

# 151D Bronco

## BROADBAND SEISMOMETER

The 151D Bronco Broadband Seismometer is an observatory grade force-balance feedback velocity sensor available with the frequency bandwidth of 0.0083 Hz (120 sec) - 80 Hz. The seismometer contains three independent symmetrical sensors arranged in an orthogonal Galperin configuration. The sensor signals are deconvolved to provide the traditional ZNE orthogonal seismometer output for low noise and large dynamic range measurements.

The 151D Bronco has built-in leveling and automated unlock features for ease of installation. The leveling mechanism includes a single bulls-eye bubble level, three adjustable feet and three locknuts. Sensor mass will automatically unlock upon application of power to the sensor. Upon unlocking the sensor a mass zero-position adjusting sequence will perform automatic mass zero adjustment if needed.

Recording of signals, along with monitoring and adjustment of the mass and sensor can also be performed via the Reftek Wrangler High Resolution Seismic Recorders using the sensor control interface of the 151D. The 151D Bronco is an exceptionally low noise seismometer (refer to the Power Spectral Density plot). The low self noise performance makes the 151D an ideal seismometer for local, regional and teleseismic seismicity studies in different installation configurations.



### KEY FEATURES

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

### APPLICATIONS

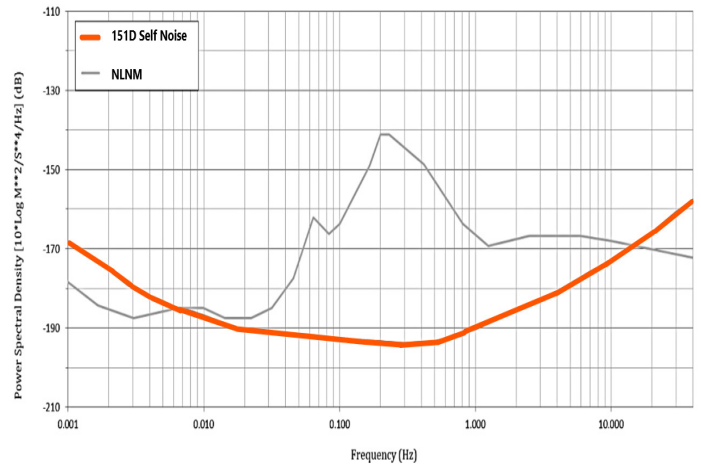
- » Broadband Surface Installation
- » Local and Regional
- » GSN Installation

# 151D Bronco

## BROADBAND SEISMOMETER

<b>MODEL</b>	<b>151D-120</b>
<b>MECHANICAL</b>	
<b>Size</b>	9.5" dia. x 9.5" high (24 cm x 24 cm)
<b>Weight</b>	28 lbs (12.70 Kg)
<b>Watertight Integrity</b>	IP67 for outdoor use & immersion resistance.
<b>Humidity</b>	0-100% (non-condensing)
<b>Alignment</b>	Removeable orientation N/S pins screw into the base (brass for N, silver for S)
<b>Leveling</b>	Integrated Bubble Level; three adjustable leveling feet with locknuts
<b>Mass Position</b>	Remote Monitoring and Adjusting Zero-point using 3 Independent Voltage Outputs
<b>Mass Locking</b>	Lock via Electrical Signal
<b>Mechanical Zero</b>	No need for Adjustment within Ambient Temperature Fluctuation $\pm 10$ °C
<b>ELECTRICAL</b>	
<b>Sensor Type</b>	Triaxial, Symmetrical UVW
<b>Feedback</b>	Force-balance with Capacitive Displacement Transducer
<b>Frequency Bandwidth: 151B-120</b>	0.0083 Hz (120 sec.) – 80 Hz
<b>Sensitivity</b>	2000 V/m/s
<b>Full Scale Output</b>	$\pm 20$ V Peak-to-Peak Differential
<b>Dynamic Range</b>	>150dB (0.01-0.05Hz) >160dB (1-10Hz)
<b>Self-Noise (low model)</b>	Below NLNM from 145 sec. to 10 Hz
<b>Output Impedance</b>	<100 Ohms
<b>Calibration</b>	Coil Resistance 54 $\Omega$ Sensitivity: 10 m/s <sup>2</sup> /A
<b>Distortion</b>	Total Harmonic Distortion <-60 dB
<b>Cross Axis Coupling</b>	<1 %
<b>Low Spurious Resonance</b>	Higher than 80 Hz
<b>Damping</b>	0.7 of Critical

<b>Linearity</b>	<-60 dB
<b>ENVIRONMENTAL</b>	
<b>Operating Temperature</b>	-25°C to +60 °C
<b>POWER</b>	
<b>Power Input</b>	+12 VDC (9 V to 30 VDC)
<b>Power Consumption</b>	0.65 W
<b>Power-Fail Protection</b>	Built-in
<b>Signal Overload Protection</b>	Built-in
<b>Lightning Protection</b>	Built-in
<b>Auto-Recovery Time</b>	Full operation recovery within 10 minutes after either power fail or signal overload



### NORTH AMERICA

75 MacDonald Ave Unit 1  
Dartmouth, Nova Scotia, Canada  
B3B 1T8

[sales@reftek.com](mailto:sales@reftek.com)

Contact your local dealer today

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### 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](mailto:support@reftek.com).