

FULL-WAVEFORM / COMPENSATED SONIC PROBE

The RG sonic probe uses a dual-transmitter dual-receiver array to provide high-quality formation acoustic-velocity data. Options are available for display of full-waveform data and cement-bond data (CBL) in cased boreholes.

PRINCIPLE OF MEASUREMENT:

A piezoelectric transmitter is stimulated by a high-voltage pulse and radiates a high-frequency sonic wave via the borehole fluid and formation to a receiver. An accurate quartz clock measures the first arrival transit time.

Compensated sonic mode: Both pairs of transmitters and receivers are used. The probe measures the velocity of the first compressional arrival. Use of multiple transmitters and receivers allows cancellation of the borehole fluid path and determination of formation velocity.

Full waveform sonic mode: Only the lower transmitter is used. The probe records the full sonic wave-train at both receivers simultaneously and also the velocity of the first arrival.

Cement-bond log (CBL) mode: Only the lower transmitter is used. The probe records the amplitude and arrival time of the first casing arrival at the lower receiver and full wave-trains at both receivers.

FEATURES

- Down-hole digitisation of waveform data
- Compensation for poor centralisation or casing
- Variable density log (VDL) or wavelet (wiggle) display

MEASUREMENTS

- Formation velocity (slowness)
- Shear (S) velocity (where shear wave exists)
- Full waveform
- Time of first arrival (delta-t)
- Amplitude of first arrival (CBL)
- Integrated transit time

APPLICATIONS

Minerals/ water/ engineering

- Lithology identification
- Porosity
- Rock strength and elasticity
- Correction of seismic velocity
- Fracture and permeability indication in hard rock
- Location of poor or missing cement behind casing

OPERATING CONDITIONS

Borehole type:

- Sonic:** open-hole, water-filled
- (CBL):** cased-hole, water-filled
- Centralisation: minimum 2 essential

SPECIFICATIONS

Diameter: 60mm
Length: 4.35m
Weight: 24kg
Max. temperature: 70°C
 (extended ranges available)
Max. pressure: 20MPa
 (extended ranges available)
Transducer type: 23kHz piezoelectric
Spacing: Tx-Rx1: 710mm;
 Tx -Rx2: 1110mm
Waveform acquisition: 2ms with 4µs sampling
Down-hole gain: 0db to 42db (surface control)

SALES INFORMATION

Probe:

25 080 000	Compensated sonic probe
25 082 000	- includes full waveform
25 083 000	- includes full waveform and CBL

Accessories:

21 030 000	Centraliser 90 - 180mm
21 031 000	Centraliser 180 - 260mm
21 032 000	Centraliser 260 - 342mm
21 033 000	Centraliser 342 - 472mm

