



## Installation and Troubleshooting of the Wireless 485 Modem Set

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*P485MODEMASY / 2000002Kit*

### Introduction

Thank you for your purchase of the Wireless RS-485 Modems. Installed and configured properly, these modems will provide a reliable wireless link for your Falcon XT, Syscon or Falcon Base Unit RS-485 network.

### Pre-configuration

These wireless modems are highly configurable for a variety of applications. PTI Security Systems has preconfigured the modems to suit a majority of installations and provide easy replacement, should one become damaged.

This pre-configuration is

1. The wired connection is set for:
  - a. 2400 baud for the Syscon (PN 2000002Kit)
  - b. 9600 baud and two stop bits for the Falcon Base Unit or XT (PN P485MODEMASY)
2. Falcon Base Unit/XT modems are set for 2 Stop Bits. Syscon Modems are set for 1 Stop Bit.
3. The DIP switches are all set to the OFF position. This enables RS-485 communication. There is no benefit to any other switch settings besides all off.
4. Encryption is not used.

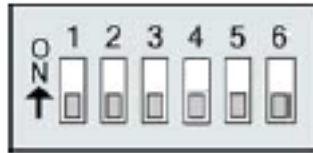
### Important – Please Read:

1. Should a more sophisticated configuration be required, the installer must alter the configuration. Remember that in order for the radio modems to communicate they must have compatible configurations, so when replacing a modem with a customized configuration, the replacement modem must also have its configuration customized.
2. The radio modems are not configured to be secure. It is possible to eavesdrop on their communication. A secure custom configuration is required when using these

modems with PayXpress regardless of the location of the PayXpress terminal on the RS-485 network.

## Set Up

1. The Wireless RS-485 modems are powered using the supplied power transformers.
2. Connection to the RS-485 network is made using the supplied cables.
  - a. Data Positive = Red
  - b. Data Negative = Black
  - c. Shield = Bare
3. For antenna installation see the supplied instruction manual or the PTI Security Web Quick Docs Section.
4. Before plugging power into the modem, set all DIP switches to the OFF position (down) as shown below.



5. If using a Falcon XT, change the Poll Timeout setting in the Setup Falcon XT Advanced Settings screen to a value of 200. This is important for proper operation.

## Testing and Troubleshooting

### Step 1 - Check for Interfering systems

This step should be performed first, prior to connecting to the access control system.

While at the installation site, connect the antenna and power to the modem. Do not connect the modem to the RS-485 network at this time. Observe the three green RSSI LEDs. These LEDs indicate the signal strength of the received signal. Since we only have one modem on, all LEDs should be off. If any are lit there will be interference from a nearby system. If this is the case, a custom configuration is required in order to change the addressing of the modem. The simplest solution is to change the hopping channel or VID. See the "Addressing" section of the XTend Product Manual on the Digi International Web site. Note that if changing the hopping channel or VID, it must be set the same on both modems.

Repeat this step at both Modem installation sites.

### Step 2 – Connect the Modem to the Controller RS-485 Network

Connect the modem to the RS-485 network on the controller (Falcon Base Unit, Syscon or XT). Connect the antenna and power to the modem. The RSSI LEDs should be off; the GREEN Data-In LED should be flashing indicating that the modem is successfully receiving data from the controller. If the Data-In LED is not flashing check your connections to the

RS-485 network and verify that the system is using 9600 baud for the Falcon Base Unit or Falcon XT or 2400 Baud if using the SYSCON. If these systems are set for other baud rates, a custom modem configuration is required changing the baud rate. Note that on the Falcon Base unit or XT you must also select 2 stop bits. The baud rates for both modems should be set the same.

Once this step is complete, leave the modem on and connected to the controller’s RS-485 network.

### Step 3 – Connect the Modem to the Remote RS-485 Network

Connect the modem to the remote RS-485 network. Connect the antenna and power the modem. The RSSI LEDs should be on. Three is ideal. Two is acceptable. Only 1 LED lit indicates that a better antenna arrangement may be required. If no RSSI LEDs light up then the modem is not receiving data from the modem connected to the controller. Note that the RSSI LEDs will only light on the “remote modem” if the “controller modem” is connected and transmitting data, as indicated by the “controller modem’s” green Data-In LED flashing.

The Data-Out LED should be flashing indicating that the modem is outputting data on the RS-485 network that it is receiving from the controller wirelessly, if it is not then repeat steps one and two above. If you are using a custom configuration, it is possible that two modem are not configured properly.

The Data-In LED should be flashing indicating that remote device(s) connected to the RS-485 network are responding. If the Data-In LED is not flashing then check the RS-485 connection to the remote devices. Check the remote device LEDs to see if these devices are receiving data and responding. Finally check the controller settings to ensure that it is configured for proper communication even without use of the Wireless RS-485 modem.

### LED Summary

Indicator	Meaning	Requirement
Green RSSI LED	The modem is receiving data from another modem.	Another modem is configured to communicate with this modem and is (or has recently) transmitting data.
Green Data In LED	The controller (Falcon Base Unit, XT or Syscon) or device (keypad, mux) is sending data to the modem.	The controller is properly connected. The controller and modem have matching baud rates and stop bits. The modem is properly configured for RS-485 communication.
Yellow Data Out LED	The modem has received data and is outputting to the controller or device	Both modems must be communicating wirelessly and the transmitting modem must be transmitting data.

### How They Work

The Wireless RS-485 modems are designed to be transparent. Neither the controller (XT, FBU or SYSCON) nor the slave device (keypad, mux or relay board) is aware of their

existence. While they are transparent, they do affect the performance of the system and in some cases parameters must be adjusted.

The impact to system performance is the time required for data to be transferred between the controller and the device. Additional time is required since the data must be gathered into a packet and transferred across the wireless link before it can be sent to the remote device. You will notice longer response times when using the Wireless RS-485 modems. This is normal.

### **Note:**

1. DIP Switch 2 has been disabled preventing this switch from erasing the preconfigured settings.
2. Bias resistors (4.7K) have been added to the modem for proper operation with the RS-485 network is in the idle state (neither the controller nor remote device is transmitting).

### **Custom Configurations**

Custom configurations can be implemented using the tools and information provided on the Digi International Inc. website. Since we have disabled the ability to restore the modem to Digi factory defaults, you must connect with the following settings:

- Syscon (PN 2000002Kit) – Use 2400 Baud, 1 stop bit and no parity
- Falcon Base Unit or Falcon XT (PN P485MODEMASY) – Use 9600 Baud, 2 Stop bits and no parity