

DataSheet

MT-E722

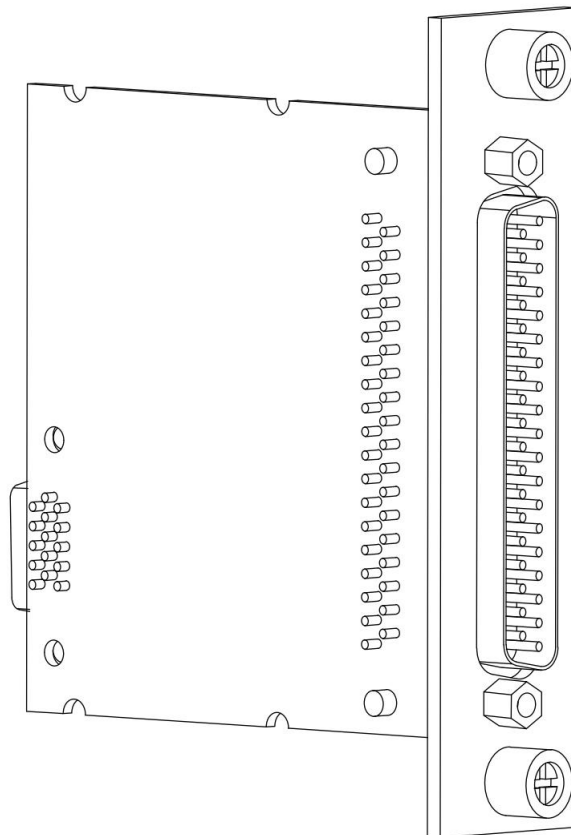
16-Channel, 10S/s/ch, Simultaneous, ± 78 mV Temperature

Input module

This document contains the specifications for MT-E722. Specifications are typical at 25°C unless otherwise noted.

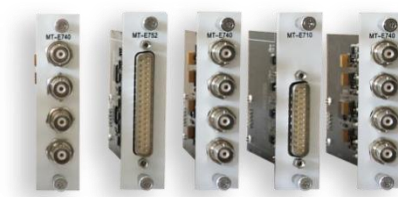


Caution Using the MT-E722 in a manner not described in this document may impair the protection the MT-E722 provides.



MANGOTREE

MT E Series Overview



MT provides more than 20 E Series modules for measurement, control, and communication applications. E Series modules can connect to any sensor or bus and allow for high-accuracy measurements that meet the demands of advanced data acquisition and control applications.

- Measurement-specific signal conditioning that connects to an array of sensors and signals
- Isolation options such as bank-to-bank, channel-to-channel, and channel-to-earth ground
- -40 °C to 70 °C temperature range to meet a variety of application and environmental needs
- Hot-swappable

The majority of E Series modules are supported in both RobustRIO and FlexDAQ platforms and you can move modules from one platform to the other with no modification.

RobustRIO



RobustRIO combines an open-embedded architecture with small size, extreme ruggedness, and E Series modules in a platform powered by the Redefinable I/O (RIO) architecture. Each system contains an FPGA for custom timing, triggering, and processing with a wide array of available modular I/O to meet any embedded application requirement.

FlexDAQ

FlexDAQ is a portable, rugged data acquisition platform that integrates connectivity, data acquisition, and signal conditioning into modular I/O for directly interfacing to any sensor or signal. Using FlexDAQ with LabVIEW, you can easily customize how you acquire, analyze, visualize, and manage your measurement data.



Software

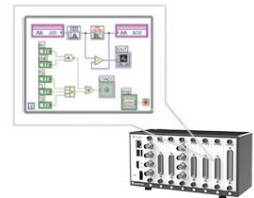
LabVIEW Professional Development System for Windows

- Use advanced software tools for large project development
- Use advanced measurement analysis and digital signal processing
- Take advantage of open connectivity with DLLs, ActiveX, and .NET objects
- Build DLLs, executables, and MSI installers



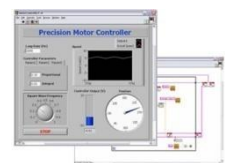
LabVIEW FPGA Module

- Design FPGA applications for MT RIO hardware
- Program with the same graphical environment used for desktop and real-time applications
- Execute control algorithms with loop rates up to 300 MHz
- Implement custom timing and triggering logic, digital protocols, and DSP algorithms
- Incorporate existing HDL code and third-party IP including Xilinx IP generator functions



LabVIEW Real-Time Module

- Design deterministic real-time applications with LabVIEW graphical programming
- Take advantage of built-in PID control, signal processing, and analysis functions
- Automatically take advantage of multicore CPUs or set processor affinity manually
- Take advantage of real-time OS, development and debugging support, and board support

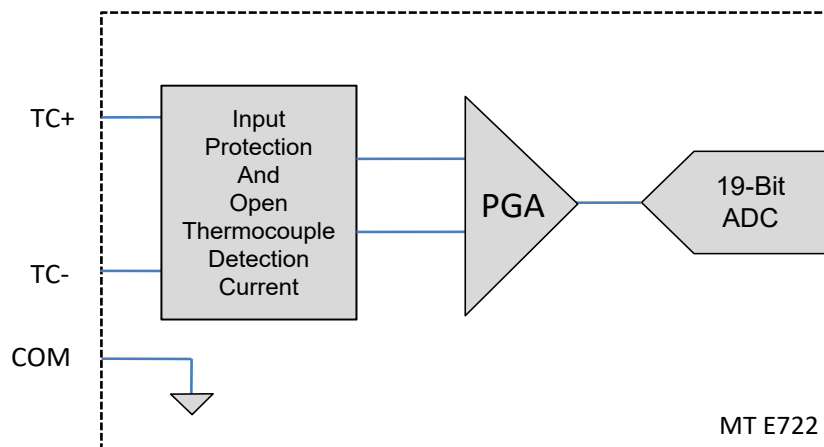


MT-E722 Connectivity

Pin definition of DSUB connector and Spring Terminal connector.

T0-	20	1	T0+
T1-	21	2	T1+
T2-	22	3	T2+
T3-	23	4	T3+
T4-	24	5	T4+
T5-	25	6	T5+
T6-	26	7	T6+
T7-	27	8	T7+
COM	28	9	COM
COM	29	10	COM
T8-	30	11	T8+
T9-	31	12	T9+
T10-	32	13	T10+
T11-	33	14	T11+
T12-	34	15	T12+
T13-	35	16	T13+
T14-	36	17	T14+
T15-	37	18	T15+
		19	NC

MT-E722 Circuitry



Each channel passes through a differential filter and then is multiplexed and sampled by a 19-bit ADC. The channels share a common ground, COM, that is isolated from other modules in the system.

MT-E722 Specifications

The following specifications are typical for the range -40 °C to 70 °C unless otherwise noted.



Caution Do not operate the MT-E722 in a manner not specified in this document. product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it to MangoTree for repair.

Input Characteristics

Number of channels	16 thermocouple channels,1 internal autozero channel,1 internal cold-junction compensation channel
ADC resolution	19 bits
Type of ADC	Delta-Sigma
Sample mode	Simultaneous
Voltage measurement rage	±78.125mV
Temperrature measurement range	Works over temperrature ranges defined by NIST(J, K, T, E, N, B, R, and S thermocouple types)

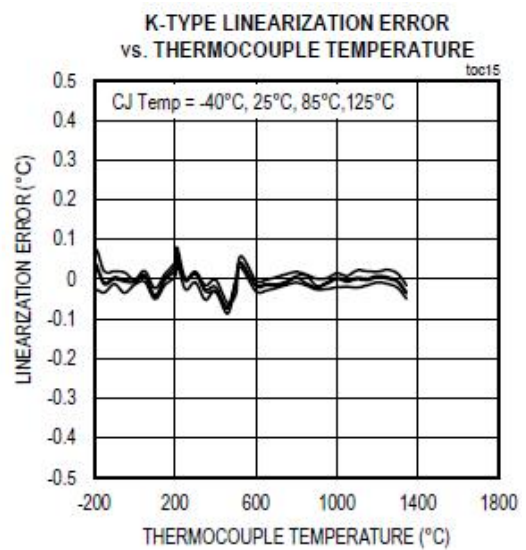
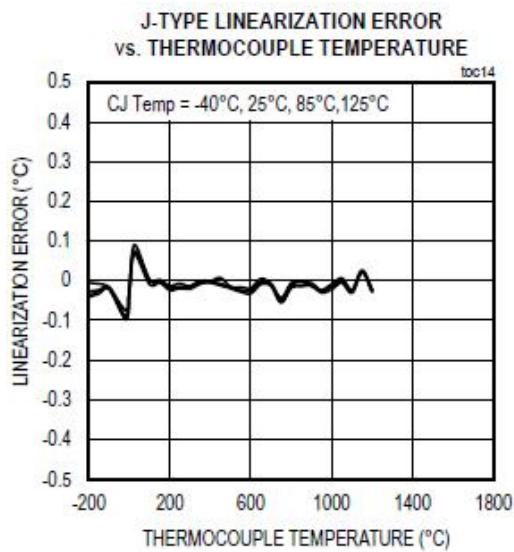
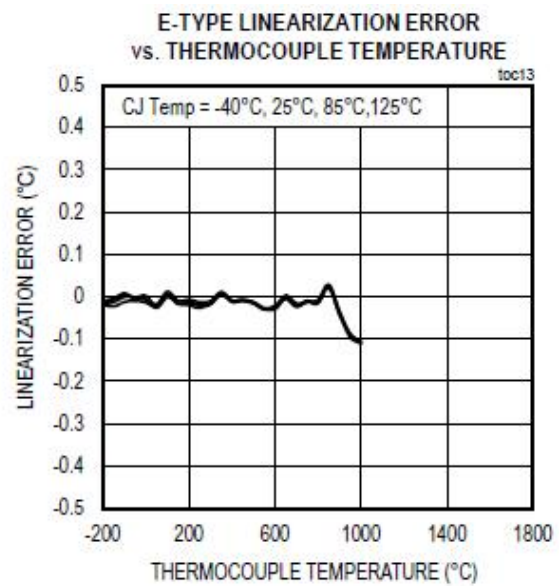
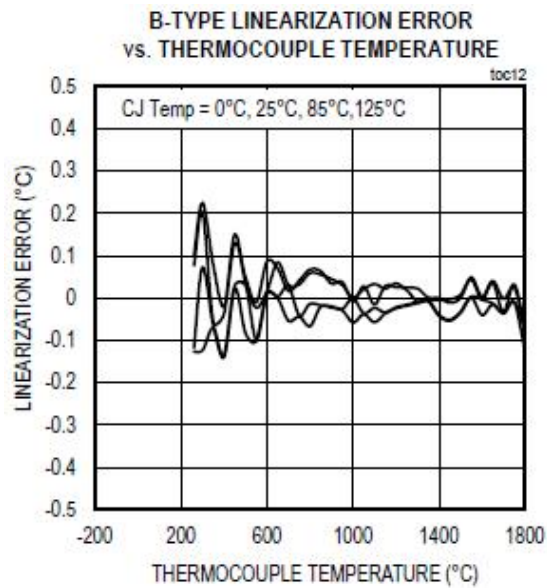
Conversion time(simultaneously sampled)

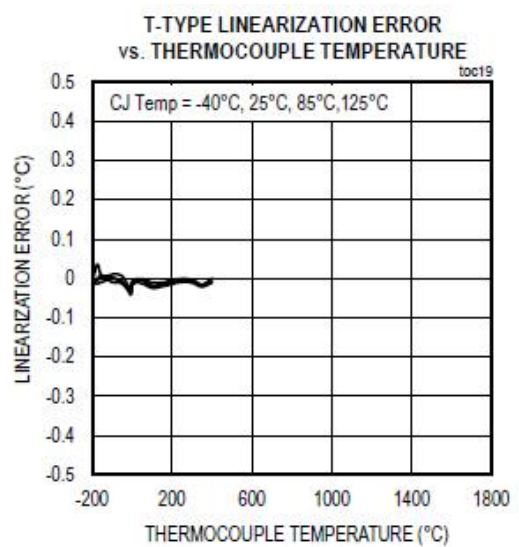
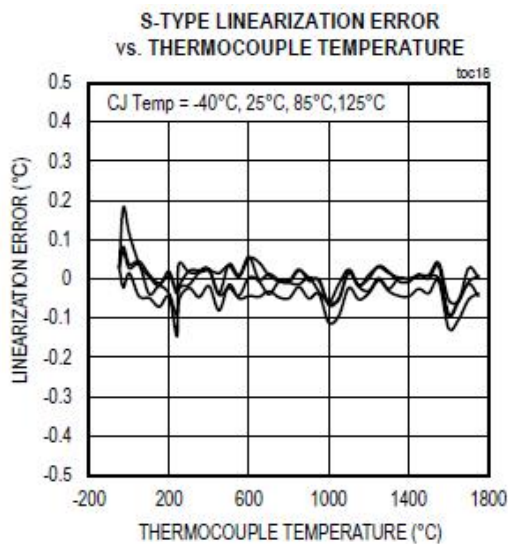
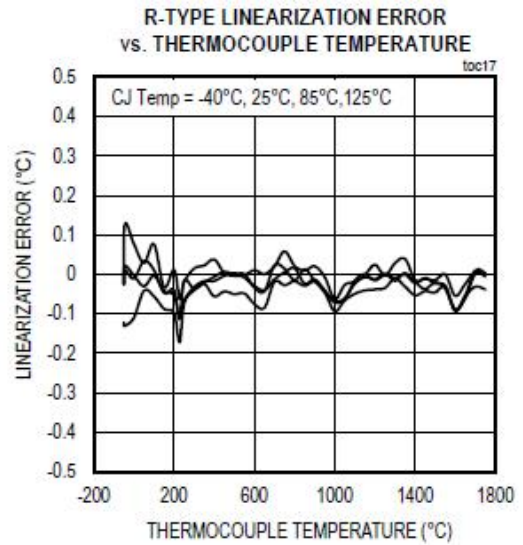
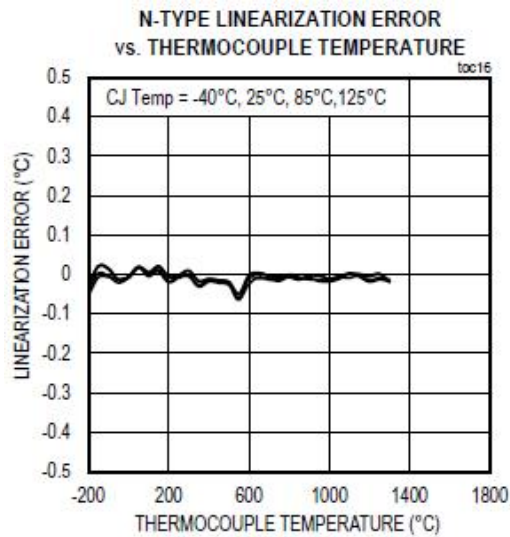
Timing Mode	Conversion Time(ms)	Sample Rate (S/s)
1-shot conversion(60Hz)	143	7
1-shot conversion(50Hz)	169	6
Auto conversion mode(60Hz)	82	12.2
Auto conversion mode(50Hz)	98	10.2

Common-Mode Rejection	70 dB
50/60 Hz Noise Rejection	91 dB
Overvoltage protection	±45V between TC+ and TC-
Input noise	1.3 uV RMS
Cold-junction compensation accuracy	±0.7°C (-20 °C to +85 °C)
Thermocouple voltage measurement accuracy	±0.15%

Temperature Measurement Accuracy

The following figures show the errors for each thermocouple type when connected to the MT-E722.





Power Requirements

Power consumption from chassis	490mW maximum
Thermal dissipation (at 70 °C)	840 W maximum

Safety Voltages

Connect only voltages that are within the following limits:

MT-E722 with DSUB Safety Voltages

Isolation

Channel-to-COM	None
Channel-to-earth ground	
Continuous	60 VDC, Measurement Category I
Withstand up to 2,000 m	1,000 Vrms, verified by a 5 s dielectric withstand test

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as MAINS voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.

CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 2014/34/EU; Potentially Explosive Atmospheres (ATEX)

Shock and Vibration

To meet these specifications, you must panel mount the system.

Operating vibration

Random (IEC 60068-2-64)	5 g _{rms} , 10 Hz to 500 Hz
Sinusoidal (IEC 60068-2-6)	5 g, 10 Hz to 500 Hz
Operating shock (IEC 60068-2-27)	30 g, 11 ms half sine; 50 g, 3 ms half sine; 18 shocks at 6 orientations

Environmental

Refer to the manual for the chassis you are using for more information about meeting these specifications.

Operating temperature	-40 °C to 70 °C (IEC 60068-2-1, IEC 60068-2-2)
Storage temperature	-40 °C to 85 °C (IEC 60068-2-1, IEC 60068-2-2)
Ingress protection	IP40
Operating humidity (IEC 60068-2-78)	10% RH to 90% RH, noncondensing Storage
humidity (IEC 60068-2-78)	5% RH to 95% RH, noncondensing Pollution
Degree	2
Maximum altitude	
For MT-E722 with DSUB	2,000 m

Indoor use only.

Support

MT-RIO上手指南：

<https://server.mangotree.cn:9900/WebFile/Downloads/上手指南/MT-RIO/>



RIO上手指南

MT-RIO视频教程：

<https://server.mangotree.cn:9900/WebFile/Downloads/视频教程/MT-RIO/>



RIO视频教程

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Master视频教程

Dimensions:(mm)

