



**GPS / GNSS Receiver Master
Development System
User's Guide**

Wireless made simple®



Warning: Some customers may want Linx radio frequency (“RF”) products 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 (“Life and Property Safety Situations”).

NO OEM LINX REMOTE CONTROL OR FUNCTION MODULE SHOULD EVER BE USED IN LIFE AND PROPERTY SAFETY SITUATIONS.

No OEM Linx Remote Control or Function Module should be modified for Life and Property Safety Situations. Such modification cannot provide sufficient safety and will void the product’s regulatory certification and warranty.

Customers may use our (non-Function) Modules, Antenna and Connectors as part of other systems in Life Safety Situations, but only with necessary and industry appropriate redundancies and in compliance with applicable safety standards, including without limitation, ANSI and NFPA standards. It is solely the responsibility of any Linx customer who uses one or more of these products to incorporate appropriate redundancies and safety standards for the Life and Property Safety Situation application.

Do not use this or any Linx product to trigger an action directly from the data line or RSSI lines without a protocol or encoder/decoder to validate the data. Without validation, any signal from another unrelated transmitter in the environment received by the module could inadvertently trigger the action.

All RF products are susceptible to RF interference that can prevent communication. RF products without frequency agility or hopping implemented are more subject to interference. This module does not have a frequency hopping protocol built in.

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.

Ordering Information

Ordering Information	
Part Number	Description
MDEV-GPS-R4	R4 Series Master Development System
MDEV-GPS-F4	F4 Series Master Development System
MDEV-GPS-RM	RM Series Master Development System
MDEV-GPS-FM	FM Series Master Development System
MDEV-GNSS-GM	GM Series Master Development System
MDEV-GNSS-TM	TM Series Master Development System
EVM-GPS-R4	R4 Series Evaluation Module
EVM-GPS-F4	F4 Series Evaluation Module
EVM-GPS-RM	RM Series Evaluation Module
EVM-GPS-FM	FM Series Evaluation Module
EVM-GNSS-GM	GM Series Evaluation Module
EVM-GNSS-TM	TM Series Evaluation Module
RXM-GPS-R4-x	R4 Series GPS Receiver Module
RXM-GPS-F4-x	F4 Series GPS Receiver Module
RXM-GPS-RM-x	RM Series GPS Receiver Module
RXM-GPS-FM-x	FM Series GPS Receiver Module
RXM-GNSS-GM-x	GM Series GNSS Receiver Module
RXM-GNSS-TM-x	TM Series GNSS Receiver Module

Figure 2: Ordering Information

Initial Setup

Unpack the development system and install the AAA and coin-cell batteries. Connect the external GPS antenna. The power switch selects between the battery pack or USB power if the board is plugged into a USB bus. To use the display, turn the OLED display power switch on. The development board is now ready for use. After turning on the power, the module determines its current position. Please note, the time required for an initial fix or after long periods of storage is considerably greater than in subsequent operation. Please refer to the module's data guide for complete information regarding Time-To-First-Fix (TTFF). To protect the display and extend its life, turn off the display before turning off the board.

Troubleshooting

If the boards fail to work out of the box, then try the following:

- Check the batteries to make sure they are not dead
- Check to make sure that the power switch is in the correct position
- Check that the antenna is installed correctly
- Check that the data routing switch is set appropriately

If all of these appear to be in order, please call +1 800 736 6677 or e-mail techsupport@linxtechnologies.com for technical support.

The Receiver Section

The receiver module is mounted on an evaluation board which plugs into headers on the main development board. The evaluation board has an SMA antenna connector to allow the attachment of many different styles of GPS antennas, including the included SH Series active GPS antenna. Each receiver module has its own evaluation board, but all of them are designed to fit into the same socket on the main board.

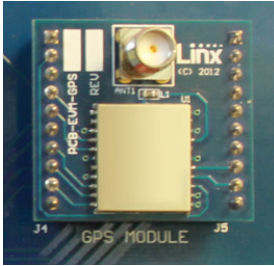


Figure 5: The Development Board Receiver Section

On the bottom of the main board is a CR2032 coin cell battery that provides power to the Real Time Clock (RTC) and SRAM when the receiver is powered down. This allows the receiver to start up and obtain a position fix faster. This cell provides about two years of operation.

The Display Section

The Master Development System features an OLED screen that displays the navigation information from the receiver module. This allows the development board to act as a stand-alone evaluation system without the need for any additional software.



Figure 7: The Development Board Display Section

The display is driven by an on-board microcontroller located under the display. Data from the receiver module is connected directly to this microcontroller. The microcontroller receives data at the receiver's default 9,600bps.

Note: If the receiver's baud rate is changed, it will not be able to communicate with the microcontroller.

The display and microcontroller pull about 100mA when fully powered, so a power switch is supplied to deactivate the display area when not in use, saving battery life. To protect the display and extend its life, be sure to turn the display section off before turning off the main power to the board.

Schematics

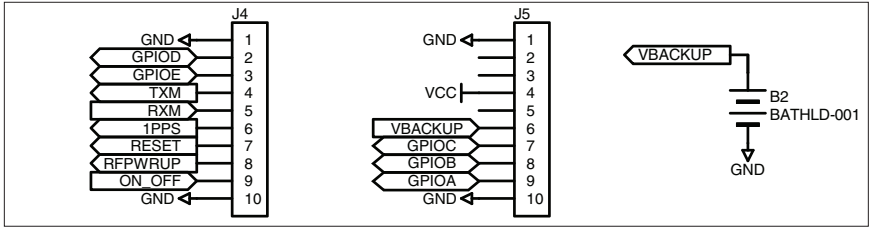


Figure 9: Receiver Section Schematic

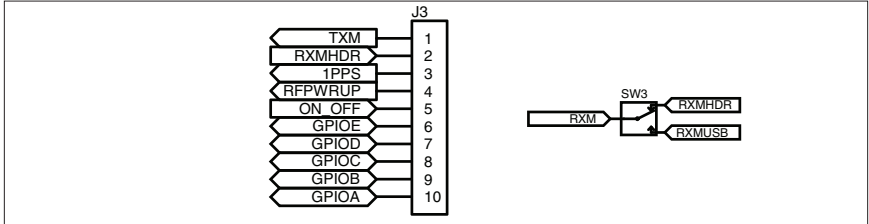


Figure 10: Header Section Schematic

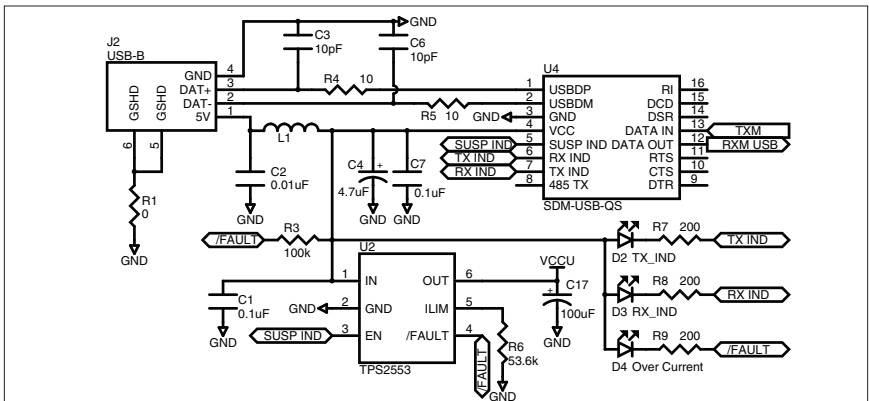


Figure 11: USB Section Schematic

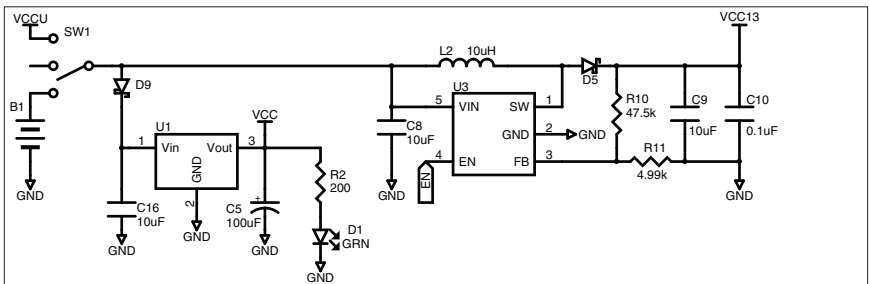


Figure 12: Power Supply Schematic



Linx Technologies
159 Ort Lane
Merlin, OR, US 97532

Phone: +1 541 471 6256
Fax: +1 541 471 6251

www.linxtechnologies.com

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