REFTEK SYSTEMS INC.

151B-120 Observer

BROADBAND SEISMOMETER

The 151B Observer Broadband Seismometer is a force-balance feedback sensor available with the frequency bandwidth of 0.0083 Hz (120 sec) - 50 Hz.

The 151B Observer contains three independent sensors (one vertical and two horizontal) with built-in electronic feedback circuit, control and power conversion circuits, featuring low noise, large dynamic range and easy installation and use.

The 151B Observer has built-in leveling and mass lock/unlock facilities. The leveling mechanism includes two bubble levels, three adjustable feet and three locknuts—located on the seismometer's chassis.

The 151B Observer has a built-in mass zero-position adjusting mechanism to perform automatic mass adjustment. As soon as the seismometer is powered it checks the zero position of each component's mass and automatically adjusts the zero position if needed. Monitoring and adjustment of the mass can also be performed via the 130S series High Resolution Recorders using the Sensor Control Board.

The 151B Observer is an exceptionally low noise seismometer (refer to the Power Spectral Density plot). The low self noise performance makes the 151B an ideal seismometer for local, regional and global seismicity studies in different installation configurations.

KEY FEATURES

- High Performance Seismometer
- Low Self-Noise
- GSN Vault Design
- Low Power Consumption
- Force-Balance Electric Feedback
- Robust Mass Locking Mechanism
- Easy Installation

APPLICATIONS

- Broadband Surface Installation
- Local and Regional
- GSN Installation

151B-120 Observer

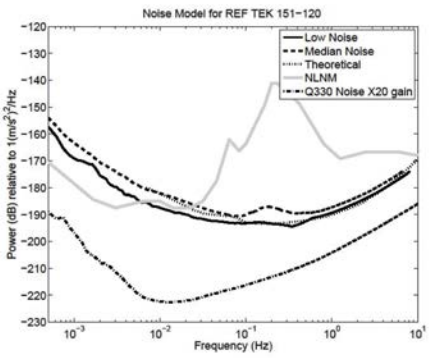
BROADBAND SEISMOMETER

MODEL	151B-120 (P/N 97118-00)
MECHANICAL	
Size	9.45" dia. x 10.6" high (24 cm x 27 cm)
Weight	26.4 lbs (12 Kg)
Watertight Integrity	IP67 for outdoor use & immersion resistance
Alignment	Removeable orientation N/S pins screw into the base (brass for N, silver for S)
Leveling	Two Integrated Bubble Levels; three adjustable leveling feet with locknuts
Mass Position	Remote Monitoring and Adjusting Zero-point using 3 Independent Voltage Outputs
Mass Locking	Mechnical Lock/Unlock Mechanism Accessible on Outside of the Case
Mechanical Zero	No need for Adjustment within Ambient Temperature Fluctuation ±20 °C
ELECTRICAL	
Sensor Type	Triaxial, Orthogonal
Feedback	Force-balance with Capacitive Displacement Transducer
Frequency Bandwidth: 151B-120	0.0083 Hz (120 sec.) – 50 Hz
Sensitivity	2000 V/m/s
Full Scale Output	±20 V Peak-to-Peak Differential
Dynamic Range	>140 dB @ 5 Hz
Self-Noise (low model)	Below NLNM from 145 sec. to 10 Hz
Output Impedance	<100 Ohms
Calibration	Coil Resistance 1,000 Ω Sensitivity: 10 m/s²/A
Distortion	Total Distortion <-80 dB
Cross Axis Coupling	<1 %
Low Spurious Resonance	Higher than 100 Hz
Damping	0.7 of Critical
Linearity	Better than 1 % of full scale

ENVIRONMENTAL	
Operating Temperature	–20 °C to +60 °C
POWER	
Power Input	+12 VDC (9 V to 18 VDC)
Power Consumption	~1.1 W
Power-Fail Protection	Built-in
Signal Overload Protection	Built-in
Lightning Protection	Built-in
Auto-Recovery Time	Full operation recovery within 10 minutes after either power fail or signal overload

ORDERING INFORMATION

PART NO.	DESCRIPTION
97118-00	151B-120: Seismometer, 3 Component, 120 Sec. to 50 Hz, w/Case
97118-35	151B-120: Seismometer, 3 Component, 120 Sec. to 50 Hz, w/Case , and with 10m cable to 130S DAS (P/N 100719-33) and Thermal insulated cover (P/N 97177-00)
100719-33	130-8803-33: Assembly, Cable, 130 to 151B-60/-120 Sensor, 33' (10m)
97177-00	151-9802: Cover, Thermal Insulated
97118-50	Ruggedized Transit Case for 151B Seismometer



Ringler, A. & Hutt, C. (2010, November - December).
Self Noise Models of Seismic Instruments. Seismological Research Letter, 81(6)

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Contact your local dealer today

CUSTOMER SUPPORT

REF TEK products are installed in locations around the world, from urban settings to rainforests to deserts. The environments are often challenging for electronics and REF TEK Systems is committed to providing reliable, practical support. Our team includes seismologists and seismic installation experts as well as engineers and technicians. **Contact support@reftek.com**.