




TM Series
Evaluation Module
User's Guide

Wireless made simple[®]

 **Warning:** Linx radio frequency (“RF”) products may be used to control machinery or devices remotely, including machinery or devices that can cause death, bodily injuries, and/or property damage if improperly or inadvertently triggered, particularly in industrial settings or other applications implicating life-safety concerns. No Linx Technologies product is intended for use in any application without redundancies where the safety of life or property is at risk.

The customers and users of devices and machinery controlled with RF products must understand and must use all appropriate safety procedures in connection with the devices, including without limitation, using appropriate safety procedures to prevent inadvertent triggering by the user of the device and using appropriate security codes to prevent triggering of the remote controlled machine or device by users of other remote controllers.

All RF products are susceptible to RF interference that can prevent communication. Lack of good sight of the GPS satellites (open sky) can affect the accuracy of a position fix or prevent a fix entirely.

Do not use any Linx product over the limits in this data guide. Excessive voltage or extended operation at the maximum voltage could cause product failure. Exceeding the reflow temperature profile could cause product failure which is not immediately evident.

Do not make any physical or electrical modifications to any Linx product. This will void the warranty and regulatory and UL certifications and may cause product failure which is not immediately evident.

Table of Contents

- 1 [Introduction](#)
- 2 [Ordering Information](#)
- 2 [Electrical Specifications](#)
- 3 [Pin Assignments](#)
- 3 [PCB Layout](#)
- 3 [Schematic](#)

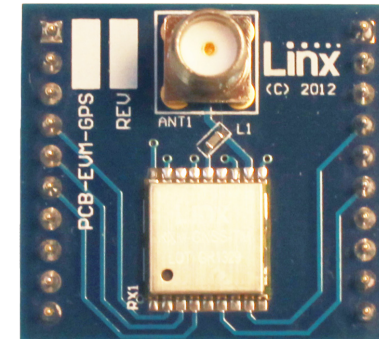


Figure 1: TM Series Evaluation Module

Introduction

The TM Series GNSS receiver module is a self-contained high-performance Global Satellite Navigation System receiver. Based on the MediaTek chipset, it can simultaneously acquire and track multiple satellite constellations. These include the United States GPS system, Europe's GALILEO, Russia's GLONASS and Japan's QZSS.

The module provides exceptional sensitivity, even in dense foliage and urban canyons. It's very low power consumption helps maximize runtimes in battery powered applications. Hybrid ephemeris prediction can be used to achieve cold start times of less than 15 seconds. The module outputs standard NMEA data.

The evaluation module contains the surface mount TM Series GNSS module, SMA connector and a ferrite bead (used to supply power to an external active antenna, such as the Linx SH Series active GPS antenna) on a single board with through-hole headers. This small board makes prototyping with the TM Series module very easy.

Ordering Information

Ordering Information	
Part Number	Description
EVM-GNSS-TM	TM Series Evaluation Module
RXM-GNSS-TM	TM Series GNSS Receiver Module
MDEV-GNSS-TM	TM Series GNSS Receiver Master Development System

Figure 2: Ordering Information

Electrical Specifications


TM Series GNSS Receiver Specifications						
Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Power Supply						
Operating Voltage	V_{CC}	3.0	3.3	4.3	VDC	
Supply Current	I_{CC}					
Peak				156	mA	1
Acquisition			28		mA	1
Tracking			20		mA	1
Standby			0.365		mA	1
Backup Battery Voltage	V_{BAT}	2.0		4.3	VDC	
Backup Battery Current	I_{BAT}		7		μA	2
Antenna Port						
RF Impedance	R_{IN}		50		Ω	
Environmental						
Operating Temperature Range		-40		+85	$^{\circ}C$	
Storage Temperature Range		-40		+85	$^{\circ}C$	

1. $V_{CC} = 3.3V$, without active antenna, ephemeris prediction is off

2. $V_{CC} = 0V$

Figure 3: Electrical Specifications



 **Warning:** This product incorporates numerous static-sensitive components. Always wear an ESD wrist strap and observe proper ESD handling procedures when working with this device. Failure to observe this precaution may result in module damage or failure.

Pin Assignments

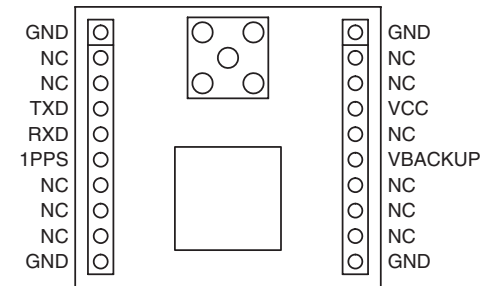


Figure 4: EVM-GNSS-TM Pin Assignments

PCB Layout

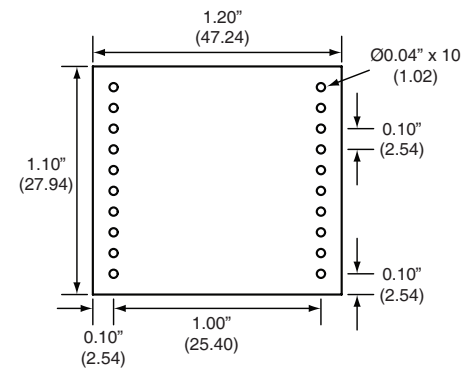


Figure 5: EVM-GNSS-TM PCB Layout Dimensions

Schematic

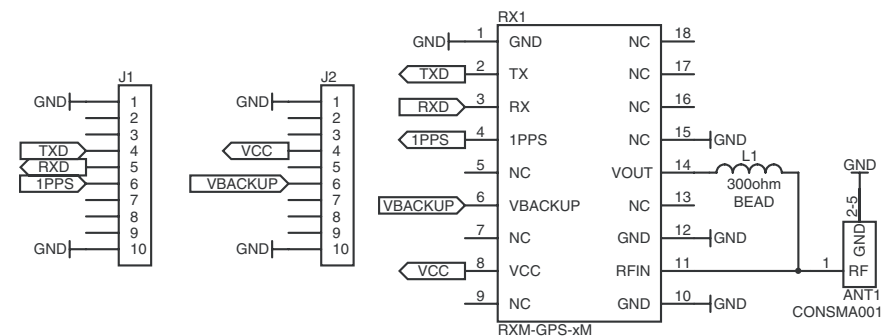


Figure 6: EVM-GNSS-TM Schematic



Linx Technologies
159 Ort Lane
Merlin, OR, US 97532

3090 Sterling Circle, Suite 200
Boulder, CO 80301

Phone: +1 541 471 6256
Fax: +1 541 471 6251
www.linxtechnologies.com

Disclaimer

Linx Technologies is continually striving to improve the quality and function of its products. For this reason, we reserve the right to make changes to our products without notice. The information contained in this Data Guide is believed to be accurate as of the time of publication. Specifications are based on representative lot samples. Values may vary from lot-to-lot and are not guaranteed. "Typical" parameters can and do vary over lots and application. Linx Technologies makes no guarantee, warranty, or representation regarding the suitability of any product for use in any specific application. It is Customer's responsibility to verify the suitability of the part for the intended application. At Customer's request, Linx Technologies may provide advice and assistance in designing systems and remote control devices that employ Linx Technologies RF products, but responsibility for the ultimate design and use of any such systems and devices remains entirely with Customer and/or user of the RF products.

LINX TECHNOLOGIES DISCLAIMS ANY AND ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL LINX TECHNOLOGIES BE LIABLE FOR ANY CUSTOMER'S OR USER'S INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR RELATED TO THE DESIGN OR USE OF A REMOTE CONTROL SYSTEM OR DEVICE EMPLOYING LINX TECHNOLOGIES RF PRODUCTS OR FOR ANY OTHER BREACH OF CONTRACT BY LINX TECHNOLOGIES. CUSTOMER AND/OR USER ASSUME ALL RISKS OF DEATH, BODILY INJURIES, OR PROPERTY DAMAGE ARISING OUT OF OR RELATED TO THE USE OF LINX TECHNOLOGIES RF PRODUCTS, INCLUDING WITH RESPECT TO ANY SERVICES PROVIDED BY LINX RELATED TO THE USE OF LINX TECHNOLOGIES RF PRODUCTS. LINX TECHNOLOGIES SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR A CUSTOMER'S, USER'S, OR OTHER PERSON'S DEATH, BODILY INJURY, OR PROPERTY DAMAGE ARISING OUT OF OR RELATED TO THE DESIGN OR USE OF A REMOTE CONTROL SYSTEM OR DEVICE EMPLOYING LINX TECHNOLOGIES RF PRODUCTS.

The limitations on Linx Technologies' liability are applicable to any and all claims or theories of recovery asserted by Customer, including, without limitation, breach of contract, breach of warranty, strict liability, or negligence. Customer assumes all liability (including, without limitation, liability for injury to person or property, economic loss, or business interruption) for all claims, including claims from third parties, arising from the use of the Products. Under no conditions will Linx Technologies be responsible for losses arising from the use or failure of the device in any application, other than the repair, replacement, or refund limited to the original product purchase price. Devices described in this publication may contain proprietary, patented, or copyrighted techniques, components, or materials.