

# FLASH TECHNOLOGY



## **FTW 175-3** **Wireless Monitoring System**

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**Reference Manual**  
**Part Number 7911753**

SERIAL NUMBER

Flash Technology, 332 Nichol Mill Lane, Franklin, TN 37067  
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(615) 261-2000



## **Front Matter**

### ***Abstract***

This manual contains information and instructions for installing, operating and maintaining the FTW 175-3 Wireless Monitoring System.

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### ***Warranty***

With proper installation and with normal operating conditions, Flash Technology warrants all components, for 2 years.

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# Section 1 – Introduction

## **Introduction**

The FTW 175-3 Wireless Monitoring System is available configured for service provided by AT&T or Verizon LTE wireless networks. Monitoring of site equipment is provided through RS-485 communications and/or four (4) dry contact inputs. The unit also monitors site power.

Equipment monitoring through RS-485 communications is available with all Flash Technology FLC series controllers and any FTB strobe system equipped with a 9038 or 4747 (Ver. 6.9 or higher) PCB.

Dry contacts are typically alarm relays provided by equipment for external monitoring of alarm conditions. Each input of the FTW 175-3 can be configured by Flash Technology's National Operations Center (NOC) to alarm on either open or closed status. **Alarm on open is preferred for fail safe monitoring.**

All alarm and communication monitoring is handled by the NOC.

**Important:** Before permanently installing and/or wiring the wireless monitoring unit, power-up the system on-site to ensure wireless service in your area. Refer to Section 2 for detailed instructions.

**When removing power from the equipment, ensure that the red wire to the battery is disconnected first. Reconnect battery after work is completed.**

## **Description**

The component layout and internal wiring of the unit is shown in Figure 1-1. The dry contact inputs are located on J2 of PCB 9039 as shown in Figure 3-3.

## **Specifications**

### Physical

13.33H x 11.30W x 7.11D inches  
(External)

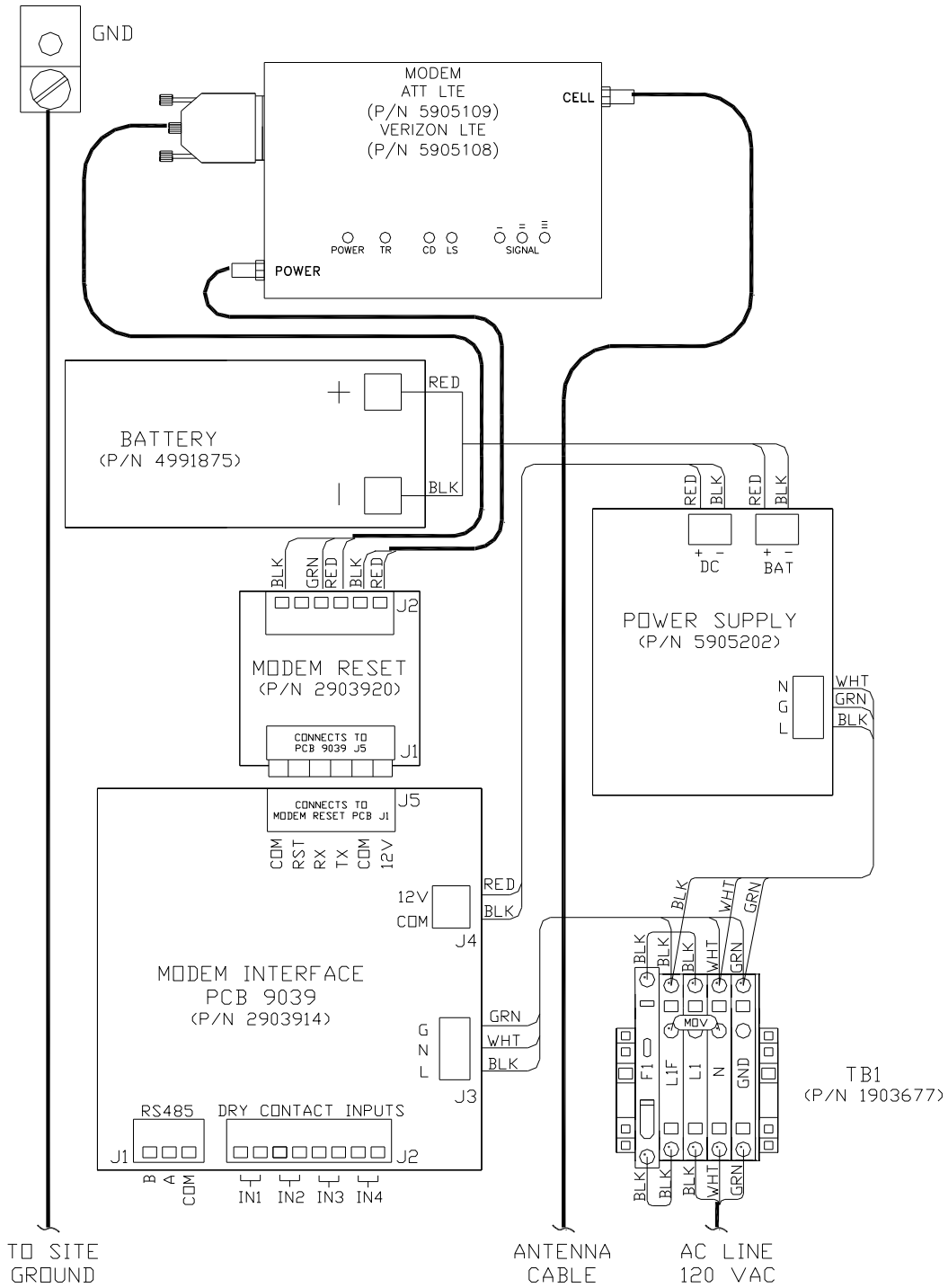
11 lbs.

### Electrical

AC Voltage 120 VAC, 60 Hz

Power 7VA

Battery Operation 4+ hrs



**FTW 175-3 COMPONENT LOCATOR AND INTERNAL WIRING**

**Figure 1-1 – FTW 175-3 Internal Wiring & Component Layout**



## Section 2 – Initial On-Site Wireless Service Check

### **Unpacking**

Inspect shipping cartons for signs of damage before opening them. Check package contents against the packing list and inspect each item for visible damage. Report damage claims promptly to the freight handler.

### **Verify Wireless Service**

**Important:** The following steps will verify wireless service in your area and must be performed at the location where the unit is to be installed. A label located on the inside front cover of the monitoring unit is provided to call attention to this process. Figure 2-1 depicts the label noted above.

To verify that cellular service is available at the site, perform the following steps prior to installation:

1. Apply 120 VAC to the unit and then monitor the green LED indicator labeled “ACTIVE” on PCB 9039 for status. See Figure 3-3 for location of the LED. If wireless service is available, the

LED will indicate signal strength by a series of short blinks (1-5).

2. Once a wireless signal is found, the unit will attempt to connect to the NOC. This operation is indicated by rapid blinking of the LED.
3. If communication is achieved, the “ACTIVE” LED will be solid on with short blinks to indicate signal strength (1-5).

**Note:** This process may take several minutes. See Figure 2-1 for complete details of the “Active” LED.

### **Finding the Best Install Location**

Move the external antenna to different locations to find the maximum signal strength available at the site, as indicated by the number of ACTIVE LED blinks. This will help determine the location where the FTW 175-3 should be mounted.

Upon successful completion of these steps, shut off power to the unit and proceed with installation.

### **ATTENTION**

Prior to installation, apply power to the unit and observe the "ACTIVE" LED to verify service. Please note that this sequence may take several minutes to complete.

OFF - Initializing.

OFF with short BLINKS - Wireless network found. Number of short blinks indicates signal strength (1 - 5).

RAPID BLINKING - Communication with NOC underway. Waiting for verification.

ON with short BLINKS - Communication with NOC verified. Number of short blinks indicates signal strength (1 - 5). Begin installation.

Contact the NOC at (800) 821-5825 for technical support.

P/N 3905210  
Rev A

Figure 2-1 – Wireless Service Label

## Section 3 – Mounting and Installation

### **Mounting**

The base of the unit has four (4) mounting feet as shown in Figure 3-4. Mounting hardware is not included.

### **Installation**

#### **AC Power Wiring**

AC Power terminal block TB1 incorporates MOV1 and Fuse F1 for increased protection against AC Power transients. Also, fuseholder TB1 acts as a power disconnect to the unit. Grasp the fuseholder on the sides and pull forward to disconnect power.

Connect 120 VAC power to terminal block TB1 (L, N, GND) as shown in Figure 3-1, but leave power turned off until you are ready for activation (see Section 4). The terminal block uses spring-cage contacts to provide rugged, trouble-free connections which are vibration-proof and gas-tight, thus providing long-term stability. The conductor contact force is determined by the spring tension and so is independent of the user tightening torque as with screw type terminals.

To install a wire, follow these steps:

1. Strip the insulation, exposing **0.4 inch** (10 mm) or more of conductor.
2. Insert a standard 1/8" width screwdriver into the rectangular slot and push. This causes the spring clip to open.
3. Insert the conductor fully into the round terminal compartment and then remove the screwdriver. The conductor automatically makes contact.
4. Check that contact is made to conductor metal and not insulation.

#### **Dry Contact Input Wiring**

Connect the equipment to be monitored via dry contact inputs as shown in Figure 3-3. A label has been provided on the inside cover of the unit to record each input, up to four (4), that is connected. Figure 3-2 depicts the dry contact input label.

#### **RS-485 Wiring**

Connect the equipment to be monitored via RS-485 as shown in Figures 3-5 or 3-6. Figure 3-3 shows the layout of the PCB 9039 board.

#### **Antenna Mounting Bracket**

The supplied Antenna Universal Mounting Bracket Kit (PN 1905355) provides multiple mounting options for the antenna; permitting installation in the optimum location for best signal strength and reliable communication. The bracket's design permits mounting on wall, Uni-strut, or pole (Figure 3-8). Regardless of the mounting method selected, the antenna bracket must be grounded with a minimum 14 AWG ground wire connected to the site grounding system. Observe proper grounding procedures.

The bracket is made from ferrous metal and galvanized for long life. The bracket's top plate accommodates either the magnetic mount or body mount style antenna as shown in Figure 3-7. The cellular antenna must be mounted in the center position of the bracket. The bracket also permits mounting of a photodiode (or photocell) in either of the two side holes on the top plate.

The FTW 175-3 is shipped with the antenna preinstalled and the antenna cable's SMA connector torqued to specification onto the modem's antenna connector for optimal performance. Do not remove or disconnect unless replacing the modem or antenna.

To install the bulkhead mount style antenna, loosen the antenna mounting nut and washer and slide the antenna mount through the bracket's center hole slot. Tighten the hardware.

**Important: For best communication performance and to minimize potential for surge damage to the modem radio module, it is very important that the supplied antenna mounting bracket be used for mounting the antenna and that the bracket be grounded with a minimum 14 AWG Ground wire connected to the site Grounding System. Also, if any excess antenna cable is coiled up, the coil diameter must not be less than 18 inches.**

### Grounding

To provide increased immunity from lightning damage to the FTW 175-3, it is essential that the Ground Lug located in the upper left corner of the FTW baseplate (Figure 1-1) be properly connected by a 2 AWG conductor to the site Grounding System. Observe proper Grounding procedures.

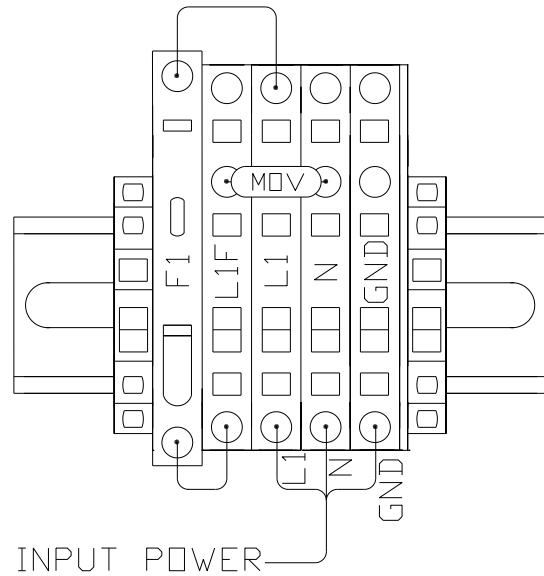


Figure 3-1 – AC Termination

DRY CONTACT INPUTS	
DESCRIPTION	ALARM (CIRCLE ONE)
1 _____	OPEN / CLOSED
2 _____	OPEN / CLOSED
3 _____	OPEN / CLOSED
4 _____	OPEN / CLOSED

Figure 3-2 – Dry Contact Input Label

## Status Indicator LED's

Table 3-1 describes the LED's that are present on the PCB 9039. The location of each LED is shown in Figure 3-3. Table 3-2 describes behavior of LED's on the Modem.

Table 3-1 – PCB 9039 LED's

Item	Description
ACTIVE	<b>Off</b> – Initializing. <b>Off with short BLINKS</b> – Wireless Network found. BLINKS indicate signal strength (1-5). <b>Rapid BLINKING</b> – Communication with NOC underway. Waiting for verification. <b>On with short BLINKS</b> - NOC communication verified. BLINKS indicate signal strength (1-5).
232RX	The RS-232 port is receiving data from the modem.
232TX	The RS-232 port is transmitting data to the modem.
485TX	The RS-485 port is transmitting data to the lighting system.
485RX	The RS-485 port is receiving data from the lighting system.
IN1	Dry contact input #1 is closed or shorted.
IN2	Dry contact input #2 is closed or shorted.
IN3	Dry contact input #3 is closed or shorted.
IN4	Dry contact input #4 is closed or shorted.

Table 3-2 – Modem LED's

Item	Description
Power	<b>Off</b> – DC power not present. <b>On</b> – DC power present.
TR (Terminal Ready)	<b>Off</b> – Data is not being transmitted. <b>Blinking</b> – Data is being transmitted.
CD (Carrier Detect)	<b>Off</b> most of the time with brief periods <b>On</b> (seconds to a minute) while actively communicating.
LS (Link Status)	<b>Off</b> – There is no power to the cellular radio. <b>On Steady</b> – Powered and connected but not transmitting or receiving. <b>Slow Blink</b> – Powered and searching for a connection. <b>Fast Blink</b> – Transmitting or receiving.
Signal (Signal Strength)	<b>All Off</b> – There is no power to the cellular radio. <b>Bar 1 On</b> – Very weak signal. <b>Bar 1 and 2 On</b> – Weak signal. <b>Bar 1 and 2 and 3 On</b> – Good signal.

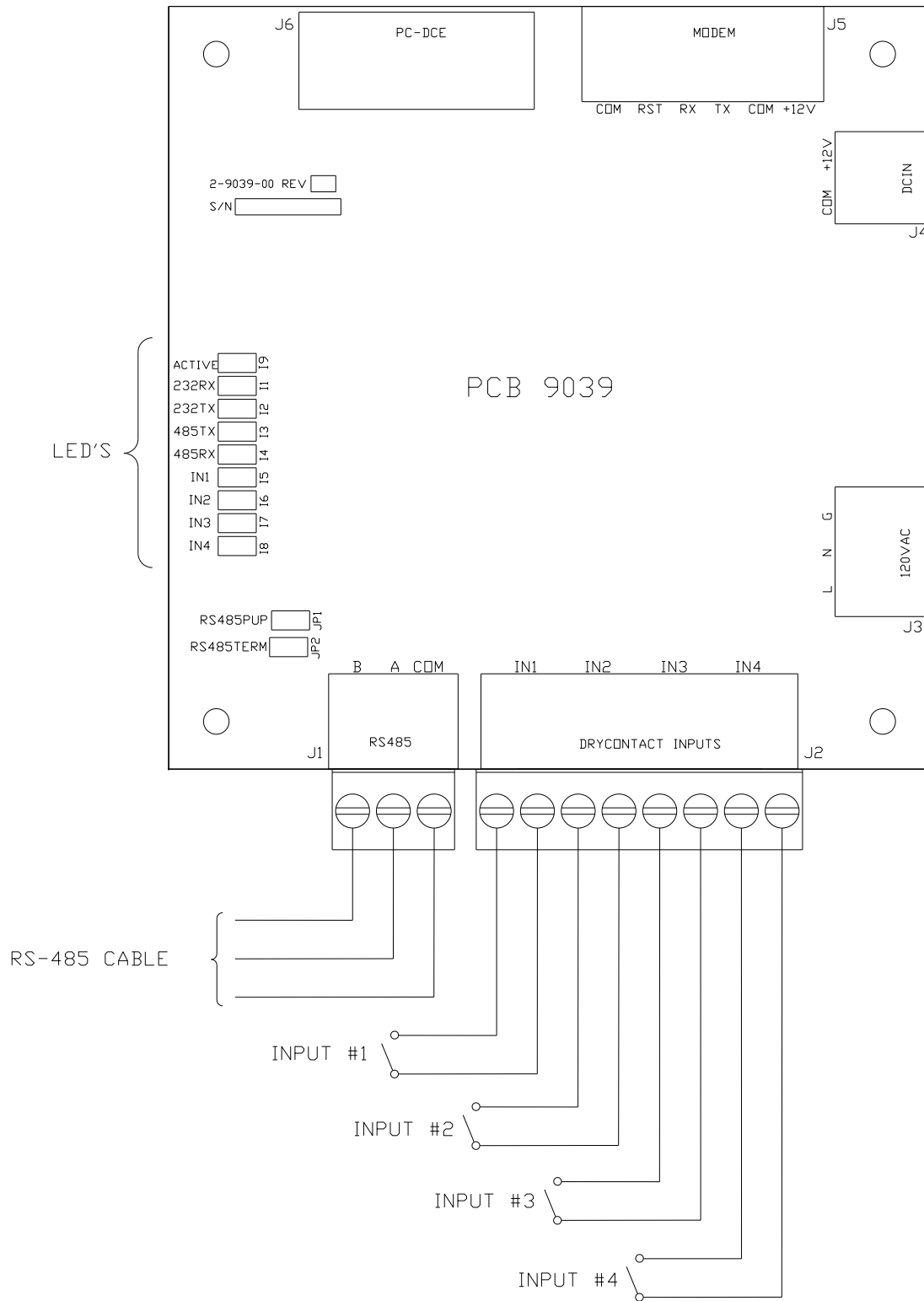
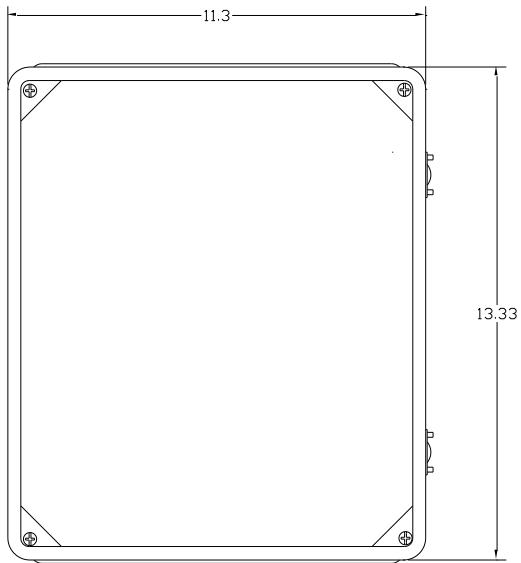
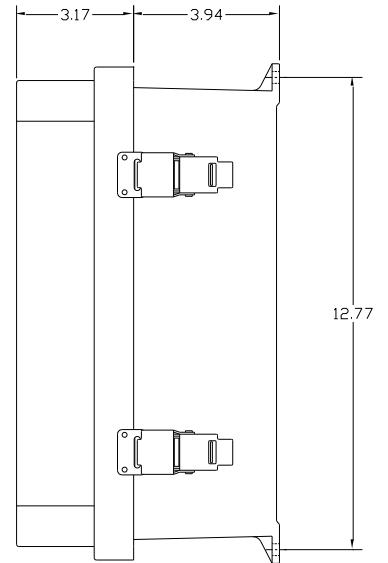


Figure 3-3 – PCB 9039 Layout and External Wiring

FRONT VIEW



RIGHT SIDE VIEW



BOTTOM VIEW

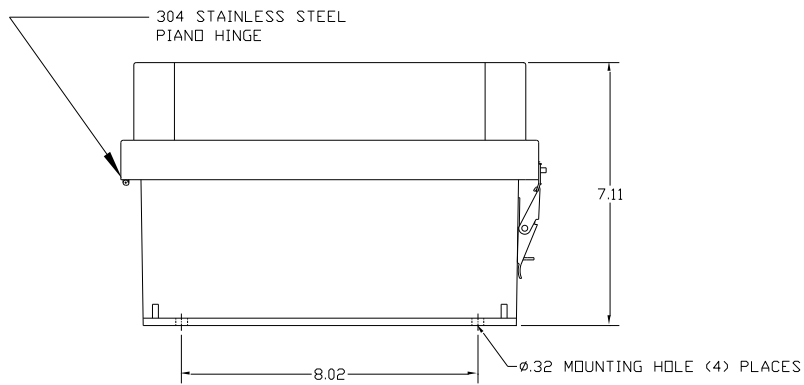


Figure 3-4 – Enclosure Mounting Footprint

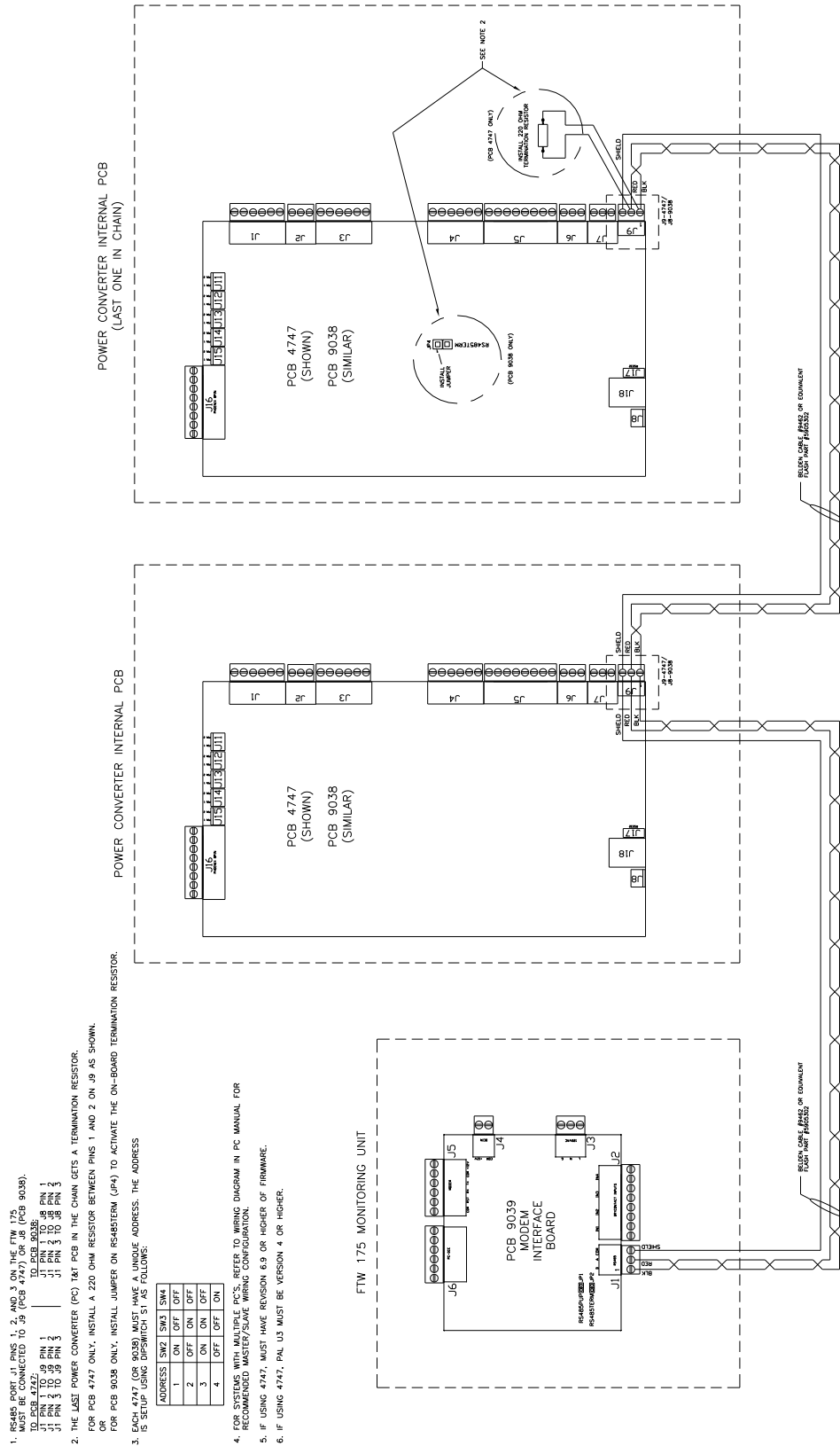


Figure 3-5 – RS-485 Installation with FTB Strobe System

NOTES:  
 RS485 PORT J1 PINS 1, 2 AND 3 ON THE FTW 175 MUST BE CONNECTED TO J2 PINS 1, 2 AND 3 ON THE 36XX CONTROLLER.  
 FTW 174  
 FLC 36XX  
 J1 PIN 1 TO J2 PIN 1  
 J1 PIN 2 TO J2 PIN 2  
 J1 PIN 3 TO J2 PIN 3

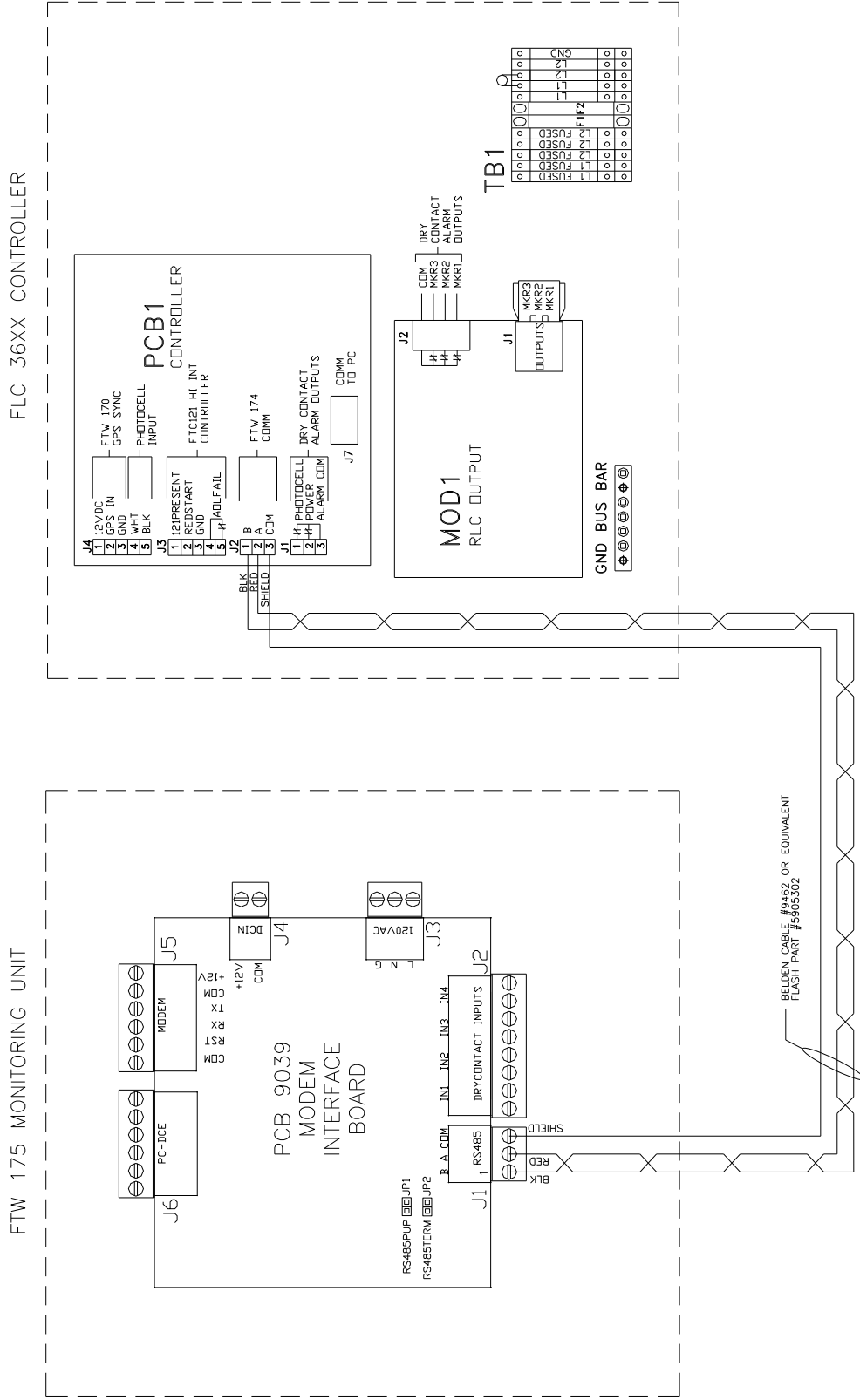


Figure 3-6 – RS-485 Installation with FLC 36XX



NOTES:  
 RS485 PORT J1 PINS 1, 2 AND 3 ON THE FTW 175 MUST BE  
 CONNECTED TO J6 PINS 1, 2 AND 3 ON THE 371 CONTROLLER.  
 FTW 174  
 FTC 371  
 J1 PIN 1 TO J6 PIN 2  
 J1 PIN 2 TO J6 PIN 1  
 J1 PIN 3 TO J2 PIN 3

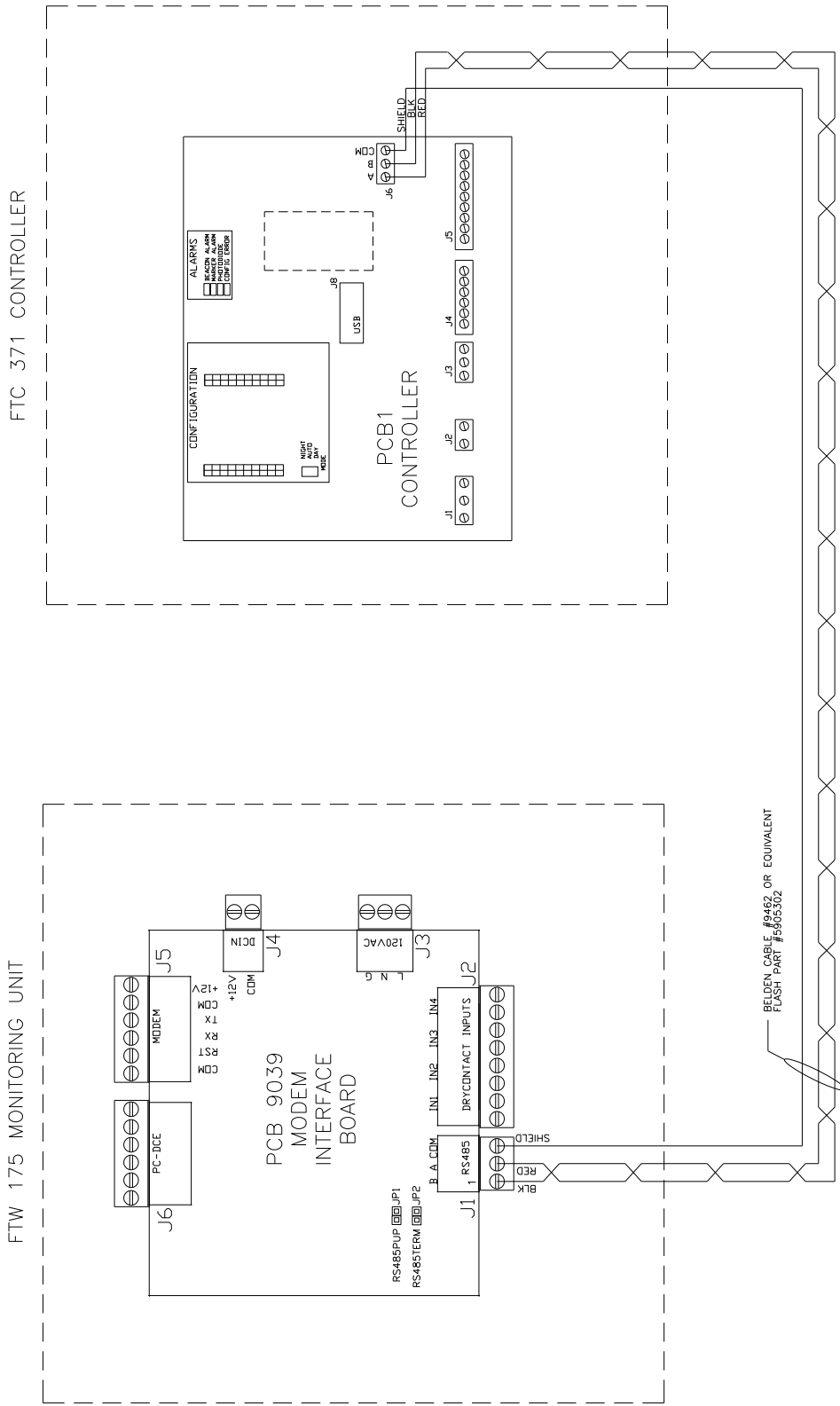
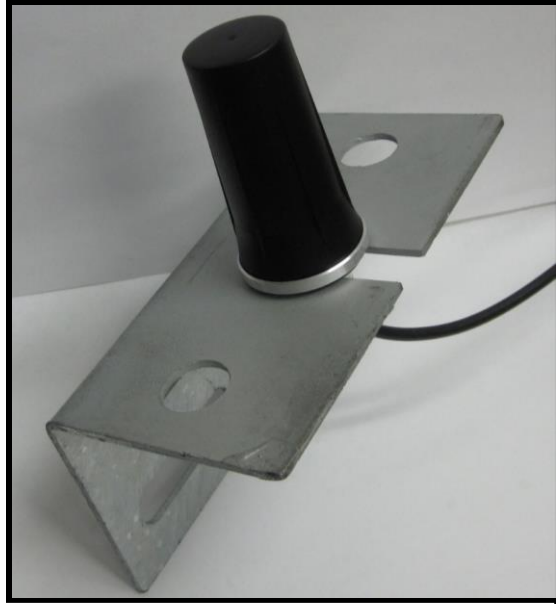


Figure 3-6 – RS-485 Installation with FTS 371



Body Mount Antenna

Figure 3-7 – Antenna Mounting Bracket with Cellular Antenna

<p><u>Wall Mount</u> Use screws to mount to the inside or outside wall of a shelter. <i>(Screws are not included in the kit.)</i></p>	<p><u>Horizontal Uni-strut Mount</u> Use spring-nuts to mount to Uni-strut. <i>(Spring-nuts are not included in the kit.)</i></p>	<p><u>Vertical Pole or H-frame post Mount</u> Use 3" U-bolt (<i>included</i>) to mount to pole or H-frame post. The bracket permits use of larger U-bolts, up to 5".</p>

Figure 3-8 – Antenna Mounting Options

## Section 4 – Activation

### Monitoring

**Important: Before leaving the site, ensure that the battery is connected.**

**When removing power from the equipment, ensure that the red wire to the battery is disconnected first. Reconnect battery after work is completed.**

Once the installation is complete, follow the procedure below to activate the service and begin monitoring:

1. Before calling the NOC, please be prepared to provide the following information:
  - The wireless number for this unit. See Figure 4-1. The label is located on the inside front cover.
  - Your name, contact number and company.
  - If monitoring an FCC registered tower site, the site number and FCC number.
  - Descriptions of the items being monitored by each input.
2. Re-apply power to the equipment and observe the “Active” LED shown in Figure 3-3. Once the LED is “On with short BLINKS”, communication with the NOC has been established. This process may take several minutes. Refer to Figure 2-1 and Table 3-2 for complete details of the “Active” LED.
3. Secure the external antenna on the Antenna Mounting Bracket in a location which provides maximum signal strength as indicated by the number of ACTIVE LED blinks
4. Connect the red wire to + (Positive) and the black wire to – (Negative) on the battery as shown in Figure 1-1.
5. Call 1-800-821-5825 to initiate monitoring while on-site. The NOC technician will request several tests to be performed to verify correct installation and operation of the system.
6. Please note that once the unit is powered and communication is established, it will automatically send a message to the NOC to initiate service and billing will begin.



**IP 10.243.16.1**

Figure 4-1 – Wireless Number

## Section 5 – Recommended Spare & Replaceable Parts

### Customer Service

Customer Service: (800) 821-5825

Telephone: (615) 261-2000

Facsimile: (615) 261-2600

Shipping Address:

Flash Technology  
332 Nichol Mill Lane  
Franklin, TN 37067

### Ordering Parts

To order spare or replacement parts, contact Parts Department at 1-800-821-5825.

Table 5-1 – Major Replaceable Parts

Reference	Description	Part Number
MODEM	Modem Wireless, Verizon LTE	5905108
	Modem Wireless, AT&T LTE	5905109
HARNESS	Harness, FTW 175-2 Modem Signal	4905206
BATTERY	12V Battery	4991875
POWER	Power Supply	5905202
PCB 9039	PCB FTW 175-3	2903914
MODEM RESET	Modem Reset PCB	2903920
ANTENNA	Dual Band Magnetic Mount	4905227
	Wide Band Body Mount	4905230
ANTENNA	Kit Antenna Mounting Bracket	1905355
TB1	FUSE 3 AMP 3AB	4150218
TB1	Varistor 130V	6901079

Table 5-2 – Optional Items

Reference	Description	Part Number
CABLE	RS-485; Single Pair, 22 AWG, Red/Black	5905302
CABLE	Dry Contacts; 4 Pair, 22 AWG, Red/Black	5993101

## ***RMA Policy***

If any system or part(s) purchased from Flash Technology need to be returned for any reason (subject to the warranty policy), please see the current RMA policy available online at: [flashtechnology.com/rma](http://flashtechnology.com/rma).

To initiate an RMA, call the Flash Technology NOC to receive technical assistance (800-821-5825 Option 9, M-F, 7 a.m. to 7 p.m. CT).

Emailing a completed RMA request form to [FlashSupport@spx.com](mailto:FlashSupport@spx.com) can also start the process on sites not requiring detailed troubleshooting. The form can be filled out online at: <http://flashtechnology.com/rma-request-form/>.

NOTE: An RMA number must be requested from Flash Technology prior to return of any product. No returned product will be processed without an RMA number. Failure to follow the below procedure may result in additional charges and delays. Any product received without an RMA number is subject to return back to the sender. All RMA numbers are valid for 30 days.