

Remote Charge Converter

MODEL 5004

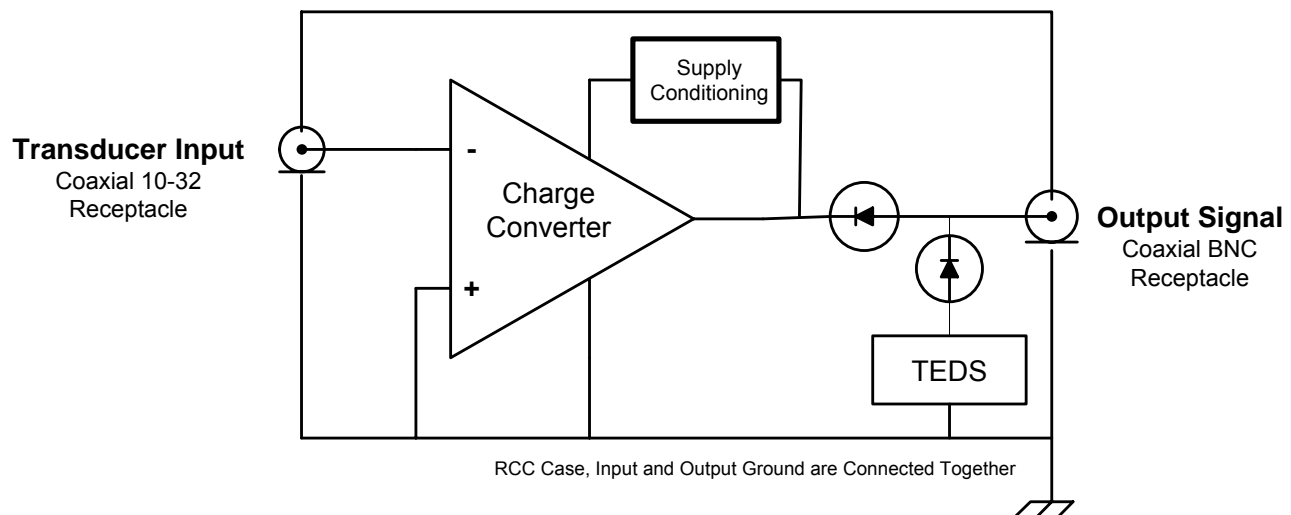
- Low-Noise Charge Converter
- Wide Frequency Response
- Two-Wire System
- IEEE 1451.4 Compliant TEDS
- Three Gain Versions
- Rugged Metal Package



Description

The VIP Sensors Model 5004 Remote Charge Converter (RCC) is a low-noise, wideband, front-end signal conditioner that transforms the high impedance charge signals from Piezoelectric transducers to low impedance voltage signals. The two-wire output interface configuration consists of a signal and a ground line; the signal line carries the constant current (4 to 20 mA) to the RCC needed for its operation, and the voltage signal out of the RCC proportional to the transducer excitation. The RCC case, input ground, and output ground are electrically connected together.

The Model 5004 comes in three different gain versions, 0.1, 1, and 10 mV/pC. It includes a programmable non-volatile memory chip capable of storing Transducer Electronic Data Sheet (TEDS) information in compliance to the IEEE-1451-4 standard.



Model 5004 Remote Charge Converter - Functional Diagram

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SPECIFICATIONS

The following performance specifications are at +75°F (+24°C), unless otherwise noted.

INPUT	UNITS			
Type		Single-ended Piezoelectric Transducers		
Resistance	Ω	100,000 minimum		
Capacitance	pF	20 maximum		
Connector		10-32 Coaxial Receptacle, shield tied to ground and case		
OUTPUT				
Type		Single-ended		
Resistance Load	Ω	50 minimum		
Capacitance Load	pF	100 maximum		
Bias	Vdc	12.5 to 15		
Output Voltage	Vpk	8 maximum for linear output 10 maximum swing with 22 Vdc compliance current source		
Connector		BNC Receptacle, shield tied to ground and case		
TRANSFER CHARACTERISTICS				
Gain Stability	%	±1 from -40 to 100°C	Referenced to 25 °C at 100 Hz Capacitance	
Frequency Response	mV/Unit		Lower F-3dB	Lower F-5% Upper F-5%
		Gain of 10	2 Hz	4 100kHz
		Gain of 1	0.4 Hz	1 100kHz
		Gain of 0.1	0.4 Hz	1 100kHz
Noise Referred to Input Maximum	pC	$Q_{input} = 0.002 \sqrt{(2.5 + C_{input})^2 + 1.2/R_{input}}$ $C_{input} \text{ [pF]}, R_{input} \text{ [M}\Omega\text{]}$		
Power Requirement	mA	4 to 20		
ENVIRONMENTAL				
Temperature	°F (°C)	Operating	-40 to +211 (-40 to +100)	
		Storage	-76 to +257 (-65 to +125)	
Humidity		Maximum 95% R.H.		
Shock	g pk	100	3.6 mS	halve sine pulse
Vibration	g pk	20	from 50 to 2000 Hz	
PHYSICAL CHARACTERISTICS				
Dimensions	in (mm)	3.2 × 0.55 diameter (81 x 14)		
Weight	oz (grams)	2.1 (60)		
Connectors		Input: 10-32 Receptacle	Output: BNC Receptacle	
Case		Stainless Steel covered with a clear Teflon sleeve for isolation		
ACCESSORIES				
Input cable (optional)		Model 9006L10 Cable, Low Noise, Coaxial 10-32/10-32, 10 ft (3.3 m)		
Output cable (optional)		Model 9008L10 Cable, Coaxial BNC/BNC, 10 ft (3.3 m)		
ORDERING INFORMATION		VIP Model 5004Gxx where xx = gain; standard = 0.1, 1.0, 10		