

DataSheet

# MT-E720

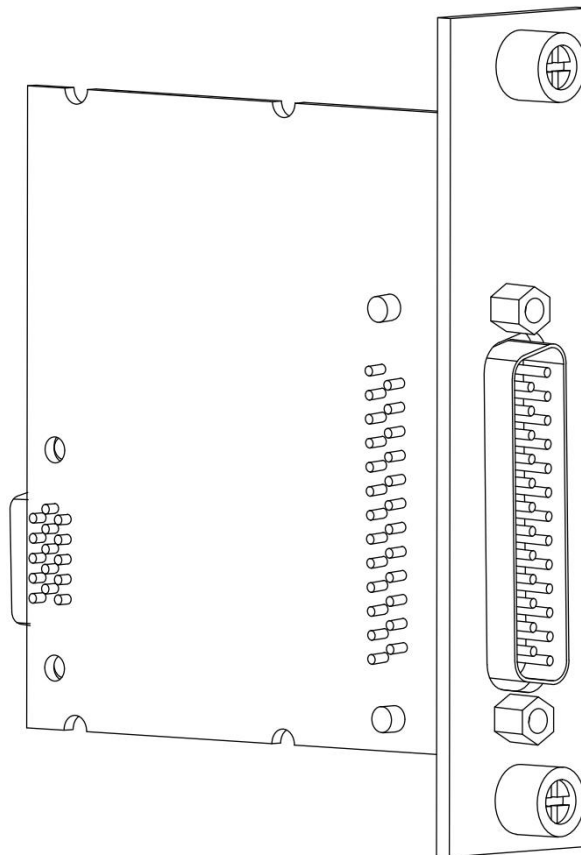
8-Channel, 10S/s/ch, Simultaneous,  $\pm 78$  mV Temperature

Input module

This document contains the specifications for MT-E720. Specifications are typical at 25°C unless otherwise noted.



**Caution** Using the MT-E720 in a manner not described in this document may impair the protection the MT-E720 provides.



# MT E Series Overview

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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

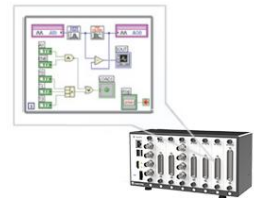
## LabVIEW Professional Development System for Windows

- 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



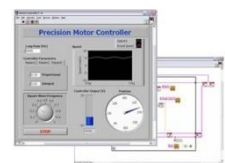
## LabVIEW FPGA Module

- 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



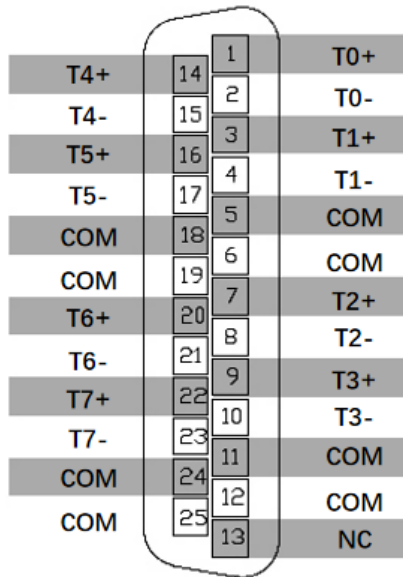
## LabVIEW Real-Time Module

- 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

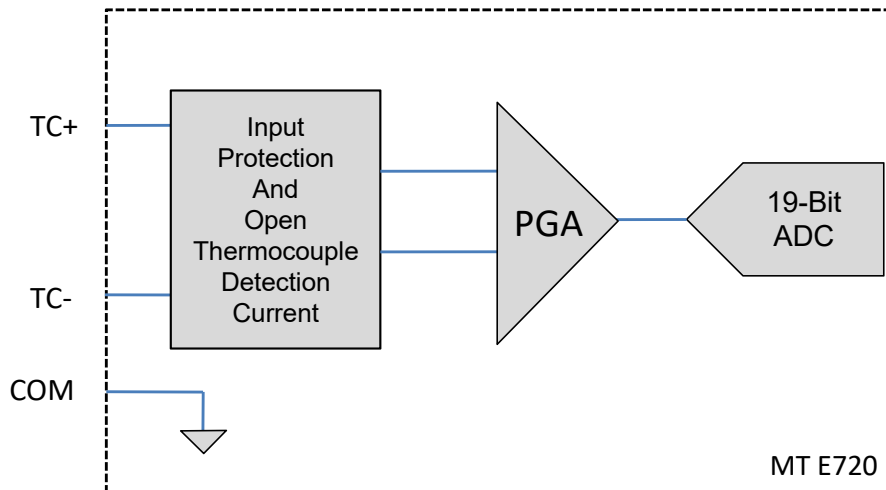


# MT-E720 Connectivity

Pin definition of DSUB connector and Spring Terminal connector.



# MT-E720 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-E720 Specifications

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



**Caution** Do not operate the MT-E720 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	8 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 range	±78.125mV
Temperature measurement range	Works over temperature ranges defined by NIST(J, K, T, E, N, B, R, and S thermocouple types)

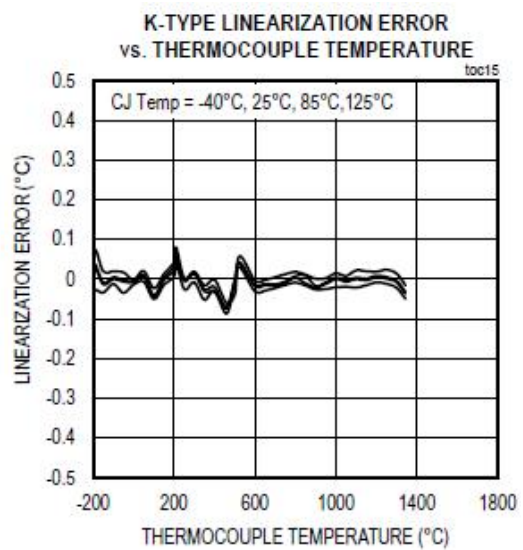
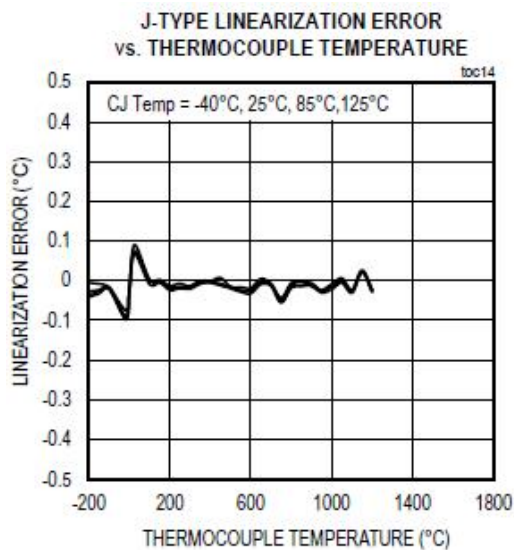
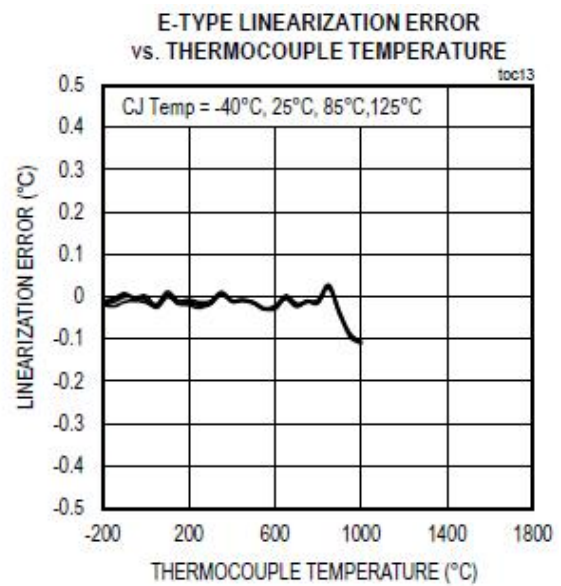
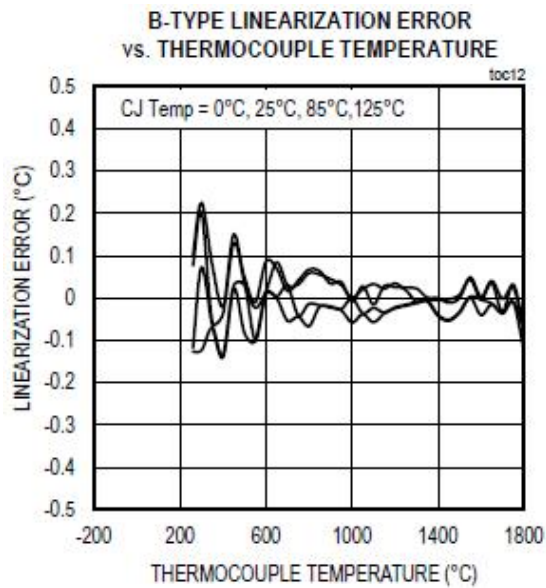
Conversion time(simultaneously sampled)

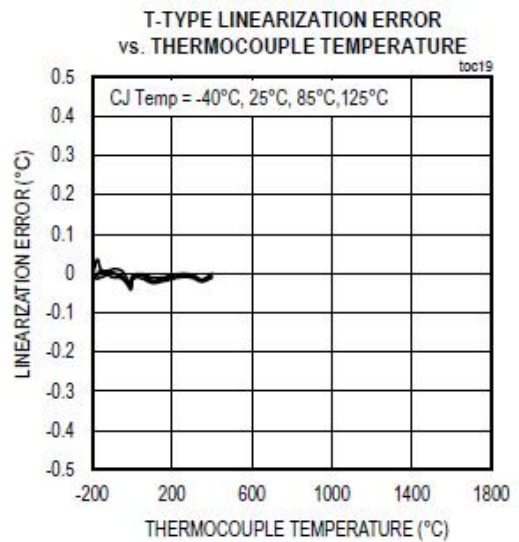
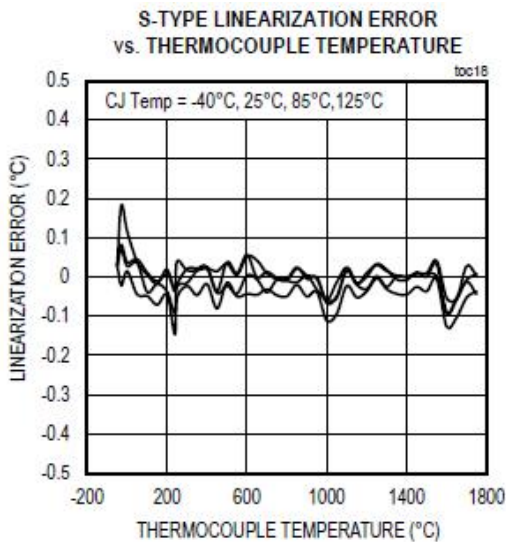
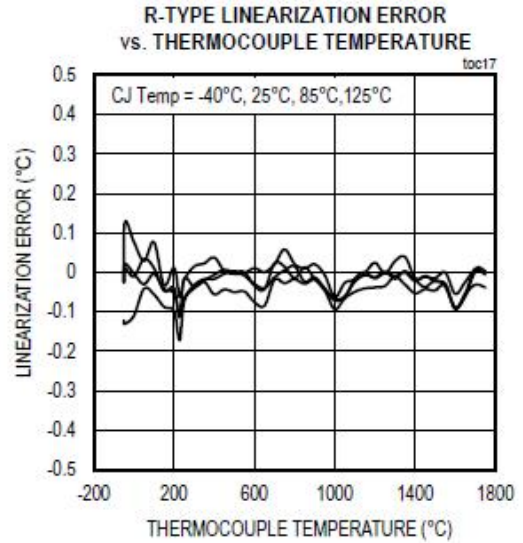
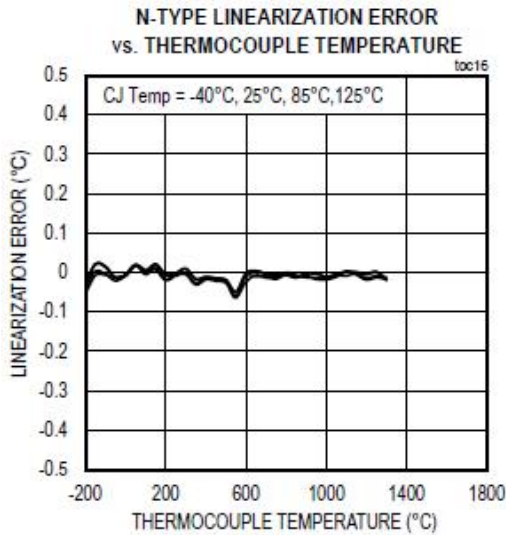
Timing Mode	Conversion Time(ms)	Sample Rate (S/s)
1-shot conversion(60Hz)	143	7
1-shot conversion(50Hz)	169	6
Auto conversion mode(60Hz)	82	12.2
Auto conversion mode(50Hz)	98	10.2

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-E720.





## 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-E720 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 <sub>rms</sub> , 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-E720 with DSUB	2,000 m

Indoor use only.

# Support

MT-RIO上手指南:

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



RIO上手指南

MT-RIO视频教程:

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



RIO视频教程

MT-Master上手指南:

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



Master上手指南

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Master视频教程

# Dimensions:(mm)

