

# VBT1X1



## GPS Variable Voltage Bias Tee Technical Product Data

### Features

- Supports all L-band and S-band GNSS signals.
- Wide Output Voltage Range
  - 0 to 21.5 VDC.
- Low Insertion Loss
  - Less than 1.0 dB typical.
- Excellent Flatness
  - Less than 0.25 dB variation between GPS L1 and L2 typical.
- Multiple AC/DC Power Options Available
- Internal DC regulation and filtering
- Lightning Induced Transient Resistant.
  - Designed to survive DO-160G Section 22, Waveform 3 & 4.



### Description

The **Variable Voltage Bias Tee 1X1 (VBT1X1)** is a one input, one output GPS bias-tee. This equipment is designed to inject DC voltage into a coaxial cable with minimum RF insertion loss. The VVBT1X1 is compatible with all L-band and S-band GNSS signals, including GPS, Galileo, GLONASS, BeiDou, and IRNSS. The VBT1X1 provides a regulated voltage supply and features internal transient suppression technology designed to pass DO-160G Lightning Induced Transient testing on the DC input port. In the default configuration, the J1 RF output is DC blocked while the requested DC voltage is provided to the Antenna port. The output voltage is controlled by a lid-mounted potentiometer, providing a 1.25 to 21.5 VDC voltage range when supplied with at least a 24 VDC input. The VBT1X1 is powered by an attached AC transformer (24 VDC out) or a MIL-DTL-5015 10SL two-pin DC power port.

### Use Cases

- Powering antennas, inline amplifiers, splitters, or other GNSS equipment.
- Providing compatibility for equipment with different operating voltages.
  - By using a VBT1X1-N/X/110 tuned to 12VDC, a 12 VDC antenna can be used with a 5 VDC receiver.
- Protecting expensive receivers by blocking the DC path from the antenna.
- Replaces a benchtop power supply and RF bias-tee in lab environments.

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## Electrical Specifications, TA=25°C

Parameter	Notes	Min	Typ	Max	Unit
Frequency Range	Covers all major GNSS constellations.	1.1		2.5	GHz
Characteristic Impedance	Unused ports should be terminated with 50Ω loads.		50		Ω
Insertion Loss	The loss that occurs from the input port to any output port: S21	0	-1	-2	dB
Input SWR	Input Standing Wave Ratio: S11		1.5:1	2.0:1	-
Output SWR	Output Standing Wave Ratio: S22		1.3:1	2.:1	-
Band Flatness	The difference in loss or gain between the L1 and L2 frequencies.		0.25	1	dB
Group delay flatness	The difference in signal delay between the L1 and L2 frequencies.			1	ns
Current Draw	Typical current consumption.		9		mA

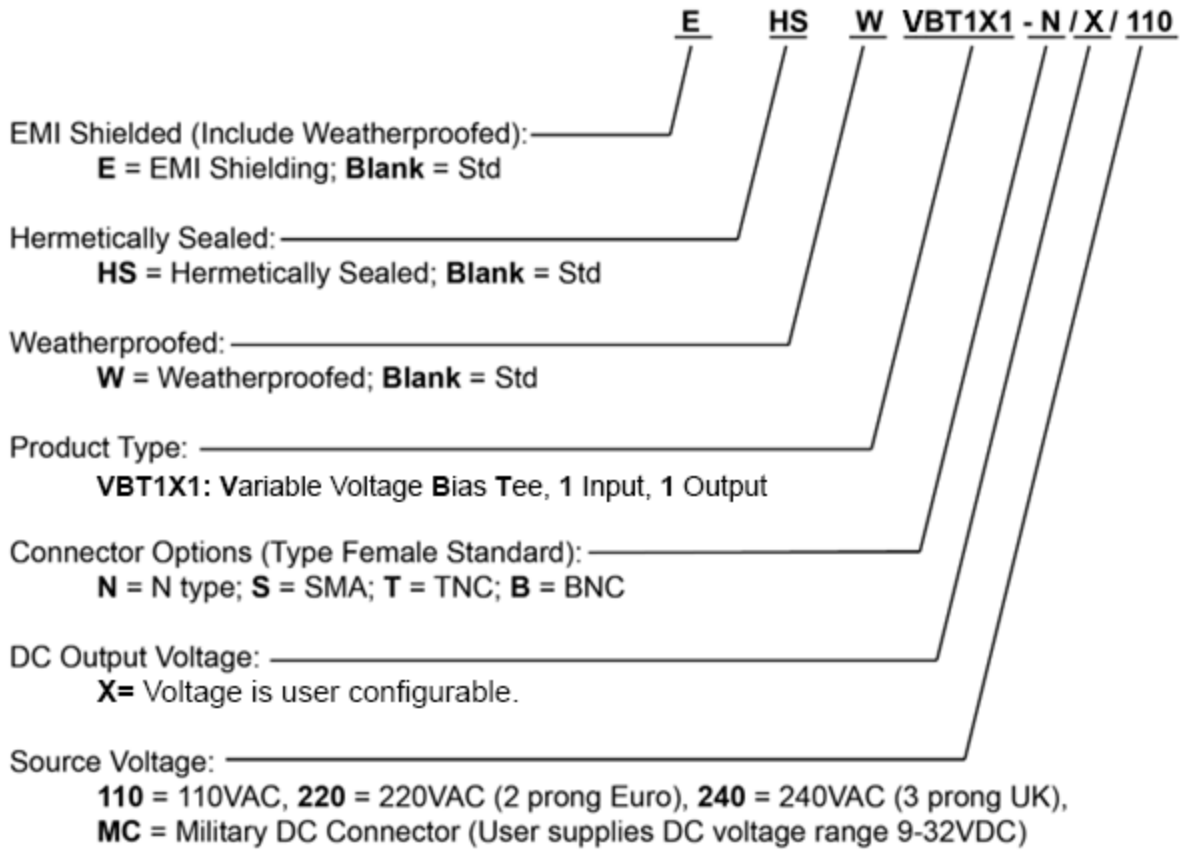
External Power Options (Networked Option)		
Source Voltage Options	Voltage Input	Style
	110VAC	Transformer (ITA Type A Wall Mount)
	220VAC	Transformer (ITA Type C Wall Mount)
	240VAC (United Kingdom)	Transformer (ITA Type G Wall Mount)
	Customer Supplied DC 9-32 VDC	Mil DC Connector (Includes Mate)
Output Voltage Options <sup>(1)</sup>	DC Voltage Out	Max Current out For Corresponding Vout
	3.3 V	500mA
	5V	500mA
	9V	500mA
	12V	500mA
	15V	mA
	Custom	Custom
Standard DC Configuration with any External Power Option (AC/DC or Military DC)		
<b>J1 Output DC Blocked with 200Ω load standard</b>		
<b>Any port can be custom selected to Pass or Block DC</b>		
Connector Options	Connector Style	Charge
	Type N-female	No Charge
	Type SMA-female	No Charge
	Type TNC-female	No Charge
	Type BNC-female	No Charge
	Other	Contact GPS Networking

(1)With Network Option, any RF port (input or output) can be specified to Pass DC or Block DC

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## Part Number Configuration

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(Military DC Mating Connector is included standard with the MC power option).

Contact GPS Networking Technical Support at 1-800-463-3063 or [salestech@gpsnetworking.com](mailto:salestech@gpsnetworking.com) for any questions regarding non-standard configurations and corresponding part numbers.

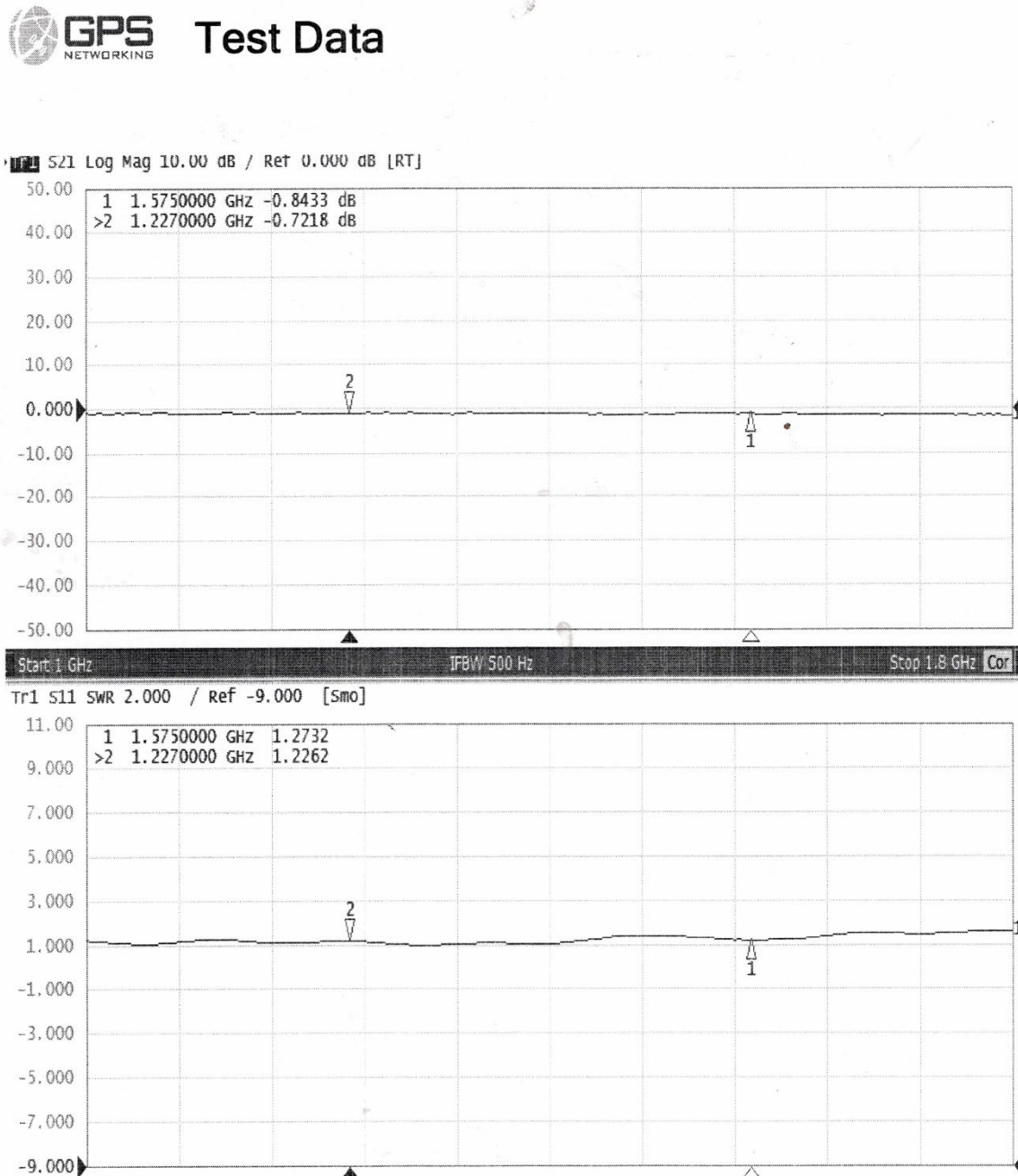
# VBT1X1



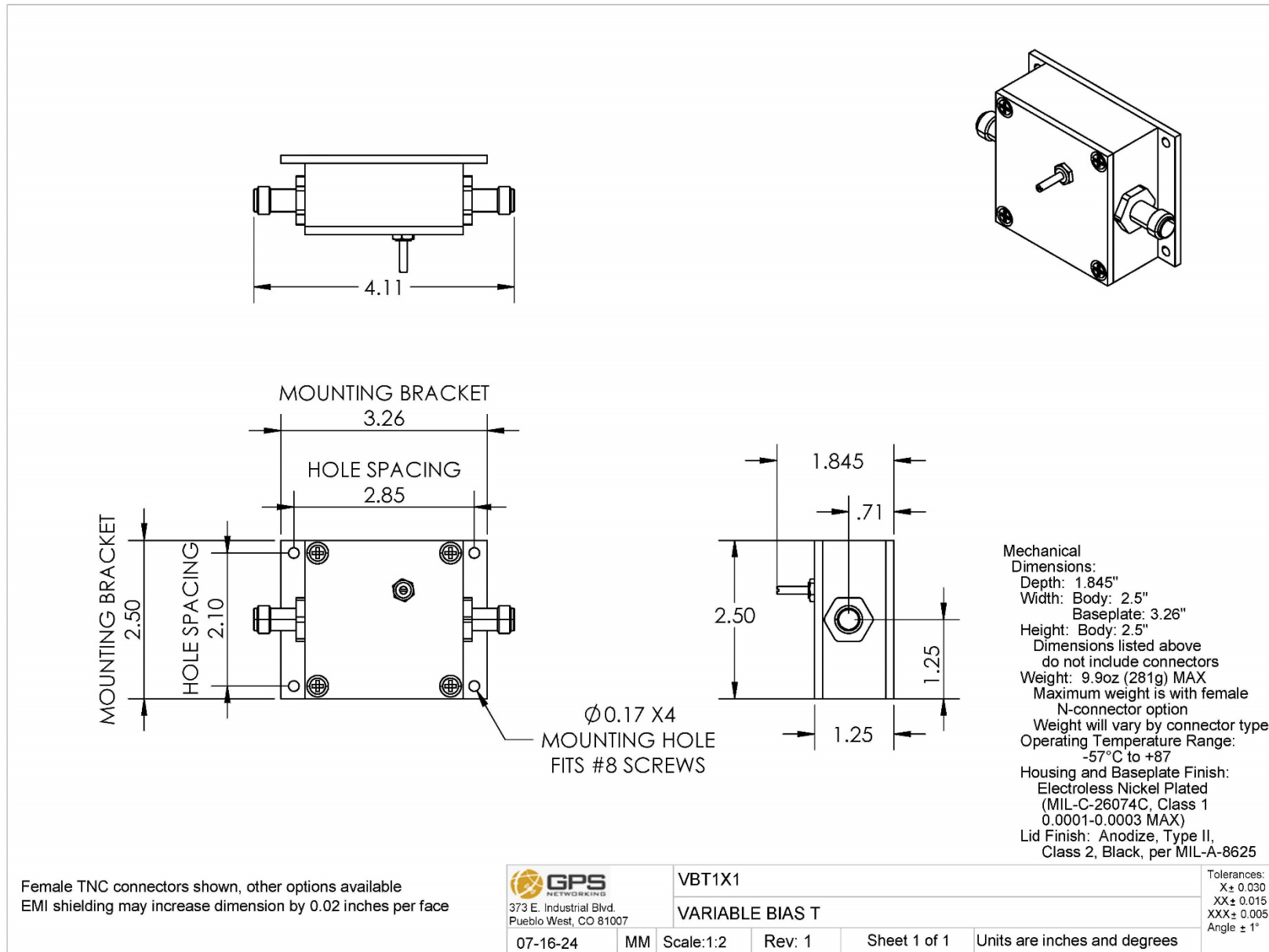
## Performance

### VBT1X1 (Insertion Loss)

Each VBT1x1 ships with a test sheet that verifies critical performance characteristics, such as gain, input VSWR, and amplitude balance; a typical VNA test sheet is shown below.



# Mechanical



Contact us at [salestech@gpsnetworking.com](mailto:salestech@gpsnetworking.com) for 3D models or CAD drawings.