

Full-Waveform Sonic Tool

Mount Sopris Industries (MSI)

2SAA-1000

Measurement Parameters & Applications:

The Sonic tool uses a transducer to transmit an acoustic wave through the borehole fluid and surrounding formation. At distances of three, four and five feet from the transmitter are receivers, which measure the refracted acoustic wave. From this wave, compressional, shear and tube wave arrivals can be determined. The difference in the compressional arrivals from the five to the four and the four to the three foot receivers can be calculated as Travel Time or Delta T, an inverse velocity measurement scaled in micro-seconds/foot. Travel Time can be used to calculate porosity, determine lithology and formation saturation. The variable frequency transmitter can be adjusted to maximize the various refracted acoustic waves along the sonic waveform. Specific properties such as shear wave arrival times can be obtained, which is necessary for calculating advanced rock properties.

Operating Constraints:

Maximum pressure 2000 PSI
Operation temperature range 0 to 70 degrees C, 32 to 158 degrees F
Borehole constraints..... Open or cased hole, Fluid filled to 12 in., 30.5 cm

Dimensions:

Length..... 119 in., 302.3 cm
Diameter 1.75 in., 4.45 cm
Weight 33 lbs, 15 kg

Transmitter & Receivers:

Number of transmitters..... 1
Transmitter frequency bands..... 0.5 to 1.5 KHz, 1 to 3 KHz, 1.5 to 4.5 KHz, 2 to 6 KHz,
2.5 to 7.5 KHz, 3.6 to 10.5 KHz, 5 to 15 KHz, 7.5 to 22.5 KHz,
10 to 30 KHz, 12.5 to 37.5 KHz and 15 to 45 KHz.
Number of Receivers..... 3
Receiver frequency response..... 1 - 40 KHz
Transmitter to Receiver Spacing..... 3, 4 & 5 ft.