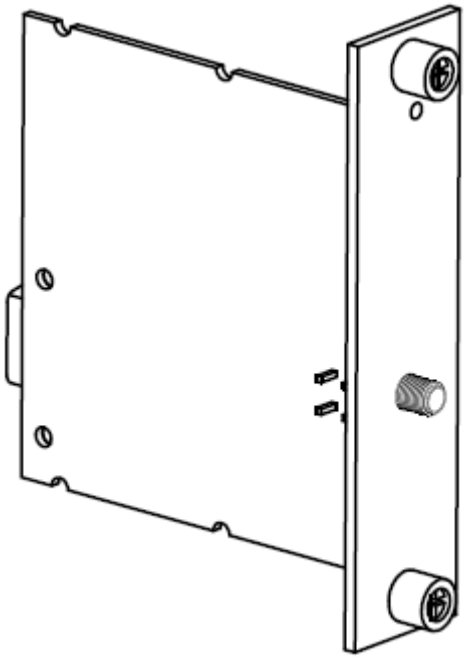
DATASHEET

MT E796

E Series GPS and BeiDou Synchronization Module



- Support Multi-satellite system: GPS、BeiDou、QZSS
- Update Rate: 1Hz by default, maximally up to 10Hz
- Low Consumption: 24.1 mA in tracking mode
- -40 ℃ to 70 ℃ operating;

The MT E796 is a stationary GPS timing module for RobustRIO and FlexDAQ systems.It provides accurate timing and geographic location information to the E series host, which enables synchronization of E series systems.

MANGOTREE

Connecting the MT E796

The MT E796 has one SMA female connector on its front panel for a GPS active antenna. The connector provides a DC voltage to power the antenna and also serves as input for the GPS RF signal.

Installing the Antenna

The embedded GPS receiver in the MT E796 requires signals from several satellites to compute accurate timing and location. The more satellites available to the receiver, the more accurately it can determine time and location. Therefore, the antenna location should be such that it receives signals from the greatest number of satellites possible. As the number of satellites visible to the antenna decreases, the synchronization performance may also decrease. Choose the antenna location so that the antenna has a clear view of the sky. There is no strict definition for a clear view of the sky, but a suitable guideline is that the GPS antenna should have a straight line of sight to the sky in all directions (360 °) down to an imaginary line making a 30 ° angle with the ground. Locations far from trees and tall buildings that could block or reflect GPS satellite signals are best.

Maximum Cable Lenth

Maximum cable length depends on the GPS antenna gain and the Cable's loss per unit of distance. We recommends a GPS signal strength of between -135 dBm and -120 dBm at the MT E796 SMA input. GPS signal strength on the Earth's surface is typically -130 dBm. Targeting a signal strength of -125 dBm at the SMA input, you can compute the maximum cable length as:

Max_cable_loss = -130 dBm + antenna_gain - (-125 dBm)

Max_cable_length = Max_cable_loss /

(loss_per_unit_of_distance)

For example, if you use an active antenna with gain of 28 dB and RG-58 cable, which has a rated loss at 1.5 GHz of about 0.8 dB/m (24.5 dB/100 ft), the maximum cable length you could use is:

Max_cable_loss = -130 dBm + 28 dB - (-125 dBm) = 23 dB

Max_cable_length = 23 dB / (0.8 dB/m) $\approx$ 29 m

MT E796 Specifications

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

Signal type	GPS L1 C/A BeiDou B1 C/A
GPS signal frequency	1575.42±1.023MHz
BeiDou signal frequency	1561.098±2.046MHz
Sensitivity	
Acquisition	-148dBm
Reacquisition	-163dBm
Tracking	-165dBm
Recommended signal strength at SMA	-135 dBm to -120 dBm
Input impedance	50Ω, nominal
Accuracy of 1PPS Signal	Typical accuracy < 10 ns
Passive Antenna	
	Frequency Range: 1559MHz-1609 MHz VSWR: <2 (Typ.) Polarization: RHCP or Linear Gain: >0dBi
Active Antenna	
	Frequency Range: 1559MHz-1609 MHz VSWR: <2 (Typ.) Polarization: RHCP or Linear Noise figure: <1.5dB Gain (antenna): >0 dBi Gain (embedded LNA): <17dB (Typ.)

Power Requirements

Power consumption from chassis	150 mW max
Thermal dissipation (at 70 ℃)	550 mW max

CE Compliance CE

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 (IEC 60068-2-1, IEC 60068-2-2)	-40 ℃ to 70 ℃
Storage temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 ℃ to 85 ℃
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	5,000 m

Indoor use only.