

Ultra•Post® Detectors with Switched Mode Transmitter

Setup and Service Guide

ZAUPMH	Ultra•Post Primary
ZAUPSH	Ultra•Post Secondary
ZAUPMH2	Ultra•Post III Primary
ZAUPSH2	Ultra•Post II Secondary
ZEUPPLUS	Ultra•Post Plus Controller
ZS1012-P	Ultra•Post IV (AMS-1012) Primary
ZS1012-S	Ultra•Post IV (AMS-1012) Secondary

About this Guide

Ultra•Post detectors use an LPA transmitter (used primarily in Europe) or switched mode transmitter (SMT). This guide explains how to tune, service, and troubleshoot Ultra•Post detectors that use SMT. Related documents are:

- Planning Guide, SMT, 8000-2595-03
- Installation Guides
 - Ultra•Post IV with SMT, 8000-2595-23
 - Ultra•Post III with SMT, 8000-2595-19
 - Ultra•Post Plus Power Pack, 8000-2642-02
 - EuroMax Plus Pedestals, 8000-2642-05
- Reference Guide, Ultra•Post, Ultra•Post II, Ultra•Post Aisle, Ultra•Post Plus, Ultra•Post Plus Aisle, 8000-2595-08

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Detector Setup Features

Ultra•Post and Ultra•Post Plus detectors have the following features:

- 58kHz or 60kHz operation. The detector can be set to detect 58 or 60kHz security tags and labels (58kHz operation is described in this guide). **Note:** Ultra•Post IV pedestals detect only 58kHz tags.
- Power on self-test. Upon power up or hardware reset, detector software runs a self-test to ensure it functions.
- Laptop communication. A laptop computer and configuration software is used to set up and configure the detector, and to determine its operational status.
- Frequency hopping. Two alternating transmit frequencies (operating frequency $\pm 200\text{Hz}$) enable the detector to detect a broad range of signals from security tags and labels.
- Improved sensitivity. Noise measurements used to calculate the tag/label detection threshold are continuously updated and maintained for each phase of the AC line (0°, 120°, and 240°).
- Tag cutoff frequency. Adjustable using the laptop configurator, this function prevents partially deactivated (“wounded”) labels from triggering an alarm.
- Alarm indication.
Ultra•Post IV: The top cap of the primary pedestal contains flashing LEDs and audio. Removing the pedestal's red lens accesses a volume control under the cap.
Ultra•Post/Ultra•Post II/Ultra•Post III: The top cap of the primary pedestal contains flashing LEDs and audio. Removing the pedestal's front cover accesses a volume control under the cap.
Ultra•Post Plus: EuroMax Plus pedestals contain flashing LEDs and an audible alarm.
- Relays. The pedestal (or, for Ultra•Post Plus, the controller) contains a double-pole, double-throw relay located on the receiver board.

- Wireless synchronization (requires firmware version 3.0 or higher). Used when pedestals are within 1.8m (6ft) of each other, Ultra•Post firmware continuously checks Ultra•Post transmissions and synchronizes their operation to keep one detector from interfering with another. Use the configurator to enable or disable this function.
- Transmit inhibit.
Ultra•Post IV: The top cap of the primary pedestal or alarming secondary contains a transmit-inhibit pushbutton you can press to disable the transmitter for diagnostic purposes. The receiver board also contains a jumper you can set to inhibit the transmitter and a connector for a transmit-inhibit input.
Ultra•Post/Ultra•Post II /Ultra•Post III: The top cap of the primary pedestal or alarming secondary contains a transmit-inhibit pushbutton you can press to disable the transmitter for diagnostic purposes.
Ultra•Post Plus: The base of a EuroMax Plus pedestal contains a transmit-inhibit keylock and counter. The keylock is used to disable the transmitter for diagnostic purposes. Use the configurator to enable or disable this function.
- Diagnostics. The detector can be tested using the laptop computer, or an LED (DS3) inside the primary pedestal or controller that flashes an error code if system software should fail.
- “Dying gasp” (Ultra•Post/Ultra•Post II / Ultra•Post III only).
A degenerating tone signals when AC power is interrupted to the primary pedestal. To disable this feature, remove jumper JW1 located at the bottom of the alarm board.

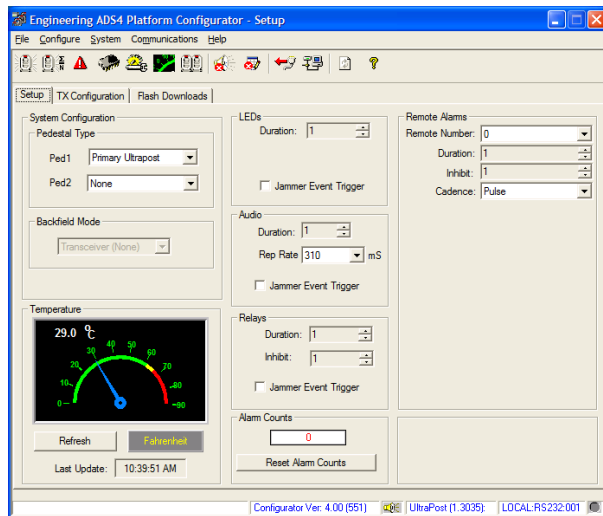
Setup and Service for Ultra•Post IV Detectors

This section covers the setup and service of the Ultra•Post IV detector.

Software Configurator

The Ultra•Post configurator (Figure 1) displays a control panel used to change detector parameters. Pull-down menus above the control panel also allow you to monitor real-time operation, run diagnostics, and select system options.

Figure 1. Configurator setup panel



Note: Online help provided with the configurator provides a complete description of operation.

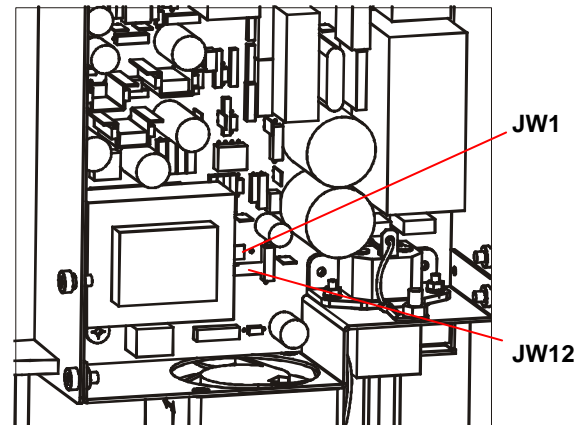
Parameters displayed for 58kHz operation are:

- Rx Gain (Enable AGC, Low Gain, +10, +20, +30)—default: Enable AGC. +30 is highest gain, Low Gain is lowest gain
- Tag Window Delay (0 to 1000µs—default: 540µs)
- Sensitivity (0 to 15dB) – default is 12 for Aiding and 14 for “figure-8”.
- Minimum threshold (0 to 45dBuV)—default: 9
- Hits to detect (1 to 10—default: 5 hits)
- Pedestal type (primary, secondary, ferrite)
- TX Frequency (Low, Nominal, High, Hopping)
- Frequency Cutoff Low—default: 57.41kHz).
- Frequency Cutoff Hi—default: 58.6kHz).
- Audio duration (0-15 sec.)
- LED duration (0-15 sec.)—default: 2 sec.)

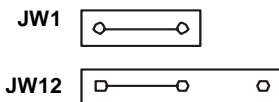
Note: Refer to the online help provided with the configurator for a complete description of configurator operation.

AC Setup

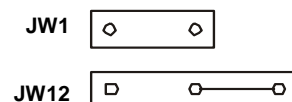
- On the primary pedestal, loosen two fasteners. Then remove the cover from the exit side of the pedestal by pulling its bottom out and down. Set the cover aside. Repeat for the secondary pedestal, if used.
- Loosen the four Phillips-head screws holding the cover onto the transmitter board enclosure in the primary pedestal and remove the cover.
- Remove the cover on the secondary pedestal capacitor board.
- Select the proper voltage for the site with jumpers JW1 and JW12.



- For 120Vac sites, place jumper JW1 IN and jumper pins 1-2 on JW12.



- For 240Vac sites, place jumper JW1 OUT and jumper pins 2-3 on JW12.



CAUTION! If the jumper position is wrong for the AC voltage used, the pedestal will fail and have to be repaired.

Checking Detector Operation



DO NOT perform the following procedure until you have thoroughly reviewed configurator software settings.

1. On the primary pedestal, loosen two fasteners. Then remove the cover from the exit side of the pedestal by pulling its bottom out and down.
2. Verify all boards are properly seated and all cables are securely plugged in.
3. Loosen the four Phillips-head screws holding the cover onto the transmitter board enclosure in the primary pedestal and remove the cover.
4. Verify jumpers on the transmitter board are in their default positions. (Refer to Figure 3).

JW2	In
JW4	In
JW5	Out
JW6	In (primary), Out (secondary)
JW7	In
JW9	Out (primary), In (secondary)
JW10	In (primary), Out (secondary)
JW11	Out
5. If used, connect the secondary pedestal to the primary pedestal.
 - a. Plug the interconnect cable into connector P2 on the transmitter board in the primary pedestal and its other end into connector P10 in the secondary pedestal.
 - b. Plug the shield of the cable into connector P4 in the primary pedestal and its other end into connector P1 in the secondary pedestal.
6. Plug the appropriate power cord to the pedestal and its other end into the designated AC outlet.

7. Connect the laptop computer to J4 on the receiver board and load the configurator.

Note: When power is first applied, all LEDs on the receiver board flash five times for 50Hz (six times for 60Hz) to indicate the detector passed its power up test. If LEDs do not flash, check for an error condition using either the laptop computer or by observing yellow LED DS3 on the board. Refer to Figure 4 for location of DS3; refer to the section entitled “DS3 Error Codes” on page 42 for interpretation of the codes.

Once the detector passes the power up test, the green Power LED DS10 on the receiver board should flash once per second.

Close the metal enclosure and, in each pedestal, verify transmit current in each coil is between 14–18A. If it is less than 14A, go to the section “Tuning the Pedestal” on page 5.

8. On the laptop screen, select the Ultra•Post Type for the detector installed (for example “Primary/Secondary Transceiver”).
9. Check the following:
 - If validations occur with no tags/labels nearby, increase the Minimum Threshold or change the Sensitivity in 1dB increments until validations cease.
 - If this Ultra•Max detector is causing another to constantly alarm or not detect, or vice versa, check the receive data display. If the bar meters are constantly reaching the maximum values, then adjust the Zero Crossing Delay.
 - Check for backfield. If too high, a) select the “Alternating”, “Ped1 Tx Ped2 Rx”, or “Ped1 Rx Ped2 Tx” for the Backfield Mode parameter, or b) place the primary pedestal closest to the area affected by the backfield.
 - If a lot of noise is entering the receiver but it is lower when the Polarity of an antenna is set to “Figure-8” than when the Polarity is set to Aiding, set the Polarity to “Figure-8”.
 - Set audio and LED durations.
10. If using a remote alarm, connect its cable either to the Relay port at J7 or the Peripheral Network port at TB1 on the receiver/ controller board.

J7 connections		TB1 connections	
Pin 1	Ground	Pin 1	RS-485 LO
Pin 2	Not used	Pin 2	RS-485 HI
Pin 3	NO 2	Pin 3	GND
Pin 4	ARM 2	Pin 4	RS-485 LO
Pin 5	NC 2	Pin 5	RS-485 HI
Pin 6	NO 1	Pin 6	GND
Pin 7	ARM 1		
Pin 8	NC 1		


11. Disconnect AC power from the pedestal and all cables including the laptop cable. Detector operation has now been verified.

Tuning the Pedestals

If the burst current in a top or bottom coil is not 14–18A (at resonance), optimize tuning by trying various jumper configurations until maximum peak current is achieved.

The tuning jumpers are on the transmitter board. See Figure 3.

- Top coil tuning jumpers: JW2, JW4, JW5, JW6
 - Bottom coil tuning jumpers: JW7, JW9, JW10, JW11
1. Ensure the tuning jumpers are set to their default values. See Table 1 (top coil) or Table 2 (bottom coil). Note that the default differs for the primary and secondary pedestals.
 2. If the enclosure cover is off, put it back on.



CAUTION! The metal cover affects the tuning of the system. All current measurements **must** be made with the cover on or the current readings will be incorrect.
 3. Look at the current values in the top and bottom coils and determine which coil has the lowest current.
 4. Remove the cover temporarily and adjust the tuning jumpers for the coil with the lowest current up one step (for example, from Step 9 to Step 10). See Table 1 (top coil) or Table 2 (bottom coil).
 5. Put the cover back on and check the current.
 - If the current is less than before you adjust the capacitance, you are detuning the pedestal. Return to the default configuration and decrease one step instead.
 - If the current goes up, you are tuning the pedestal in the correct direction.
 6. Continue adding or subtracting capacitance one step at a time until you find the peak current.

Repeat the procedure for the other coil. **Note:** Independent overlapping antenna coils in each pedestal affect each other's tuning. Therefore, it may be necessary to repeatedly adjust the tuning of the coils until optimum current is achieved for both coils.

An alternate method of tuning is to disable the coil not being tuned by removing its Enable jumper. For the primary pedestal, these are J4 for the top coil and J6 for the bottom coil. For the secondary pedestal, these are J3 for the top coil and J5 for the bottom coil. Refer to Figure 3 for the location of these jumpers.

Table 1. Ultra•Post IV Tuning Table (Top Coil)

Step #	JW4	JW2	JW5	JW6
1	0	0	0	0
2	0	1	0	0
3	0	1	0	1
4**	1	1	0	0
5*	1	1	0	1
6	0	0	1	0
7	1	1	0	1
8	0	0	1	0
9	0	1	1	0
10	0	1	1	1
11	1	1	1	0
12	1	1	1	1

* Default for primary pedestal

** Default for secondary pedestal

Table 2. Ultra•Post IV Tuning Table (Bottom Coil)

Step #	JW10	JW7	JW9	JW11
1	0	0	0	0
2	0	1	0	0
3	0	1	0	1
4**	0	1	1	0
5	0	1	1	1
6	1	0	0	0
7	0	1	1	1
8	1	0	0	0
9*	1	1	0	0
10***	1	1	0	1
11	1	1	1	0
12	1	1	1	1

* Default for primary pedestal

** Default for secondary pedestal

*** Alternate default for primary pedestal

Figure 2. Ultra•Post dual-pedestal wiring

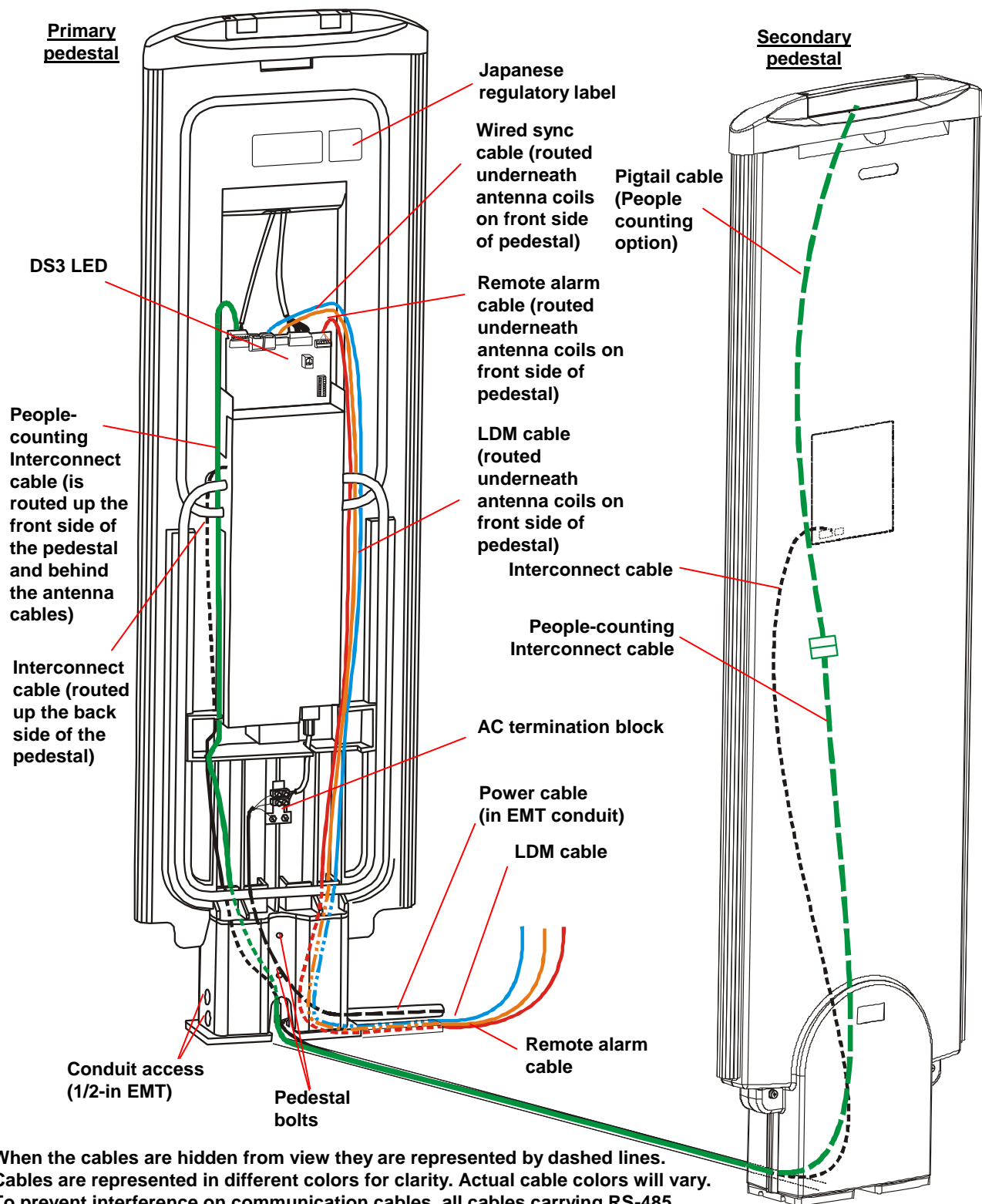


Figure 3. Ultra•Post IV primary pedestal transmitter board

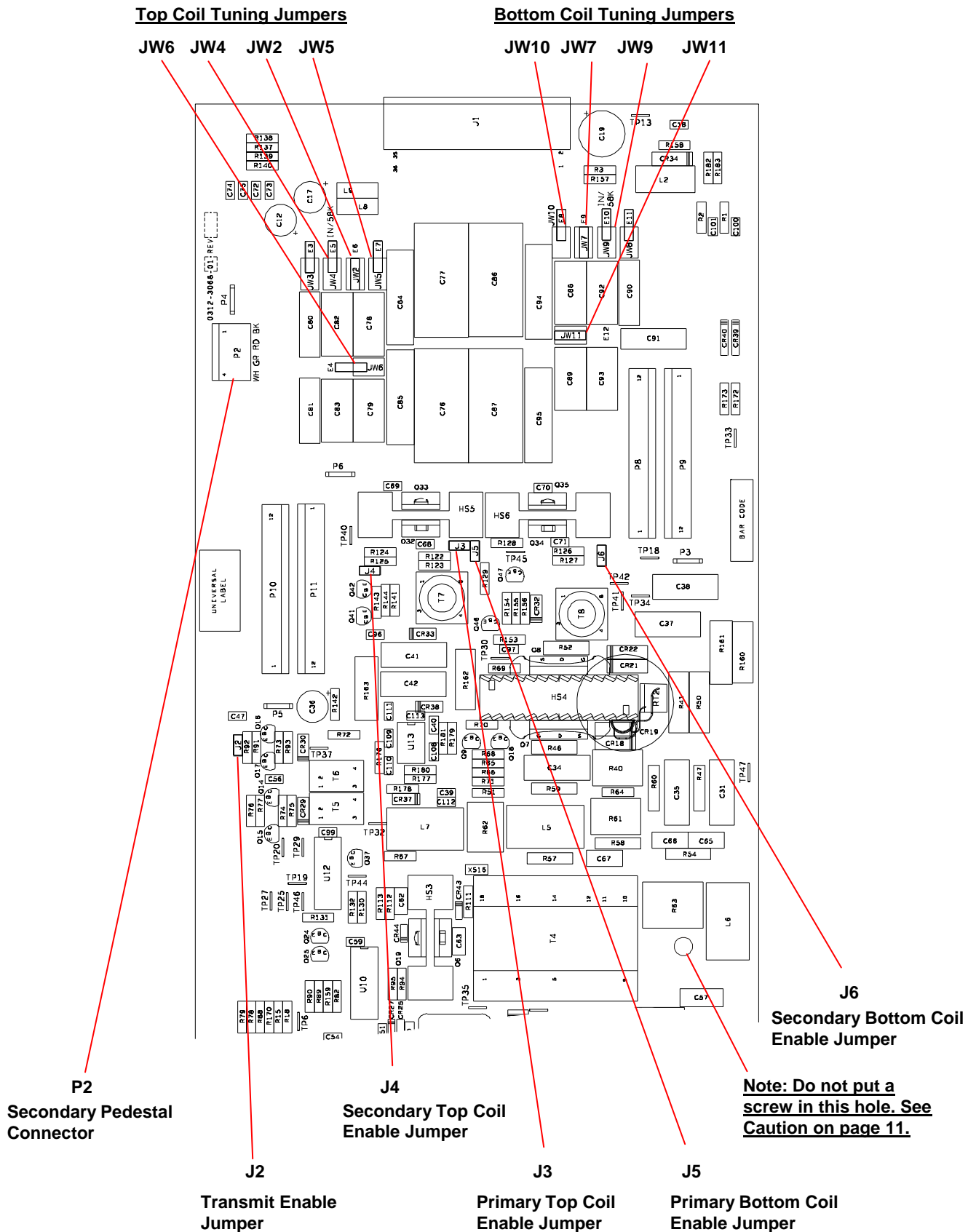
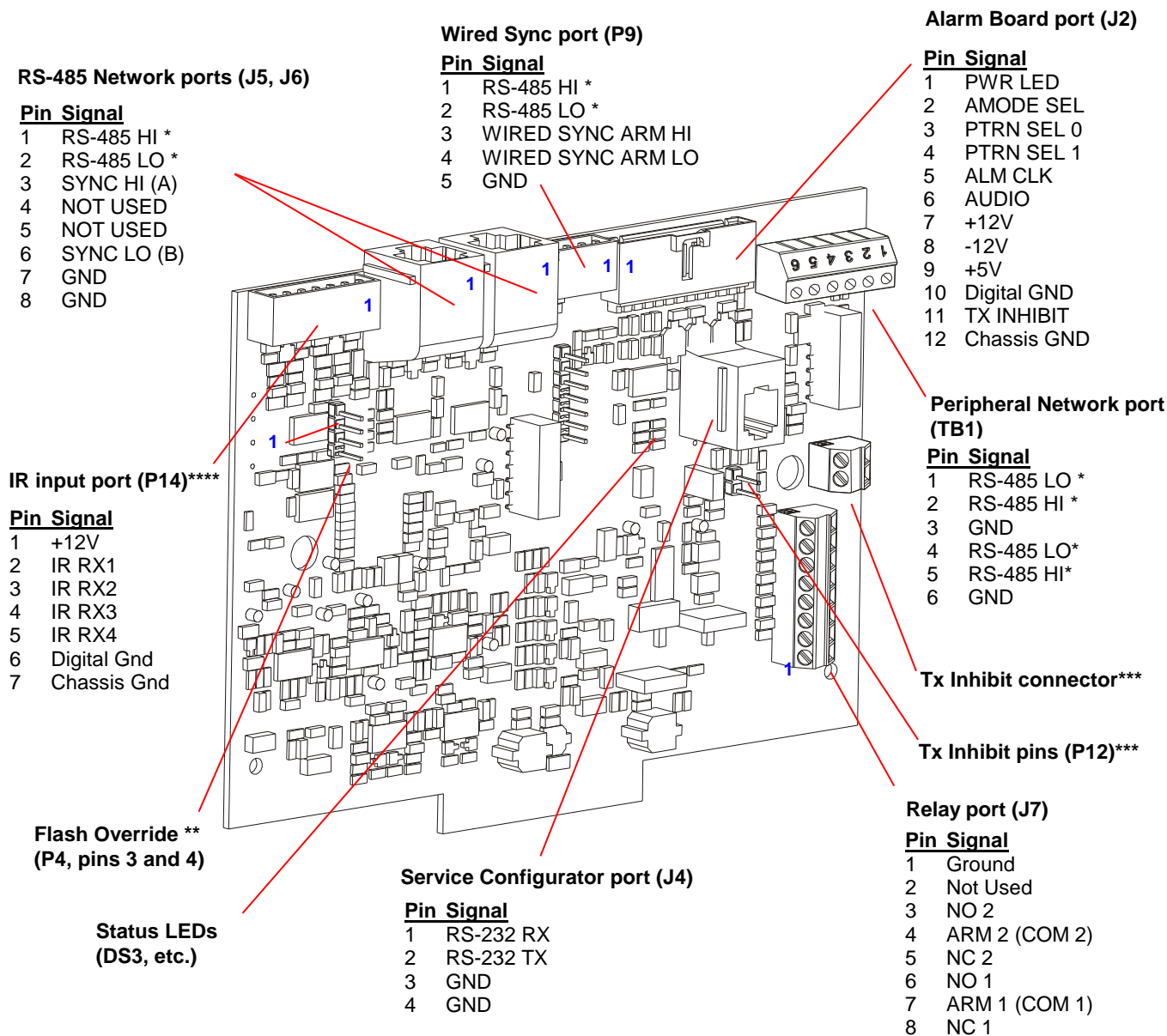


Figure 4. Ultra•Post IV receiver board pinouts



* RS-485 LO and HI signals are available on many of the receiver ports. Because the wire color code for these signals varies from option to option, you need to connect the option by connecting the RS-485 LO wire to the RS-485 LO pin and the RS-485 HI wire to the RS-485 HI pin.

** To override the normal boot process, short pins 3 and 4 of connector P4.

*** To inhibit the Transmitter, put a jumper across the two Tx Inhibit pins (P12). Alternately, you can connect the two pins of the Tx Inhibit connector to an external device that connects the two pins when some external event occurs.

**** This port connects to the Alarm board when the People Counting (Traffic Flow) option is installed on it.

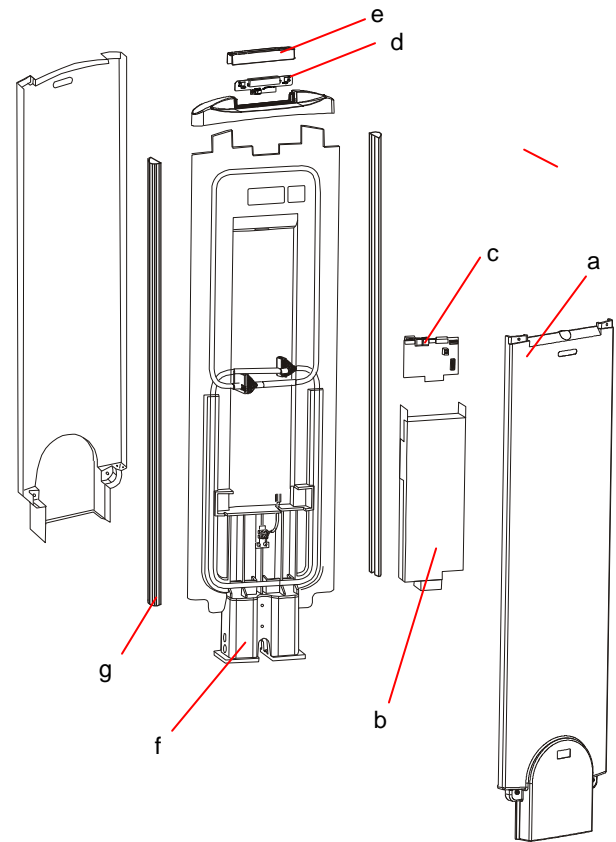
Ultra•Post IV Field Replaceable Units

Primary Pedestal

The Ultra•Post primary pedestal (Figure 5) has the following Field Replaceable Units (FRU):

- a. Ultra•Post IV cover 0404-0584-01. The Ultra•Post IV and III covers are the same except for the color.
- b. Ultra•Post IV Transmitter/Power assembly (includes PCB) 0304-3032-01. Generates and switches transmit current to the top and bottom antenna coils of the primary and secondary pedestals. The board also contains circuits and jumpers for tuning the primary antenna. Connectors on the board receive the interconnect cable from the secondary pedestal, when used.
- c. Ultra•Post IV Digital Receiver board 0312-3022-01. Receives and analyzes incoming signals and controls operation of the primary and secondary pedestals. A Telco receptacle on the board receives the cable from the laptop computer.
- d. Alarm/Traffic Flow board 0312-3045-01. Controls LED and audible alarm functions. A pushbutton accessed through a small hole in the top of the pedestal enables the transmitter to be momentarily or indefinitely disabled for troubleshooting. An optional kit is available that adds people-counting capability to the board.
- e. Alarm lens without cutouts (primary) 0505-1409-01.
- f. Mounting base 0500-9067-01. Four bolts secure the pedestal to the floor. Two bolts secure the pedestal to the base.
- g. Bumper strip 0505-4536-01 (2). Protects the pedestal from impact. Optional cart guards, bumper guards, and boots are available.

Figure 5. Ultra•Post IV primary pedestal FRUs

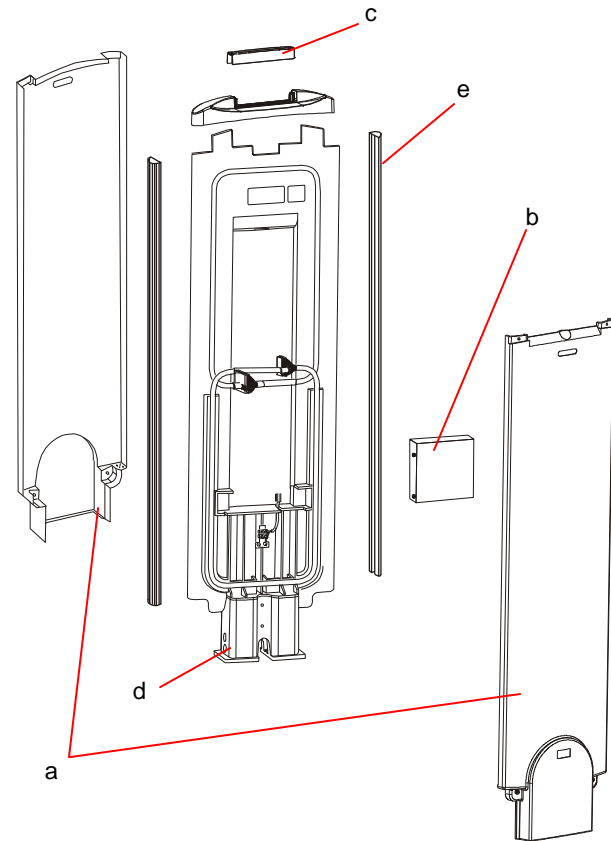


Secondary Pedestal

The Ultra•Post secondary pedestal (Figure 6) has the following Field Replaceable Units (FRUs):

- a. Ultra•Post IV cover 0404-0584-01. The Ultra•Post IV and III covers are the same except for the color.
- b. Secondary cap tuning board (0312-0816-02). Contains circuits and jumpers for tuning the secondary antenna. Connectors on the board receive the interconnect cable from the primary pedestal.
- c. Alarm lens without cutouts (secondary) 0505-1409-02.
- d. Mounting base 0500-9067-01. Four bolts secure the pedestal to the floor. Two bolts secure the pedestal to the base.
- e. Bumper strip 0505-4536-01 (2). Protects the pedestal from impact. Optional cart guards, bumper guards, and boots are available.
- f. Interconnect cables (ZPUP-ICBL-4M, ZPUP-ICBL-12M, ZPUP-ICBL-15M). Connects a primary and secondary pedestal. (not shown)
- g. People-counting cables (ZPUP-PCICBL-4M, ZPUP-PCICBL-12M, ZPUP-PCICBL-15M). Connects an Alarm/Traffic Flow board in the primary pedestal to one in the secondary pedestal.(not shown)

Figure 6. Ultra•Post IV secondary pedestal FRUs



Ultra•Post IV Service Procedures



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

The following Ultra•Post IV service procedures refer to Figure 7.

Removing the Alarm Board

1. Remove both covers from the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of each cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the receiver board, disconnect the alarm cable from the alarm board port.
4. Remove the two screws on the top of the alarm lens.
5. Lift the alarm lens.
6. Slide the alarm board out of two slots in the top cap.

Removing the Receiver Board

1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the receiver board, disconnect the pedestal alarm cable and the remote alarm cable.
4. Loosen two fasteners securing the receiver board and slide it up until it disconnects from the transmitter board.
5. Remove the receiver board.

Removing the Transmitter Board

1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the transmitter board, disconnect antennas and shields from connectors P3, P4, P5, and P6. Pull on the connectors, not the wires.
4. For dual-pedestal systems, disconnect the interconnect cable and its shield from the transmitter board.
5. Loosen two fasteners securing the receiver board and slide it up until it disconnects from the transmitter board.
6. Loosen the four screws holding the cover on the enclosure and then lift the cover off.
7. Loosen six screws securing the transmitter board and remove it.

When installing a new transmitter board, install the small alignment screw in the upper right hand corner of the board before you install any of the other screws.



CAUTION: If the transmitter board has a screw hole at the location shown in Figure 3, installing a screw there can damage the Transmitter board. DO NOT install a screw in this location.

Replacing the Fuse/ Changing the Power Setting

1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. Loosen the four screws holding the cover on the enclosure and then lift the cover off.
4. Replace the fuse or change the power setting.
 - Replace blown fuse F1 with the type and rating marked on the board.
 - To change the power setting:
 - For 240Vac operation, remove jumper JW11 or in place it in its storage position (out).
 - For 120Vac operation, install jumper JW11 (in).

Replacing the Rubber Bumper Strip

1. Remove both covers from the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of each cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the receiver board, disconnect the alarm cable.
4. Remove the four screws on the underside of the top cap that attach it to the pedestal.
5. Carefully lift the top cap, sliding the alarm cable out of the pedestal cavity.
6. Slide the rubber strip(s) off the pedestal and replace with new strip(s). Tuck the new strip under the cap.
7. Reconnect the alarm cable and reinstall the top cap and covers.

Inhibiting the Transmitter

Use the transmit-inhibit circuit to determine the cause of unexplained alarms. If the alarm continues when the transmitter is disabled, interference is the likely cause. If the alarm stops when the transmitter is disabled, tags placed too close to the detector are the likely cause.

The transmitter can be inhibited several ways:

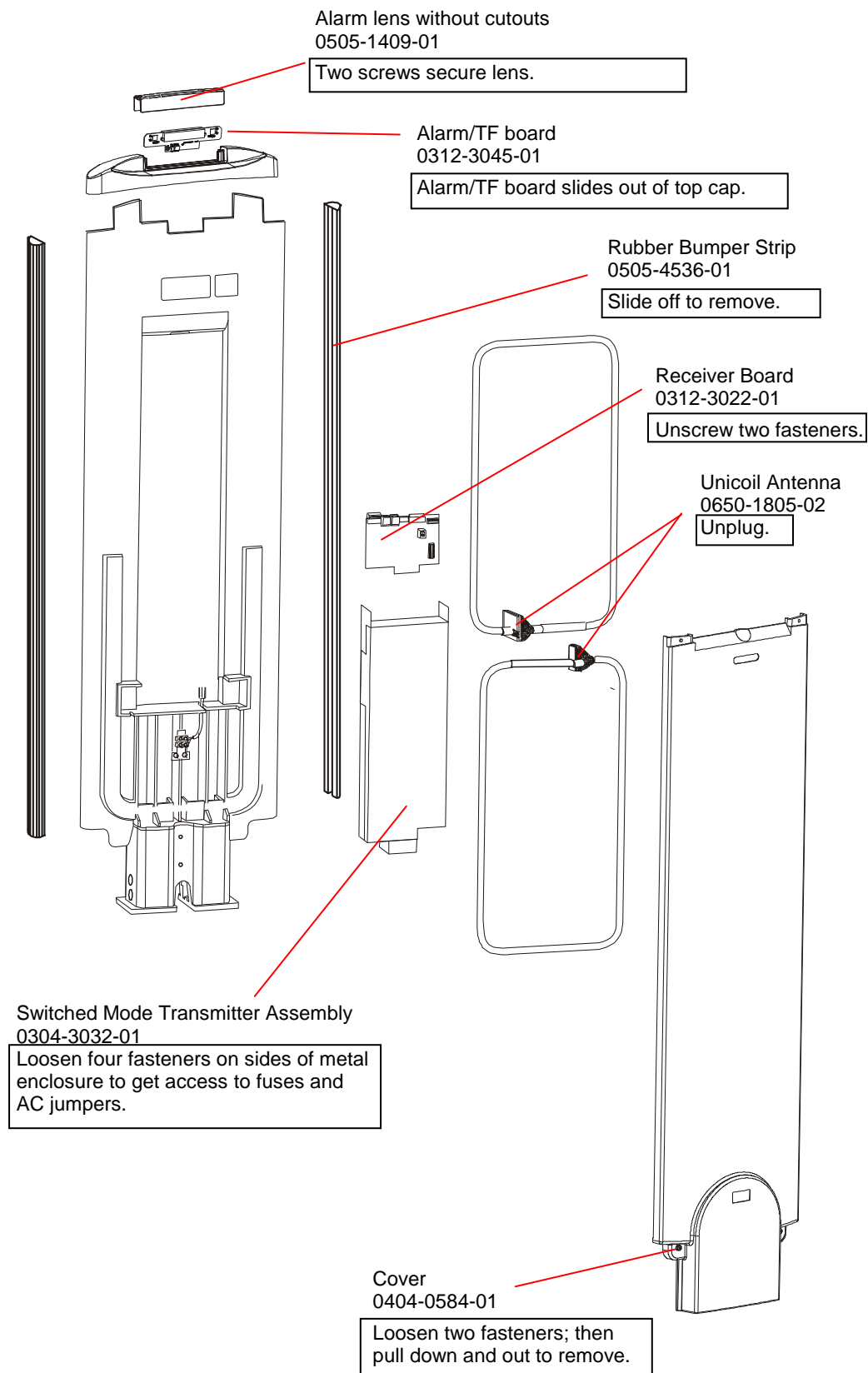
- By putting a jumper across the Tx-Inhibit pins (P12). The transmitter will be inhibited until the jumper is removed. See Figure 4.
- By connecting an external switch to the Tx-Inhibit connector. When the switch closes, the transmitter is inhibited until the switch opens. For example, this connector could be connected to an electronic switch that closes when a metal security gate is lowered at night. This prevents the system from alarming when the store is closed. See Figure 4.
- By pressing pushbutton S1 through the hole in front of the alarm lens on the top cap. See the procedure below for instructions on how this works.

This Tx-inhibit pushbutton works as follows:

1. Using a pointed instrument such as a straightened paper clip, press pushbutton S1. For Ultra•Post IV pedestals, S1 is located on the top cap in front of the alarm lens.

Note: A beep occurs each time S1 is pressed. The software configurator can disable this feature.
2. Press S1 once to disable the transmitter for 30 seconds (the power LED at the center of the board will flash rapidly).
3. Press S1 a second time within 30 seconds to disable both transmitter and alarm circuits indefinitely (power LED stays on continuously). This prevents continuous alarms until the detector can be serviced.
4. Press S1 a third time to return the detector to routine operation (power LED flashing once per second).

Figure 7. Ultra•Post IV primary pedestal access and disassembly



Setup and Service for Ultra•Post I/II/III Detectors

This section covers Ultra•Post, Ultra•Post II, and Ultra•Post III detectors.

Software Configurator

The Ultra•Post configurator (Figure 8), customized for 58 or 60kHz operation, displays a control panel used to change detector parameters. Pull-down menus above the control panel also allow you to monitor real-time operation, run diagnostics, and select system options.

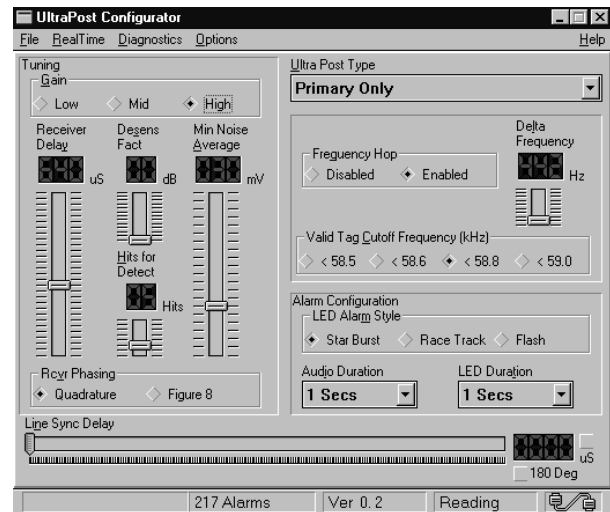
Note: Online help provided with the configurator provides a complete description of operation.

Parameters displayed for 58kHz operation are:

- Gain (low, mid, high—default: high)
- Receiver delay (400 to 960 μ s—default: 640 μ s)
- Desensitization factor (0 to 12dB—default: 0)
- Minimum noise average (0 to 100mV—default: depends on "Gain" and "Phasing" settings)
- Hits for a detect (3 to 10—default: 5 hits)
- Receiver phasing (quadrature, figure-8—default: quadrature)
- Ultra•Post type (primary only, secondary only, primary/secondary, primary/secondary alternating, primary transmit/secondary receive, primary receive/secondary transmit, primary transceiver/ferrite)
- Frequency hopping (on, off—default: on)
- Delta frequency (390 to 858Hz—default: 442Hz)
- Valid tag cutoff frequency (58.5kHz, 58.6kHz, 58.8kHz, or 59.0kHz—default: 58.8kHz).
- Alarm LED pattern (star burst, race track, and flash—default: star burst)
- Audio duration (1, 2, 3, 4, 5, 10, 20, 30 sec.—default: 1 sec.)
- LED duration (1, 2, 3, 4, 5, 10, 20, 30 sec.—default: 1 sec.)
- Line sync delay (0 to 10ms—default: 0)

Note: Refer to the online help provided with the configurator for a complete description of configurator operation.

Figure 8. Configurator control panel (58kHz)



AC Setup

Refer to the following figures:

- Ultra•Post dual-pedestal installation (Figure 9)
- Ultra•Post II/III dual-pedestal installation (Figure 10).

1. On the primary pedestal, loosen two fasteners. Then remove the cover from the exit side of the pedestal by pulling its bottom out and down. Set the cover aside. Repeat for the secondary pedestal, if used.
2. Pry the access button from the metal can to access this jumper. The pedestal is shipped configured for 240Vac operation; JW1 and JW12 removed or in their storage position (out). For 120Vac operation, install JW1 and JW12 (in).



CAUTION! If the jumper position is wrong for the AC voltage used, the pedestal will fail and have to be repaired.

Checking Detector Operation



WARNING! DO NOT perform the following procedure until you have thoroughly reviewed configurator software settings.

Refer to the following figures:

- Ultra•Post dual-pedestal installation (Figure 9)
- Ultra•Post II/III dual-pedestal installation (Figure 10)

1. On the primary pedestal, loosen two fasteners. Then remove the cover from the exit side of the pedestal by pulling its bottom out and down.

2. If present, remove the cardboard shipping retainer above the receiver board.

3. Verify all boards are properly seated and all cables are securely plugged in.

4. Verify jumpers on the transmitter board are in their default positions.

JW2 Out

JW3 Out

JW4 In

JW5 Out

JW6 Out

JW7 Out

JW8 In (Primary), Out (Secondary)

JW9 In

JW10 Out

JW11 Out

5. Place pedestals in their exact installation location.

6. If used, connect the secondary pedestal to the primary pedestal.

- a. Plug the interconnect cable into connector P2 on the transmitter board in the primary pedestal and its other end into connector P2 in the secondary pedestal.
- b. Plug the shield of the cable into connector P5 in the primary pedestal and its other end into connector P1 in the secondary pedestal.

7. Plug the appropriate power cord to the pedestal and its other end into the designated AC outlet.

Note: When power is first applied, all LEDs on the receiver board flash five times for 50Hz (six times for 60Hz) to indicate the detector passed its power up test. If LEDs do not flash, check for an error condition using either the laptop computer or by observing red LED DS3 on the board (see page 42).

Once the detector passes the power up test, the power LED at the top of the pedestal should flash once per second.

8. Connect the laptop computer to J4 on the receiver board and load the configurator.

9. In each pedestal, verify transmit current in each coil is between 14–18A.

10. On the receiver board, ensure transmit current potentiometer R27 is at its maximum clockwise position (see Figure 9 and Figure 10 for location). Check the transmit current. If it is still not 14–18A, see “Checking Resonance Using a Scope in the Primary Pedestal” or “Checking Resonance Using a Scope in the Secondary Pedestal”.

Note: Independent overlapping antenna coils in each pedestal affect each other's tuning. Therefore, it is necessary to disable one coil (top or bottom) when tuning the other.

11. On the laptop screen, select the Ultra•Post Type for the detector installed (for example “Primary/Secondary Transceiver”).

12. Check the following:

- On the receiver board, check TP33 (Figure 8 and Figure 10) using an oscilloscope. If noise is overdriving the receiver, reduce the gain.
- If validations occur with no tags/labels nearby (VAL LED appears to be constantly on), increase the minimum noise average or decrease the desensitization factor in 1dB increments until validations cease.
- If this Ultra•Max detector is causing another to constantly alarm or not detect, or vice versa, check the receive data display. If the bar meters are constantly reaching the maximum values, then increase line sync delay.
- Check for backfield. If too high, a) select the “Primary/Secondary Alternating” or “Primary Transmit/Secondary Receive” combination, or b) place the primary pedestal closest to the area affected by the backfield.
- To keep noise from entering the receiver, set receiver phasing to “figure-8”.
- Frequency hop is best used for detecting narrow labels. Is frequency hop on?
- Set the visual alarm style to one of the three patterns. Set audio and LED durations.

13. If using a remote alarm, connect its cable to dry contact relay connector J2 on the receiver/controller board. This connector brings the alarm input to ground and can support two alarm units.

J2 connections:

Pin 1	Ground
Pin 2	Not used
Pin 3	NO 2
Pin 4	ARM 2
Pin 5	NC 2
Pin 6	NO 1
Pin 7	ARM 1
Pin 8	NC 1



WARNING! Install ferrite bead 2700-0034-01 within .3m (1ft) of connector J2. Loop the alarm cable once and clamp the bead onto the loop.

14. Disconnect AC power from the pedestal and all cables including the laptop cable. Detector operation has now been verified.

Checking Resonance Using a Scope in the Primary Pedestal

Top coil...

1. Using the laptop, configure the detector as “primary” only.



WARNING—RISK OF ELECTRIC SHOCK! Remove jumper J2 to disable the transmitter before connecting an oscilloscope.

2. On the transmitter board, connect a scope probe across test point TP30 (top coil) and TP47 (ground).
- Note:** On revision D boards or higher, use the left side of R69 instead of TP30.
3. Disable the bottom coil by removing jumper J5.
 4. Plug in jumper J2.
 5. On the scope, verify waveform amplitude is at resonance, or 1.6–2.0V peak which corresponds to 14–18A (or 0.1V per ampere, minus 2 to 3A).

Note: Waveform amplitudes will be 2–3A higher than the actual current. For example, 1.9V peak may correlate to 16A.

Note: Burst duration should be 1.6ms. Burst repetition rate is 1.5 times the line frequency.

If waveform amplitude is OK, reinstall jumper J5 and check the primary bottom coil, next. If not, see “Retuning the pedestal”, then recheck the primary top coil.

Bottom coil...



WARNING—RISK OF ELECTRIC SHOCK! Remove jumper J2 to disable the transmitter before connecting an oscilloscope.

1. On the transmitter board, connect a scope probe across test point TP33 (top coil) and TP47 (ground).
- Note:** On revision D boards or higher, use the left side of R64 instead of TP33.
2. Disable the top coil by removing jumper J3.
 3. Plug in jumper J2.
 4. On the scope, verify waveform amplitude is 1.6–2.0V peak which corresponds to 14–18A (or 0.1 volt per ampere, minus 2 to 3 amperes).

Note: Waveform amplitudes will be 2–3A higher than the actual current. For example, 1.9V peak may correlate to 16A.

Note: Burst duration should be 1.6ms. Burst repetition rate is 1.5 times the line frequency. If waveform amplitude is OK, reinstall jumper J3 and recheck the primary top coil. If not, see “Retuning the pedestal”, then recheck the primary bottom coil.

Checking Resonance Using a Scope in the Secondary Pedestal

Top coil...

1. Using the laptop, configure the detector as “secondary” only.



WARNING—RISK OF ELECTRIC SHOCK! Remove jumper J2 to disable the transmitter before connecting an oscilloscope.

2. On the transmitter board, connect a scope probe across test point TP30 (top coil) and TP47 (ground).

Note: On revision D boards or higher, use the left side of R69 instead of TP30.

3. Disable the bottom coil by removing jumper J6.
4. Plug in jumper J2.
5. On the scope, verify waveform amplitude is at resonance, or 1.6–2.0V peak which corresponds to 14–18A (or 0.1V per ampere, minus 2 to 3A).

Note: Waveform amplitudes will be 2–3A higher than the actual current. For example, 1.9V peak may correlate to 16A.

Note: Burst duration should be 1.6ms. Burst repetition rate is 1.5 times the line frequency.

If waveform amplitude is OK, reinstall jumper J6 and check the secondary bottom coil, next. If not, see “Retuning the pedestal”, then recheck the secondary top coil.

Bottom coil...



WARNING—RISK OF ELECTRIC SHOCK! Remove jumper J2 to disable the transmitter before connecting an oscilloscope.

1. On the transmitter board, connect a scope probe across test point TP33 (top coil) and TP47 (ground).

Note: On revision D boards or higher, use the left side of R64 instead of TP33.

2. Disable the top coil by removing jumper J4.
3. Plug in jumper J2.
4. On the scope, verify waveform amplitude is 1.6–2.0V peak which corresponds to 14–18A (or 0.1 volt per ampere, minus 2 to 3 amperes).

Note: Waveform amplitudes will be 2–3A higher than the actual current. For example, 1.9V peak may correlate to 16A.

Note: Burst duration should be 1.6ms. Burst repetition rate is 1.5 times the line frequency.

If waveform amplitude is OK, reinstall jumper J4 and recheck the secondary top coil. If not, see “Retuning the pedestal”, then recheck the secondary bottom coil.

Retuning the Pedestal

If burst current in a top or bottom coil is not 14–18A (at resonance), optimize tuning by trying various jumper configurations until maximum peak current is achieved.

Jumpers JW2–JW6 are on the transmitter board. Use the Table 3 (top coil) or Table 4 (bottom coil) for your detector operating frequency, 58 or 60kHz. Start at the default jumper configuration and reconfigure jumpers to increase capacitance until transmit current peaks. If this does not happen, return to the default configuration and decrease capacitance. See Figure 9 or Figure 10 for jumper locations.

Table 4. Ultra•Post Tuning Table (Bottom Coil)

Step	JW7	JW8	JW9	JW10	JW11
1	Out	Out	Out	Out	Out
2 **	In	Out	Out	Out	Out
3	In	In	Out	Out	Out
4	In	Out	Out	Out	In
5	Out	Out	In	Out	Out
6 *	Out	In	In	Out	Out
7	In	In	In	Out	Out
8	Out	Out	Out	In	Out
9	Out	In	Out	In	Out
10	Out	Out	In	In	Out
11	Out	In	In	In	Out
12	In	In	In	In	Out
13	In	In	In	In	In

* Default for 58kHz

** Default for 60kHz

Table 3. Ultra•Post Tuning Table (Top Coil)

Step	JW2	JW3	JW4	JW5	JW6
1	Out	Out	Out	Out	Out
2 **	In	Out	Out	Out	Out
3	In	In	Out	Out	Out
4	In	Out	Out	Out	In
5 *	Out	Out	In	Out	Out
6	Out	In	In	Out	Out
7	In	In	In	Out	Out
8	Out	Out	Out	In	Out
9	Out	In	Out	In	Out
10	Out	Out	In	In	Out
11	Out	In	In	In	Out
12	In	In	In	In	Out
13	In	In	In	In	In

* Default for 58kHz

** Default for 60kHz

Figure 9. Ultra•Post dual-pedestal installation (switched mode transmitter)

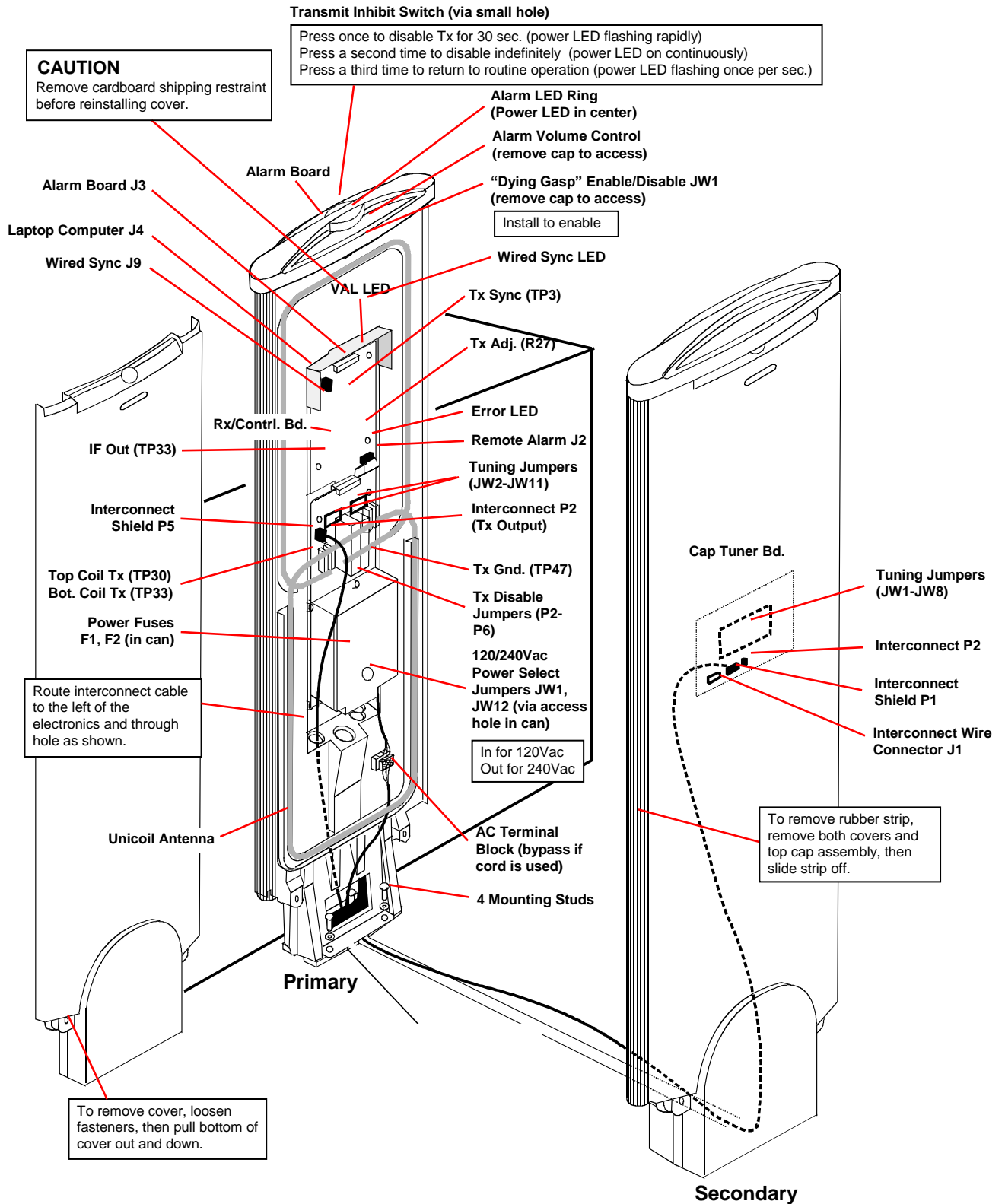
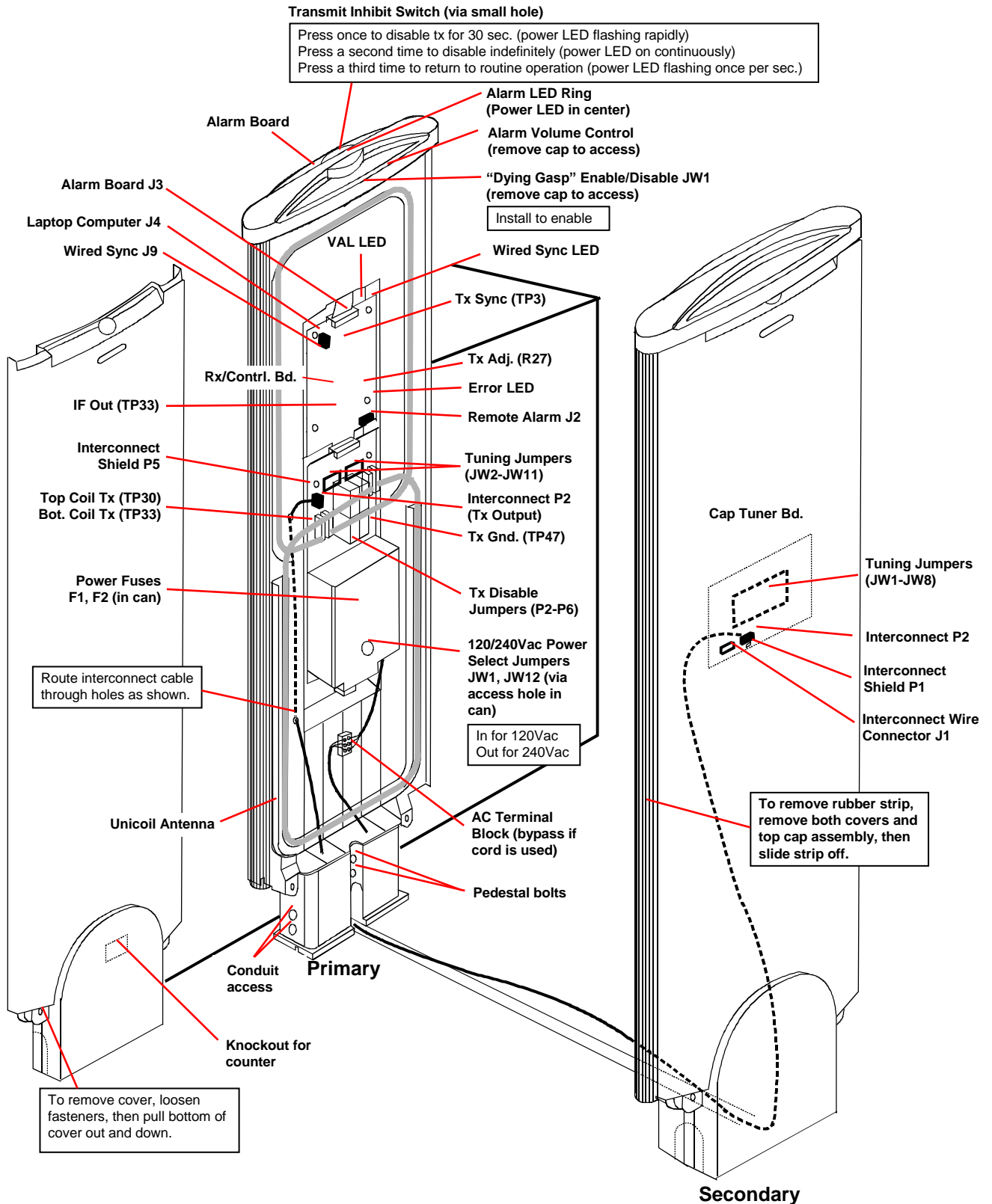


Figure 10. Ultra•Post II/III dual-pedestal installation (switched mode transmitter)



Ultra•Post and Ultra•Post II/III Parts

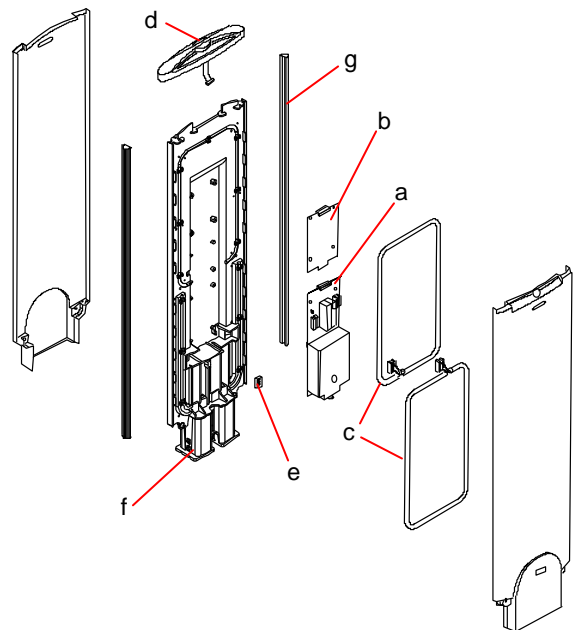
Primary Pedestal

The primary pedestal (Figure 11) consists of the following components:

- a. Transmitter/Power supply board 0301-0791-03. Generates and switches transmit current to the top and bottom antenna coils of the primary and secondary pedestals. This board also contains circuits and jumpers for tuning the primary antenna. Connectors on the board receive the interconnect cable from the secondary pedestal, when used.
- b. Receiver board 0301-0785-01. Receives and analyzes incoming signals and controls operation of the primary and secondary pedestals. A Telco receptacle on the board receives the cable from the laptop computer.
- c. Unicoil antenna 0650-1805-01. Alternates between the aiding and “figure-8” configurations for transmitting, or can be configured as quadrature or “figure-8” for receiving.
- d. Alarm board 0300-1715-02. Controls LED and audible alarm functions. A pushbutton accessed through a small hole in the top of the pedestal enables the transmitter to be momentarily or indefinitely disabled for troubleshooting. A jumper on the underside of the board enables or disables the “dying gasp” power interrupt feature.

- e. AC terminal block 2101-0034-03. AC power can either be hardwired to the inside of the pedestal or connected to the pedestal using one of several power cords (0351-0547-xx).
- f. Mounting base 0500-9067-01. Four bolts secure the pedestal to the floor. Two bolts (2838-0009-01) secure the pedestal to the base.
- g. Bumper strip 0500-5384-03 (2). Protects the pedestal from impact. Optional cart guards, bumper guards, and boots are available.

Figure 11. Primary pedestal components

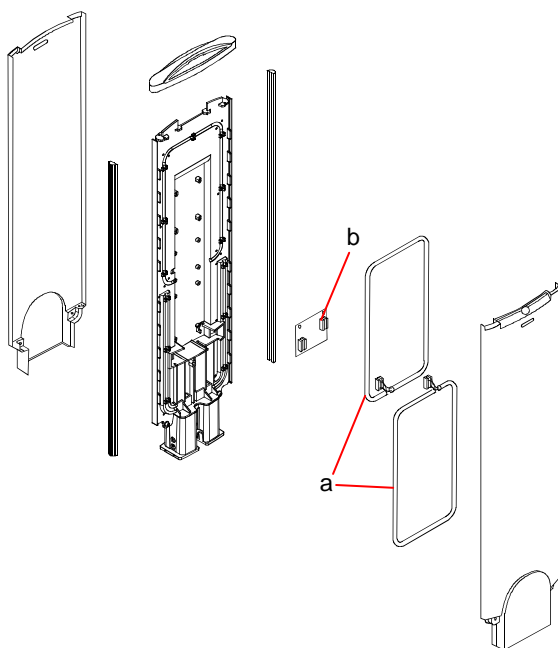


Secondary Pedestal

The secondary pedestal (Figure 12) contains the following components:

- a. Unicoil antenna 0650-1805-01. Alternates between the aiding and “figure-8” configurations for transmitting, or can be configured as quadrature or “figure-8” for receiving.
- b. Tuning board 0301-0816-01. Contains circuits and jumpers for tuning secondary transmit coils. For convenience, should the connector of the interconnect cable be removed to facilitate routing, instead of connecting the cable’s wires to the connector, they can be connected to a terminal block on this board.

Figure 12. Secondary pedestal components



Ultra•Post Service Procedures



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

Unless stated otherwise, the following service procedures apply to the Ultra•Post, Ultra•Post II, and Ultra•Post III pedestal models.

Removing the Alarm Board

Referring to Figure 16 and Figure 17:

1. Remove both covers from the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of each cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the receiver board, disconnect the alarm cable from the alarm board port.
4. Remove the alarm board from the top cap.

For the Ultra•Post, Ultra•Post II, and Ultra•Post III, remove the four screws under the top cap. Then carefully lift the cap and pull the cable out of the pedestal cavity. Two prongs hold the alarm board in place. Carefully bend the prongs inward to release the board from the cap.

Removing the Receiver Board

Note: If removing a board in the Ultra•Post Aisle pedestal, first remove the alarm interface board.

Referring to Figure 16 and Figure 17:

1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the receiver board, disconnect the pedestal alarm cable and the remote alarm cable.

4. Loosen four fasteners securing the receiver board and slide it up until it disconnects from the transmitter board.
5. Remove the receiver board.

Removing the Transmitter Board

Note: If removing a board in the Ultra•Post Aisle pedestal, first remove the alarm interface board.

Referring to Figure 16 and Figure 17:

1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the transmitter board, disconnect antennas and shields from connectors P3, P4, P5, and P6. Pull on the connectors, not the wires.
4. For dual-pedestal systems, disconnect the interconnect cable and its shield from the transmitter board.
5. Loosen four fasteners securing the receiver board and slide it up until it disconnects from the transmitter board.
6. Loosen four screws securing the transmitter board and remove it.

Note: If replacing Ultra•Post board 0301-0784-01 with Ultra•Post II/III board 0301-0784-03, remove the fan drip plate and standoffs from the -01 board and install them on the -03 board.

Replacing the Fuse/ Changing the Power Setting

Referring to Figure 16 and Figure 17:

1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. Loosen the screws securing the lid of the metal can and lift the lid off.
4. Replace the fuse or change the power setting.
 - Replace blown fuse F1 with the type and rating marked on the board.
 - To change the power setting:
 - For 240Vac operation, remove jumper JW11 or in place it in its storage position (out).
 - For 120Vac operation, install jumper JW11 (in).

Replacing the Rubber Bumper Strip

Referring to Figure 16 and Figure 17:

1. Remove both covers from the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of each cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Disconnect AC power when servicing.

3. On the receiver board, disconnect the alarm cable.
4. Remove the four screws (two on each side) under the top cap.
5. Carefully lift the cap and pull the cable out of the pedestal cavity.

6. Slide the rubber strip off the pedestal and replace it with a new strip. Tuck the new strip under the cap.
7. Reconnect the alarm cable and reinstall the top cap and covers.

Inhibiting the Transmitter

Use the transmit-inhibit circuit to determine the cause of unexplained alarms. If the alarm continues when the transmitter is disabled, interference is the likely cause. If the alarm stops when the transmitter is disabled, tags placed too close to the detector are the likely cause.

This circuit works as follows:

1. Using a pointed instrument such as a straightened paper clip, press pushbutton S1. S1 is located within the LED ring (see Figure 9).

Note: A beep occurs each time S1 is pressed. The software configurator can disable this feature.

2. Press S1 once to disable the transmitter for 30 seconds (the power LED at the center of the board will flash rapidly).
3. Press S1 a second time within 30 seconds to disable both transmitter and alarm circuits indefinitely (power LED stays on continuously). This prevents continuous alarms until the detector can be serviced.
4. Press S1 a third time to return the detector to routine operation (power LED flashing once per second).

Upgrading the Program Memory Module

The Program Memory Module is a part on the receiver board of Ultra•Post, Ultra•Post II, and some older versions of Ultra•Post III pedestals only. It is replaced if it is defective or if the download procedure is interrupted at a critical point and the system cannot reboot. Install Kit 0351-1304-01



CAUTION—ELECTROSTATIC SENSITIVE DEVICE!

Use a ground strap or contact chassis ground to dissipate static electricity while working on the PC board.

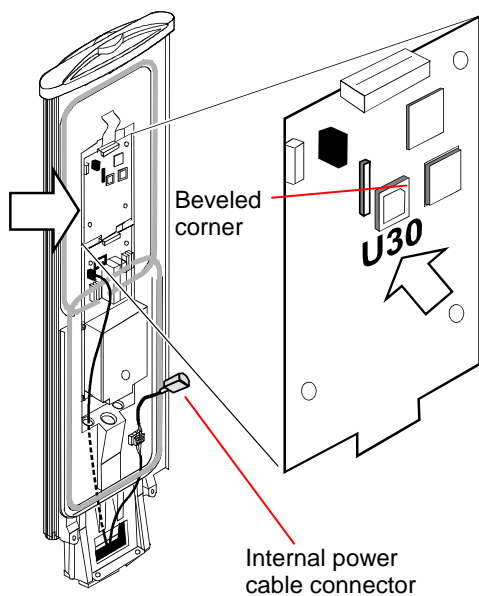
1. Remove the cover from the exit side of the primary pedestal. To do this: loosen two fasteners at the base of the cover, and then pull the bottom of the cover out and down.
2. Unplug the power cord from the transmitter board.



WARNING—RISK OF ELECTRIC SHOCK! Do not touch the terminal block below the connector. If wired, it could be carrying 120v or 240vac.

3. On the receiver board, locate program memory module U30 (Figure 13).

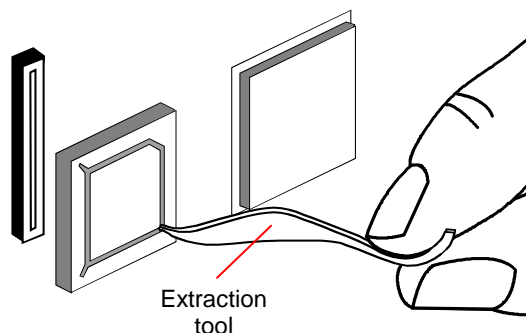
Figure 13. Identifying the Memory Module



4. Carefully insert an extraction tool into the corner of the memory module where shown (Figure 14). Carefully pry the module out of the socket.

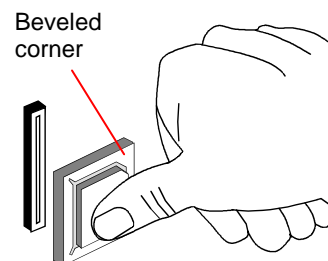
Note: If necessary, alternately insert the extraction tool into the socket's diagonal corner to "rock" the module out of the socket.

Figure 14. Inserting the Extraction Tool



5. Align the new memory module over the socket with its beveled corner to the upper right (Figure 15). Carefully press down on the module until its top is flush with the socket.

Figure 15. Inserting the Memory Module



6. Reconnect AC power to the pedestal.
7. On the receiver board, observe LEDs during startup. If an error code appears, refer to error codes listed on page 42.

Figure 16. Ultra•Post parts access and disassembly

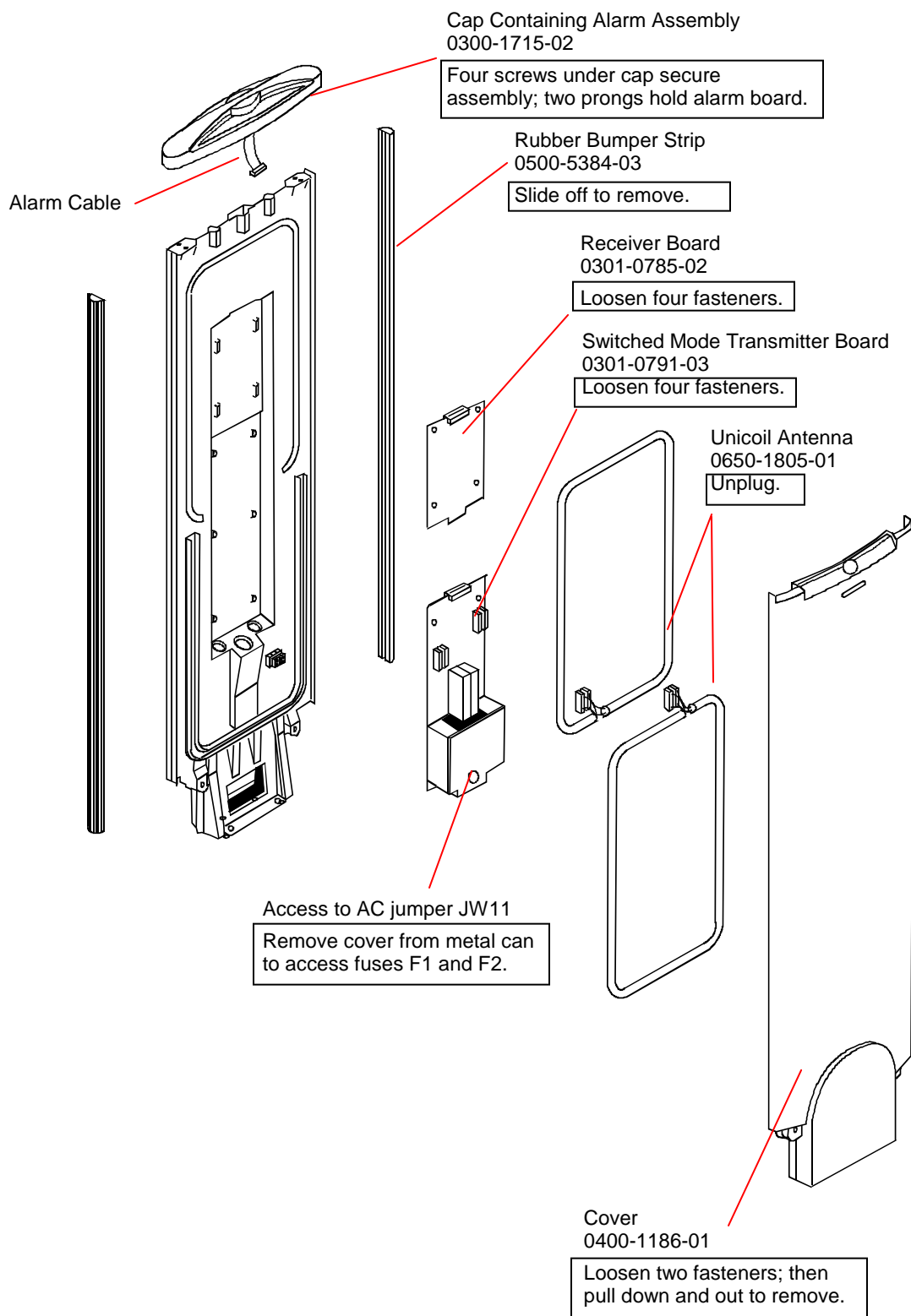
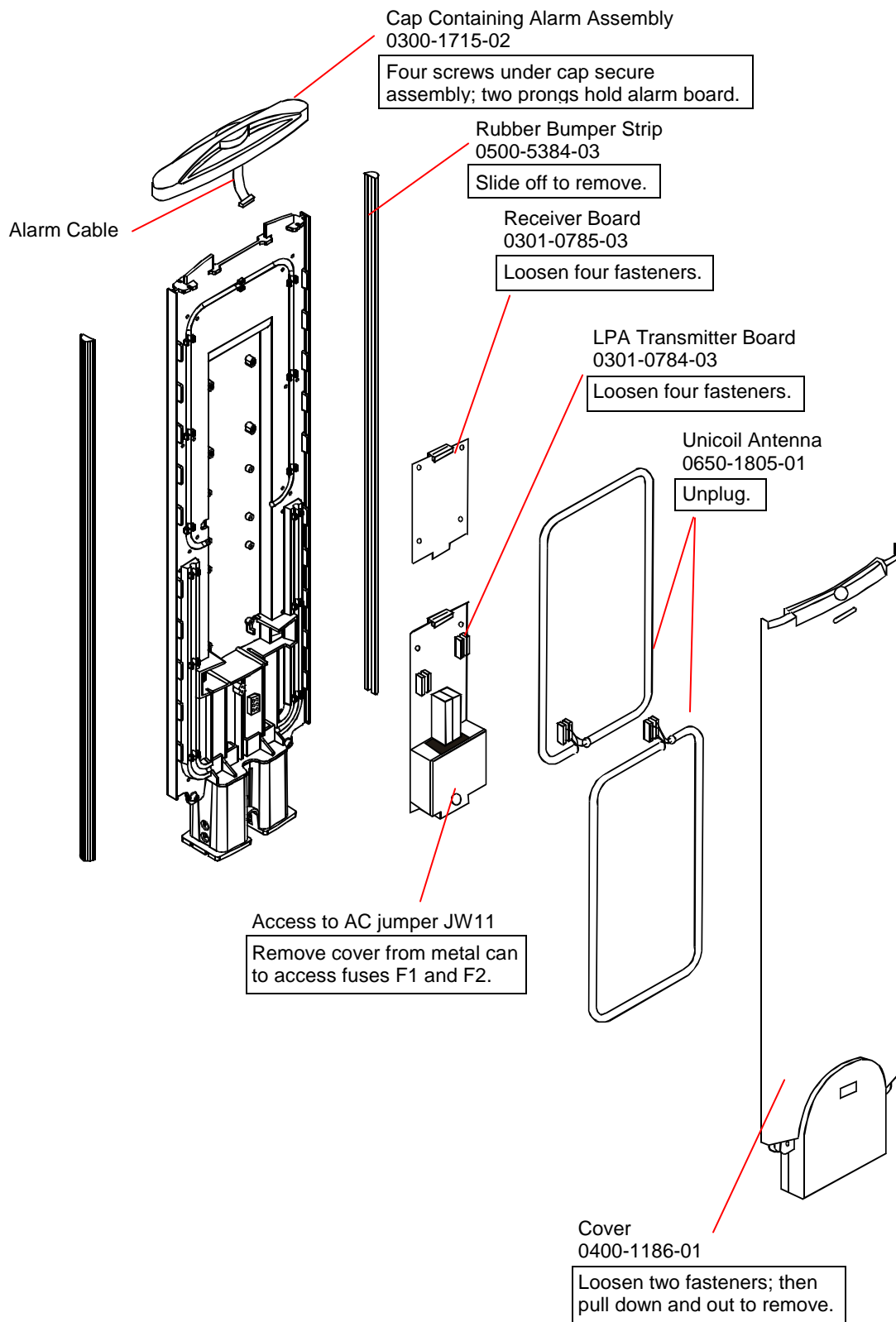


Figure 17. Ultra•Post II/III parts access and disassembly



Setup and Service for Ultra•Post Plus Detectors

This section covers EuroMax pedestal antenna tuning and service for Ultra•Post Plus controllers.

Software Configurator

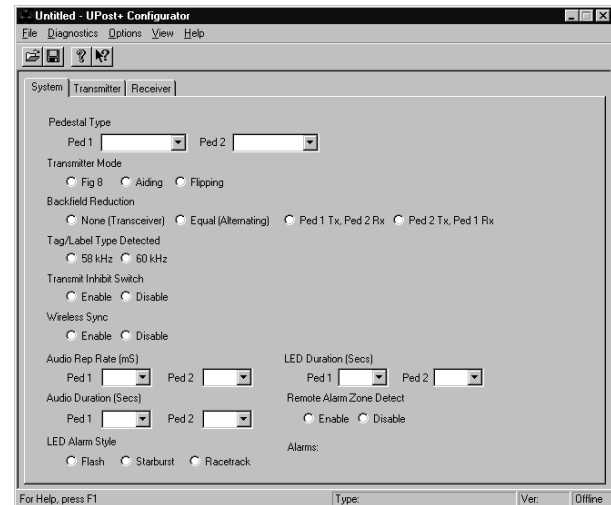
The Ultra•Post Plus software configurator (Figure 18) displays control panels that enable you to change detector parameters and monitor detector performance.

Use the Ultra•Post Configurator to:

- Select pedestal type.
- Select transmitter Mode.
- Select 58kHz or 60kHz tag detection.
- Select the backfield reduction desired.
- Resonate the antennas based on real-time current.
- Adjust the detector's ability to detect a tag using real-time data.
- Set the alarm pattern and its duration.
- Display real time transmitter and receiver data.
- Diagnose detector operation.
- Download firmware.
- Reset alarm counts and clear error codes.

Note: Refer to the online help provided with the configurator for a complete description of configurator operation.

Figure 18. Configurator control panel



EuroMax Plus Antenna Tuning

Capacitor board 0301-1515-01 (Figure 19) contains an adjustable high voltage capacitance network used to resonate the transmit antennas. Resonance is achieved by changing jumper combinations in steps.



WARNING—RISK OF ELECTRIC SHOCK!

This procedure involves removing covers to expose printed circuit boards. Do not touch boards and connectors with power on.

Use the configurator to disable the transmitter before reconfiguring tuning jumpers on the capacitor board.

Do the following for each pedestal:

1. Remove the half shell covering the capacitor board (Figure 19) from the pedestal and check that the transceiver cable from the controller is connected to the board.
2. In the controller, check that transmitter and alarm boards are connected to the receiver/controller board (Figure 22 on page 33).
3. Turn on the controller or enable the transmitter.
4. On the receiver board, connect the laptop computer to connector J4 and load the configurator.
5. On the Transmitter Control Panel, display the transmit current for the pedestal to be tuned.
6. **TURN OFF POWER!** Turn off the controller or disable the transmitter.
7. On the capacitor board, insert jumpers JW5 and JW15 across pins 1-2 for EuroMax Plus.
8. Set the tuning jumpers JW1–JW4 (bottom coil) and JW11–JW14 (top coil) to their default settings for the antenna configuration and operating frequency used (Table 5 or Table 6).

Table 5. Default settings for aiding

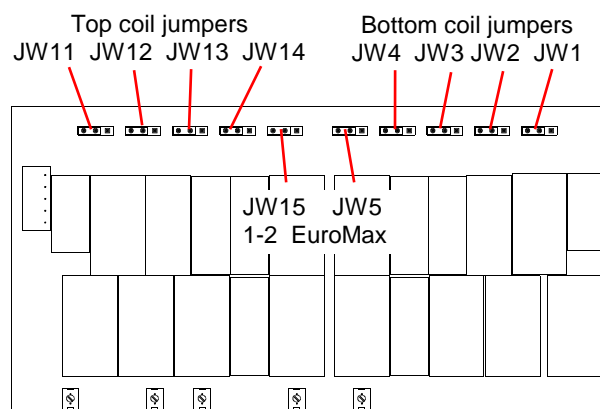
Freq	JW1 JW11	JW2 JW12	JW3 JW13	JW4 JW14
58kHz	1-2	1-2	2-3	1-2
60kHz	1-2	1-2	1-2	2-3

Table 6. Default settings for figure-8

Freq	JW1 JW11	JW2 JW12	JW3 JW13	JW4 JW14
58kHz	1-2	1-2	1-2	2-3
60kHz	1-2	1-2	2-3	2-3

Note: Jumper position 1-2 adds capacitance; jumper position 2-3 bypasses capacitance.

Figure 19. Capacitor board 0301-1515-01



9. Turn on the controller or enable the transmitter.
10. Beginning with the first antenna, use the system's software configurator to check top and bottom antenna coils for maximum current (14.5–16A). If current is above 14.5A, tuning is complete. If not, continue.

Note: If the configurator is not available, use an oscilloscope with a current probe. Where the plug of the Tx/Rx cable connects to the controller, attach the probe around either the white wire (top coil) or the black wire (bottom coil).

11. Tune the antenna beginning with the top coil.
 - a. **TURN OFF POWER!** Turn off the controller or disable the transmitter.
 - b. Beginning with the default settings (Table 7), reconfigure jumpers JW11–JW14 on the capacitor board up one tuning step.
 - c. Turn on the controller or enable the transmitter.
12. If the current goes down, repeat step 11 but instead, go down one tuning step (Table 7). Continue repeating step 11, going up or down in steps, until current is maximized above 14.5A.
13. Repeat steps 11 and 12 for the bottom coil (jumpers JW1–JW4).
14. Recheck the top coil for current change and tweak if necessary. Do the same for the bottom coil. Ensure current is maximized in both. If current is above 14.5A, tuning is complete.
15. Perform steps 6–14 for the next antenna, if used.
16. Do a tag walk-through test.

The detector may have to be adjusted should any of the following conditions occur:

 - Noise closely mimics the tag/label signal.
 - The output of the bandpass filter in the receiver is clipping.
 - Noise spikes are frequently initiating a validation state.
 - The system is being affected by out-of-phase transmit bursts from a nearby Ultra•Max system.

Refer to “Troubleshooting” on page 37.

Table 7. EuroMax Plus tuning steps

Step	JW1 JW11	JW2 JW12	JW3 JW13	JW4 JW14
1	2-3	2-3	2-3	2-3
2	1-2	2-3	2-3	2-3
3	2-3	1-2	2-3	2-3
4 ***	1-2	1-2	2-3	2-3
5	2-3	2-3	1-2	2-3
6	1-2	2-3	1-2	2-3
7	2-3	1-2	1-2	2-3
8 **	1-2	1-2	1-2	2-3
9	2-3	2-3	2-3	1-2
10	1-2	2-3	2-3	1-2
11	2-3	1-2	2-3	1-2
12 *	1-2	1-2	2-3	1-2
13	2-3	2-3	1-2	1-2
14	1-2	2-3	1-2	1-2
15	2-3	1-2	1-2	1-2
16	1-2	1-2	1-2	1-2

* Default for aiding, 58kHz

** Default for aiding, 60kHz; and figure-8, 58kHz

*** Default for figure-8, 60kHz

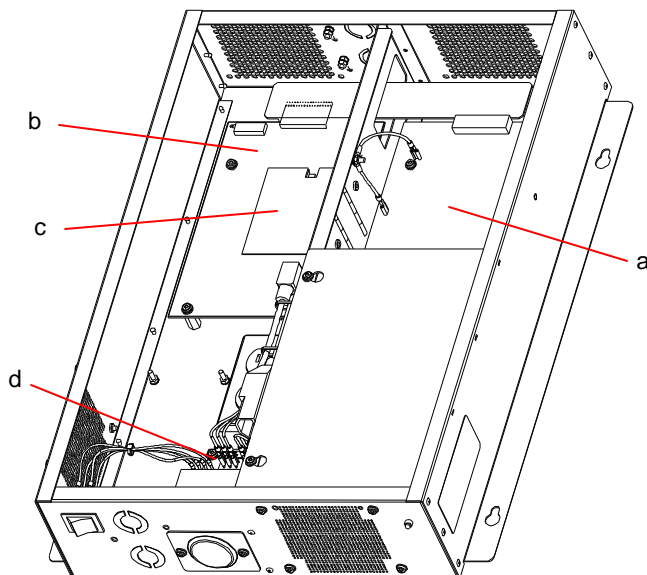
Ultra•Post Plus Parts

Ultra•Post Plus Controller

The controller (Figure 20) consists of the following components:

- Transmitter/Power supply board 0301-0784-02. Generates and switches transmit current to top and bottom antenna coils in the pedestals. Two connectors accept interconnect cables from the pedestals.
- Receiver board 0301-0785-01. Receives and analyzes incoming signals and controls the operation of the detector. A connector controls remote alarm units. A receptacle accepts a Telco connector from a laptop computer.
- Alarm interface board 0301-1511-01. Controls the alarm lamp and audible alarm in EuroMax pedestals. It also controls a remote alarm associated with the second pedestal.
- AC terminal block. AC power can either be hardwired to this terminal block or connected to the controller using one of several power cords (0351-0547-xx).

Figure 20. Controller (ZEUPPLUS-E/E2/E3)



EuroMax Plus Pedestal

The EuroMax Plus pedestal (Figure 21) contains the following components:

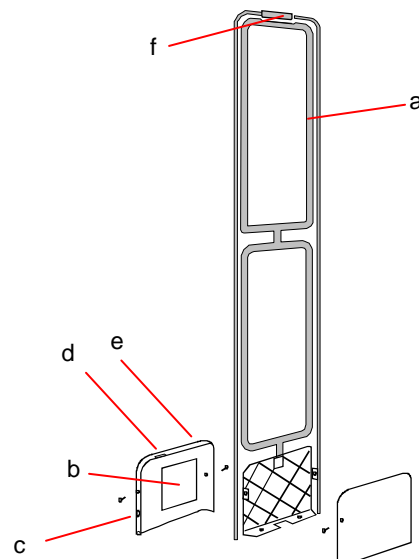
- Unicoil antenna 1810-0262-01. The same coil is used to transmit and receive.
- Capacitor board 0301-1515-01. This board contains circuitry and jumpers for tuning the transmit coils.
- Key switch 0650-2179-01. A key switch in the base cover of the pedestal enables the transmitter to be momentarily or indefinitely disabled for troubleshooting.
- Counter 0650-2180-01. A counter in the base cover of the pedestal increments by one for each alarm event that occurs.
- Cover assembly 0300-2277-01. Contains the capacitor board, key switch, counter, audible alarm buzzer, and cables.
- Alarm lamp. Indicates that the pedestal has detected a tag/label.

The EuroMax Plus Receiver pedestal contains the following components:

- Receiver antenna 1810-0178-01. Used only to receive.
- Differential amplifier board (0301-0506-01). This board contains circuitry to amplify the receive signal.

The EuroMax Plus Receiver pedestal also contains an alarm lamp, key switch, and counter but they are not functional.

Figure 21. EuroMax Plus pedestal



Ultra•Post Plus Service

Removing the Alarm Interface Board

The following steps refer to Figure 22.

1. Turn off power to the controller and remove its cover.
2. On the alarm interface board, disconnect cables from terminal blocks JP1 and JP2.
3. Loosen four screws securing the alarm interface board to the bracket. Then remove screws securing the bracket to the sidewall of the controller.
4. Carefully remove the alarm interface board and bracket from connectors on the receiver/controller board.

Removing the Receiver/Controller Board

The following steps refer to Figure 22.

1. Turn off power to the controller and remove its cover.
2. Disconnect the interconnect board from the edge connector at the top of the receiver board.
3. If used, disconnect the remote alarm cable from connector J2 on the receiver board.
4. Remove four screws securing the receiver board to the controller.
5. Remove the receiver board.

Removing the Transmitter Board

The following steps refer to Figure 22.

1. Turn off power to the controller and remove its cover.
2. Disconnect the interconnect board from the edge connector at the top of the transmitter board.
3. Unplug the power cord from the board.
4. Disconnect interconnect cables from P2 and P12 on the board.
5. Remove the four screws securing the transmitter board to the controller and remove the board.

Replacing the Fuse/ Changing Power Setting

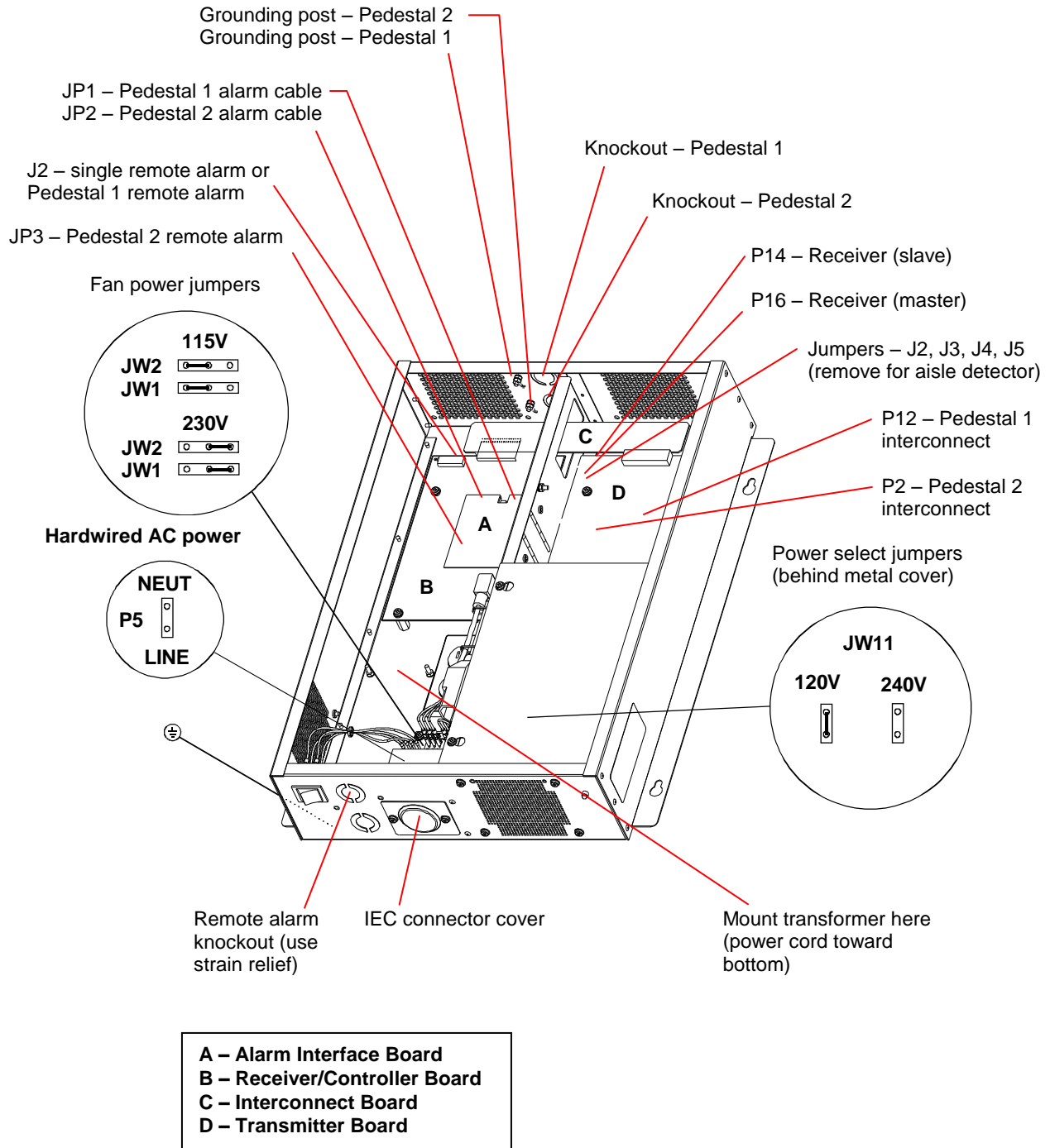
The following steps refer to Figure 22.

1. Turn off power to the controller and remove its cover.
2. Loosen screws securing the lid of the metal can and lift the lid off. Replace blown fuse F1 with the type and rating marked on the board.
3. Make sure the controller's fan is wired for the correct AC voltage. The controller is shipped configured for 240Vac operation; JW1 and JW12 removed or in their storage position (out). For 120Vac operation, install JW1 and JW12 (in).



CAUTION! If the jumper position is wrong for the AC voltage used, the controller will fail and have to be repaired.

Figure 22. Ultra•Post Plus controller



Inhibiting the Transmitter

A transmit-inhibit key switch at the base of the EuroMax Plus pedestal can be used to determine the cause of unexplained alarms. If the alarm continues when the transmitter is disabled, the likely cause is interference. If the alarm stops when the transmitter is disabled, the likely cause is tags/labels placed too close to the detector.

The spring-loaded key switch works as follows:

1. Toggle the key switch once to disable the detector transmitter for 30 seconds (power LED on the pedestal will flash rapidly).

Note: A beep occurs each time the key switch is toggled. The configurator software can disable the transmit-inhibit feature.

2. Toggle the key switch a second time within 30 seconds to disable both the transmitter and alarm indefinitely (power LED stays on continuously). This prevents continuous alarms until the detector can be serviced.
3. Toggle the key switch a third time to return to routine detector operation (power LED flashing once per second).

Cleaning the Pedestal

Use a soft cloth soaked with mild glass cleaner to clean the acrylic surface of the EuroMax Plus pedestal and the half shells.

Upgrading the Program Memory Module

Use Install Kit 0351-1304-01

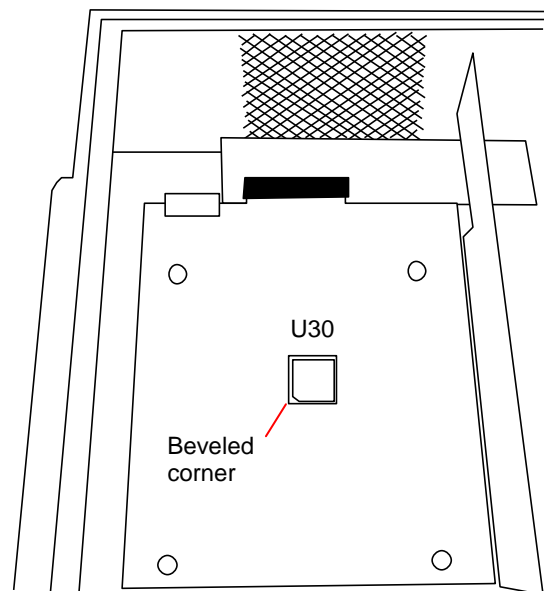


CAUTION—ELECTROSTATIC SENSITIVE DEVICE!

Use a ground strap or contact chassis ground to dissipate static electricity while working on the PC board.

1. Turn off power to the controller and remove its cover.
2. If present, remove the alarm interface board and bracket.
3. On the receiver board, locate program memory module U30 (Figure 23).

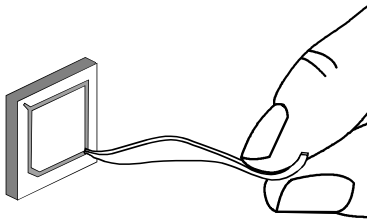
Figure 23. Identifying the Memory Module



4. Carefully insert an extraction tool into the corner of the memory module where shown (Figure 24). Carefully pry the module out of the socket.

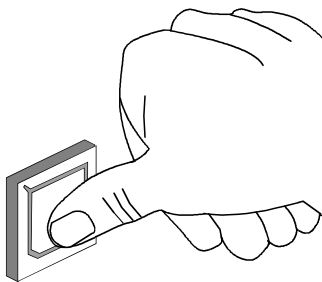
Note: If necessary, alternately insert the extraction tool into the socket's diagonal corner to "rock" the module out of the socket.

Figure 24. Inserting the Extraction Tool



5. Align the new memory module over the socket with the beveled corner of the module and the beveled corner of the socket aligned (Figure 25). Carefully press down on the module until its top is flush with the socket.

Figure 25. Inserting the Memory Module



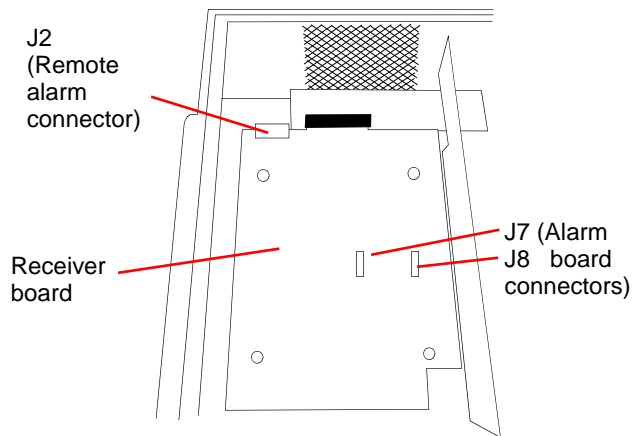
6. If necessary, reinstall the alarm interface board. Refer to the instructions on page 35.
7. Reconnect AC power to the controller.
8. On the receiver board, observe LEDs during startup. If an error code appears, refer to error codes listed on page 42.

Installing the Alarm Interface Board

The alarm interface board controls the alarm lamp and audible alarm in the EuroMax Plus and alarming secondary pedestals. To install the alarm interface board in the controller, do the following:

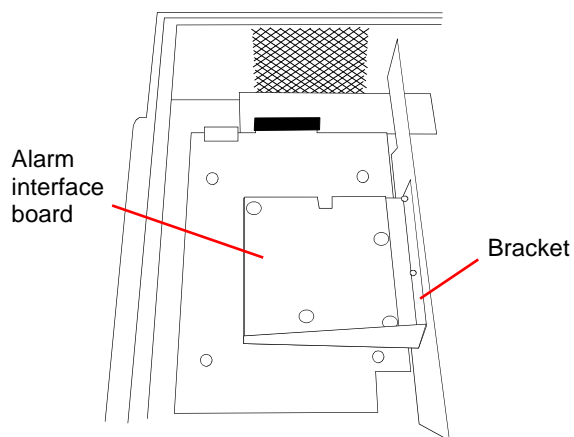
1. Attach alarm interface board 0301-1511-01 to bracket.
 - a. Align the square cutout and holes in the bracket with the cutout and connectors on the board.
 - b. Loosely attach the alarm interface board to the bracket using four screws. **DO NOT** tighten screws.
2. Remove receiver board from the controller.
 - a. Disconnect the interconnect board from the connector J1 at the top of the receiver/controller board.
 - b. If used, disconnect the remote alarm cable from connector J2 on the receiver board.
 - c. Remove four screws securing the board to the controller.
 - d. Remove the board from the controller.
3. Mount the alarm interface board with the loosely attached bracket to the receiver/controller board (Figure 27).
 - a. Insert the connector without the shroud into connector J7 on the receiver board.
 - b. Insert the connector with the shroud into connector J8 on the receiver board.
 - c. Carefully press the board to mate the connectors.

Figure 26. Receiver board in controller



4. Reinstall receiver board.
 - a. Install the receiver board in the controller using the four screws removed in step 2.
 - b. If used, reconnect the remote alarm cable to connector J2 on the receiver board.
 - c. Reattach the interconnect board to the edge connector at the top of the board.
5. Apply insulation tape to the bracket to insulate it from the sidewall and secure the bracket to the sidewall of the controller using two screws.
6. Tighten four screws securing the alarm interface board to the bracket.

Figure 27. Receiver board with alarm interface board



Troubleshooting

Dead system/Low sensitivity

A detector that is dead or has low sensitivity may be without power, in the wrong mode, or affected by noise from an electronic device such as a TV set or PC monitor, or from certain fluorescent, halogen, or neon lamps.

To diagnose the problem, you use the Mode lamp inside the alarm lamp assembly

- *Ultra•Post IV*. The mode lamp is a red LED (DS1) on the alarm board that is visible on the aisle side of the alarm lens. (See Figure 28).
- *Ultra•Post*, *Ultra•Post II*, *Ultra•Post III*. The mode lamp is a green LED inside the center of alarm lamp assembly (See Figure 29).
- *Pro-Max Plus* and *Floor-Max Plus / AMS-2001* detectors do not have a mode lamp or switch.

Figure 28. Mode lamp on Ultra•Post IV

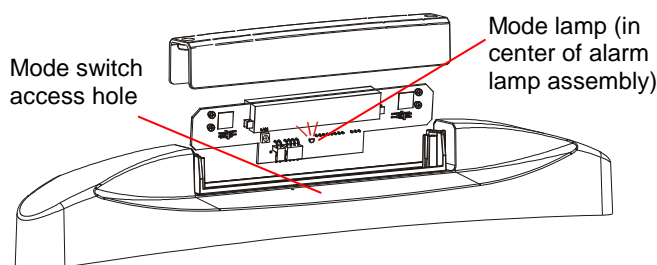
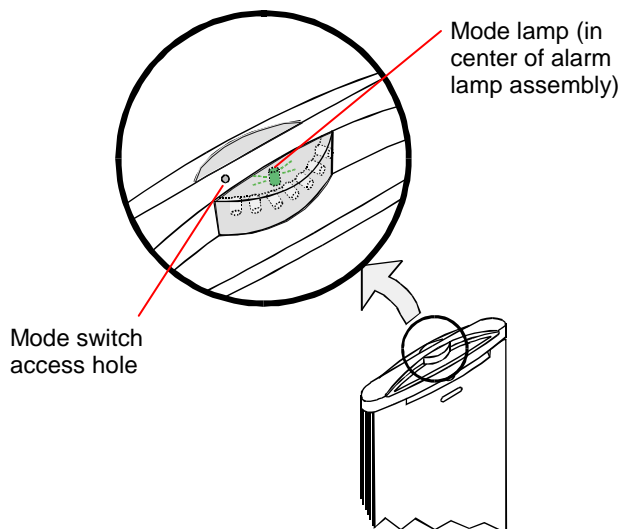


Figure 29. Mode lamp on Ultra•Post I/II/III



1. Observe the Mode lamp. In what state is the lamp?
 - Off - No power
 - Steady (not flashing) – Service Mode
 - Flashing twice a second – Hidden Tag Mode
 - Flashing once a second – Normal Mode
2. Use the following table to determine the problem/action to take.

Status	Problem/Action
Off	<p>The detector has no power.</p> <ol style="list-style-type: none"> 1. Ensure the detector is connected to the AC power source. 2. Check the circuit breaker in the store's breaker box. If the breaker tripped, reset it and check system performance. If the breaker will not stay on, call maintenance. If the breaker is OK, the detector needs service. Call for assistance.
Flashing twice per second	<p>Detector is in Hidden Tag Mode.</p> <ol style="list-style-type: none"> 1. Wait 30 seconds for the detector to revert to Normal Mode. 2. Use a tag to test the system for sensitivity. If the detector still has low sensitivity, see "Flashing once per second" below.
On steady (not flashing)	<p>Detector is in Service Mode.</p> <ol style="list-style-type: none"> 1. To change detector to normal mode, insert a paper clip into the mode switch access hole (Figure 29) and press the switch once. 2. Test the detector for sensitivity with the tag/label. If the detector still has low sensitivity, see "Flashing once per second" below.
Flashing once per second	<p>An electronic device or a lamp may be causing interference. One at a time, turn off each device or lamp within 3m (10ft) of the pedestals and use a tag to test sensitivity. If sensitivity improves when a device is turned off, that is the interference source. Leave the device off or move it away from the receiver antennas. If sensitivity does not improve, call for assistance.</p>

False Alarms

Nearby electronic devices or hidden tags/labels can cause the detector to false alarm.

1. To help diagnose the problem, the detector has a Mode LED (Figure 28 or Figure 29). In what state is the lamp?

Note: Pro-Max Plus and Floor-Max Plus detectors do not have a mode lamp or switch.

- Flashing once a second – Normal Mode
 - Steady (not flashing) – Service Mode
 - Flashing twice a second – Hidden Tag Mode
2. Does pedestal alarm constantly or just sometimes—twice a minute or less?
 - Sometimes. Go to step 3.
 - Constantly. Go to step 4.
 3. Move all store products 3m (10ft) from pedestal. Do alarms stop?
 - Yes. One or more moved products have a tag/label. Find and remove it, you are done.
 - No. Look for tags/labels within 3m (10ft) of pedestals. If no tags/labels are found and problem persists, go to step 6.
 4. Place the alarming pedestal in Hidden Tag Mode by inserting the end of a paper clip into the mode switch access hole (Figure 29) and pressing the switch once. The pedestal should emit a three second tone and enter Hidden Tag Mode and the mode lamp should flash rapidly. (If not, this feature has been disabled. Go back to step 3.) After 30 seconds, Hidden Tag Mode reverts to Normal Mode.
Do alarms occur during the 30 seconds Hidden Tag Mode is on?
 - No. Go to step 5.
 - Yes. Go to step 6.
 5. After the Hidden Tag Mode completes, do alarms resume?
 - Yes. One or more tags/labels are still in the area. Find and remove them, you are done.
 - No. Ensure you waited 30 seconds and then check mode light to ensure pedestal is not in Service Mode. If it is in Service Mode, press the mode switch once more to return to Normal Mode and go back to step 1. If it is not in Service Mode, wait until the system false alarms again before performing this procedure.
 6. A nearby device such as a TV set or computer, or a neon or halogen lamp may be causing false alarms. One at a time, turn off each device or lamp within 3m (10ft). Do alarms stop when the device or lamp is off?
 - Yes. That device or lamp is the source of the false alarms. Leave the device or lamp off or move it away from the receiver antennas. If you cannot, see “No” below.
 - No. Call for assistance. Place the pedestal in Service Mode to stop the alarm until service arrives by inserting the end of a paper clip into the mode switch access hole (Figure 29). If the pedestal is in the Normal Mode, press the mode switch twice; otherwise, press the mode switch once. The mode lamp should stay on continuously.

Continuous Receiver Tuning Procedure

Ultra•Max detectors set their timing to the zero crossing of the AC line. Another Ultra•Max detector may be causing interference with the Ultra•Post detector if AC line phasing differences exist between the two detectors. Use the following procedure to find the transmit signal of another detector and adjust the line sync delay to minimize interference.

Note: This procedure is only valid for the Ultra•Post, Ultra•Post II, Ultra•Post III, and Ultra•Post Plus. You cannot monitor the line sync delay of an Ultra•Post IV with an oscilloscope.

1. Connect a scope/meter to the receiver/controller board of the primary pedestal.
Ultra•Post, Ultra•Post II, and Ultra•Post III: Connect Channel A probe to Bandpass TP26 and Channel B probe to TP15 (Figure 30).
Ultra•Post Plus: If an alarm interface board is installed, TP26 can be accessed without removing the board. TP26 is directly beneath the cutout in the alarm interface board (Figure 30).

Figure 30. Test points on receiver board in pedestal

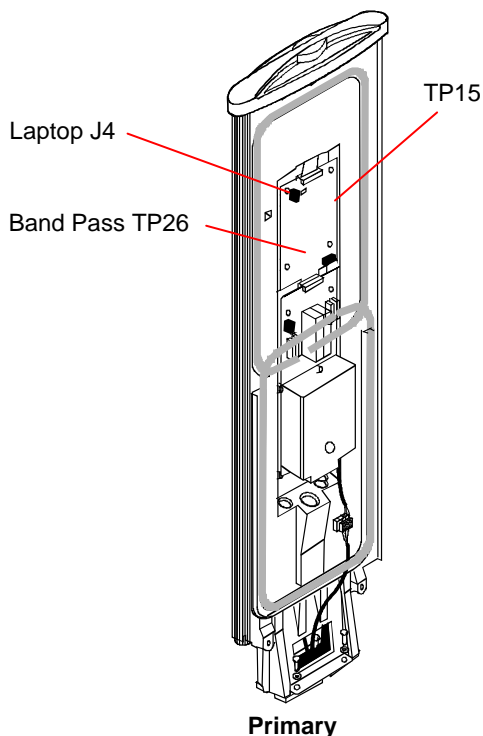
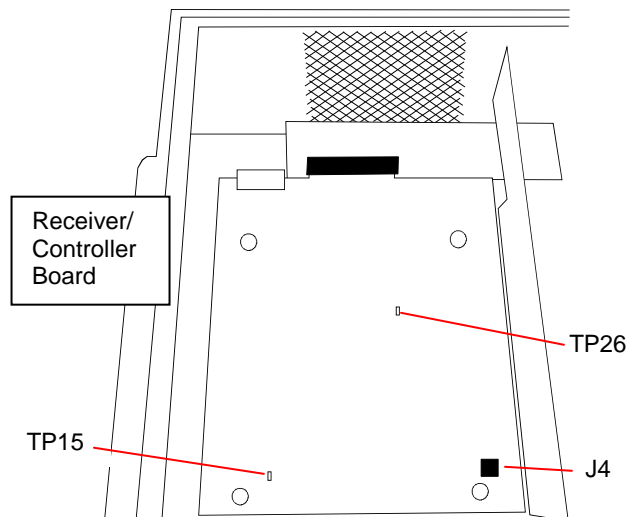


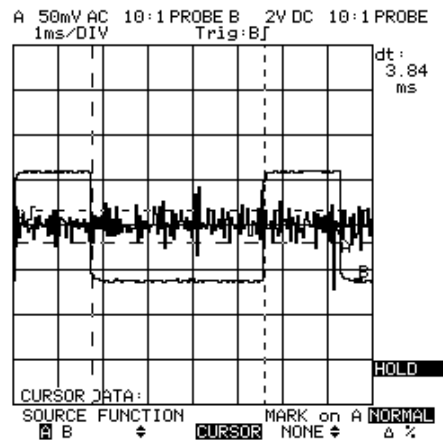
Figure 31. Test points on receiver board in controller



2. Set the scope trigger to Channel B.
3. Connect the laptop computer to the service port on the receiver board and load configurator software.
4. In configurator software, select "Continuous Receiver Operation" from the "Options" pull-down menu. This selection will time-out in 15 minutes.

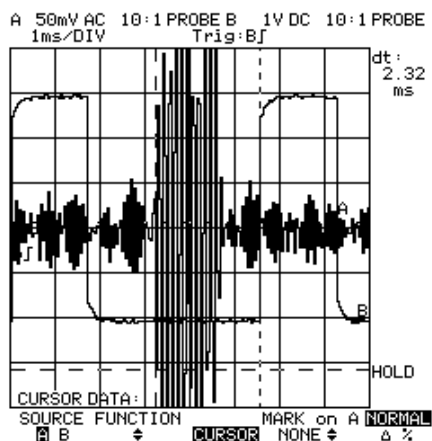
The waveform in Figure 32 shows the detector in continuous receiver mode with no remote burst present.

Figure 32. No remote burst



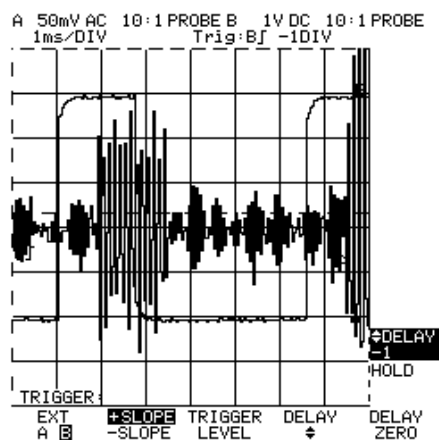
The waveform in Figure 33 shows a remote burst in phase. A remote burst is in phase when timing between the leading edge of the remote burst and the leading edge of the next square wave is 2.3 to 2.5ms.

Figure 33. In phase remote burst



The waveform in Figure 34 shows a remote burst out of phase. A line sync delay adjustment is required.

Figure 34. Out of phase remote burst

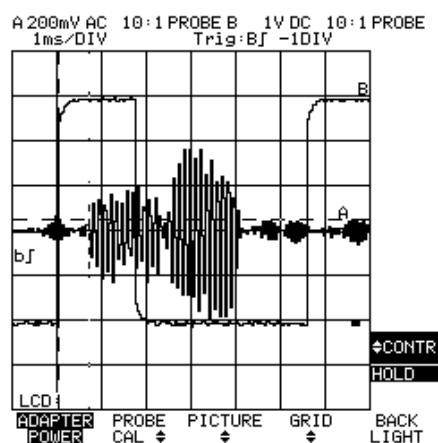


- Adjust "Line Sync Delay" on the Receiver Control Panel until the waveform in Figure 33 appears.

Figure 35 shows two remote bursts out of phase. Multiple remote bursts out of phase require designating one system as a reference and phase adjusting all other systems to the reference system.

Note: It may be necessary to unbolt the pedestal and rotate it in order to obtain the best remote burst display.

Figure 35. Two out of phase remote bursts



- Save detector settings by selecting the "Save" option from the "File" pull-down menu.

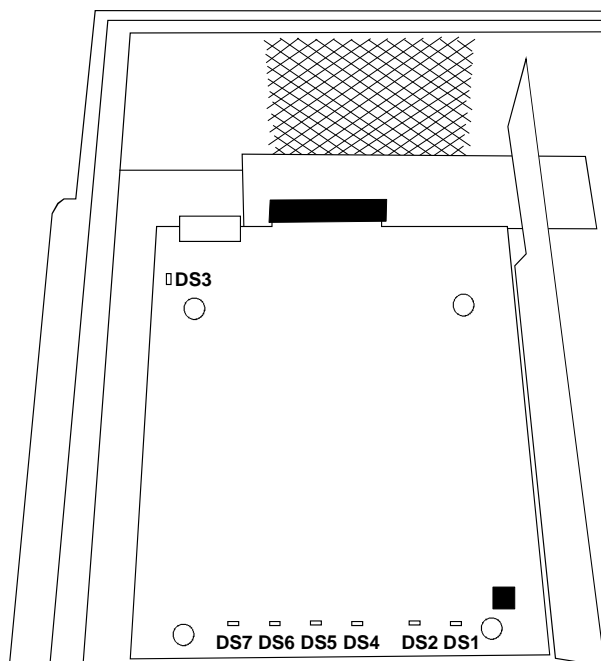
LED Status Indicators

LED indicators on the receiver board can be used for diagnostic purposes. During the power-on self-test, all LEDs flash simultaneously to test their function, then they light in sequence to indicate the progress of the power on self-test.

Ultra•Post/Ultra•Post II/Ultra•Post III and Ultra•Post Plus

Figure 36 shows the location of the status LEDs on the Ultra•Post Plus receiver board.

Figure 36. LED indicators in controller



- Red Alarm LED (DS1). Indicates an alarm condition when the alarm board is not connected or when the alarm lamp has been disabled.
- Green Power LED (DS2). Indicates that power is applied to the board and the processor is running.
- Red Error LED (DS3). Near the remote alarm connector, this LED flashes in a coded sequence whenever the board fails the power on self test, or run-time diagnostic tests, or when a serious failure interrupt occurs.
- Yellow Val LED (DS4). Is on during a tag/label validation sequence.

- Yellow Special Modes LED (DS5). Indicates the detector is operating with Special Modes active, usually used during detector diagnostic tests. Most Special Modes automatically time out after 17 minutes.
- Green Sync LED (DS6). Indicates this detector has detected another Ultra•Post detector and has successfully synchronized with it.
- Yellow LED (DS7). Represents different conditions depending on Special Modes in effect. Currently indicates that the detector failed the tag frequency test.

Ultra•Post IV

Figure 4 shows the location of the status LEDs on the Ultra•Post IV receiver board.

- Yellow LED (DS1) and red LED (DS2) indicate traffic flow status. DS1 indicates an OUT event and DS2 indicates an IN event.
- Yellow ERROR LED (DS3) flashes in a coded sequence whenever the board fails Power On Self Test or run time diagnostic tests, or when a serious failure interrupt occurs. See section on DS3 error codes below.
- Yellow LED (DS4) and red LED (DS12) are used for tag validation indicators.
- Two LEDs are associated with the Network RS485 port. The green LED (DS6) indicates data is being received, and the red LED (DS7) indicates data is being transmitted.
- Two LEDs are associated with the Peripheral RS485 port. The green LED (DS8) indicates data is being received, and the red LED (DS9) indicates data is being transmitted. The RS232 port is incorporated into the RS485 port.
- The flashing green POWER indicator (DS10) or electronic “pulse” shows both that the board is powered and that the processor is running.
- Red LED DS11 is the alarm LED.

DS3 Error Codes

To indicate an error code, the DS3 error LED on the receiver board will flash a number of times, pause, then flash again a number of times. For example: DS3 flashing three times, pausing, then flashing two times indicates error code 32. Error codes are listed in Table 8 and Table 9.

Table 8. Ultra•Post, Ultra•Post II, and Ultra•Post III error codes

No.	Error Description
11	Memory test failure – Fatal Error
12	FPGA load failure – Run Time Error
13	EPROM check sum – Fatal Error
14	NVM test – Run Time Error
15	No line sync – Run Time Error
21	Line frequency out of tolerance – Run Time Error
22	Calibration test failure – Run Time Error
23	Hot Supply Code – power supply too hot
24	Tx Time Out Code – transmitter on too long
25	Supply Cool Code – supply was hot, now cooled down
31	Pedestal 1 Tx current upper coil failure – Run Time Error
32	Pedestal 1 Tx current lower coil failure – Run Time Error
33	Pedestal 2 Tx current upper coil failure – Run Time Error
34	Pedestal 2 Tx current lower coil failure – Run Time Error

Table 9. Ultra•Post IV error codes

Alert Code		Action
11	Illegal Instruction	Not applicable for UP IV
12	Unimplemented Interrupt	Not applicable for UP IV
13	NVM Write Failed	Fatal error. Replace receiver board
14	Invalid Device	Fatal error. Replace receiver board
15	Sequence Table Error	Not applicable
16	Out of Memory	Not applicable
17	Undecided: No Split	Not applicable
18	Watchdog: Task Reset	Recoverable. First, try resetting the NVM to its defaults. If problem persists, reinstall application software. If problem persists, replace receiver board.
21	Current Sense Antenna A	Recoverable. Retune primary antenna
22	Current Sense Antenna B	Recoverable. Retune secondary antenna
23	Power Supply Overtemp Fault	Recoverable. First, ensure the fan is working and not blocked by dust. Second, replace transmitter board and receiver board.
24	Transmitter Failsafe Fault, Burst Too Long	Recoverable. First, ensure the fan is working and not blocked by dust. Second, replace transmitter board and receiver board.
25	Receiver samples have exceeded the Receiver buffer	Recoverable. Reinstall application software
31	Missing Zero Crossing Signal	Recoverable. Check the AC line quality. If it is OK, replace the transmitter board and/or the receiver board.
32	Missing External Zero Crossing Signal	Recoverable. This occurs when Universal Sync has been selected as the Sync source in the configurator but no signal is received. Check the connection on the RS-485 connectors (J5, J6) on the receiver board and the signal source.
33	Invalid Line Frequency at Power/Up	Recoverable. This can be caused by noise on the AC power line. Check the AC line quality.
34	Invalid Power Supply Type at Powerup	Fatal. Software cannot determine if the power supply is an LPA or an SMT. Replace the transmitter board and/or the receiver board.
35	Wired Sync: Missing Signal	Recoverable. This occurs when Wired Sync has been selected as the Sync source in the configurator but no signal is received. Check the connection on the Wired Sync connectors (P9) on the receiver board and the signal source.
36	Unknown Voltage ID selection assuming 58kHz	Fatal. Replace transmitter board and/or receiver board.
37	Line PLL Unlocked	Recoverable. This can be caused by noise on the AC power line. Check the AC line quality. On the Advanced Settings screen in the configurator you can adjust the Zero Crossing Qualify parameter to try to compensate.
41	Jammer Event Detected	Not an error. System has detected a jammer in the vicinity. Notify the manager. See the error log file for the time and date of the error.
42	Notch Select Timeout	Not applicable for UP IV.

43	Window Select Timeout	Not applicable for UP IV
44	Host Communication Mailbox Full	Recoverable. Reload the application software. If error is not eliminated, replace the receiver board.
45	LDM Power Save Active	Not an error. The LDM has commanded the UP IV to go into power save mode.
46	LDM Power Save Inactive	Not an error. The LDM has commanded the UP IV to come out of power save mode.
51	No Reference	Not applicable for UP IV
52	Invalid Alarm Type from detector	Not applicable for UP IV
53	NVM Checksum Error	Recoverable.
54	NVM Reset	Recoverable.
55	NVM Revision Change	Recoverable.
56	People Counter Blocked Sensor Detected	Recoverable. Check alignment of sensors on alarm board. You can use the Traffic Flow IN LED (DS2) and the Traffic Flow OUT LED (DS1) to figure out when the alignment is correct.
57	Invalid Wired Sync Command Received	Recoverable. Check connections to Wired Sync.

Specifications

Electrical

Power supply (SMT):

Primary input..... 100-120Vac or
220-240Vac
@ 50-60Hz

Primary power fuse..... 2.5A, 250V, 5x20,
slow-blow, hi-breakage

Current draw (UP IV) 2A peak

Current draw (UP I/II/III)..... 4A peak

Input power <180W

Transmitter (SMT):

Operating frequency (UP IV) 58 kHz (±200Hz)

Operating frequency (UP I/II/III).... 58 or 60kHz (±200Hz)

Transmit burst duration..... 1.6ms

Transmit current..... 16A peak

Burst repetition rate:

Based on 50Hz ac 37.5Hz (Normal)
75Hz (Validation)

Based on 60Hz ac 45Hz (Normal)
90Hz (Validation)

Transmit coil resistance 1.6 ohms (±5%)

Receiver:

Center frequency (UP IV) 58 kHz

Center frequency (UP I/II/III)..... 58 or 60kHz

Receive coil resistance 1.6 ohms (±5%)

Alarm:

Alarm relay output..... DPDT contacts

Contact switching current 1.0A max.

Contact switching voltage 28V max.

Lamp/Audio duration 1-30 sec.
(1 sec. increments)

Environmental

Operating temperature (UP IV) 0° to 30°C (32°-86°F)

Operating temperature (UP I/II/III) 0° to 50°C (32°-122°F)

Relative humidity 0 to 90% non-condensing

Declarations

Regulatory Compliance

EMC 47 CFR, Part 15
EN 300330
EN 301489
RSS 210

UM UP xxxxxx

Safety UL 1950
Can/CSA-C22.2 No. 950

AMS-1012

Safety UL 60950-1
CSA-C22.2 60950-1

FCC COMPLIANCE: This equipment complies with Part 15 of the FCC rules for intentional radiators and Class A digital devices when installed and used in accordance with the instruction manual. Following these rules provides reasonable protection against harmful interference from equipment operated in a commercial area. This equipment should not be installed in a residential area as it can radiate radio frequency energy that could interfere with radio communications, a situation the user would have to fix at their own expense.

EQUIPMENT MODIFICATION CAUTION: Equipment changes or modifications not expressly approved by Sensormatic Electronics Corporation, the party responsible for FCC compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

Other Declarations

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RWH 07/2009