



SitePro™ Field Interface Unit, Models 2010, 2020, 2011 and 2021 Installation Instructions

Introduction

The Field Interface Unit (FIU) provides the communications hardware link between the SitePro™ central computer, the SitePro compatible field satellite controllers and the SitePro Central Decoder System components. The FIU is available in four configurations to provide various combinations of wireline and radio communication paths. An auxiliary port is provided on all FIU models for switch-type sensor input.

The FIU enclosure is designed for installation in a climate-controlled environment, next to or near the central computer, with a maximum separation distance of 50' (15.2 m). Power for the FIU is provided by a 100–240 V a.c./12 V d.c. 50/60 Hz power supply adaptable to both domestic and international plug receptacles. A lighted On/Off rocker switch located on the front of the FIU controls power to the unit and is circuit-protected with a 1.5 amp fast-blow fuse. An array of indicator lights on the front panel is provided for visual confirmation of system communication activity.

The following instructions cover installation of the Field Interface Unit (FIU), Surge Protection Unit (SPU), Duplex Modular Wall Plate, optional Radio-Link components and optional SitePro Central Decoder System (CDS) components. For Network CDS system installation, additional detailed installation information is provided with the Network CDS Decoder Interface Unit (DIU).

⚠ IMPORTANT: For your safety and equipment protection, please comply with all Caution and Warning statements within this document. It is the responsibility of the installer to comply with all NEC and/or local electrical codes that apply to the installation of this equipment. Please refer to page 16 for FCC and CISPR 22 information.

Note: Some cabling and hardware components are provided for installation of the FIU, Surge Protection Unit (SPU) and duplex modular wall plate. All other materials; i.e., wire, conduit, grounding conductors, communication cable, radio(s) and related radio hardware must be purchased separately.

The diagrams on pages 1–5 depict the various FIU model system configurations. See **Figures 1 and 5** for model 2010 (Figure 1 - Satellite, Figure 5 - CDS), **Figure 2** for model 2020, **Figure 3** for model 2011 and **Figure 4** for model 2021.

Figure 1 - Model 2010 (one wireline port)

- | | |
|--------------------------------|--|
| 1 - Field Interface Unit | 11 - Shielded Interface Cable |
| 2 - 12 V d.c. Power Jack | 12 - Surge Protection Unit |
| 3 - Power Adapter | 13 - Communication Cable |
| 4 - Central Computer | 14 - Satellite Controller |
| 5 - COM Port 1 | 15 - Communication Cable - COM Path 1
(out to satellites) |
| 6 - DB-9/DB-9 Serial Cable | 16 - Auxiliary Port (optional for sensors) |
| 7 - Channel 1 (in) | 17 - 1.5A Fuse |
| 8 - COM Line 1 (out) | |
| 9 - RJ11 Modular Cable | |
| 10 - Duplex Modular Wall Plate | |

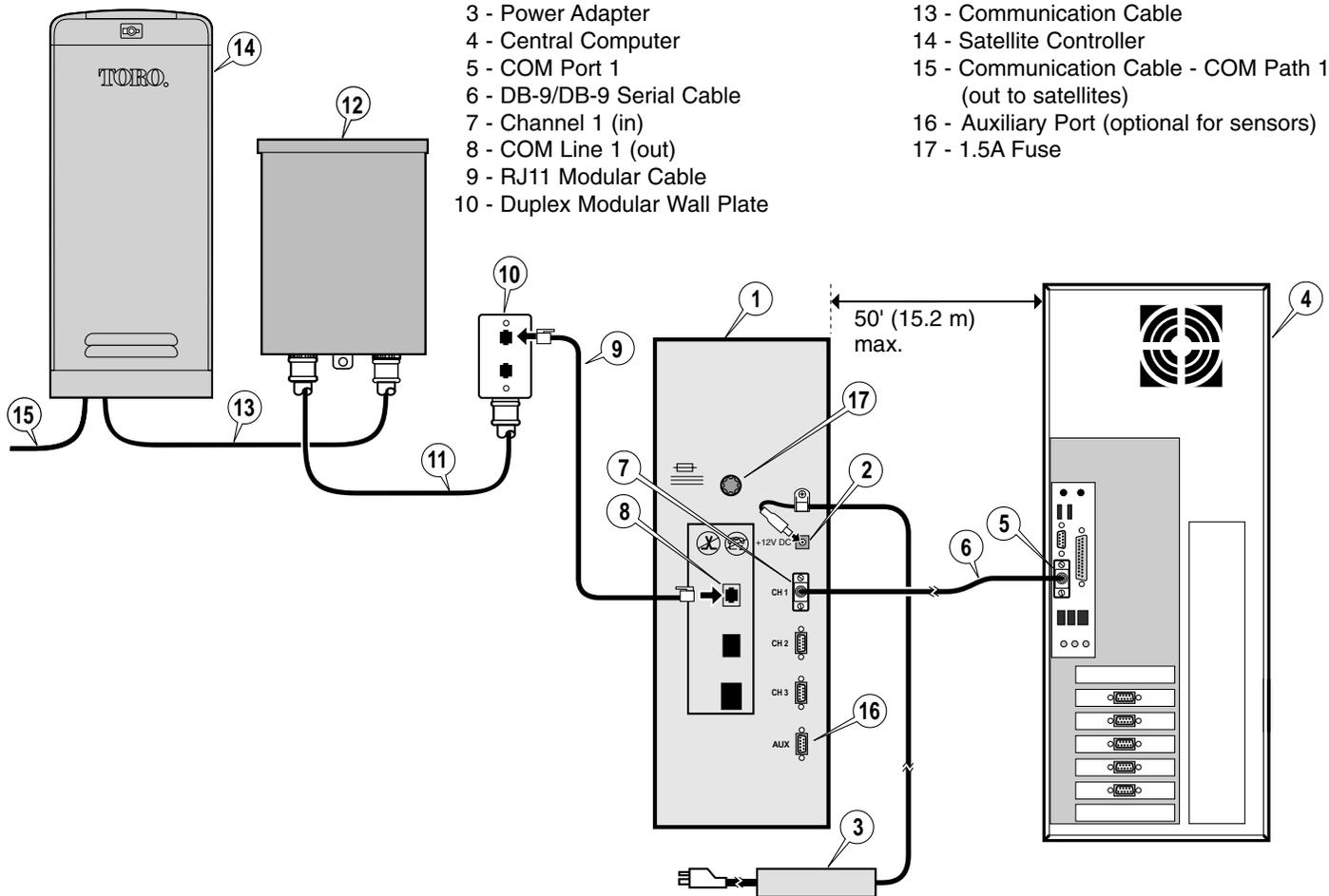
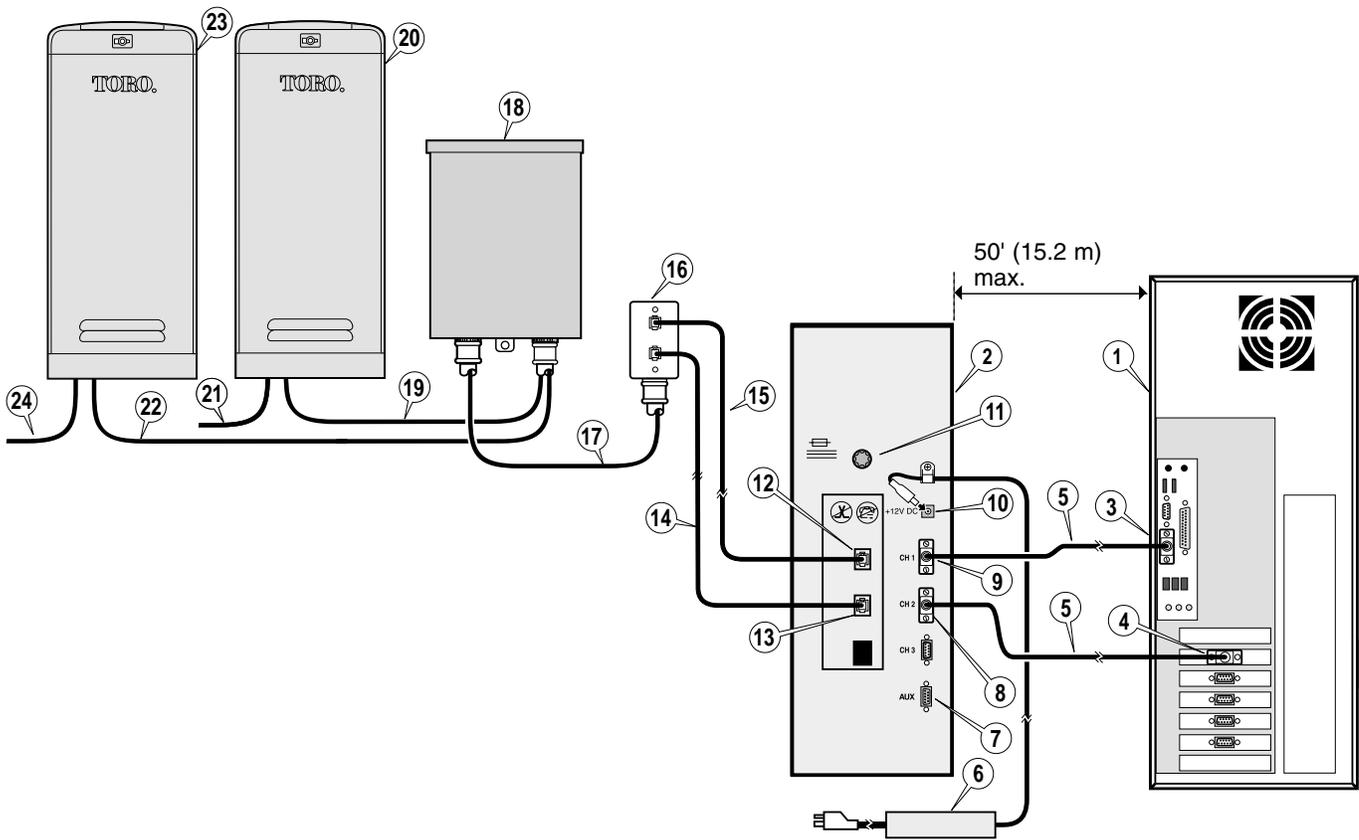


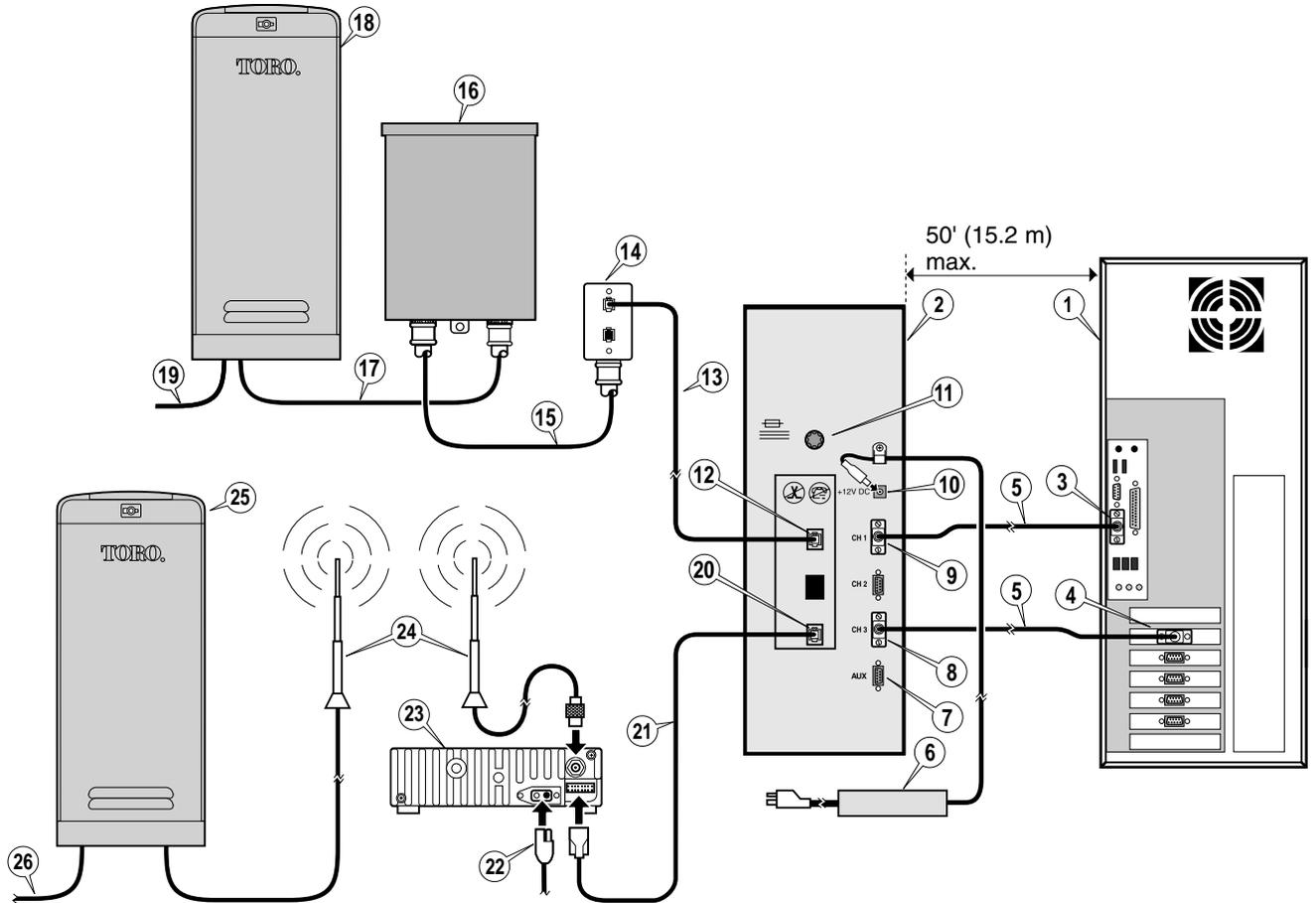
Figure 2 - Model 2020 (two wireline ports)



- | | |
|---|---|
| 1 - Central Computer | 14 - RJ11 Modular Cable - COM Path 2 |
| 2 - Field Interface Unit | 15 - RJ11 Modular Cable - COM Path 1 |
| 3 - COM Port 1 | 16 - Duplex Modular Wall Plate |
| 4 - COM Port 2 | 17 - Shielded Interface Cable |
| 5 - DB-9/DB-9 Serial Cable | 18 - Surge Protection Unit |
| 6 - Power Adapter | 19 - Communication Cable - COM Path 1 |
| 7 - Auxiliary Port (optional for sensors) | 20 - Satellite Controller - COM Path 1 |
| 8 - Channel 2 (in) | 21 - Communication Cable - COM Path 1 (out to satellites) |
| 9 - Channel 1 (in) | 22 - Communication Cable - COM Path 2 |
| 10 - 12 V d.c. Power Jack | 23 - Satellite Controller - COM Path 2 |
| 11 - 1.5A Fuse | 24 - Communication Cable - COM Path 2 (out to satellites) |
| 12 - COM Line 1 (out) | |
| 13 - COM Line 2 (out) | |

Figure 3 - Model 2011 (one wireline port and one radio port)

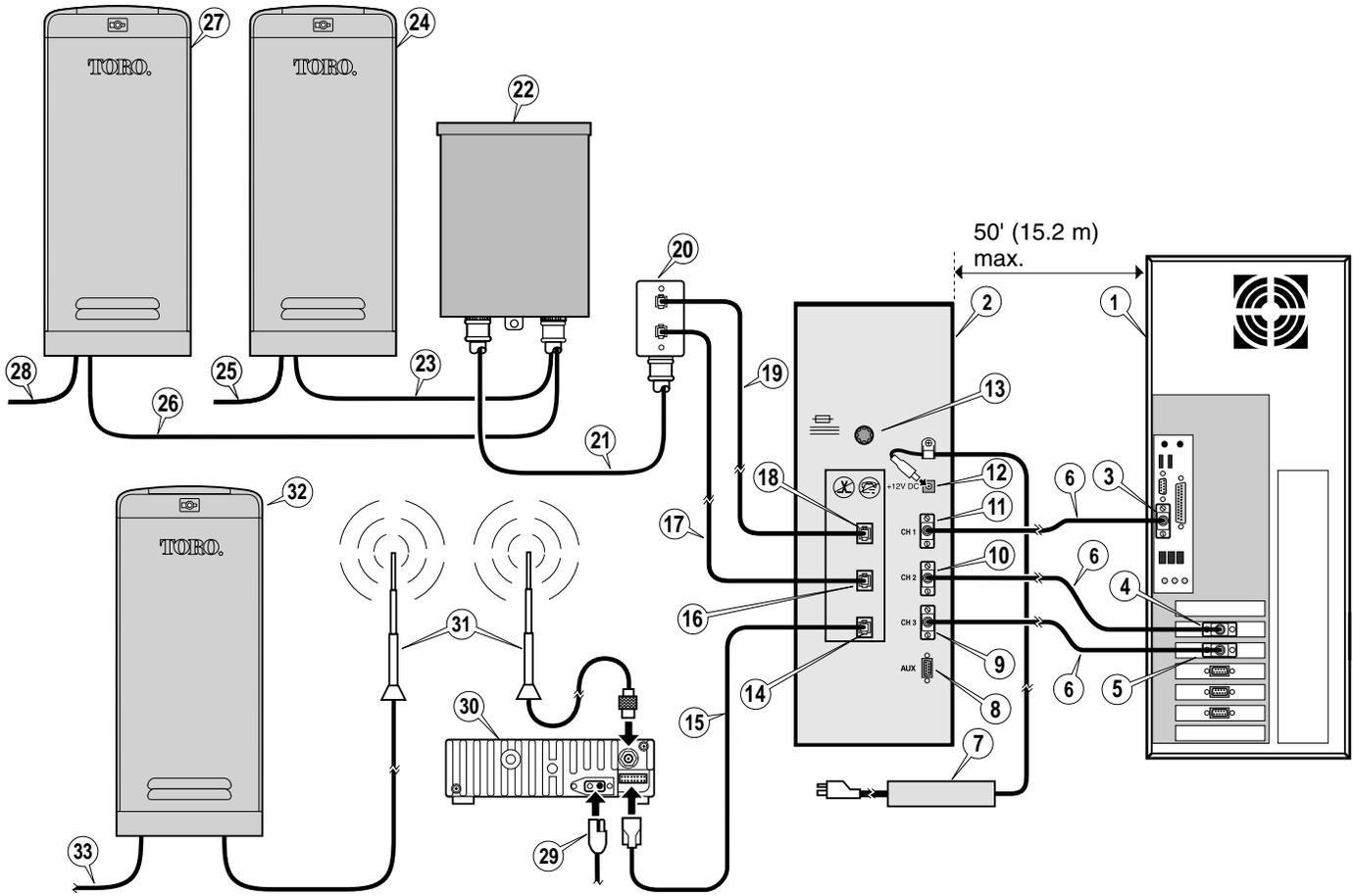
Note: See page 9 for Radio-Link installation procedures.



- | | |
|---|--|
| 1 - Central Computer | 14 - Duplex Modular Wall Plate |
| 2 - Field Interface Unit | 15 - Shielded Interface Cable - COM Path 1 |
| 3 - COM Port 1 | 16 - Surge Protection Unit |
| 4 - COM Port 2 | 17 - Communication Cable - COM Path 1 |
| 5 - DB-9/DB-9 Serial Cable | 18 - Satellite Controller - COM Path 1 |
| 6 - Power Adapter | 19 - Communication Cable - COM Path 1 (out to satellites) |
| 7 - Auxiliary Port (optional for sensors) | 20 - COM Line 3 (out) |
| 8 - Channel 3 (in) | 21 - Radio Adapter Cable Assembly |
| 9 - Channel 1 (in) | 22 - Radio Power Supply Cable |
| 10 - 12 V d.c. Power Jack | 23 - Motorola 2-Way Communication Radio |
| 11 - 1.5A Fuse | 24 - External Radio Antennas |
| 12 - COM Line 1 | 25 - Radio-Link Equipped Satellite Controller - COM Path 3 |
| 13 - RJ11 Modular Cable | 26 - Communication Cable - COM Path 3 (out to satellites) |

Figure 4 - Model 2021 (two wireline ports and one radio port)

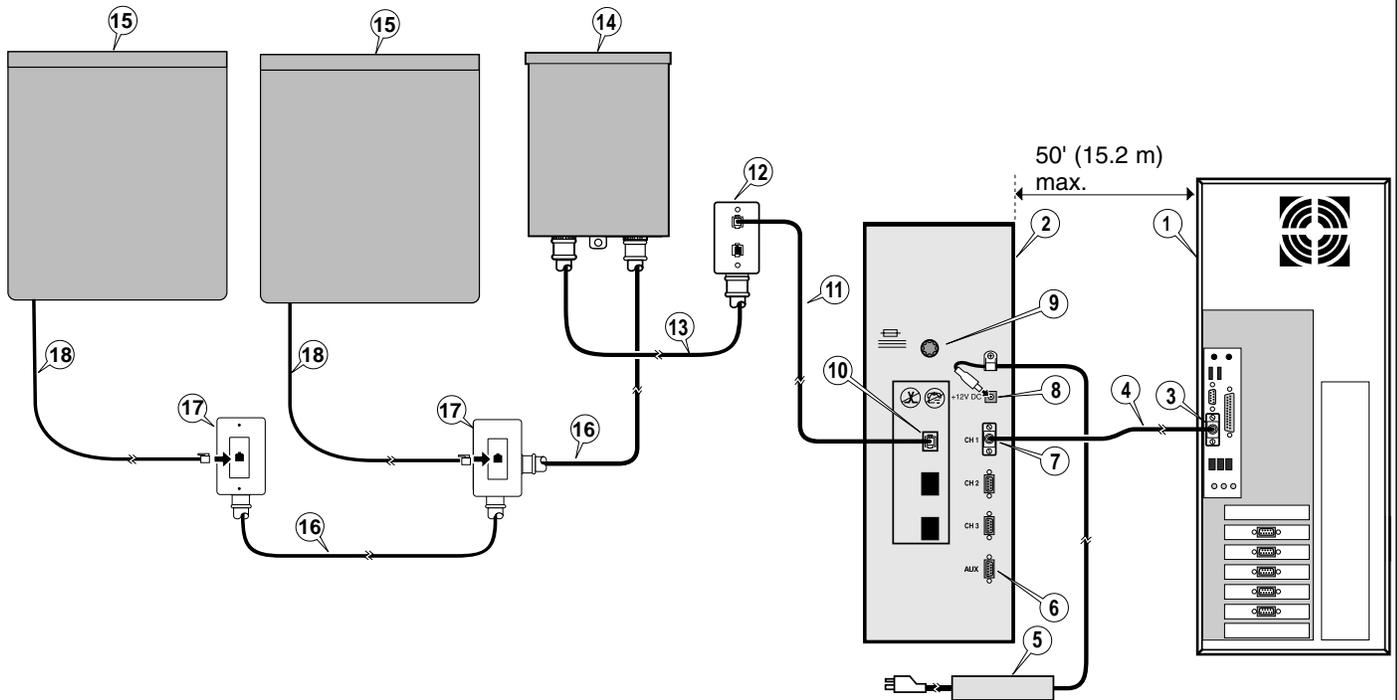
Note: See page 9 for Radio-Link installation procedures.



- | | |
|---|--|
| 1 - Central Computer | 18 - COM Line 1 (out) |
| 2 - Field Interface Unit | 19 - RJ11 Modular Cable - COM Path 1 |
| 3 - COM Port 1 | 20 - Duplex Modular Wall Plate |
| 4 - COM Port 2 | 21 - Shielded Interface Cable |
| 5 - COM Port 3 | 22 - Surge Protection Unit (SPU) |
| 6 - DB-9/DB-9 Serial Cable | 23 - Communication Cable - COM Path 1 |
| 7 - Power Adapter | 24 - Satellite Controller - COM Path 1 |
| 8 - Auxiliary Port (optional for sensors) | 25 - Communication Cable - COM Path 1 (out to satellites) |
| 9 - Channel 3 (in) | 26 - Communication Cable - COM Path 2 |
| 10 - Channel 2 (in) | 27 - Satellite Controller - COM Path 2 |
| 11 - Channel 1 (in) | 28 - Communication Cable - COM Path 2 (out to satellites) |
| 12 - 12 V d.c. | 29 - Radio Power Supply Cable |
| 13 - 1.5A Fuse | 30 - Motorola 2-Way Communication Radio |
| 14 - COM Line 3 (out) | 31 - External Radio Antenna |
| 15 - Radio Adapter Cable Assembly | 32 - Radio-Link Equipped Satellite Controller - COM Path 3 |
| 16 - COM Line 2 (out) | 33 - Communication Cable - COM Path 3 (out to satellites) |
| 17 - RJ11 Modular Cable - COM Path 2 | |

Figure 5 - Model 2010 (one wireline port)

Note: See page 12 for Network CDS installation procedures.



- | | |
|---|---------------------------------------|
| 1 - Central Computer | 10 - COM Line 1 (out) |
| 2 - Field Interface Unit | 11 - RJ11 Modular Cable - COM Path 1 |
| 3 - COM Port 1 | 12 - Duplex Modular Wall Plate |
| 4 - DB-9/DB-9 Serial Cable | 13 - Shielded Interface Cable |
| 5 - Power Adapter | 14 - Surge Protection Unit (SPU) |
| 6 - Auxiliary Port (optional for sensors) | 15 - Decoder Interface Unit |
| 7 - Channel 1 (in) | 16 - Communication Cable |
| 8 - 12 V d.c. Power Jack | 17 - RJ45 Modular Wall Plate Assembly |
| 9 - 1.5A Fuse | 18 - RJ45 Modular Cable Assembly |

Installing the Field Interface Unit, Wall Plate Assembly and Surge Protection Unit

- Position the Field Interface Unit within 6' (1.8 m) of the PC.
Note: Maximum distance is 50' (15.2 m).
- Using the serial cable(s) supplied, connect the PC to the FIU as illustrated in the appropriate configuration diagram **Figure 1–5**.
- Note:** The methods of cable connection will vary depending on the availability of computer COM ports. **DO NOT USE P0 FOR CONNECTION.** P0 is recommended for an external modem.
- With the power switch in the Off position, plug the power adapter into the FIU 12 V d.c. receptacle and the wall socket outlet using the appropriate AC power cord supplied. Leave the FIU power switch in the Off position until the installation has been completed.

- To prevent the power wire from being accidentally pulled out, install the power wire through the strain relief and tighten securely as shown in **Figure 6**.

Note: Regulatory agencies specify that when connecting plug-in equipment, the socket-outlet shall be located near the equipment and shall be easily accessible.

- To facilitate installation of the modular wall plate, install a standard duplex junction box to the wall within 5' (1.5 m) of the FIU. The RJ11 modular cable(s) provided are 6' (1.8 m) in length.

(continued)

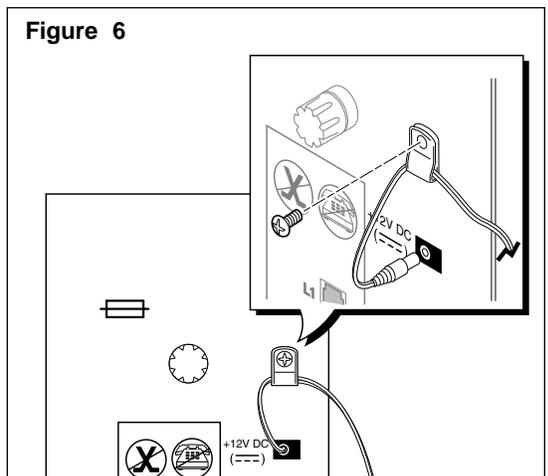
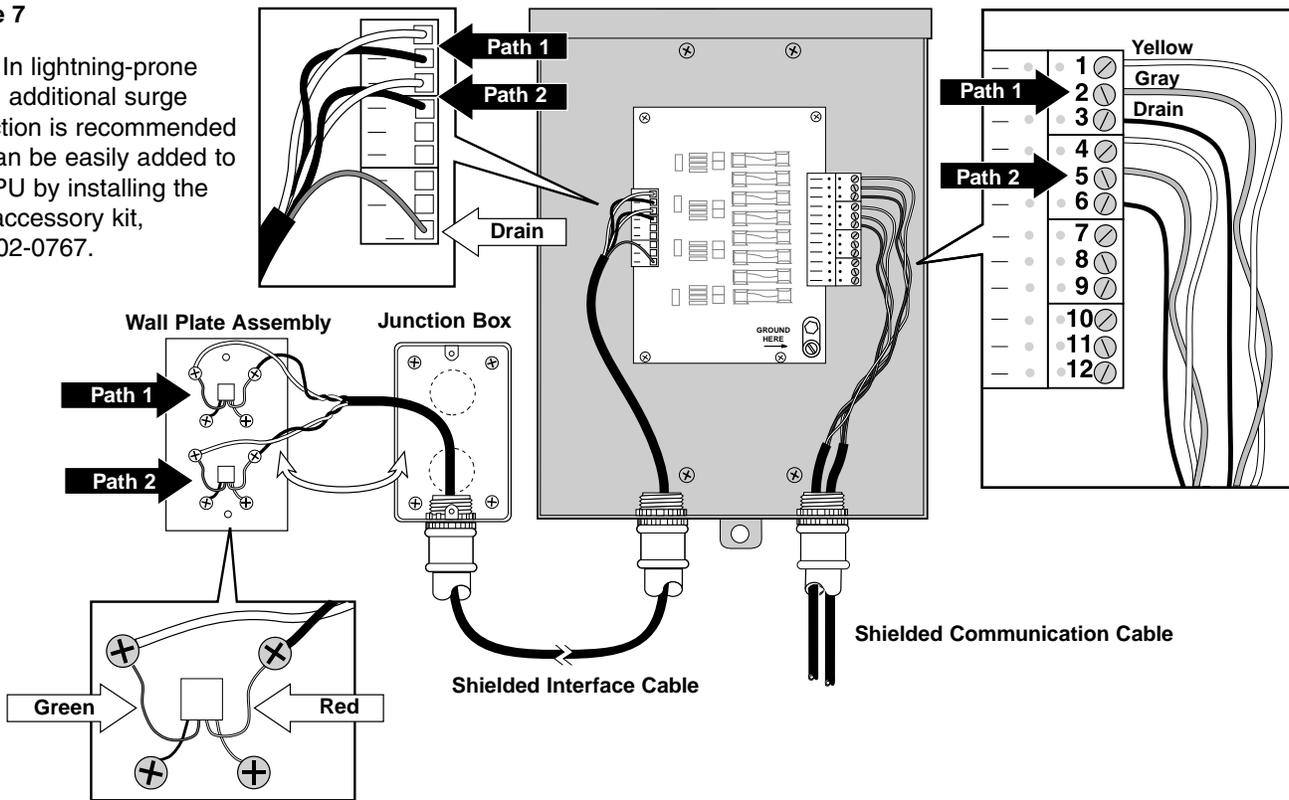


Figure 7

Note: In lightning-prone areas, additional surge protection is recommended and can be easily added to the SPU by installing the SPU accessory kit, P/N 102-0767.



7. A 25' (7.6 m) length interface cable is supplied for the connection of the modular wall plate to the SPU. Select an installation site for the SPU on an outside wall, within the cable reach, and 3' to 5' (0.9 m to 1.5 m) above ground level for straight and easy access to an earth ground. Attach the SPU securely to the wall using appropriate fasteners inserted through the four mounting holes provided in the SPU enclosure.
8. Install 3/4" (19 mm) EMT conduit from the duplex junction box to the bottom left side of the SPU enclosure.
9. Pull the interface cable through the conduit from the duplex junction box into the SPU.
10. Secure the black and white wire pair(s) to the modular wall plate receptacle and the SPU as shown in **Figure 7**.
Note: Connections for two wireline communication paths are shown. If only one path is required, tape back the unused wire pair for future use.
Note: The drain wire is connected to the last terminal position on the central side of the SPU and clipped flush with the cable outer insulation at the wall plate receptacle.
11. Secure the modular wall plate receptacle to the junction box. Connect the FIU to the modular wall plate receptacle using the RJ11 modular cable(s) supplied.
12. Route the communication cable(s) from satellite or DIU into the SPU and connect wires as shown in **Figure 7**.
Note: The communication cable drain wire(s) can be connected to terminals 3, 6, 9 or 12. These terminal positions are all connected to the ground plane.

Earth Ground Installation

⚠ Important Notice To Installer: It is recommended that the electrical grounds for the central computer, FIU and SPU are bonded together to achieve the same grounding potential. This is especially important for installation sites located in lightning-prone regions. In addition, using a power strip or UPS with surge protection for the central computer and FIU is also recommended.

The Surge Protection Unit must have an efficient pathway to earth ground. A 6 AWG (10 mm²) bare copper ground wire connecting the SPU ground lug to the earth ground device(s) must be installed in the most direct path as possible, avoiding sharp bends. Resistance in the ground path (when measured with an earth ground resistance test device) must be within the following tolerances: 0 to 10 ohms – excellent, 11 to 20 ohms – acceptable, 21–30 ohms – marginal.

The following instructions describe one of several acceptable grounding methods. Due to variables in soil composition, the ground-rod method described may not be suitable for your installation site. Copper plate(s) or other grounding devices may be required to achieve the required resistance level necessary for proper grounding protection. Recommended earth ground resistance instruments are: AEMC Instruments, model 3710 clamp-on tester, or Biddle Megger, model 250260. Contact your local Toro distributor for assistance in acquiring this test equipment.

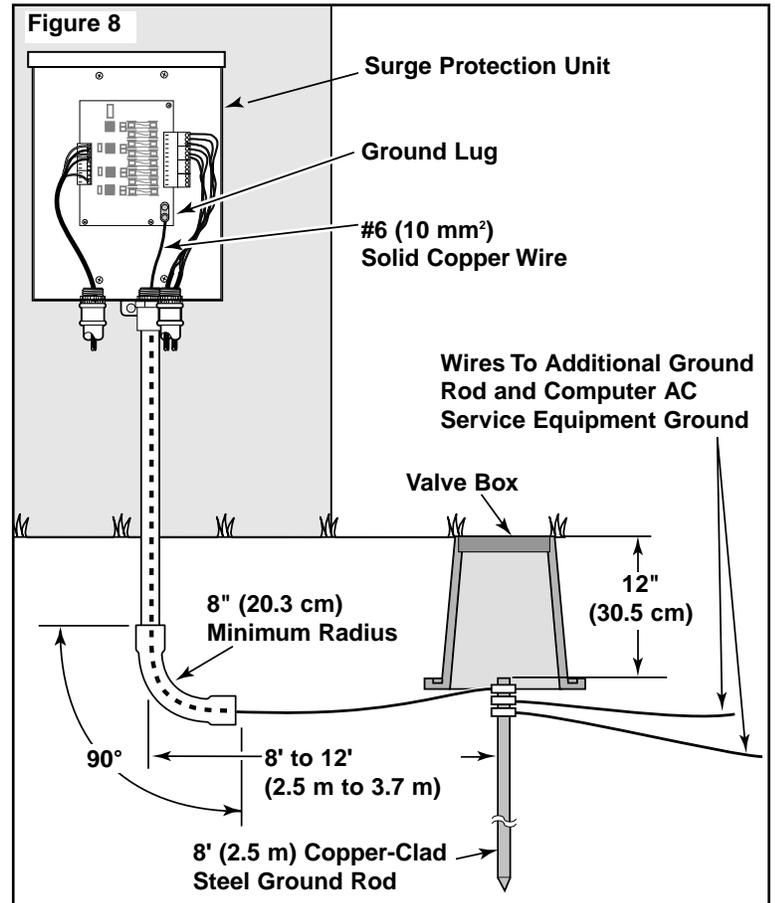
Procedure

1. Drive a 5/8" (16 mm) by 8' (2.5 m) copper-clad steel ground rod into well-moistened soil not more than 8" (20.3 cm) from the SPU. The top of the ground rod should be 12" (30.5 cm) below grade level.
2. Install 3/4" (19 mm) conduit from the bottom of the SPU enclosure to approximately 12" (30.5 cm) below grade level. Use a 90° sweep elbow with a minimum radius of 8" (20.3 cm) at the end of the conduit.
3. Using a clamp or "Cad weld" fastener, attach a length of 6 AWG (10 mm²) solid copper wire near the top of the ground rod. Avoiding sharp bends, route the wire through the conduit into the SPU. Secure the wire to the large copper ground lug provided. See **Figure 8**.
4. To eliminate ground differential, attach the computer and FIU power source equipment ground to the SPU ground device.

Note: Make sure the soil surrounding the ground rod(s) remains well moistened at all times. The addition of some form of irrigation may be required if the SPU is installed in a non-irrigated location.

5. Measure the ground resistance per the instructions provided with the ground test instrument. If the resistance exceeds the acceptable limit, additional ground rod(s) can be installed at a distance equal to twice the buried depth of the first rod; i.e., 16' (4.9 m). Interconnect the ground rods using #6 (10 mm²) solid copper wire and test again. If the measured ground resistance continues to read above the acceptable limit, contact your local Toro distributor for further assistance and recommendations.

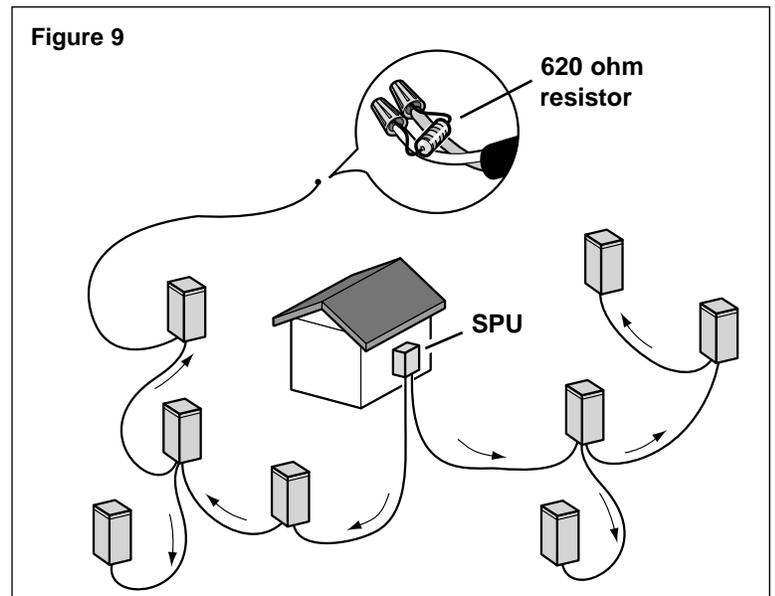
6. Install a valve box over the ground rod to provide access to the ground wire connection(s).



Satellite Communication Cable Installation

Please note the following communication cable installation requirements and suggestions:

- The satellite is designed for use with shielded, twisted-pair, communication cable. Consult with your local Toro distributor for the cable type and wire size best suited for your installation.
- More than one cable run can be routed from the SPU.
- A branch communication cable can be routed from another satellite connection.
- If additional cable runs are installed for future system expansion, the end of each cable run must be terminated with a 620 ohm resistor. See inset in **Figure 9**.
- If the communication cable is routed in the same trench as main power wires, a minimum of 12" (30.5 cm) separation is recommended to prevent voltage induction on the communication cable. Check local codes for actual requirements.
- If in-ground cable splices or repairs are required, the connection must be properly insulated with a waterproof splicing device. Using an appropriate splicing kit, such as Scotchcast 82-A1 (or equivalent), is recommended. Placing the cable splice in a small valve box for protection and accessibility is also recognized as good installation practice.



Procedure

1. Route the communication cable(s) from the SPU to the satellite locations as shown in **Figure 9**.
2. Connect the communication cable to the satellites per the installation instructions supplied with the satellite controller.

Communication Cable Test

Correct installation of the communication cable is essential for proper operation of the wireline control system. The communication cable must be tested for the presence of significant voltage, circuit continuity and excessive resistance. A digital multimeter and a 620 ohm resistor are required to perform the following tests.

- A. Remove the communication wire connector plug(s) at the SPU.
- B. Test for the presence of voltage on the communication and drain wires as follows:

Connect the positive lead of the voltmeter to either end of a wire circuit and the negative lead to an earth ground. If the voltmeter indicates more than one volt, connect a 620 ohm resistor between the open end of wire circuit and earth ground. Perform the voltage test again. If the voltage drops to less than one volt, the condition is acceptable. If the reading exceeds one volt, it may be due to a direct connection or induced if the communication cable is run with the power wires. A minimum spacing of 12" (30.5 cm) is required between the communication cable and power wires. Locate the source of power and correct before continuing.
- C. Test the communication and drain wire circuits for possible cross connection (yellow connected to gray, etc.). Perform the test as follows:

Connect one ohmmeter lead to each communication wire; the Ohmmeter should indicate an open circuit. If the Ohmmeter indicates a complete circuit, check the communication wire connector plug at each satellite controller or DIU location for a possible crossed connection. When the wire circuit has been corrected and/or tested successfully, continue to the next step.
- D. Test the communication and drain wire circuit for continuity and total resistance. Perform test as follows:

At the furthest satellite controller or DIU location, install a jumper wire across the communication wires. At the SPU, touch the Ohmmeter leads to the signal wire connector plug. If the circuit continuity is good, the Ohmmeter will indicate some resistance. Record the resistance reading for future reference. If the circuit is open (no resistance), check the communication wire connector plug at each satellite or DIU location for loose or improperly installed wires. When the circuit has been tested successfully and resistance recorded, remove the jumper wire and replace with a 620 ohm resistor.
- E. Determine if the measured resistance of the communication wire circuit is less than or equal to the maximum allowable resistance. The allowable resistance of 16 AWG (1.0 mm²) signal wire is 7 ohms per 1000' (305 m). The allowable resistance of 18 AWG (0.75 mm²) signal wire is 11 ohms per 1000' (305 m). Calculate the resistance as follows:

Divide the length of the circuit by 1000' (305 m). Multiply the quotient by 7 for 16 AWG (1.0 mm²) wire or 11 for 18 AWG (0.75 mm²) wire. The product is the maximum allowable resistance for the circuit.

Example: Total length of 16 AWG (1.0 mm²) wire circuit is 3500' (1067 m)

$$3500' (1067 m) \div 1000' (305 m) = 3.5$$

$$3.5 \times 7 \text{ ohms} = 24.5 \text{ ohms}$$
- F. Compare the actual circuit resistance measured in Step D with the calculated allowable resistance. If the actual resistance exceeds the maximum allowable, check the cable for damage and/or a possible break. Also check the connection at each satellite for loose or improperly installed wires. If the actual resistance is less than or equal to the allowable resistance, the circuit is properly installed. When both wire circuits have been tested successfully, reconnect the communication cable connector plug at the SPU and at all satellite or DIU locations.

FIU Front Panel Components

The front panel provides information on the communication activity between the PC, FIU and satellites or DIU by displaying a series of indicator lights. An illuminated power switch is provided to turn the FIU on and off.

Note: Refer to the Troubleshooting section on page 12 if the indicator lights do not function as described.

PC Connected + : Indicator light flashes rapidly when the PC is transmitting data to the FIU. During idle periods of non-transmission, the light will be off.

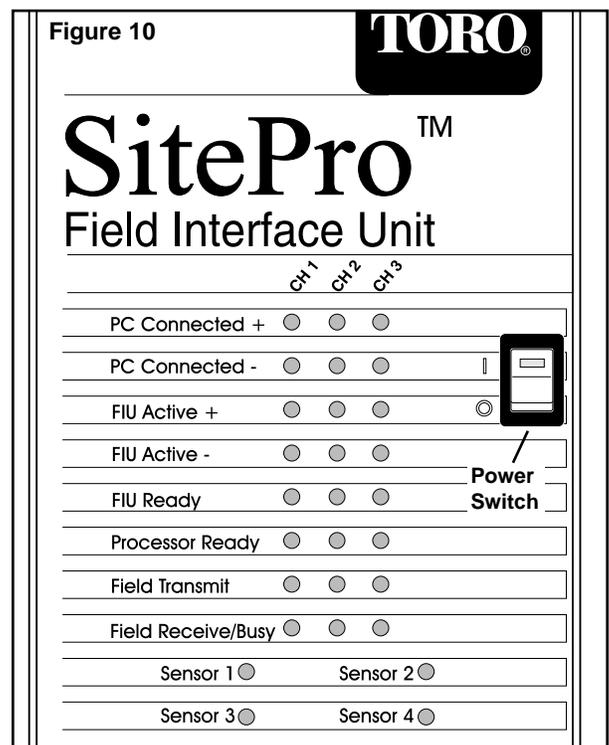
PC Connected - : Indicator light flashes rapidly when the PC is transmitting data to the FIU. During idle periods of non-transmission, light will remain ON. The light will also be ON if PC connected and the FIU's power is off.

FIU Active + : Indicator light flashes rapidly when the FIU is transmitting data to the PC. During idle periods of non-transmission, the light will remain off.

FIU Active - : Indicator light flashes rapidly when the FIU is transmitting data to the PC. During idle periods of non-transmission, the light will remain on.

Note: For FIU-2011 and FIU 2021 models, the Ch 3 FIU Active light will be on if the PC is not connected.

FIU Ready: Indicator light will be on when the data lines are open and ready for communication.



Processor Ready: Indicator light will illuminate when the microprocessor in the FIU has received configuration instructions from PC and is ready to communicate with satellites or DIUs.

Field Transmit: Indicator light will illuminate or flash during transmission of data to field satellites or DIU(s).

Field Receive/Busy: Indicator light will illuminate or flash when receiving data from field satellites or detection of a busy channel by the radio.

Sensors (1–4): (Pending availability of SitePro sensor capability.) Sensor contacts are connected to a 12 V d.c. source within the FIU and will be Normally Open operation type. Upon sensor activation, the contacts will close or connect, the light will illuminate and the FIU will signal the PC accordingly.

Note: An example of FIU sensor application is a rain switch. Purchase of sensors is optional (Sensor kit, Toro P/N 102-0397). These sensors do not apply to sensors connected to field satellites.

Satellite System Setup

1. Check all cable connections at the Field Interface Unit, PC, Modular Wall Plate and SPU.
2. Switch on the Field Interface Unit.
3. From the SitePro program menu bar, select: Setup> Hardware.
4. From the “System” tab, select the applicable satellite hardware type.
5. From the “Communications” tab, select the “Wire” subtab.
6. Using the scroll down list provided, select the computer Com port associated with the FIU COM Port [L1] and/or [L2].
7. To establish a radio communication path, click on the “Radio” subtab and select the computer COM port associated with this FIU connection.
8. Click OK to exit the setup window. This completes the setup procedure.
9. If the FIU is not active, restart SitePro with FIU COM Port Defined.

Radio-Link Installation (Models 2011 and 2021 only)

Note: The required Motorola® two-way communications radio, power supply and antenna components are not supplied.

▲ CAUTION: Only the following 2-way radio and power supply models have been tested and approved for use with the Radio-Link system. Radios and/or power supplies other than the following are subject to damage if installed. Per FCC, Narrow Band is preferred over Wide Band.

Note: Per FCC recommendations, Narrow Band is preferred over Wide Band.

- Motorola M1225, model number M44DGC90J2-A (Narrow Band). Maximum output - 25W.
- Motorola Radius SM50, model number M34DGC00A2AA (Narrow Band). Maximum output - 10W.
- Motorola MAXTRAC 300, model number D34MJA77A3CK (Wide Band), Maximum output - 1W.
- Motorola power supply models HPN4001 or HPN4002

▲ CAUTION: Base station and satellite radio output wattage must not exceed the limit specified by the applicable license. Special licensing and frequencies may be required for high wattage output.

▲ CAUTION: High wattage output of the satellite radio can impair satellite operation. Ensure adequate spacing is provided between the antenna and satellite to prevent the timing mechanism from malfunctioning due to induced RF.

The installation requirements listed below are **essential for proper operation** of the Radio-Link control system. If you have any questions regarding the requirements and/or radio setup procedures, please contact a Toro distributor for assistance.

The following services and procedures must be provided by an authorized Toro representative or Motorola vendor:

- An installation site survey to analyze the location for the best radio frequency.
- Procurement of the radio frequency license.
- Selection of the required antenna type, size and height based on the distance and terrain between the central and satellite controllers.
- The antenna cable type, length and installation method required for proper radio operation.
- Specific antenna requirements (height, power, location and lightning protection) to meet product safety and FCC regulations.
- Procurement of the required radio and power supply.
- The radio must be configured for Radio-Link operation as follows:
 - Inputs and outputs set with Motorola radio service software similar to the example shown in **Figure 12** for the MAXTRAC 300 radio, **Figure 13** for the SM50 radio, or **Figure 14** for the M1225 radio.
 - Tx and Rx squelch type **must** be set to **CSQ** (open squelch).

Figure 12 - MAXTRAC 300 Radio

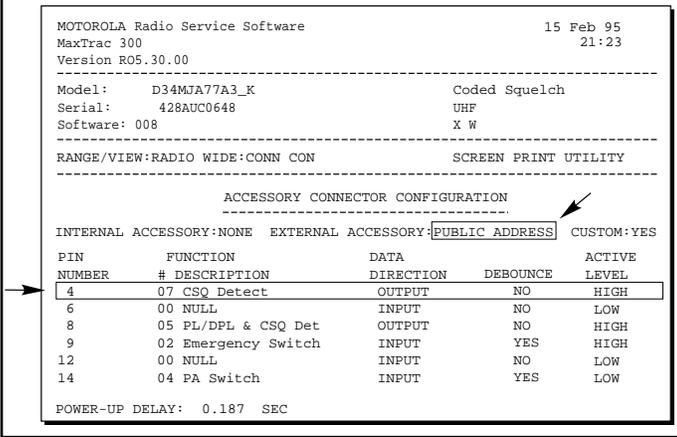
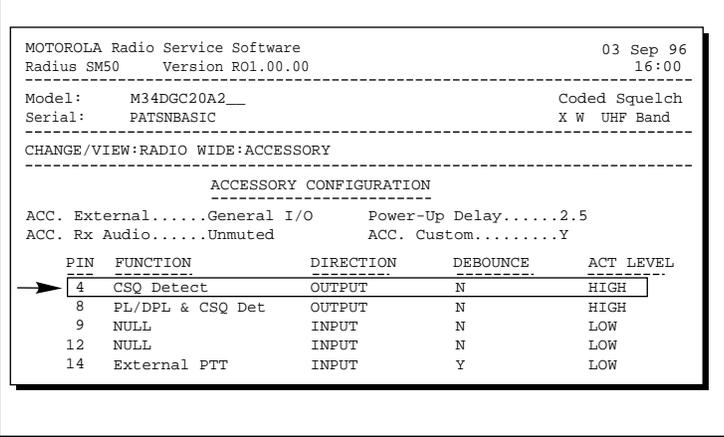
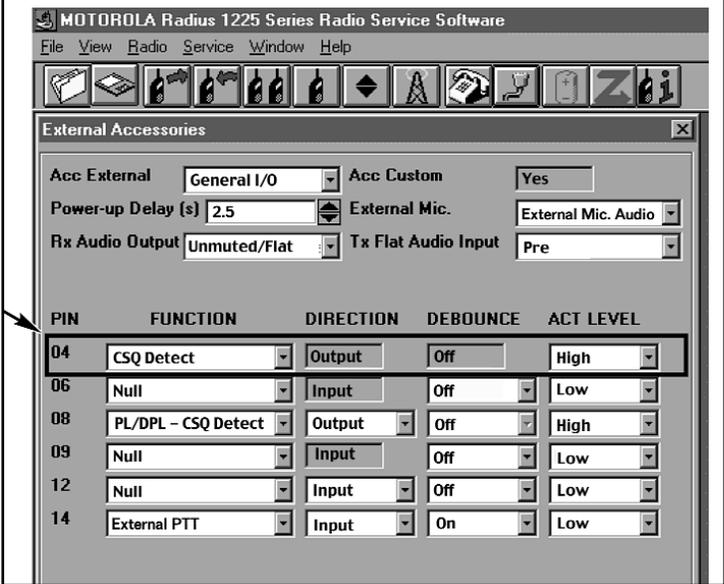


Figure 13 - Radius SM50 Radio



Note: The Motorola radio service software screens shown in Figure 12, 13, and 14 are for example only. Later service software versions may not be formatted as shown, however, the items within boxes must be set as indicated to enable system operation.

Figure 14 - M1225 Radio

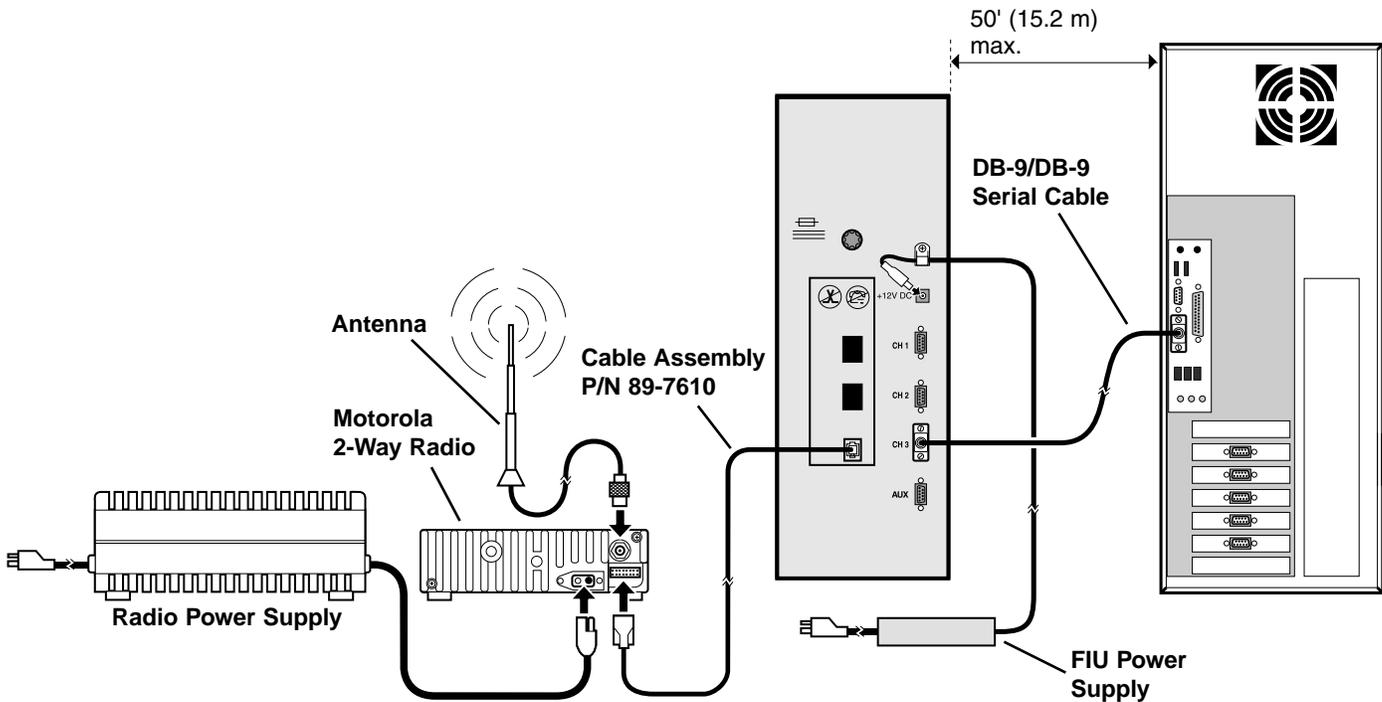


Radio Components Connection

- Using the cables provided in the kit, connect the radio, power supply, FIU and central computer as shown in Figure 15.

Note: FIU CH #3 may be connected to other computer COM ports depending on COM port availability.

Figure 15



Radio-Link System Setup

1. Reconnect power to the FIU and switch on all components. The central computer should be booted up and the SitePro program operational. See **Figure 3 and 4** respectively for hardware configuration of model FIU-2011 and FIU-2021.
2. From the SitePro program menu bar, select: Setup> Hardware.
3. From the "System" tab, select the applicable satellite hardware type.
4. From the "Communications" tab, select the "Radio" subtab for the Radio Communications page.
5. Select the applicable computer COM port used for the Radio-Link connection.
6. From the Radio Communications page, click on "Advanced." The following advanced parameter settings will be displayed.
To edit the default parameters, place the cursor in the field and use the keyboard.

Lead Tone – The minimum time a radio transmitter must be turned on prior to transmitting any signal. The lead tone time usually ranges from a few tenths of a second to a few seconds. This field will accept an entry in the range of 0.00 to 10.00 seconds. *Adjust setting to 0.5 seconds.*

Retries – Selects the number of retries of a command or data request before SitePro stops trying and reports a communications error. *Adjust setting to three retries.*

RF Busy Time-out – Sets the wait time during which the system will look for an RF channel before it gives up and declares the channel "busy". *The default is 10 seconds.*

Max Transmit Duration – This field allows you to define the maximum duration of a continuous transmission from a radio (in order to allow others to transmit on the channel). *The default duration is 10 seconds.*

First and Last Cycle Times – Defines the polling windows for satellites that communicate via radio transmission. No polling activity will take place outside this window. Manually initiated activities or auto-system updates may occur outside this window. The default for the first cycle time is 12:00 a.m. *The last cycle time default is 11:59 p.m.*

Polling Interval – Specifies in hours and minutes how often the central will poll the radio satellites. The range is 0 hours and 0 minutes (no polling) to 23 hours and 59 minutes. *The default is one hour.*

7. When finished editing the advanced radio parameters, click on "OK" to close the screen.
8. Continue to "Testing Radio-Link Operation" on the following page.

Testing Radio-Link Operation

1. Verify that all cables are properly connected.
2. Verify that the satellite controllers are powered up and operational.
3. Verify that the central and satellite radios are switched on and operating on the same channel (frequency).
4. Verify that voice communication exists between the central and satellite radios.
5. From the SitePro program menu bar, select Setup-Hardware-Communications tab, select the Radio subtab.
For the FIU Radio Port, select the COM port which is connected to the FIU radio port.
6. From the Control System page, select the Groups tab. In the Com Mode column, verify that **Radio** is selected, and click OK.
7. Verify that the satellite address is correctly set at the satellite(s).
8. Perform a download to the field to configure lead tones for the satellites.
9. From the menu bar, select Tools, then click Communication Monitor for the "FIU Monitor" page.
10. From the menu bar, select Reports, then click Satellites with Reports.
11. From the Satellites With Reports page, select No Communication.
12. Click on the Start Button. SitePro will poll the satellites and report the results.

Note: If "No Response" is indicated, recheck all cable connections at the central and satellite(s). Recheck the radios for proper setup and operation. Reperform the test procedure.

SitePro Central Decoder System Connection

The SitePro Central Decoder System (CDS) program works in conjunction with the SitePro Field Interface Unit Model 2010 and the Decoder Interface Unit (DIU).

Connect the FIU, central computer, SPU and the DIU(s) as shown in **Figure 16**. All hardware is provided for connection except shielded, twisted-pair communication cable. For additional decoder system information, refer to the installation instructions provided with the DIU.

Decoder Interface Unit Communication Cable Installation

(Refer to **Figure 16** for the following procedure.)

1. To facilitate installation of the RJ45 modular plug wall plate assembly provided with each DIU, install a duplex conduit box to the wall within 5' (1.5 m) of each DIU (the RJ45 modular cable assembly provided is 7' [2.1 m] in length).
2. Install conduit between the SPU and the first DIU conduit box. If multiple DIUs are being installed, install conduit between each additional DIU conduit box.
Note: If the RJ45 modular wall plate assembly will be installed outdoors, it must be protected in a weather-resistant enclosure.
3. Route communication cable from the SPU to the DIU conduit box(es) as shown.
4. At the SPU, remove insulation to expose 16" (41 cm) of communication wires. Strip off 3/8" (10 mm) of insulation from the communication wires. Attach the wire pair to the top connector terminals as shown.
5. At the wall plate assembly conduit box(es), remove insulation to expose 4" (10 cm) of communication wires. Strip off 3/8" (10 mm) of insulation from the communication wires. Connect the yellow wire(s) to Pin 1 and grey wire(s) to Pin 2.
6. Install a 620 ohm resistor across pins 1 and 2 of the RJ45 wall plate assembly. If multiple DIUs are used, install the resistor only on the last DIU wall plate assembly in the system.
7. Secure the RJ45 wall plate assembly to the conduit box. Attach the RJ45 modular cable to the wall plate receptacle and DIU receptacle located on the back of DIU control panel. See **Figure 17**.

Central Decoder System Setup

1. Check all cable connections at the FIU, central computer, wall plates, SPU and the DIU.
2. Place the FIU power switch in the On (I) position.
3. From the SitePro program menu bar, select: Setup > Hardware.
4. From the "System" tab, select the Central Decoder System.
5. From the "Communications" tab, select the "Wire" subtab.
6. Using the scroll down list provided, select the computer COM port associated with the FIU COM Port.
7. Click OK to exit the setup window. This completes the SitePro setup procedure.

Figure 16 - DIU Connection Overview

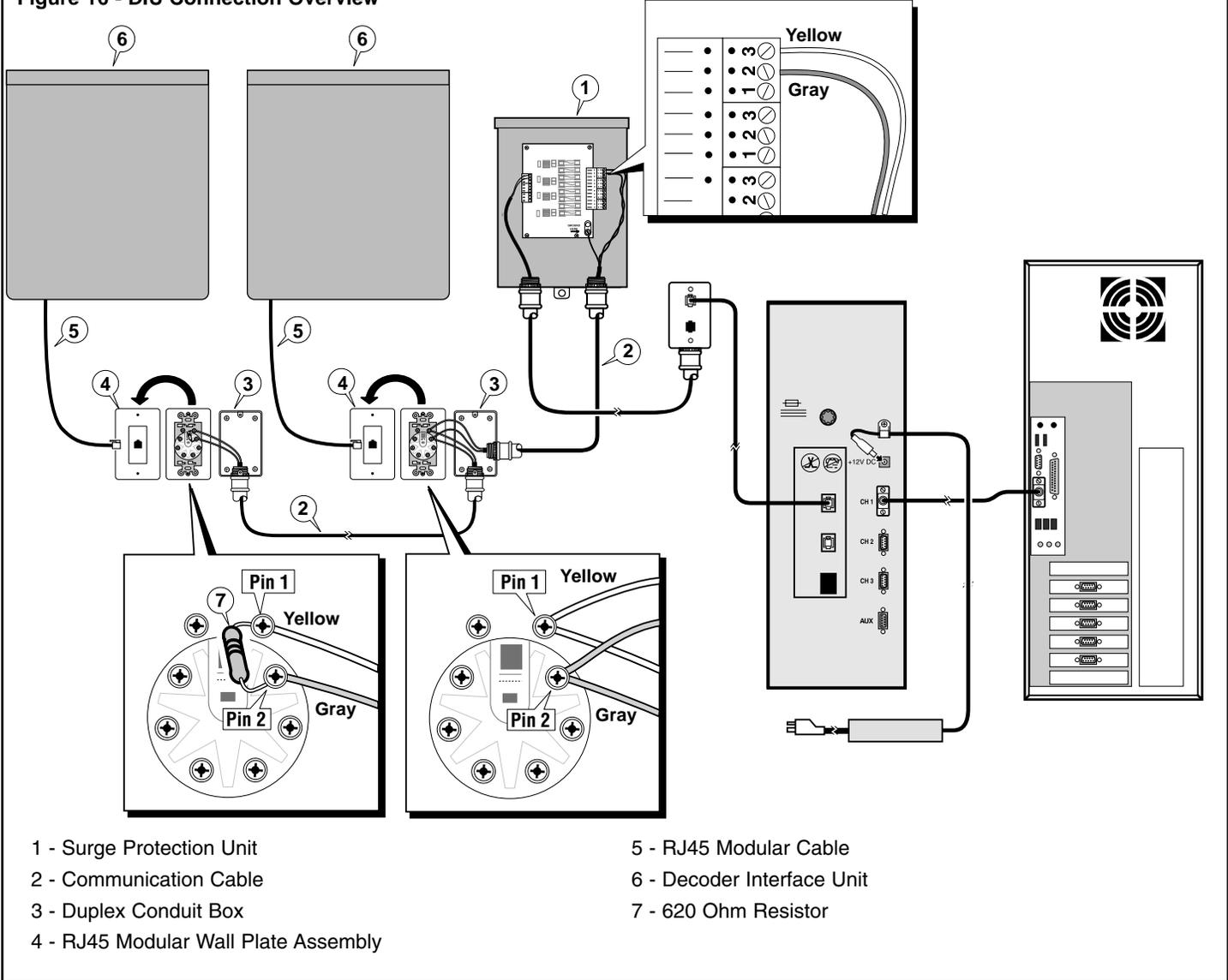


Figure 17

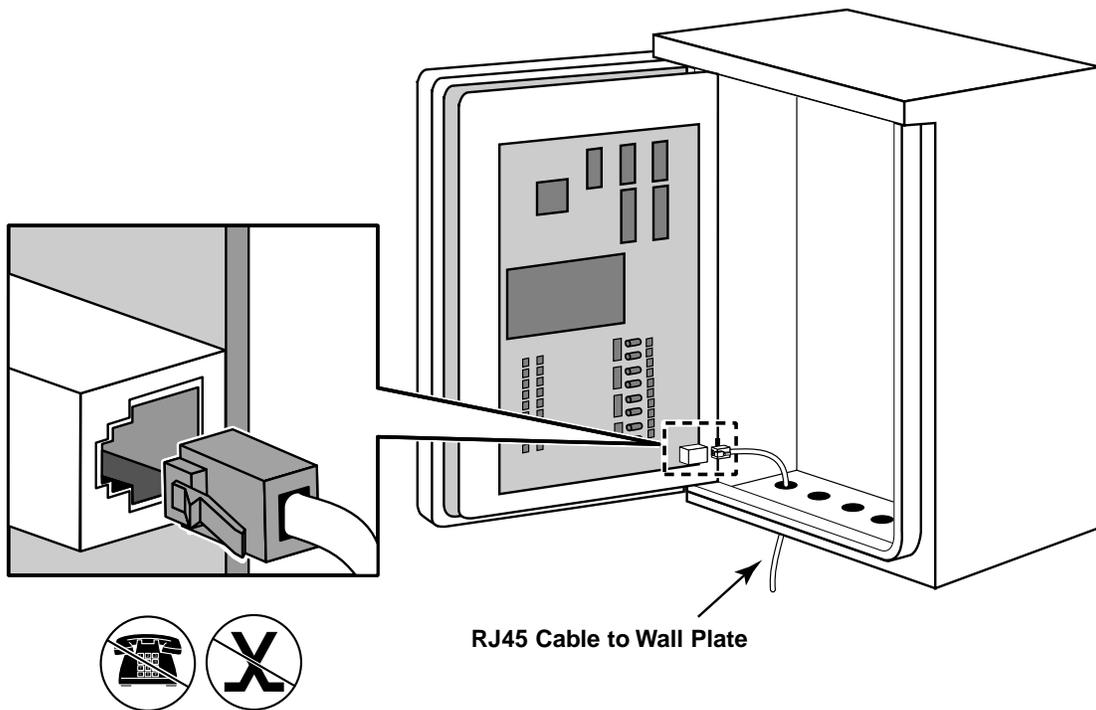
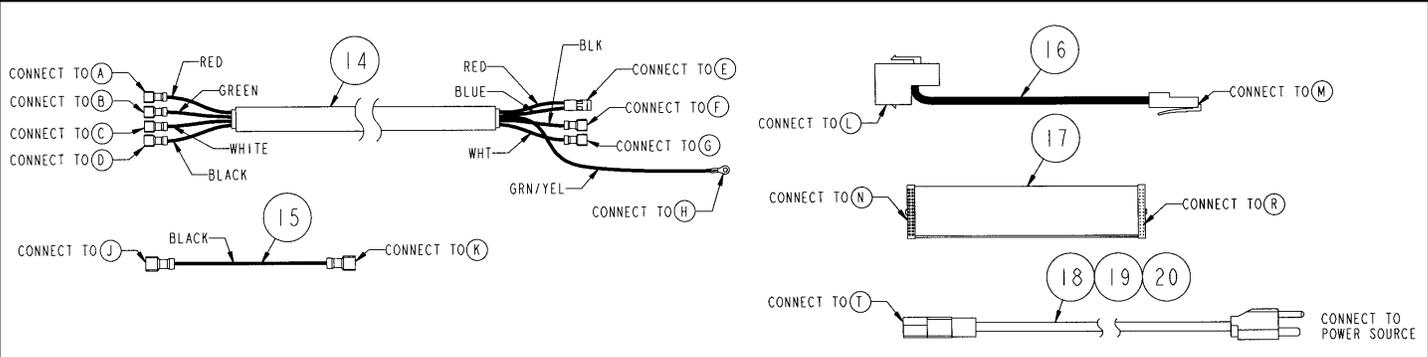
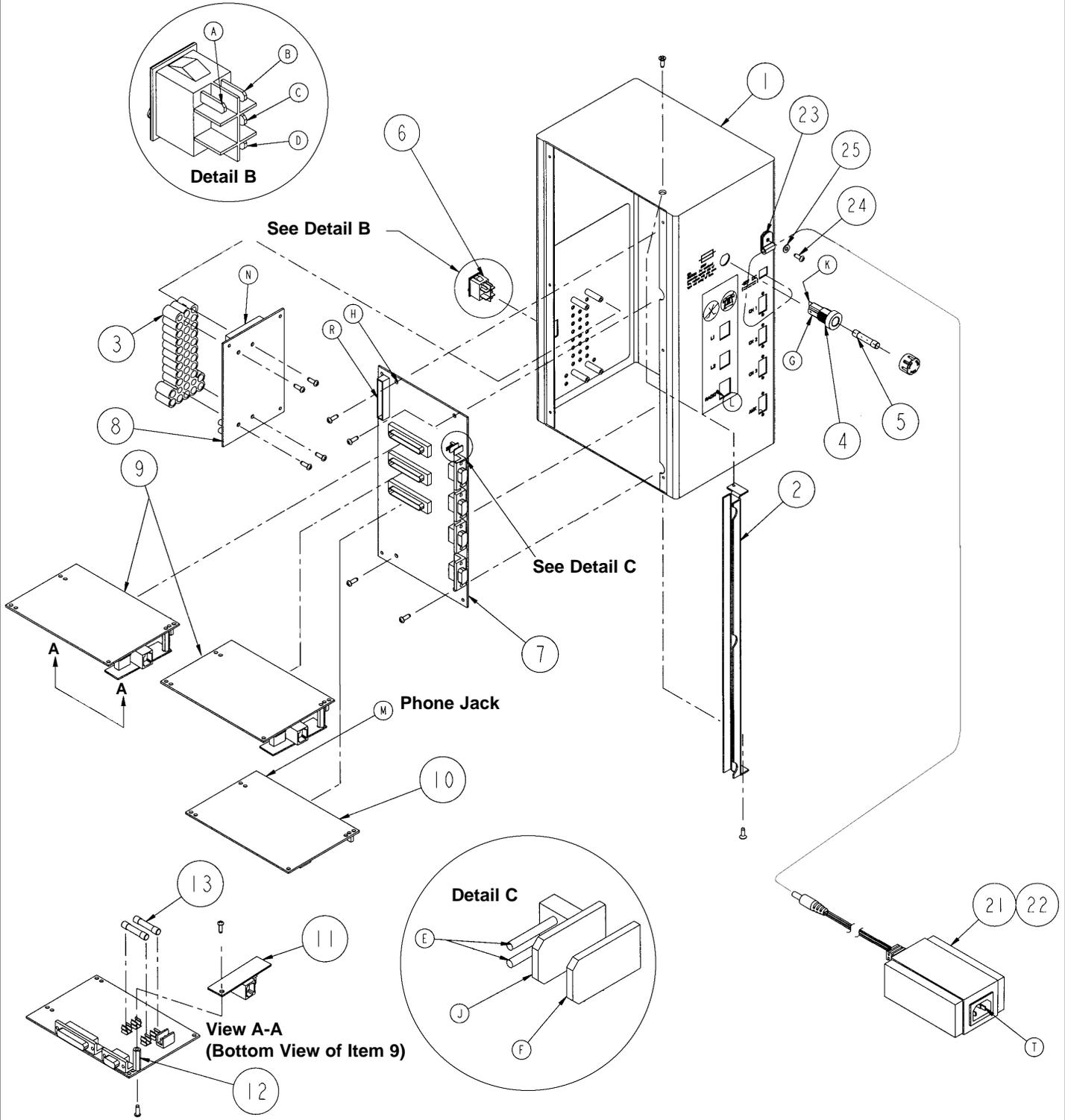


Figure 18 - Illustrated Parts Listing, FIU Models 2010, 2020, 2011 and 2021



Item No.	Part No.	Description	Quantity Per Assy.
		Refer to Figure 18 for the following items:	
1	-----	Housing, SNCX, FIU	1
2	-----	Bracket, FIU (See Service Item 102-0867)	1
3	-----	Front Plate, LED Display (See Service Item 102-0872)	1
4	360-0750	Holder, Fuse	1
5	360-0749	Fuse, 1.5 Amp, (10-pack)	1
6	-----	Rocker Switch, Power (See Service Item 102-0873)	1
7	-----	PCB Assy., Serial, Back Plane (See Service Items 102-0869 through 102-0871)	1
8	-----	PCB Assy., LED (See service item 102-0872)	1
9	-----	PCB Assy., Standard Modem (See Service Item 102-0864)	2
10	-----	PCB Assy., Universal Modem (See Service Item 102-0866)	1
11	-----	Phone Jack Adapter, Standard Modem (See Service Item 102-0864)	2
12	-----	Spacer, #6-32 x 15/16" (See Service Assy. 102-0864)	2
13	-----	Fuse, 0.75 Amp (See Service Item 102-3819)	4
14	-----	Cable, FIU Power Switch (See Service Item 102-0875)	1
15	-----	Wire Assy., Black (See Service Item 102-0874)	1
16	-----	Cable Assy., Universal Modem (See Service Item 102-0866)	1
17	-----	Cable Assy., 30-Pin, Female Connectors (See Service Item 102-0876)	1
18	-----	Power Cord, U.S./Canada (See Service Item 102-0877)	1
19	-----	Power Cord, Europe (See Service Item 102-0879)	1
20	-----	Power Cord, English (See Service Item 102-0881)	1
21	-----	Transformer, 12 V d.c., 1.5A (See Service Item 102-0878)	1
22	-----	Transformer (Australian), 12V d.c., 1.5A (See Service Item 102-0882)	1
23	1-7204	Cable Clamp, 3/16"	1
24	4-1063	Screw, Tap, #6	1
25	1-3086	Flat Washer, #6, Brass	1
		SERVICE ITEMS	
	102-1201	Kit, Service, Cable, SitePro, FIU (9-pin Male to 25-pin Female Serial Cable)	
	102-0864	PCB Assy., Standard Modem (Includes Items 9, 11, 12 & 13)	
	102-3819	3/4A Fuse (Includes Item 13) (10-pack)	
	102-0866	Universal Modem (Includes Items 10 & 16)	
	102-0867	FIU Bracket (Includes Item 2)	
	102-0868	1.5A Fuse Assy. (Includes 1 each of Items 4 & 5)	
	102-0869	PCB Assy. (FIU-2010), Serial Back Plane (Includes Item 7)	
	102-0870	PCB Assy. (FIU-2020 and FIU-2011), Serial Back Plane (Includes Item 7)	
	102-0871	PCB Assy. (FIU-2021), Serial Back Plane (Includes Item 7)	
	102-0872	PCB Assy., LED, FIU (Includes Item 3)	
	102-0873	Rocker Switch, Power (Includes Item 6)	
	102-0874	Wire Assy., Black (Includes Item 15)	
	102-0875	Cable, FIU Power Switch (Includes Item 14)	
	102-0876	Cable Assy., 30-pin Female Connectors, (Includes Item 17)	
	102-0877	Power Cord, U.S./Canada (Includes Item 18)	
	102-0878	Transformer, 12V d.c., 1.5A (Includes Item 21)	
	102-0879	Power Cord, Europe (Includes Item 19)	
	102-0881	Power Cord, English (Includes Item 20)	
	102-0882	Transformer, Australian, 12V d.c., 1.5A (Includes Item 22)	
	*102-0397	FIU Sensor Kit	
	*102-0767	FIU Additional Surge Protection Kit	
	*89-9116	FIU Wireline Path Upgrade Kit	
	*89-9117	FIU Radio-Link Accessory Kit	
		* Order through Finished Goods Distribution System.	
		Note: Service items subject to change without notice.	

FIU Internal Modem Breakdown		
Model No.	Standard Modem(s)	Universal Modem
Model 2010	1	0
Model 2011	1	1
Model 2020	2	0
Model 2021	2	1

Troubleshooting

If a malfunction occurs, follow the suggested steps to identify and fix the problem. If the problem cannot be resolved there may be a problem with the FIU, the satellite or the DIU. If you have current NSN support, please call **Toro NSN** at 1-800-527-4248. Otherwise, please call our **Toro Help Line**, 1-800-664-4740 Monday through Friday, 7:30 AM – 4:00 PM (Pacific Time).

"PC Connected – " Light Off.	1. FIU is not powered up. 2. Defective cable. 3. Defective FIU.	1. Apply power. 2. Replace cable. 3. Contact Toro distributor / NSN.
"FIU Active – " Light Off	1. FIU is not powered up. 2. Defective cable. 3. Defective FIU.	1. Apply power. 2. Replace cable. 3. Contact Toro distributor / NSN.
"FIU Ready" Light Off "Processor Ready" Light Off	1. SitePro is not downloaded properly and/or COM port driver needs to be restarted/reloaded. 2. Bad processor or bad FIU.	1. Restart SitePro program with FIU COM port defined. Repeat system setup procedure (see p.9). 2. Contact Toro distributor / NSN.
"Field Transmit" Light never turns On.	1. Bad connection between modem card and Serial Back Plane (motherboard) inside the FIU. 2. Bad modem card.	1. Contact Toro distributor / NSN. 2. Contact Toro distributor / NSN.
"Field Receive/Busy" Light never turns On.	1. Bad connection between FIU and field satellite or DIU.	1. Contact Toro distributor / NSN.

Field Interface Unit Specifications

Enclosure Dimensions: 5 3/8" W x 7.5" D x 13" H (13.7 cm W x 19 cm D x 33 cm H)

Input: 12 V d.c., 1.5A (max.) Output: NEC Class 2 Fuse Protection: 1.5A (fast-blow)

Caution: For continued protection against risk of fire, replace only with the same type and rating of fuse.

Power Supply Input: 100–250V a.c., 50/60 Hz, 0.38A, +/- 10% Power Supply Output: 12 V d.c., 1.5A

Electromagnetic Compatibility

Domestic: This equipment has been tested and found to comply with the limits for a FCC Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to the radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How To Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4

International: This is a CISPR 22 Class B product.

