

REF TEK 

Unshakable.

Broadband Seismometers
MODEL 151-120
MODEL 151-60
OBSERVER

Applications:

Local and Regional
Broadband Surface or Posthole Installation
GSN Installation

Features:

High Performance Broadband Seismometer
Low Self-Noise Over a Wide Bandwidth
Portable Design
Low Power Consumption
Force-Balance Electric Feedback
Robust Mass Locking Mechanism
Easy Installation



REF TEK

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Related Sub-systems:

3rd Generation Seismic Recorders, 130-01 & 130B-01
 Accelerometers, 131A & 131B; 147-01/1 & 147-01/3
 Strong Motion Accelerographs, 130-SM & 130-SMA
 Miniature Seismic Recorder, 125A-02 "Texan"

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 Specifications subject to change without notice. Rev. 1.1

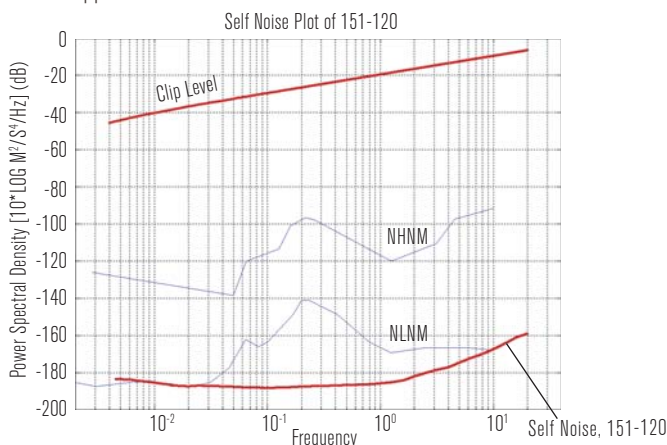
Introduction

The 151 series Broadband Seismometer, "Observer", is a force-balance feedback sensor available with frequency bandwidth 0.0083 Hz (120 sec) - 50 Hz, and 0.016 Hz (60 sec) - 50 Hz, flat to velocity. The "Observer" with frequency bandwidth 0.033 Hz (30 sec) - 50 Hz is available upon request. The 151 "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 Observer has built-in leveling and mass lock/unlock facilities. The leveling mechanism includes two bubble levels, three adjustable feet and three locknuts which are located on the seismometer's chassis (see photo below).

The Observer has 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 130 family High Resolution Recorders using Sensor Control Board, RT527-B01.

The Observer is a low noise seismometer (see below Power Spectral Density plot). The low self noise performance makes the 151-120 an ideal seismometer for local, regional, and global seismicity studies in different installation configurations, including observatory and portable, surface and posthole applications.



151 "Observer" Specifications

Sensor Type:	Triaxial, orthogonal
Feedback:	Force-balance with capacitive displacement transducer
Frequency Bandwidth:	0.0083 Hz (120 sec) - 50 Hz (see diagram in manual), Model 151-120; 0.0066 Hz (60 sec) - 50 Hz, Model 151-60; 0.0033 Hz (30 sec) - 50 Hz, Model 151-30 (optional upon request)
Sensitivity:	2000 V/m/s
Full Scale Output:	±20 V peak-to-peak differential
Dynamic Range:	Greater than 140 dB @ 5 Hz
Output Impedance:	Less than 100 Ohms
Calibration:	Coil resistance 1,000 Ω, sensitivity: 10 m/s ² /A
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 :	Mechanical lock/unlock
Distortion:	Total distortion less than -80 dB
Cross Axis Coupling:	Less than 1%
Mechanical Zero:	No need for adjustment within ambient temperature fluctuation ± 20°C
Power-Fail Protection:	Built-in
Signal Overload Protection:	Built-in
Auto-recovery Time:	Full operation recovery within 10 minutes after either power fail or signal overload
Power Input:	9 to 18 VDC
Operation Temperature:	-20°C to +60°C
Power Consumption:	< 1.3 W
Watertight Integrity:	IP 67 for outdoor use and immersion resistance
Case:	Aluminum, powder coated
Dimension :	Diameter 24 cm x Height 27 cm
Weight:	26.4 lbs (12 kg)
Connector:	PT01A 14-19S
Alignment:	Removable orientation N/S pins screw into the base (brass for N, silver for S)
Accessories (optional):	Rugged transportable Hardigg case. Flexible insulation bag (P/N 151-9800)

