

DATA SHEET

Remote Charge Converter (TRS)

Model 1772-X



USA Patent 11,309,855

01 Description

This specification describes the MEGGITT Model 1772 Remote Charge Converters are designed for high-temperature PE (HTPE) transducers that can operate at temperatures up to + 815°C (+ 1500°F). The circuit is connected to the PE with a high temperature coaxial cable. The circuit extends the frequency range of the PE transducer by suppressing the PE resonance (TRS) and makes it possible to operate with high-temperature PE typically having resistance as low as 10 kΩ at high temperatures. The sensitivity of the circuit is not affected by the PE transducer's and cable capacitances.

Model Number Definition:

1772-1 (use with 6243MX)

1772-2 (use with 6237M70/71)

1772-3 (use with 6245)

1772-4 (use with 2278, X & Y AXIS)

1772-5 (use with 2278 Z AXIS)

1772-6 -10 (use with 2276, 2273A, 2273AM1, 2273AM20)

02 Key features and benefits

- Fixed sensitivities: 1 mV/pC,
- Capable to operate with PEs having resistance $\geq 10\text{ k}\Omega$
- Has two-wire output
- Output signal on same 2 wires that carry supply current from constant current power supply
- Extends frequency range by suppressing PE resonance. Patented Design
- Operation over a constant current range of 8 to 20 mA and temperature range of +14°F to +212°F (-10°C to +100°C).
- RoHS Compliant

03 Applications

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

04 Contact

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05 Specifications

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

Electrical Characteristics

Input Characteristic

Input Connection	The input is single ended with one side connected to signal ground Source
Source Impedance	
Source Resistance, R_{PE}	$R_{PE} \geq 10 \text{ k}\Omega$
Source Capacitance, C_{PE}	$C_{PE} \leq 1000 \text{ pF}$
Input Range	3500 pCpk

Output characteristics

Output Connections	The output is single ended with one side connected to signal ground Output	
Output Impedance	50 Ohm maximum	
Capacitive Load	The output is direct coupled and requires capacitive decoupling for resistive loads	
DC Output Bias	+11.5 Vdc to +16.0 Vdc over all temperature range	
Maximum Output Voltage	7 Vpk-pk, 3.5 Vpk	
Electrical Noise at the output		
$C_{PE} = 50 \text{ pF}$		
Broadband noise (1 Hz - 10 kHz)	$\mu\text{V rms}$	40
Spectral density noise	$\mu\text{V}/\sqrt{\text{Hz}}$	
	1 Hz	30
	10 Hz	4
	100 Hz	0.2
	1 kHz	0.1
	10 kHz	0.1

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Transfer Characteristics

Gain 1 mV/pC +2/-4% for 1772-1....-6

10 mV/pC +2/-4% for 1772-6-10

Frequency Response (ref 100 Hz)

Frequency response of 1772-X alone

		1772-1	1772-2	1772-3	1772-4	1772-5	1772-6
$R_{PE} > 20$ k Ω	$\pm 5\%$	≤ 13 Hz – 2.7 kHz	≤ 13 Hz – 2.7 kHz	≤ 13 Hz – 2.7 kHz	≤ 13 Hz – 600 Hz	≤ 13 Hz – 5 kHz	≤ 13 Hz – 6.3 kHz
	$\pm 10\%$	≤ 8 Hz – 4 kHz	≤ 8 Hz – 4 kHz	≤ 8 Hz – 5 kHz	≤ 8 Hz – 800 Hz	≤ 8 Hz – 6 kHz	≤ 8 Hz – 8.5 kHz
	-3 dB	≤ 3.5 Hz – 5.6 kHz	≤ 3.5 Hz – 6.7 kHz	≤ 3.5 Hz – 7 kHz	≤ 3.5 Hz – 2 kHz	≤ 3.5 Hz – 8.5 kHz	≤ 3.5 Hz – 12.8 kHz
$R_{PE} = 20$ k Ω	$\pm 5\%$	6 Hz - 3 kHz	6 Hz - 3 kHz	6 Hz - 3.5 kHz	6 Hz – 600 Hz	6 Hz - 5 kHz	6 Hz – 6.3 kHz
	$\pm 10\%$	4 Hz - 4 kHz	4 Hz - 4 kHz	4 Hz - 4 kHz	4 Hz – 800 Hz	4 Hz - 6 kHz	4 Hz – 8.5 kHz
	-3 dB	2 Hz - 6 kHz	2 Hz - 7 kHz	2 Hz - 7 kHz	2 Hz - 2 kHz	2 Hz - 8.5 kHz	2 Hz – 12.8 kHz
$R_{PE} = 10$ k Ω	$\pm 5\%$	3 Hz - 3 kHz	3 Hz - 3 kHz	3 Hz – 3.5 kHz	3 Hz – 600 Hz	3 Hz - 5 kHz	3 Hz – 6.3 kHz
	$\pm 10\%$	2.7 Hz – 4 kHz	2.7 Hz - 4 kHz	2.7 Hz - 4 kHz	2.7 Hz – 800 Hz	2.7 Hz – 6 kHz	2.7 Hz – 8.5 kHz
	-3 dB	2 Hz - 6 kHz	2 Hz - 7 kHz	2 Hz - 7 kHz	2 Hz - 2 kHz	2 Hz - 8.5 kHz	2 Hz – 12.8 kHz

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Frequency response of HT PE transducers alone

	6243MX	6237M70/71	6245	2278 (X&Y)	2278 (Z):	2276, 2273A, 2273AM1, 2273AM20
± 5 %	1 Hz - 2 kHz	1 Hz - 3 kHz	1 Hz - 3 kHz	1 Hz - 600 Hz	1 Hz - 4 kHz	1 Hz - 6 kHz
±10%	1 Hz - 3 kHz	1 Hz - 5 kHz	1 Hz - 4 kHz	1 Hz - 800 Hz	1 Hz - 5 kHz	1 Hz - 8 kHz
± 3 dB	1 Hz - 6 kHz	1 Hz - 6 kHz	1 Hz - 6 kHz	1 Hz - 1.5 kHz	1 Hz - 6 kHz	1 Hz - 12.5 kHz

Frequency response of HT PE transducers & 1772-X

		6243MX & 1772-1	6237M70/ 6237M71 & 1772-2	6245 & 1772-3	2278 (X, Y) & 1772-4	2278 (Z) & 1772-5	2276/2273A/ 2273AM1/ 2273AM20 & 1772-6
$R_{PE} > 20 \text{ k}\Omega$	± 5 %	≤ 13 Hz - 5 kHz	≤ 13 Hz - 6 kHz	≤ 13 Hz - 7 kHz	≤ 13 Hz - 1.5 kHz	≤ 13 Hz - 7.5 kHz	≤ 13 Hz - 11.5 kHz
	±10%	≤ 8 Hz - 6 kHz	≤ 8 Hz - 8 kHz	≤ 8 Hz - 10 kHz	≤ 8 Hz - 1.7 kHz	≤ 8 Hz - 9 kHz	≤ 8 Hz - 14 kHz
	- 3 dB	≤ 3.5 Hz - 8 kHz	≤ 3.5 Hz - 10 kHz	≤ 3.5 Hz - 12 kHz	≤ 3.5 Hz - 2.2 kHz	≤ 3.5 Hz - 10 kHz	≤ 3.5 Hz - 20 kHz
$R_{PE} = 20 \text{ k}\Omega$	± 5 %	6 Hz - 5 kHz	6 Hz - 6 kHz	6 Hz - 7 kHz	6 Hz - 1.5 kHz	6 Hz - 7.5 kHz	6 Hz - 11.5 kHz
	±10%	4 Hz - 6 kHz	4 Hz - 8 kHz	4 Hz - 10 kHz	4 Hz - 1.7 kHz	4 Hz - 9 kHz	4 Hz - 14 kHz
	- 3 dB	2 Hz - 8 kHz	2 Hz - 10 kHz	2 Hz - 12 kHz	2 Hz - 2.2 kHz	2 Hz - 10 kHz	2 Hz - 20 kHz
$R_{PE} = 10 \text{ k}\Omega$	± 5 %	3 Hz - 5 kHz	3 Hz - 6 kHz	3 Hz - 7 kHz	3 Hz - 1.5 kHz	3 Hz - 7.5 kHz	3 Hz - 11.5 kHz
	±10%	2.7 Hz - 6 kHz	2.7 Hz - 8 kHz	2.7 Hz - 10 kHz	2.7 Hz - 1.7 kHz	2.7 Hz - 9 kHz	2.7 Hz - 14 kHz
	- 3 dB	2 Hz - 8 kHz	2 Hz - 10 kHz	2 Hz - 12 kHz	2 Hz - 2.2 kHz	2 Hz - 10 kHz	2 Hz - 20 kHz

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Gain Stability

With Temperature	The gain will change less than $\pm 1\%$ referred to the $+25^{\circ}\text{C}$ gain over the temperature range $+14^{\circ}\text{F}$ to $+212^{\circ}\text{F}$ (-10°C to $+100^{\circ}\text{C}$)
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 mA to +20 mA
Voltage Supply	+24 Vdc to +30 Vdc
Warm Up Time	1.5 minutes to meet 7 V pk-pk output voltage

Physical

Dimensions	See Outline Details, inch(mm)
Weight	Maximum 2.0 oz
Case material	
Case Material	Stainless steel
Input Connector	Microdot Connector, S-50 series or equivalent
Output Connector	BNC Coaxial Connector

Environmental

Temperature	
Operating Temperature	$+14^{\circ}\text{F}$ to $+212^{\circ}\text{F}$ (-10°C to $+100^{\circ}\text{C}$)
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 haversine pulse
Radiation	1.0 MRads (integrated Gamma)
Compliance	Industrial CE standard class A

Accessories

OPTIONAL:

Model 1001-XXX Cable assembly (10-32/10-32), 10 ft, for under $+550^{\circ}\text{F}$ (288°C)

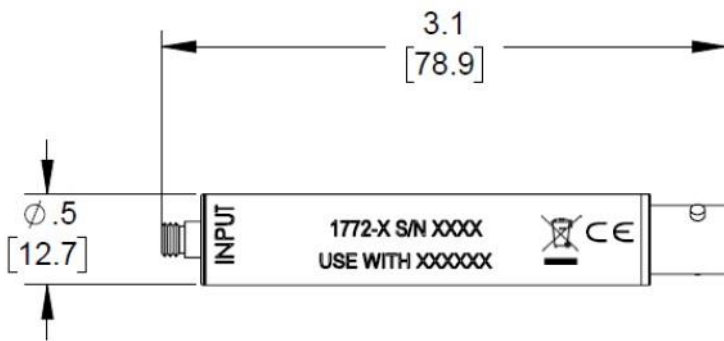
Model 3075M6-ZZZ Cable assembly $+900^{\circ}\text{F}$ (482°C), Hardline

Model 3076-ZZZ Cable Assembly $+1000^{\circ}\text{F}$ (538°C), Flexible

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06 Outline details



Note:



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