

RioExpress Quick Start Guide

Cable Replacement Pair



Thank you for purchasing the RioExpress specialty Wireless I/O. This quick start guide describes the simple steps 1-2-3 for using a pair of RioExpress modules to replicate (mirror) I/O signals for cable replacement.

Step 1: Set one unit as the Master. Note that the units are identical, and come with the same default settings. Pick one unit to be the Master and move the upper left DIP switch to the "Master" position. See Figure 1 & 2 below for proper settings.

Step 2: Attach whip antenna to each unit.

Step 3: Apply power to both units. They configure themselves, then within a couple of seconds are communicating with each other.

The RioExpress units are now replicating (mirroring) I/O signals from one unit to the other.

... It's that simple!

Note: See back for information about exercising the RioExpress features, and exploring various setup options.

Figures 1 & 2 below show the typical DIP Switch settings for simple Cable Replacement as described above. Figure 2 shows the factory default settings (Slave), and Figure 1 shows the upper-left DIP Switch set for Master function.

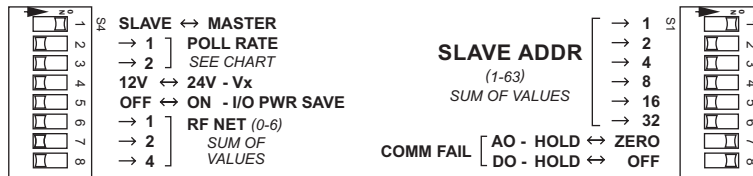


Figure 1 (Master Unit Settings)

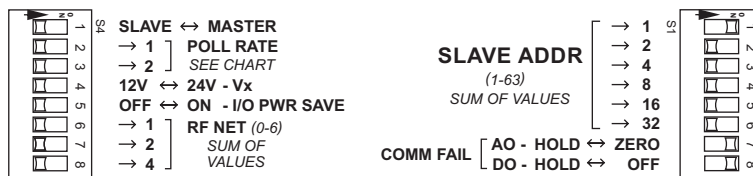
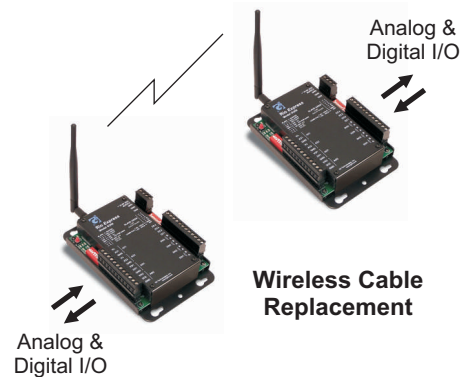


Figure 2 (Slave Unit Settings)

P/N G308-04-E2: Cable Replacement Starter Kit:

- Includes: 2 ea. G308-04 RioExpress Wireless I/O, 900MHz
- 2 ea. Whip Antennas, articulating
- 2 ea. Wall Cube Power Supplies, 12Vdc
- 1 ea. RioExpress Quick Start Guide
- 1 ea. RioExpress User's Guide

(For 2.4GHz frequency, order P/N G308-08E2)



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I/O Signals

The inputs of one unit are replicated as the outputs of the other. On the MASTER unit connect a jumper wire from DI1 to GND. The DI1 LED on the MASTER unit will turn on and the DO1 on the SLAVE unit will turn on a fraction of a second later. The units are shipped with the Analog Inputs set to 0-20mA (4-20mA). Use a 4-20mA current generator to input an analog signal on AI1 of the MASTER or SLAVE unit. You can measure the corresponding current output signal on the IO1 of the other unit. The VO1 on the other unit will also output a corresponding 0-5V (1-5V) signal. If you desire to use a 0-5V (1-5V) input signal, remove the cover and select the 0-5V input on the Analog Input selection DIP switch. To remove the cover, power off the unit, remove the four screws on the top of the cover and lift off the cover vertically.

LED Indicators

After applying power on each unit, the CPU LED will be on solid for one second. The TX1 and RX1 LEDs will then blink as the radio is configured. The CPU LED will then blink once per second. When the Master unit is powered up, it will transmit a message to the Slave unit and the Slave unit will reply (about four times per second). This is indicated by the blinking of the TX1 and RX1 LEDs. With the units in the same room, all three of the Received Signal Strength Indicator (RSSI) green LEDs should be on indicating a strong RF signal.

LED Enable Push Button

Except for the CPU LED, the LEDs will time out after 30 minutes and turn off to conserve energy. If the LEDs time out, press the LED enable push button next to the CPU LED to enable the LEDs for another 30 minutes. Repeatedly pressing the LED enable push button will toggle the LEDs on and off.

Communications Failure Action

To demonstrate the Comm Fail Action, power down one of the units and observe the comm fail action on the other. With the continuous poll rate setting the powered unit will time out after 20 seconds. When the Comm Fail timeout occurs, the DO5 Comm. Fail output will turn on. With the COMM FAIL AO and DO set to ZERO and OFF respectively, the analog outputs will go to zero, and the relay outputs will turn off when Comm Fail occurs. When both units are again powered, communications will be restored and Comm Fail will clear.

Solar Application Settings

The RioExpress has a variety of settings that allow the user to balance power savings and system performance in order to minimize cost and still meet system requirements. For ultra-low power usage (<100mW average) consider the configuration settings depicted in Figures 3 and 4.

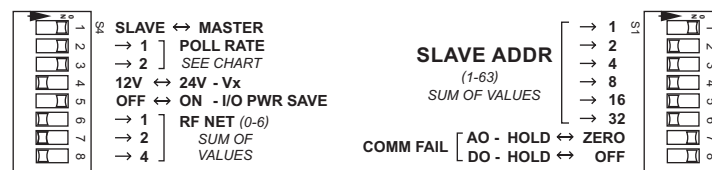


Figure 3 (Master Unit Settings, Solar)

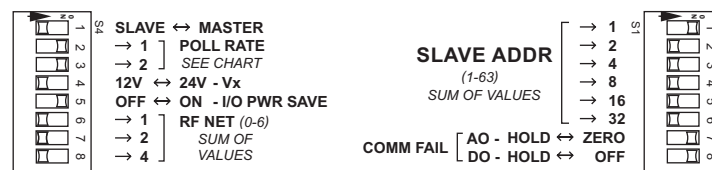


Figure 4 (Slave Unit Settings, Solar)

In this configuration the POLL RATE is set for once every minute and I/O PWR SAVE is turned on. The MASTER will poll the SLAVE, then both units will enter Power Save Mode for 58 seconds, then power-up 2 seconds before the MASTER polls the SLAVE again. While in Power Save Mode the radio, sensor excitation voltage and digital input wetting voltage will be turned off. When using this configuration in a monitoring application, the RioExpress could use as small as a 1W solar panel and a 2Ahr battery.

Note that the Poll Rate settings on the SLAVE select a “hold” time for the Digital Inputs, allowing the capture of short-duration events even with a slow poll rate.

Refer to the RioExpress User’s Guide for more information, including information needed to use the RioExpress as a Modbus Slave Wireless I/O device.