequency. A microprocessor applies a quadratic correction to this frequency so that the frequency is linearly related to borehole diameter. Depending on the polarity of the probe power, the microprocessor selects two frequencies to be transmitted up the cable line. The frequencies correspond to the caliper and natural gamma measurements (when 2PGA-1000 is attached), or the temperature and fluid resistivity measurements (when the 2SFB-1000 is attached). The processor controls the pulse driver circuit that sends positive pulses up the cable line for the first frequency, and negative pulses for the second frequency. An anti-coincidence algorithm insures that a positive and negative pulse will not occur simultaneously. The microprocessor also controls the motor that opens and closes the caliper mechanism. The mechanism opens or closes as appropriate when power is applied.