### DataSheet

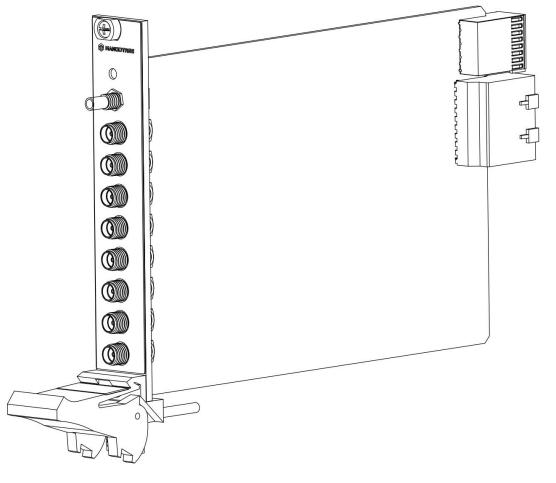
# MT-T612

### 6 AI,2 AO, ±10 V, 32 bit, 192 kS/s/ch Simultaneous

This document contains the specifications for MT-T612.Specifications are typical at 25°C unless otherwise noted.



**Caution** Using the MT-T612 in a manner not described in this document may impair the protection the MT-T612 provides.





### Input Characteristics

Number of channels	6 differential input channels
ADC resolution	32bits
Sampling mode	Simultaneous
Support Sample rate	192kS/s、96kS/s、48kS/s
Input coupling	AC/DC (Hardware-selectable)
Input range	±10V
AC voltage full-scale range	
Minimum	±10Vpk
Typical	±10.05Vpk
Maximum	±10.15Vpk
IEPE excitation current	
Minimum	2.0 mA
Typical	2.1 mA
IEPE compliance voltage	24V maximum
Crosstalk (1 kHz)	>110dB
Differential input impedance	22kΩ
Frequency response	$\pm 0.1$ dB@20Hz~20kHz
Total harmonic distortion(THD)	-115dB
Total harmonic distortion+Noise(THD+N)	-110dB

Table 1. AI Idle Channel Noise

	Idle Channel Noise	
Sample Rate (kS/s)	dBVrms	uVrms
48 kS/s	-117.9 dBVrms	9 uVrms
96 kS/s	-114.7 dBVrms	13 uVrms
192 kS/s	-112.3 dBVrms	17 uVrms

	Dial Switch	
Configuration	<b>S</b> 1	S2
DC Coupling	ON	OFF
AC Coupling	OFF	OFF
AC Coupling with IEPE	OFF	ON

#### Table 2. AC/DC Configuration

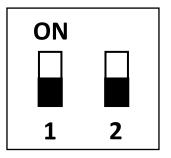


Table 3. Accuracy

Measurement Conditions		Percent of Reading	Percent of Range
		(Gain Error)	(Offset Error)
Calibrated	Maximum (-40 °C to 70 °C)	0.034%	±0.014%
Canorated	Typical (25 °C ±5 °C)	0.007%	±0.005%

### **Output Characteristics**

Number of channels	2 differential output channels
DAC resolution	32 bits
Sampling mode	Simultaneous
Support Sample rate	192kS /s、96kS /s、48kS /s
Output voltage range	±10V
Output coupling	DC
Output impedance	50 Ω

Tuble 1. Recutacy			
Measurement Conditions		Percent of Reading	Percent of Range
		(Gain Error)	(Offset Error)
Calibrated	Maximum (-40 °C to 70 °C)	0.033%	0.015%
	Typical (25 °C, ±5 °C)	0.008%	0.006%

Table 1. Accuracy

Crosstalk (1 kHz)	>110dB
Frequency response	±0.1dB@20Hz~20kHz

Table 2. AO fule Challier Noise		
$C_{\rm even} = 1 \cdot \mathbf{D}_{\rm eff} \cdot (1 \cdot \mathbf{C} / \mathbf{r})$	Idle Channel Noise	
Sample Rate (kS/s)	dBVrms	uVrms
48 kS/s	-123.2 dBVrms	5 uVrms
96 kS/s	-119.7 dBVrms	7.5 uVrms
192 kS/s	-115.9 dBVrms	11.5 uVrms

Table 2. AC	Idle Channel Noise
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Total harmonic distortion(THD)	-115dB
Total harmonic distortion+Noise(THD+N)	-110dB
External Digital Triggers	
Number of triggers	10
Source	TRIG, PXI_TRIG<07>, PXI_STAR

### **Power Requirements**

Power consumption from chassis:	900mW maximum
Thermal dissipation (at 70 °C)	930mW maximum

### Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-earth ground	±30 V maximum, Measurement Category I
Isolation	
Channel-to-channel	None
Channel-to-earth ground	None

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 $\mathbf{C}\mathbf{\epsilon}$

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	500 m

Indoor use only.

### DAQMode Support

通用模式 (DAQMode=0) 包括: AI、AO、Counter、PWM、Encoder、Digital Input、Digital Output、Digital Waveform Input、Digital Waveform Output、Temperature。

通用模式适用所有的MT-DAQ设备,该模式下用户可以开发使用设备数据手册中说明的全部功能,不同设备支持的功能不同。本设备通用模式支持的功能如下表所示,对应功能为绿色则支持,红色则不支持。

本设备通用模式(DAQMode=0)支持的功能:

AI	AO
Counter	• PWM
Encoder	Temperature
<ul> <li>Digital Input</li> </ul>	Digital Output
Digital Waveform Input	Digital Waveform Output

特殊模式包括: AI/AO同步(AIO Sync)、编码器触发AI(Encoder Trigger AI)、AI触发 编码器(AI Trigger Encoder)、DI触发AI/AO同步(DI Trigger AIO)、DI触发AI(DI Trigger AI)、 DI触发AO(DI Trigger AO)。

如果需要使用特殊模式下的模式,用户需要确认购买设备是否支持该模式,本设备支持的 特殊模式如下表所示,对应模式为绿色则支持,红色则不支持;Customer是定制DAQ模式,正 常用户无法使用。如果模式配置错误,会导致设备无法正常运行。

本设备支持的特殊模式:

AO-Sync-AI (DAQMode=1)	AI-Trigger-Encoder (DAQMode=2)
Encoder-Trigger-AI (DAQMode=3)	DI-Trigger-AI-Sync-AO (DAQMode=4)
DI-Trigger-AI (DAQMode=5)	DI-Trigger-AO (DAQMode=6)

### Config文本

MT-DAQ设备的开发和使用依赖于Config配置文本,只有正确配置该文本,才能保证设备的正常运行。不同型号的设备或板卡对应的配置参数是不同的。Python、LabVIEW和C#三种编程语言的Config配置文本完全相同。

通用Config配置文本通过MT-Master软件主页导出获得,用户可以根据实际设备或板卡的参数对配置文本进行修改配置,或者按照文本默认参数配置运行。

Config配置文本中的各项参数含义及其具体配置可以参考MT-DAQ上手指南,指南链接附 于下文Support板块。

使用MT产品过程中如有任何疑问,可以通过访问官网:<u>http://www.mangotree.cn</u>联系专业 客服咨询。



### Support

MT-Master上手指南:

https://server.mangotree.cn:9900/WebFile/Downloads/上手指南/MT-Master/



Master上手指南

MT-Master视频教程:

https://server.mangotree.cn:9900/WebFile/Downloads/视频教程/MT-Master/



Master视频教程

MT-DAQ上手指南:

https://server.mangotree.cn:9900/WebFile/Downloads/上手指南/MT-DAQ/



MT-DAQ视频教程:

https://server.mangotree.cn:9900/WebFile/Downloads/视频教程/MT-DAQ/



### Dimensions

