



**QS Series**  
**Master Development System**  
**User's Guide**

**Wireless made simple<sup>®</sup>**



**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-USB-QS	QS Series Master Development Kit

Figure 2: Ordering Information

# MDEV-USB-QS Development Board

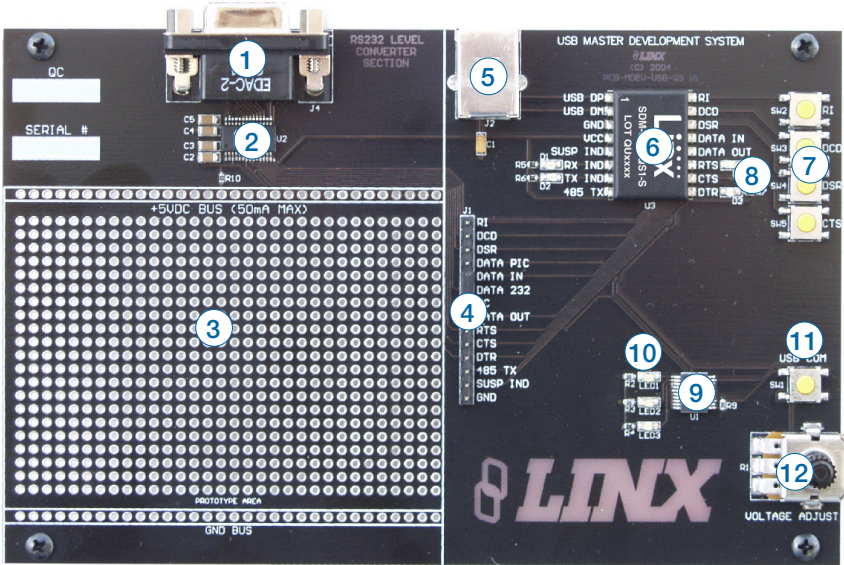


Figure 3: The QS Series Development Board

- 1. DB9 Connector
- 2. RS-232 Level Converter Chip
- 3. Prototyping Area
- 4. Breakout Header
- 5. USB Jack
- 6. QS Module
- 7. Modem Line Buttons
- 8. Modem Line LEDs
- 9. Microcontroller
- 10. Microcontroller LEDs
- 11. Microcontroller Button
- 12. Voltage Adjust Potentiometer

## The RS-232 Area

The RS-232 area contains an RS-232 level converter that works with the QS Series module to create a USB-to-RS-232 converter. All of the modem lines are provided to allow for full handshaking, and power is provided by the USB bus. To use, plug the USB cable from the PC into the jack, a straight-through serial cable from the PC into the DB9 connector and place the jumper in the breakout header between “Data In” and “Data 232”.

The development software is designed so that testing can be done with a single PC by sending data through the USB bus and receiving it back through the serial port and vice versa. This section can also be used to interface the PC with any RS-232 device. Custom software can be written to control the device directly, or the Virtual COM Port drivers can be used to make the USB module look like a serial port so that existing software can be used.

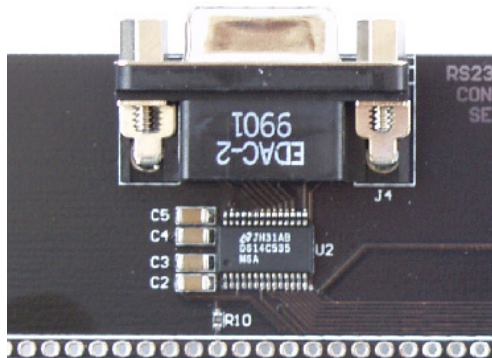


Figure 6: The RS-232 Section

## The Prototyping Area

The prototyping area contains an area of plated through holes so that external circuitry can be placed on the board. This circuitry can be interfaced with the QS module through the breakout header to the right. At the bottom of this area is a row connected to ground and at the top is a row connected to the USB power supply. The circuitry on the development board draws approximately 40 to 50mA of current, so any circuitry added to the prototyping area cannot draw more than 50mA before enumeration, per the USB specification (please see the Power Supply Guidelines in the module's data guide for more information). If the circuitry requires more current, then an external power supply is required. Resistor R10 is a 0-ohm jumper that can be removed to isolate the power supply row from the USB supply so that an external supply can be attached to this row.

All of the module's control and data lines are connected to the header, allowing easy access from the prototyping area. A jumper is also included to route the data from the RS-232 Section or the Microcontroller section to the QS module. It must be appropriately set before the sections will work properly.

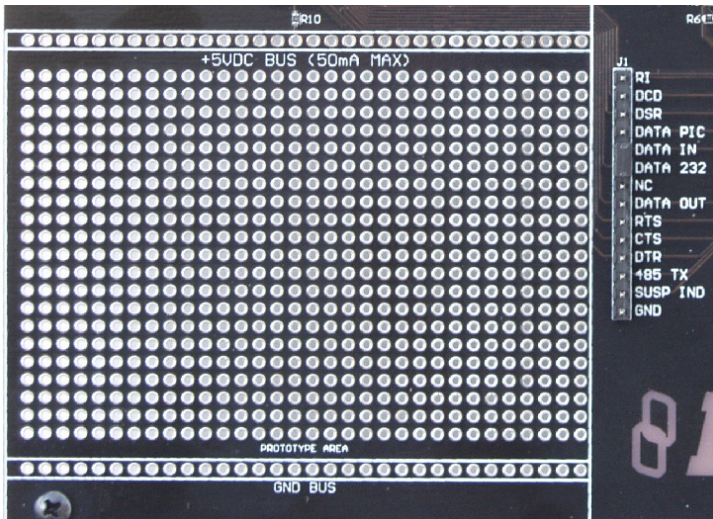


Figure 9: The Prototyping Area

## QS Series Master Development System Software

When the software is first started, the screen in Figure 11 prompts the user to choose which area of the development board will be used with the QS module: the RS-232 or the PIC section.

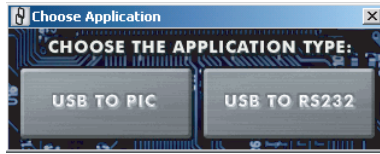


Figure 11: The Choose Application Screen

The Control Panel then appears, setup for whichever section was selected. The area can be changed by going to the Window pull-down menu and clicking the appropriate selection.



Figure 12: The Control Panel for RS-232 Operation

Full documentation for the software and samples of the source code can be found in the help file, obtained by clicking on Help \ Help File and selecting either the .pdf file to be displayed in Adobe Acrobat or the .html file to be displayed in the default web browser.

If any problems are encountered, first unplug the module and plug it back in, then check the help file. If the problem is not corrected or addressed, then Linx contact information is under the Help \ Contact Us menu.

## Resources

### Support

For technical support, product documentation, application notes, regulatory guidelines and software updates, visit [www.linxtechnologies.com](http://www.linxtechnologies.com)

### RF Design Services

For customers who need help implementing Linx modules, Linx offers design services including board layout assistance, programming, certification advice and packaging design. For more complex RF solutions, Apex Wireless, a division of Linx Technologies, creates optimized designs with RF components and firmware selected for the customer's application. Call +1 800 736 6677 (+1 541 471 6256 if outside the United States) for more information.

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