

# Quick Start Guide

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## 9XTend-NEMA™ Weatherproof RS-232/485 RF Modem

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Create a long range wireless link in minutes.

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**WARNING:** When operating with 1 Watt power output, transmitting in close proximity of other RF modems can damage modem front-ends. Observe a minimum separation distance of 2' (0.6 m) between modems.

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Refer to the 9XTend-PKG-R RS-232/485 product manual for information regarding operation of the 9XTend-NEMA RF Modem.

## Introduction

This guide provides step-by-step instruction on how to setup a wireless link and test the modem's ability to transport data over varying ranges and conditions.

## Range Test Setup

### Requirements for Range Test

- 1 XTend-NEMA Weatherproof RS-232/485 RF Modem
  - 1 XTend-PKG-R RS-232/485 RF Modem (or a second XTend-NEMA)
  - 1 Windows PC loaded with X-CTU Software
- Accessories (CAT5 cable with DB-9/PWR adapter board, loopback adapter, 2 RPSMA antennas (one is inside the NEMA enclosure), 2 power supplies)

### Install X-CTU Software

Go to the X-CTU software page at [www.digi.com/xctu](http://www.digi.com/xctu) and launch the latest X-CTU installer. Follow the prompts on the installation screens.

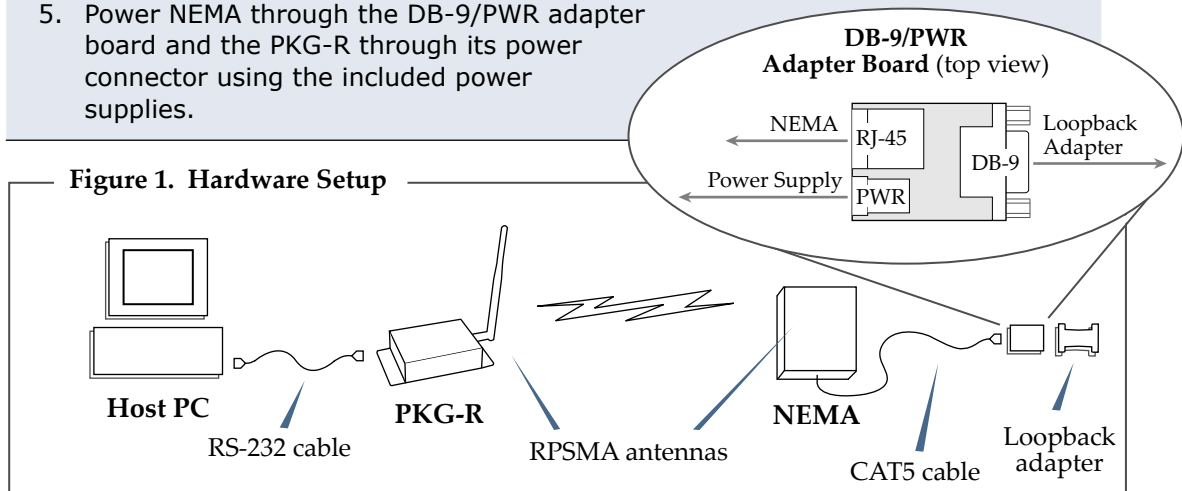
The X-CTU software interface is divided into the following four tabs:

- PC Settings - Setup PC com ports to interface with the RF modem
- Range Test - Test RF modem's range under varying conditions
- Terminal - Read/Set RF modem parameters and monitor data communications
- Modem Configuration - Read/Set RF modem parameters

### Hardware Setup

The XTend-NEMA RF Modem (remote) will be referred to as "NEMA". The XTend-PKG-R RF Modem (base) will be referred to as "PKG-R".

1. Verify DIP Switches of NEMA & PKG-R are set to their default positions (RS-232, Point-to-point Mode: Switches 1 and 5 are ON (up) and the remaining 4 switches are OFF (down)).  
[Refer to back page for important information regarding the DIP switch.]
2. Connect the female DB-9 connector of the PKG-R to the male DB-9 connector of the host PC using an RS-232 cable [Figure 1].
3. Attach the serial loopback adapter to the female DB-9 connector of NEMA. The serial loopback adapter configures the NEMA to function as a repeater by looping data back into the modem for retransmission. [Figure 1]
4. Attach RPSMA antenna to PKG-R. (NEMA antenna is inside the enclosure.)
5. Power NEMA through the DB-9/PWR adapter board and the PKG-R through its power connector using the included power supplies.



## Range Test Procedure

Use the "PC Settings" and "Range Test" tabs of the X-CTU Software to:

- Setup a PC Serial Com Port for communications with the XTend RF Modem [step 2 of "Range Test"].
- Determine RF modem's range [steps 1-8 of "Range Test"].

### Range Test

1. Launch the X-CTU Software (*Start --> Programs --> Digi--> X-CTU*).
- ② Under the "PC Settings" tab [Figure 2], select the PC serial com port from the dropdown list that will be used to connect to NEMA.
- ③ Select the PC interface baud rate that matches the RF data rate of NEMA. Use default values for remaining fields [Figure 2].
4. Select the "Range Test" tab [Figure 3].
- ⑤ (Optional) Check the box in the 'RSSI' section to enable its display.
- ⑥ Click the 'Start' button to begin range test.
7. Move the remote PKG-R (with loopback adapter) away from NEMA to determine the range of the wireless link.

Figure 2. PC Settings tab

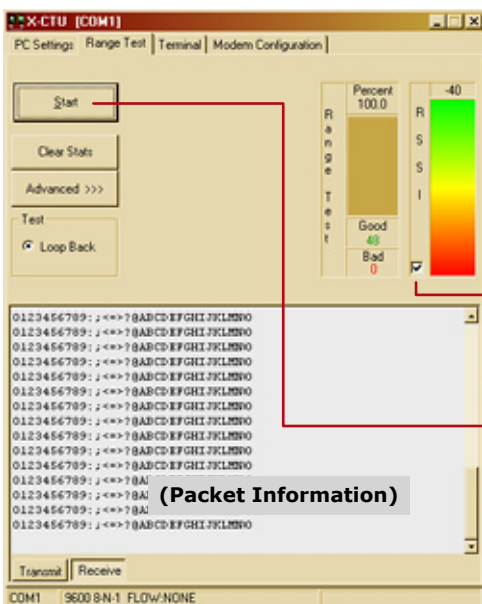
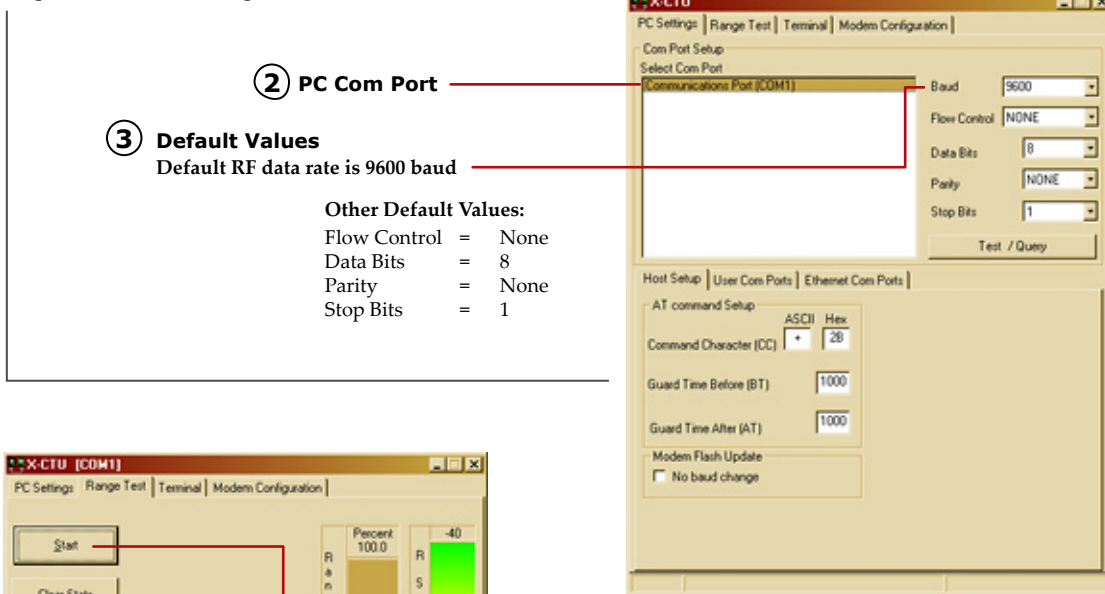


Figure 3 Range Test tab

## Optional Configurations

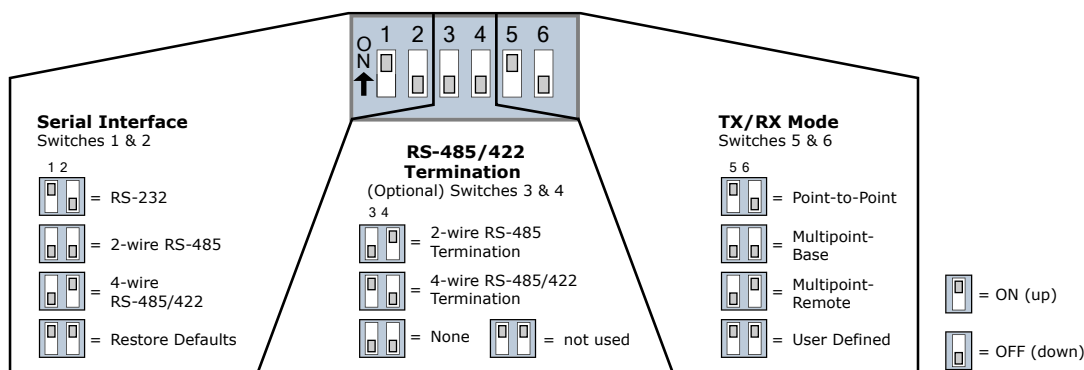
Out-of-box, the XTend-NEMA RF Modem is configured to provide immediate wireless links between devices. The modem's default configuration supports a wide range of RF communications.

If the RF Modem must be configured to support specific needs of a data system, many programming options are available. The RF modem recognizes an extensive set of AT and binary commands. Several of the commands can be sent to the modem using the DIP Switch that is located inside the weatherproof enclosure.

### Using the RF Modem DIP Switch

The DIP switch allows users to configure the several RF modem settings.

Figure 4. DIP Switch Settings (Settings applied only when powering on)



Each time the RF modem is powered on, the modem is automatically configured according to the positions of the DIP Switch. For example, the default positions (switches 2 and 5 are ON (up)) cause the DT and MY parameters to be set to specific values each time the RF modem is powered up.

To disable automatic configurations (so modified parameters persist in the modem registry on subsequent power-ups), set switches 5 and 6 to their ON (up) positions.

### Restoring Modem Defaults

If the XTend Modem is not responding or cannot enter into Command Mode, try restoring the modem to its original default parameter values.

**To Restore Defaults** (DIP Switch Method):

1. Set switches 1 & 2 of the DIP Switch to their ON (up) positions and the remaining four switches to their OFF (down) positions.
2. Turn off, then on again, the power supplying the XTend-NEMA RF modem.

### Other Configuration Options

Using the DIP Switch to configure the modem is one of several ways to configure modem parameters. Other programming options are available such as using the X-CTU Software "Terminal" and "Modem Configuration" tabs. Binary programming is also supported.

Since the XTend-NEMA and XTend-PKG-R RF modems operate and behave the same, refer to the XTend-PKG-R RF Modem product manual for more information about supported configuration options.

### Contact Digi International (Office hours are 8am – 5pm U.S. Mountain Standard Time)

Phone: (801) 765-9885, Live Chat: [www.digi.com](http://www.digi.com), E-Mail: [tech.support@digi.com](mailto:tech.support@digi.com)