



Features

Use with VT1413C

Use with Option TFB Terminal Block with Trifiler filter

Four Channels of Programmable Bridge Excitation with Voltage Values of 1 V, 2 V, 5 V, or 10 V

Wide Band Buffered Analog Output per Channel

Built-in Shunt Calibration Capability

Programmable Low Pass Filters from 100 Hz up to 10 kHz

4-channel High-speed Bridge SCP

Overview

The VT1521 is designed to provide an accurate means of doing high speed bridge measurements. It provides bridge completion circuitry, excitation voltage, programmable low pass filters, and wide band buffered outputs.

The low-pass filter on each channel is a 4th order Butterworth active RC filter used to provide alias protection and improved noise reduction. The low-pass filter cutoff frequencies are 10 kHz, 3 kHz, 1KHz, 300 Hz, and 100 Hz.

Bridge completion resistors for 1/4 bridge measurements are built-in to the Option TFB terminal block with completion values of 120 Ω and 350 Ω . The VT1521 SCP is designed to provide self regulating Excitation Voltages of 0 V, 1 V, 2 V, 5 V, or 10 V on each channel, for improved measurement accuracy.

The SCP provides a voltage gain of 0.5, 8, 64, or 512 for each channel. This SCP takes two adjacent slots in the VXI module.

Use the VT1521 with the following VXI modules:

VT1413C 64-channel Scanning A/D Converter

Option TFB Terminal Block

The Option TFB Terminal Block is a 16 channel Terminal block with a trifiler filter per channel for high common mode signal rejection. Designed to work with the VT1521, the TFB also contains user replaceable shunt calibration resistors.

These specifications for the VT1521 reflect the combined performance of the scanning A/D and the VT1521 SCP and Option TFB Terminal Block.

Measurement Ranges

Volts dc: ± 16 V peak

Input Characteristics

Maximum input voltage (normal mode plus common mode):

Operating: $< \pm 16$ V peak

Damage level: $> \pm 42$ V peak

Maximum common mode voltage:

Operating: $< \pm 16$ V peak

Damage level: $> \pm 42$ V peak

Common mode rejection (0 Hz to 60 Hz):

x0.5 gain: > 60 dB

x8 gain: > 78 dB

x64 gain: > 100 dB

x512 gain: > 100 dB

Input impedance: 100 M Ω

4-channel High-speed Bridge SCP

Maximum Tare Cal Offset

Maximum tare cal offset depends on A/D range and SCP gain.

Gain	Maximum Offset
x0.5	±25% of full-scale
x8	±90 mV
x64	±95 mV
x512	±95 mV

Filter Characteristics (4-pole Butterworth filter)

Normal mode rejection:

100 Hz Filter: 100 Hz: -3 dB 400 Hz: >47 dB	300 Hz Filter: 300 Hz: -3 dB 1200 Hz: >47 dB
1000 Hz Filter: 1000 Hz: -3 dB 4000 Hz: >47 dB	3000 Hz Filter: 3000 Hz: -3 dB 12000 Hz: >47 dB
10 kHz Filter: 10 kHz: -3 dB 40 kHz: >47 dB	

Measurement Accuracy dc Voltage

For autorange, add 0.05% of reading for input voltages ±4 V.

Accuracy Gain x0.5

Range ± FS	Linearity % of Reading:	Offset Error:	Noise 3σ
125 mV:	0.02	488 μV	1.5 μV
0.5 V:	0.02	488 μV	1.5 μV
2.0 V:	0.02	488 μV	1.5 μV
8.0 V:	0.02	488 μV	1.5 μV
16.0 V:	0.02	488 μV	1.5 μV

Temperature Coefficients: add tempco error to above table

Gain:	10 ppm/°C (after *CAL)	
Offset:	0 - 30 °C:	0 μV/°C
	30 - 55 °C:	0.75 μV/°C

Accuracy Gain x8

Range ± FS	Linearity % of Reading:	Offset Error:	Noise 3σ
7.8 mV:	0.02	30.5 μV	95 μV
31.25 mV:	0.02	30.5 μV	95 μV
125 mV:	0.02	30.5 μV	95 μV
0.5 V:	0.02	30.5 μV	95 μV
1 V:	0.02	30.5 μV	95 μV

Temperature Coefficients: add tempco error to above table

Gain:	10 ppm/°C (after *CAL)	
Offset:	0 - 30 °C:	0 μV/°C
	30 - 55 °C:	0.75 μV/°C

Accuracy Gain x64

Range ± FS	Linearity % of Reading:	Offset Error:	Noise 3σ
3.9 mV:	0.02	15 μV	12 μV
15.6 mV:	0.02	15 μV	12 μV
62.5 mV:	0.02	15 μV	12 μV
125 mV:	0.02	15 μV	12 μV

Temperature Coefficients: add tempco error to above table

Gain:	10 ppm/°C (after *CAL)	
Offset:	0 - 40 °C:	0.14 μV/°C
	40 - 55 °C:	0.38 μV/°C

Accuracy Gain x512

Range ± FS	Linearity % of Reading:	Offset Error:	Noise 3σ
7.8 mV:	0.04	15 μV	2 μV

Temperature Coefficients: add tempco error to above table

Gain:	10 ppm/°C (after *CAL)	
Offset:	0 - 40 °C:	0.14 μV/°C
	40 - 55 °C:	0.38 μV/°C

Bridge Excitation

Bridge Excitation Values: 1 V, 2 V, 5 V, and 10 V
Maximum Current: 50 mA per channel

Note: 10 V Excitation not supported for 120 Ω

Wideband Buffered Outputs

Frequency Response (-3dB): >90KHz
Signal Gain: 1 ± 1%
Maximum Output Level: +/- 12 V peak
Maximum Output Current: 5 mA/Channel
Output Impedance: <1.5 Ω

Option TFB Terminal Block

WB Output Connector: 1 x 34 pin SGMC Positronic
Input Connectors: 4 x 44 pin SGMC Positronic

Current Requirements (Amps)

5 V max	24 V max	-24 V max
0.65 A	0.18 A	0.18 A

Ordering Information

VT1521

VT1521
Option TFB

4-channel High-speed Bridge SCP
Trifiler Terminal Block