

# 2SAA (F)-1000 Multi-Frequency Full Waveform Sonic

The Mount Sopris **Multi-Frequency, Monopole-Dipole Full Waveform Sonic tool** is compatible with the **MATRIX** Portable Digital Logging System and will operate on single or multiconductor wirelines. The standard probe includes transmitter - receiver spacings of 3 & 4 feet. Customers can order probes with different spacings (metric or english) and can combine it with natural gamma (2SNA-1000)

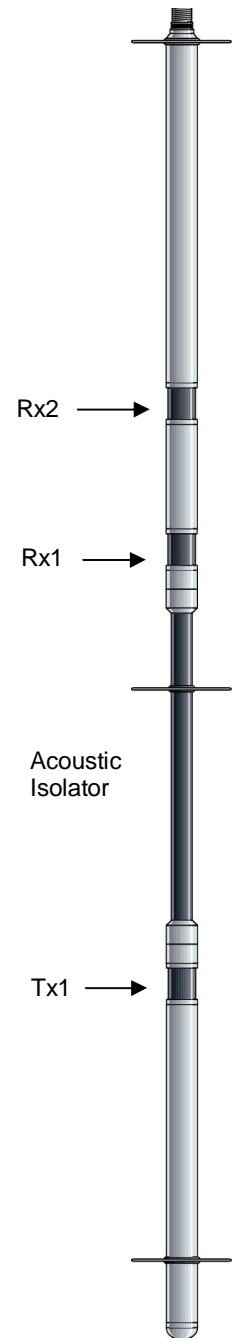
Several features of the 2SAA(F)-1000 sonic probe set it apart from conventional probes. The tool is modular, which allows the user to connect various sections together to form the specific tool needed. It is a variable frequency tool that can be used for surveys in many different environments and can be configured in the monopole or dipole mode of operation. The receivers can also stack and average multiple waveforms to cancel noise when the received signal amplitude is low.

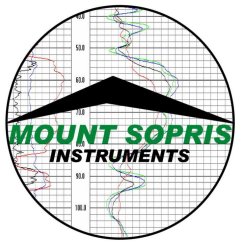
MSI P/N: 2SAA(F)-1000

**MSI Recommended Spares / Optional Items:**

- \* FWS for WellCAD (08XXX-0122)
- \* Additional acoustic transmitter (2STA-1000)
- \* Additional receiver section (2SRA-1000)
- \* 6-foot isolator (2SIA-1000/6) or special 3-foot 2SIC-1000 soft isolator for slow formations
- Spare Tx stave screws (set of 24, 2STA-0013)
- Spare set of 6 Tx staves (2STA-0008)
- 2CNA-3000 centralizers (boreholes 2.2-3.5+(56-89mm) dia.
- 2CNA-4000 centralizers (for boreholes 3-12+(76-310 mm) dia

<b>Specifications</b>	
Maximum pressure .....	3000 PSI
Operation temperature range .....	-20 to 70 degrees C
Storage temperature .....	-40 to 100 degrees C
Sample resolution: .....	12 bit
Receiver frequency response .....	1 - 40 KHz
Receiver gain: .....	1, 2, 4, 8, 16, AGC
Sampling .....	2uS (no stacking), 4 uS ó 100 in 4 uS increments
Number of samples per receiver: .....	0 to 1024
Sample holdoff time .....	10 to 2500 uS in 10 uS increments
Number of waveforms stacked and averaged.....	1 to 16
Stack interval .....	1-250 ms
Receiver modes .....	software configurable Monopole, dipole, reverse dipole stacking
Number of receivers .....	1-8
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.
Transmitter modes .....	user configurable ,Monopole dipole, reverse dipole stacking
Number of transmitters .....	1-2
<b>2SMA-1000 Modem Section</b>	
Length (assembled).....	24.625 inches (62.55 cm)
Diameter.....	1.5 inches (3.81 cm)
<b>2SRA-1000 Receiver Section</b>	
Length (assembled) .....	1 ft (30.48 cm)
Diameter .....	1.5 inches (3.81 cm)
<b>2SIA-1000 and 2SIB-1000 (2SIC-1000 and 2SID-1000) Isolator Sections</b>	
Length (assembled) .....	29 (65) inches (73.66 (165.1) cm)
Diameter.....	1.75 inches (4.445 cm)
<b>2STA-1000 Transmitter Section</b>	
Length (assembled).....	25.25 inches (64.135 cm)
Diameter.....	1.5 inches (3.81 cm)
<b>Centralizers</b>	
Diameter.....	1.75 inches (4.445 cm)
<b>Two receiver single transmitter probe</b>	
Length (assembled).....	80.875 inches (205.42 cm)
Diameter.....	1.75 inches (4.445 cm)
Weight	26 lbs (9.7 Kg)





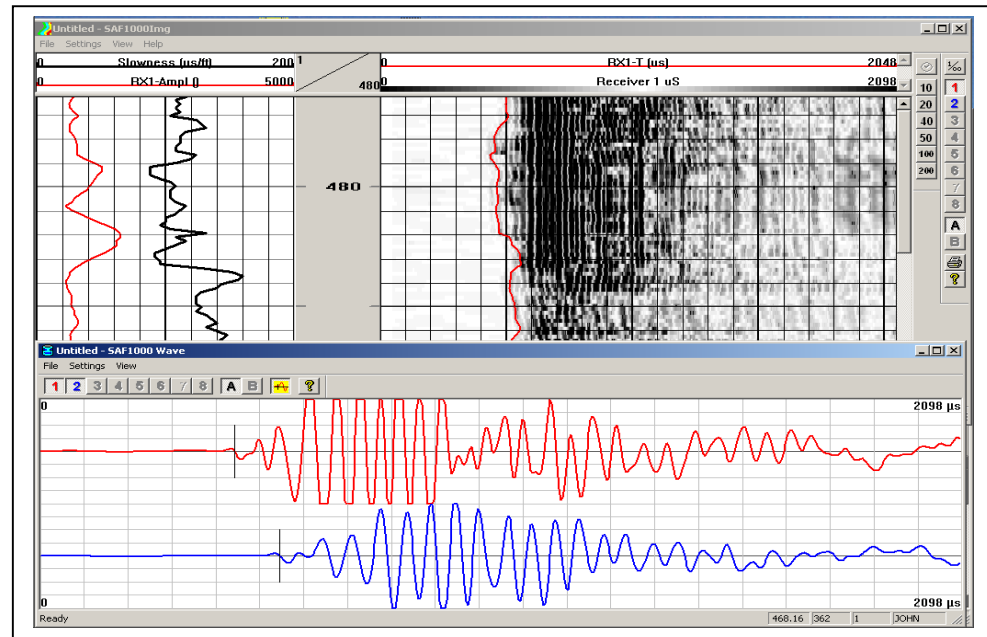
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## ADVANTAGES:

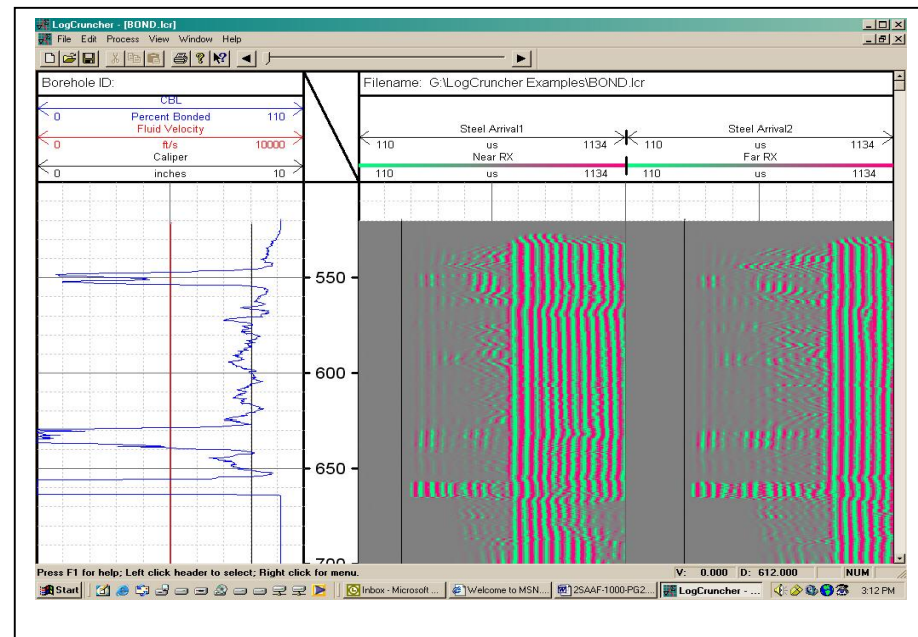
- Ability to record long wave train for Stonely wave analysis and the measurement of fracture aperture and permeability index.
- The absolute value of the amplitude of the received waveform is measurable thus allowing for amplitude calibration.
- Truly modular: other receiver and/or transmitter combinations possible up to 8 receivers and two transmitters.

## FEATURES:

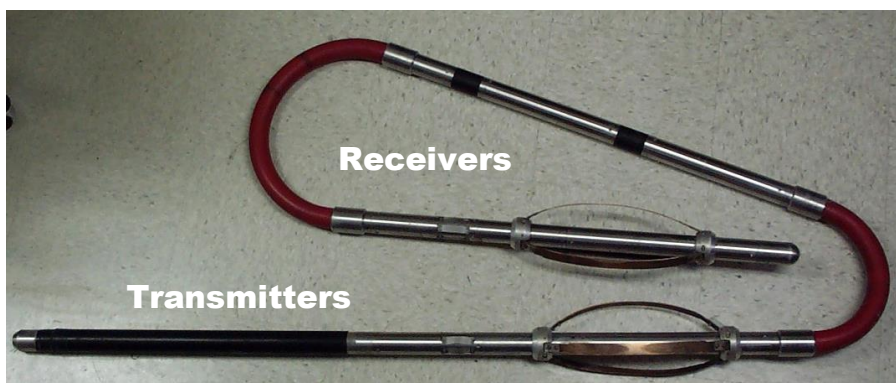
- Real-time slowness, amplitude and VDL plotting
- User-defined waveform window
- Full waveform analysis, including:
  - first arrival repicking
  - waveform filtering
  - stand-off correction
  - mechanical property calculations
  - velocity analysis
  - trace coherence analysis
  - reflected tube-wave analysis.
  - semblance processing
- Individual waveform pair plotting
- Well Completion Evaluation



Example of **real-time log** data from 2-receiver sonic in 4.5+PVC, 30 kHz Tx frequency



WellCAD Sonic CBL Example



2 Transmitter . 2 Receiver, dual isolator 2SAA(F) FWS Tool