

Differential Remote Charge Converter (DRCC)

Model 1772M3-1

(for use with the Model 6233C-10 Accel)



Product description

This specification describes the Parker Meggitt Model 1772M3-1 Differential Remote Charge Converter with transducer resonance suppression designed for high-temperature differential piezoelectric (PE) (HTPE) transducer 6233C-10 connected with cable 2001M1. The circuit provides suppression of the PE transducer's resonance and extends its frequency bandwidth about two times at the level of +5%. The DRCC converts the PE transducer high impedance charge output into a low impedance voltage output. The sensitivity is not affected by the PE transducer and cable capacitances. The 1772M3-1 is a two-wire output device.

Model Number Definition:
1772M3-1 Fixed gain of 1 mV/pC

Key features and benefits

- Extends PE transducer frequency bandwidth about two times (+5% from 5 KHz to ~10KHz)
- Provides PE transducer's resonance suppression about 4 times
- Operates over voltage supply 24-30 Vdc and current supply 8-16 mA
- Has 2-wire output and 2-pin differential input.
- Radiation resistant: 1.0 MRads (integrated Gamma)
- Gain of 1 mV/pC
- Operation over temperature range of +23°F to +185°F (-5°C to +85°C)
- Compliance: Industrial CE Standard Class A & RoHS

Applications

- Operates with extreme high temperature Differential PE transducers having resistance of >10 kΩ
- Higher frequency bandwidth measurements.



Parker Meggitt Defense Systems
9801 Muirlands Blvd.
Irvine, CA 92618
+1 (949) 465 7700
www.meggittdefense.com

Differential Remote Charge Converter (DRCC)

Model 1772M3-1

(for use with the Model 6233C-10 Accel)

Specifications

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

Electrical Characteristics

Input characteristics

Input Connection	Input is 2-pin differential with cable shield connected to signal ground
Source Resistance, R_{PE}	$R_{PE} \geq 10 \text{ k}\Omega$
Source Capacitance, C_{PE}	$C_{PE} \leq 1,000 \text{ pF}$
Input Range	3000 pCpk
Common Mode Rejection	Ratio $\geq 40\text{dB}$

Output characteristics

Output Connection	The output is single ended with one side connected to signal ground	
Output Impedance	50 Ohm maximum	
Resistive Load	The output is direct coupled and requires capacitive decoupling for resistive loads	
DC Output Bias	+12.0 Vdc to +17.0 Vdc over all temperature range	
Vpk (6 V pk-pk)		
Maximum Output Voltage	3 Vpk (6 V pk-pk)	
Electrical Noise at the output		
$C_{PE} = 1000 \text{ pF}$		
Broadband noise		
(1 Hz - 10 kHz)	$\mu\text{V rms}$	40
Spectral density noise	$\mu\text{V}/\sqrt{\text{Hz}}$	
	1 Hz	12
	10 Hz	1.6
	100 Hz	0.3
	1 kHz	0.2

Transfer Characteristics

Gain at 100 Hz 1 mV/pC +2/-4%

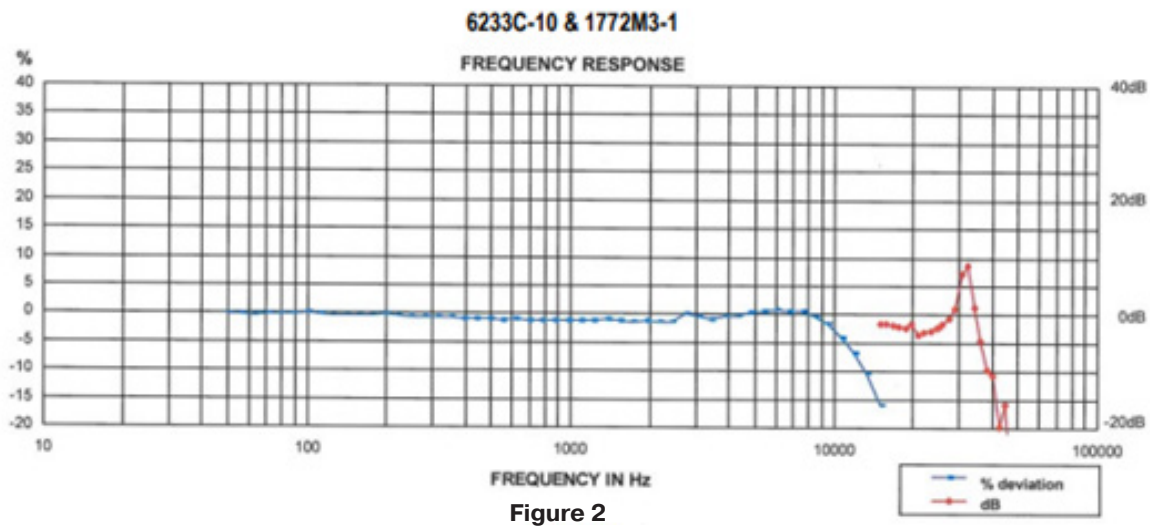
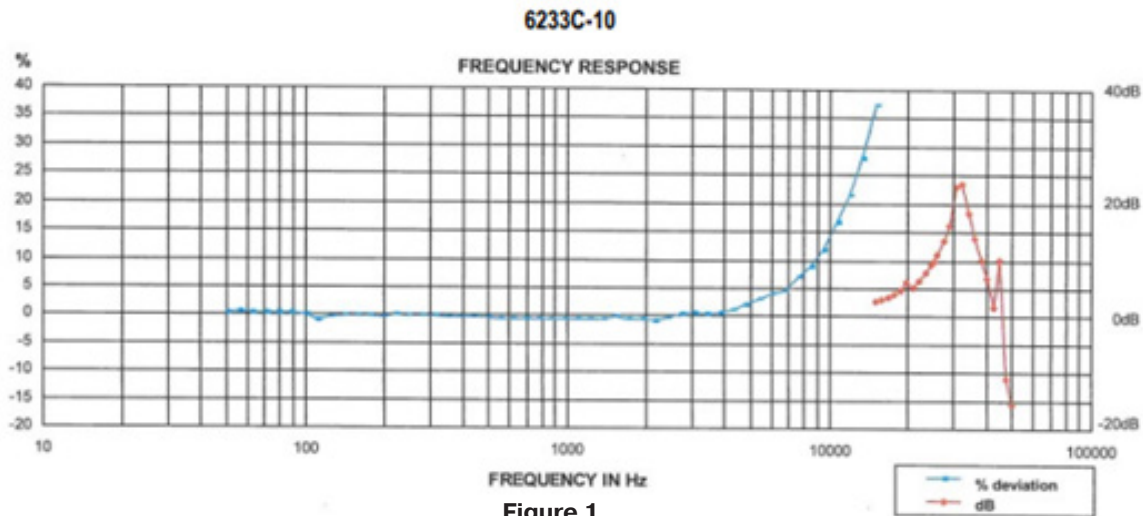
Frequency Response (ref 100 Hz)

	1772M3-1 alone	6233C-10 alone	1772M3-1 used with 6233C-10
$\pm 5\%$	$\leq 10 \text{ Hz} - 6.5 \text{ kHz}$	10 Hz - 5 kHz	$\leq 10 \text{ Hz} - 10 \text{ kHz}$
$\pm 10\%$	$\leq 5.6 \text{ Hz} - 9 \text{ kHz}$	1 Hz - 9 kHz	$\leq 5.6 \text{ Hz} - 13 \text{ kHz}$
-3dB	$\leq 3 \text{ Hz} - 12.5 \text{ kHz}$	1 Hz - 12 kHz	$\leq 3 \text{ Hz} - 22 \text{ kHz}$

Differential Remote Charge Converter (DRCC)

Model 1772M3-1

(for use with the Model 6233C-10 Accel)



Differential Remote Charge Converter (DRCC)

Model 1772M3-1

(for use with the Model 6233C-10 Accel)

Specifications

Gain Stability

With Temperature The gain will change less than $\pm 1\%$ referred to the $+75^\circ\text{F}$ ($+25^\circ\text{C}$) gain over the temperature range

Total Harmonic Distortion Less than 1% for output signals

Power requirements

The remote charge converter is designed to be powered from a positive constant current supply

Current Requirement $+8\text{ mA}$ to $+16\text{ mA}$

Voltage Supply $+24\text{ Vdc}$ to $+30\text{ Vdc}$

Warm Up Time 10 seconds to meet 3 V pk output voltage

Physical

Dimensions See Outline details

Weight Maximum 2.0 oz (56.7 grams)

Case material

Case Material Stainless steel

Input Connector 2 pin receptacle 70082, case shield connected to signal ground

Output Connector BNC Coaxial Connector

Environmental

Temperature

Operating Temperature $+23^\circ\text{F}$ to $+185^\circ\text{F}$ (-5°C to $+85^\circ\text{C}$)

Humidity The unit will withstand 95% relative humidity.

Vibration 20 g pk level with frequency sweep from 55 Hz to 2000 Hz

Shock 100g pk amplitude with 3.6ms half-sine pulse

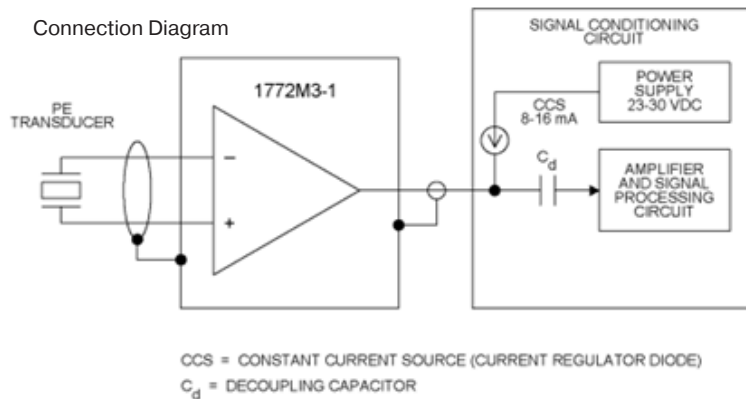
Radiation 1.0 MRads (integrated Gamma)

Compliance Industrial CE standard class A

Accessories

Model 2001M1-XXX Cable assembly 10 ft, for under $+392^\circ\text{F}$ (200°C)

Model 6233C-10 Accelerometer $+900^\circ\text{F}$ (482°C)



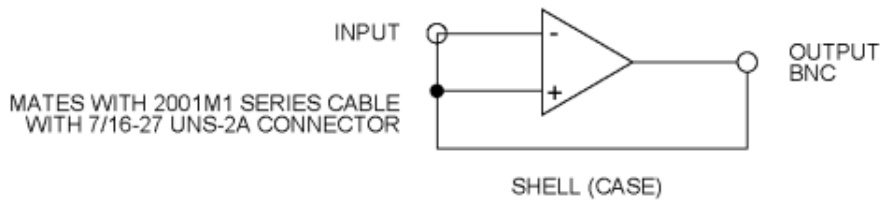
Differential Remote Charge Converter (DRCC)

Model 1772M3-1

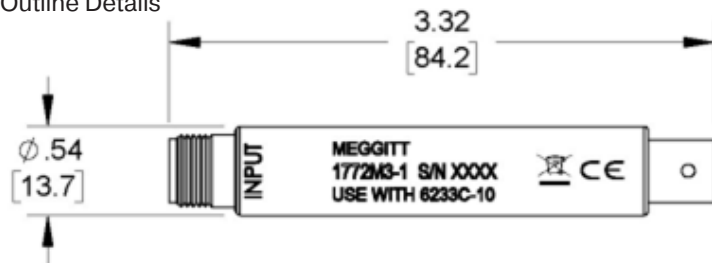
(for use with the Model 6233C-10 Accel)

Block Diagram

AMPLIFIER BLOCK DIAGRAM



Outline Details



STANDARD TOLERANCE

INCHES	[MILLIMETERS]
.XX = ± .02	[.X = ± .5]
.XXX = ± .010	[.XX = ± .25]



Continued product improvement necessitates that MEGGITT reserve the right to modify these specifications without notice. MEGGITT maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. 010121



Note: Due to continuous process improvement, specifications are subject to change without notice. TCO Review # 352