



**FEDERAL SIGNAL**  
Safety and Security Systems

# Informer Tone-Alert Radio

Model I-SW

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## *Software Programming Manual*

## Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at [www.fedsig.com/SSG-Warranty](http://www.fedsig.com/SSG-Warranty). A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to [info@fedsig.com](mailto:info@fedsig.com) or call +1 708-534-3400.

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## **End User License Agreement**

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### **Limited Warranty**

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To the maximum extent permitted by applicable law, in no event shall Federal be liable for any special, incidental, indirect, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use the software product or the provision of or failure to provide support services, even if Federal has been advised of the possibility of such damages. In any case, Federal's entire liability under any provision of this Agreement shall be limited to the amount actually paid by you for the software product; provided, however, if you have entered into a Federal support services agreement, Federal's entire liability regarding support services shall be governed by the terms of that Agreement. Because some states and jurisdictions do not allow the exclusion or limitation of liability, the above limitation may not apply to you.

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You acknowledge that the Software Product is subject to restrictions and controls imposed under the export control laws and regulations of the U.S.A. and any amendments thereof. You certify that neither the Software Product nor any direct product thereof is being or will be exported, acquired, shipped, transferred or re-exported, directly or indirectly, to (i) any country or region prohibited under such laws and regulations; (ii) any end user who you know or have reason to believe will utilize them in the design, development or production of nuclear, chemical or biological weapons; or (iii) any end user who has been prohibited from participating in the U.S.A. export transactions by any federal agency of the U.S.A. government. You also acknowledge that the Software Product may include technical data subject to export and re-export restrictions imposed by U.S.A. law.

### **Miscellaneous**

If you acquired this product in the United States, this Agreement is governed by the laws of the State of Illinois.

You shall institute reasonable measures to ensure compliance with this Agreement. Upon the request of Federal, you shall provide reports as to usage as may be necessary to verify compliance with this Agreement. Federal shall have the right, upon reasonable notice, to inspect your facilities to verify compliance with this Agreement.

You expressly save and hold Federal, its subsidiaries, agents, and affiliates harmless from any and all liability of any kind or nature whatsoever to your customers, distributors, and third parties which may arise from your acts under this Agreement.

This Agreement constitutes the entire agreement with respect to the software product and supersedes any other agreement or discussions, oral or written. This Agreement may not be changed or waived except by a written amendment signed by you and an officer of Federal. No other person has the authority on our behalf to change or waive this Agreement.

A waiver by either party of any term or condition of this Agreement will not be deemed a waiver of the term for the future or of any subsequent breach of it.

The invalidity or unenforceability of any provision of this Agreement will not affect the validity or enforceability of any other provision. Such invalid or unenforceable provision

shall be deemed to be severed from this Agreement, and the Agreement shall be construed as if such provision was never inserted into it.

No action, regardless of form, arising out of this Agreement, may be brought by you more than two years after the facts giving rise to the cause of action have occurred, whether those facts by that time are known to or reasonably ought to have been discovered by you.

In this Agreement, words importing the singular include the plural and vice versa. Words importing gender, include all genders and words importing persons include corporations and vice versa. The division of this Agreement into sections and the insertion of headings are for convenience of reference only and shall not affect the construction or interpretation of this Agreement or any part of it.

## **Safety Messages**

Listed below are important safety instructions and precautions you should follow:

### **Read and Follow Instructions**

- Read all the safety and operating instructions before using the Informer Tone-Alert Radio.
- Follow all instructions in this manual and the Informer Series Installation and Operation Manual (part number 255334).

### **Retain Instructions**

- Retain the safety and operating instruction for future reference.

### **Programming Warning**

- Program after reading this manual.
- If programmed incorrectly, the Informer may fail to operate as intended.
- Only personnel thoroughly familiar with Informer operating instructions and the intended method of use should perform the programming.
- Test the Informer for proper operation after programming and before placing it into use.

### **RF Alignment Warning**

- If the radio is aligned incorrectly, the Informer may fail to operate as intended.
- Only qualified radio technicians thoroughly familiar with the Informer's operating instructions, and the intended method of use should perform RF alignment.
- Test the Informer for proper operation after alignment and before placing it into use.

## **General Description**

### **Introduction**

The I-SW Informer programming software runs on the Microsoft® Windows® operating system. Its purpose is to configure the “personality” of the Informer and program into EEPROM memory. You can read the configuration parameters from the Informer using this software program.

The I-SW Informer software can program the complete operating system of the Informer into the Informer’s FLASH memory. This is useful for installing software upgrades. Perform all programming over a standard RS232 port without disabling the Informer. The software prompts the you to enter the appropriate parameter for each configuration item and saves the configuration to disk. All configuration information is viewable from a single screen. You can load saved configurations from disk, edit, and send it to the printer.

The application provides help prompts when you select a data entry point with the mouse. These prompts identify the type of information you need to enter and the range of allowable entries.

### **Safety Messages**

Correctly program the Informer per the user’s specific application before placing it into use. Perform programming after reading this manual. Test the Informer for proper operation after programming and before placing it into use.

Develop a warning plan and train all users on using the warning system when the Informer is used for personnel warning applications.

### **Unpacking the Software**

The Federal Signal model I-SW consists of the following:

- CD ROM containing the I-SW application program
- Serial programming cable to connect the Informer to the programming PC

### **Operating Requirements**

The CCU minimum requirements for the I-SW Informer Programming Software:

- CD ROM drive
- 5 MB Hard Disk Drive or larger
- One RS-232 Serial Port
- Mouse pointing device
- AC surge suppression device

The I-SW Informer Programming Software is compatible with:

- Desktop Operating Systems: Windows®

Optional Requirements:

- Printer

## Ordering Information

**Table 1 Ordering Information**

| Part Numbers | Description          |
|--------------|----------------------|
| I-SW         | Programming software |

## Installing the Software

The I-SW Informer Programming Software is distributed on removable media.

To install I-SW Informer Programming Software onto your computer:

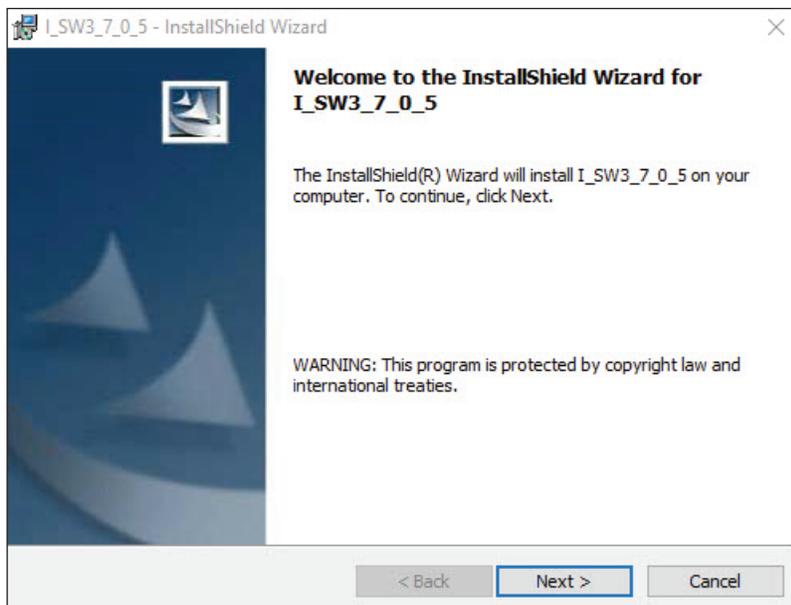
1. Insert the I-SW CD ROM into the target computer.
2. Copy the installation EXE file to the desktop for the target computer.
3. Double-click the EXE file to launch the automatic installation program.

**NOTE:** The installation program prompts you for information at various stages of the process. If you are not familiar with Windows® setup procedures, enter the default option for all prompts. On completion, the I-SW software is installed and appears on the Start Menu.

The following are the dialog boxes that appear when you go through the installation program.

4. Wait for the files to be extracted.

The following dialog box appears.



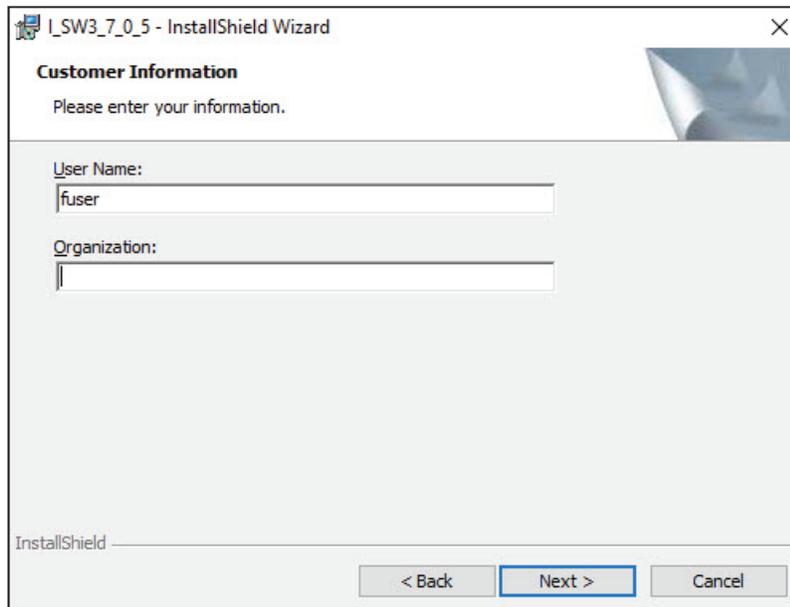
5. Click Next to continue.

The following dialog box appears.



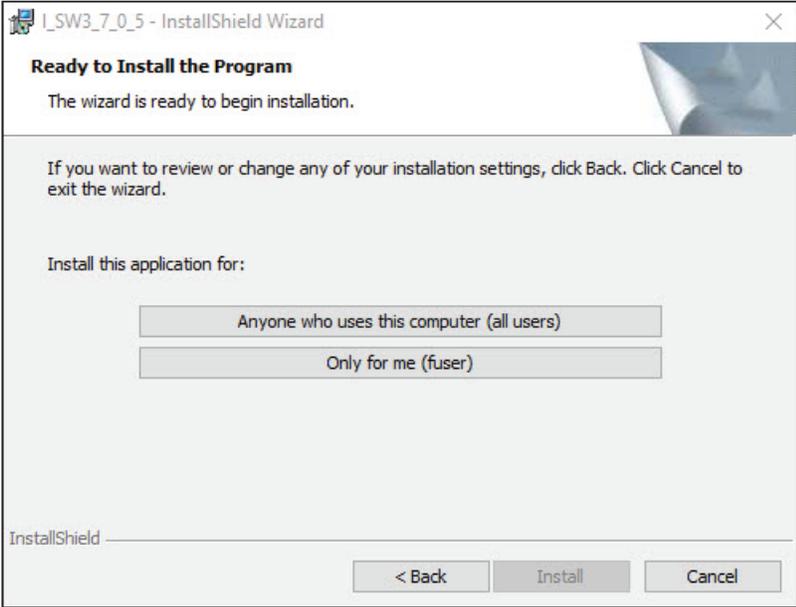
6. Select the I accept the terms of the license agreement option, and then click the Next button.

The following dialog box appears.



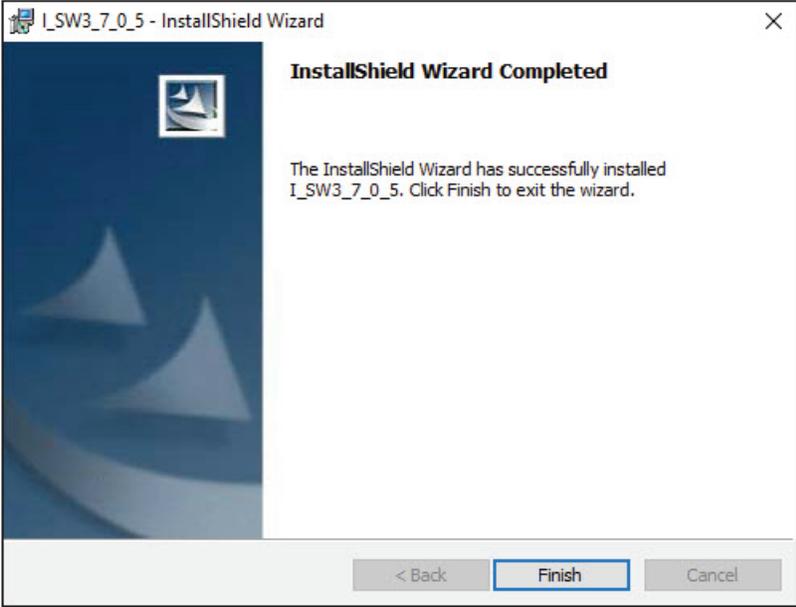
7. Type the User Name and Organization.
8. Click the Next button to install I-SW in the default folder.

The following dialog box appears.



- 9. Click the Anyone who uses this computer (all users) button, and then the Install button. Files begin to copy.

The following dialog box appears.



- 10. Click the Finish button.

## Connecting the RS232 Cable

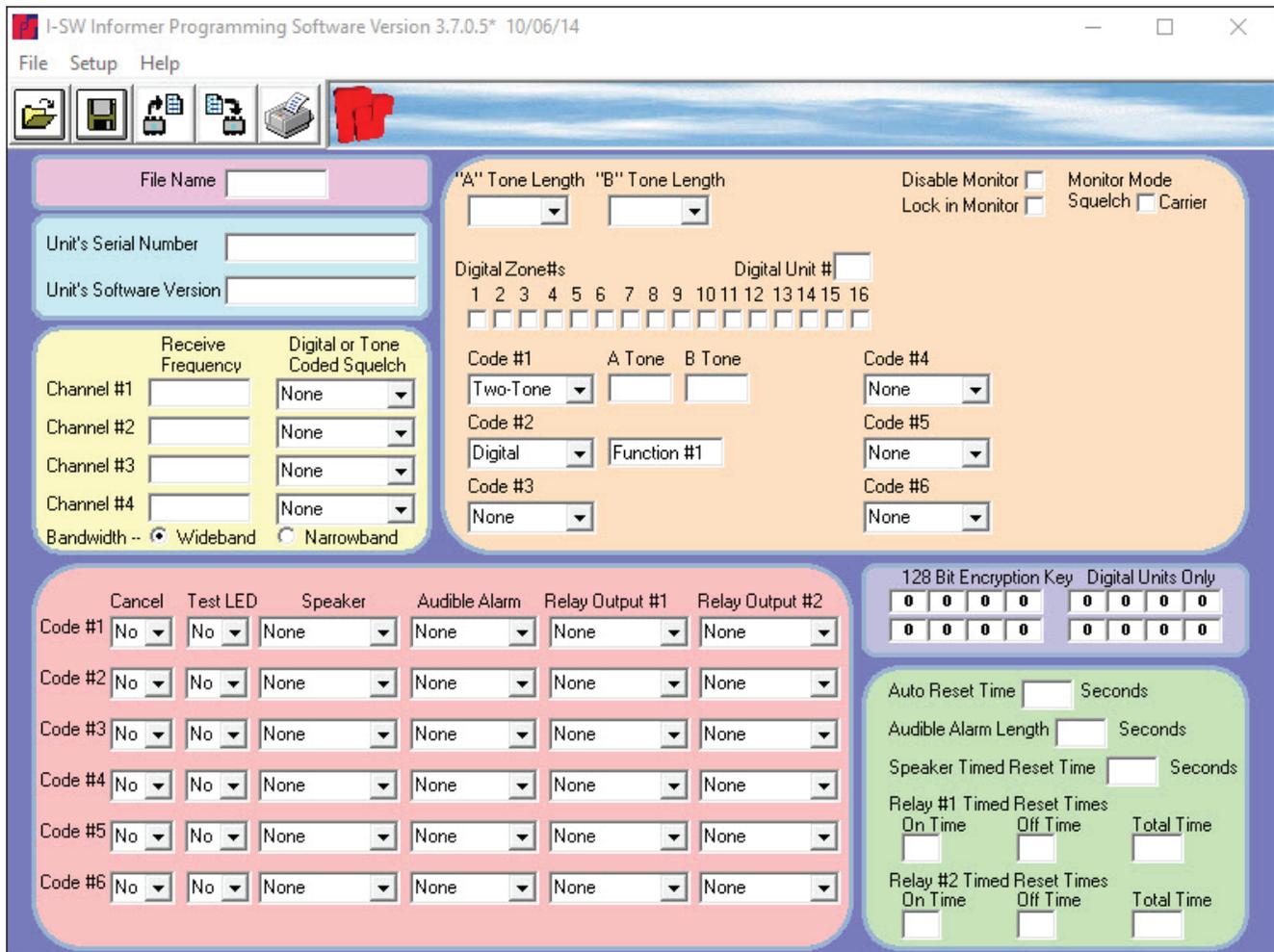
To connect the RS232 cable:

1. Connect the Informer to the serial port of the PC. Do this before programming the Informer so its programming data can be read by I-SW.
2. Plug the modular cable provided with I-SW into the Informer and plug the other end into the computer's serial port.
3. Select the appropriate port number using the Setup menu.

## Describing the I-SW Informer Programming Software

To start the I-SW software, from the Start menu, select Federal Signal Corporation > I\_SW.

The following dialog box appears.



The following table describes the menu names for the I-SW Informer Programming Software.

| <b>Menu Name</b>               | <b>Description</b>   |
|--------------------------------|--|
| File > Open Customer File      | Displays the Open dialog box. Select the name of a file to load and use to program other units   |
| File > Save Customer File      | Displays the Save As dialog box. Type in your file name to save.   |
| File > Read from Unit          | The software program reads the customer information from the Informer.<br><ol style="list-style-type: none"> <li>1. Plug the programming cable into the COM port connector on the back of the computer and into the programming connector on the back of the Informer.</li> <li>2. Click the Red button, and the program will read the customer information from the Informer.</li> </ol>  |
| File > Program Unit            | Programs the customer information into the Informer.<br><ol style="list-style-type: none"> <li>1. Select the Frequencies and Activation codes.</li> <li>2. Click the Program Unit button.</li> <li>3. Power on the Informer and plug in the programming cable. The programming cable plugs into the COM port connection at the back of the computer and into the programming connector on the back of the Informer.</li> <li>4. Click the OK button to send the customer information to the Informer.</li> </ol> |
| File > Print Label             | Prints what is displayed in the I-SW Informer Programming Software dialog box.   |
| File > Update Software         | Updates the software.<br><ol style="list-style-type: none"> <li>1. File &gt; Update Software opens a dialog box where you can select the Informer executable program (HEX file) for downloading into the unit.</li> <li>2. Plug the programming cable into the COM port connection at the back of the computer and into the programming connector on the back of the Informer.</li> <li>3. Click the OK button to update the software that runs the Informer.</li> </ol>   |
| File > Exit                    | Exits the dialog box.  |
| Setup > Com Port               | Select Com Port 1 through Com Port 10 to program the Informer. Displays Com Port 1 through 10. Select the appropriate Com Port the computer is using to connect to the Informer TAR.   |
| Setup > Restore Default Colors | Restores the default colors on the dialog box.   |
| Help                           | Opens help windows.  |

## Describing the I-SW Informer Programming Software

The following table shows the available icons with their description.

| Icon  | Description   |
|---|---|
|  | Displays the Open dialog box. Select the name of a file to load and use to program other units. This option is also available from the File menu. |
|  | Displays the Save As dialog box. Enter in your file name to save. This option is also available from the File menu.                               |
|  | The software program reads the customer informer from the Informer TAR. This option is also available from the File menu.                         |
|  | Writes the programming onto the Informer. This option is also available from the File menu.   |
|  | Prints what is displayed in the I-SW Informer Programming Software dialog box. This option is also available from the File menu.                  |

The following table describes the fields on the I-SW Informer Programming Software dialog box.

| Function                      | Description  |
|-------------------------------|--|
| File Name                     | Displays the current configuration file name loaded in the Informer.   |
| Unit's Serial Number          | Displays the unit's serial number. This field is read from the unit. The factory programs the serial number when the Informer is built. You cannot change the serial number.   |
| Unit's Software Version       | Displays the current version of the executable program loaded in the Informer.   |
| Receive Frequency             | Enter RF frequencies for four separate RF channels. Manually type in the RF frequency in MHZ.  |
| Digital or Tone Coded Squelch | Each RF frequency can have either a digital or tone PL assignment. To select a PL, click the arrow on the right. Use InvDig for Normal DPL and Digital if DPL is inverted.   |
| Bandwidth                     | Select if the unit is to receive wideband or narrowband signals.   |
| Code #1 to #6                 | Set up to six different activation codes. For each code, select Cancel (Yes/No), Text LED (Yes/No), Speaker (None, Auto Reset, Timed Reset, or Manual Reset), Audible Alarm (None, Warble, Steady, Beep, Hi-Lo, Soft Warble, Soft Steady, Soft Beep, or Soft Hi-Lo), Relay Output #1 and #2 (None, Auto Reset, Timed Reset, or Manual Resent). Soft tones have a low-level audio output. |
| Disable Monitor               | Check so the unit cannot enter monitor mode when the monitor button is pressed.  |
| Monitor Mode Squelch          | Check to enable the selection of PL or carrier based squelch.  |

| Function                                   | Description   |
|--|---|
| Coding Scheme                              | <p>Select the type of coding scheme for each code. The possible selections are None, Single-Tone, Two-Tone, DTMF, Digital, and EAS.</p> <p><b>Single Tone:</b> Possible length selections range from 0.5 to 8 seconds. To select, click the Single-Tone Length down arrow. Enter a tone frequency between 300 and 3000 Hz (2300 Hz for narrowband channels).</p> <p><b>Two Tone:</b> Possible selections range from 0.5 to 8 seconds for the first tone and 0.25 to 8 seconds for the second tone. To select, click the Tone Length down arrow. Enter in tone frequencies between 300 and 3000 Hz (2300 Hz for narrowband channels) for each tone. If the frequencies of a tone pair are within 3% of each other, the boxes turn red to warn that the tones may be too close.</p> <p><b>DTMF:</b> Enter any valid DTMF digit string from 1-12 digits. Precede the wildcard digits by the apostrophe character ('). The number key (#) is the default wildcard digit, which is accepted as a valid digit in addition to the digit preceded by the apostrophe character. For added security, use a minimum of three DTMF digits.</p> <p><b>Digital:</b> Select any valid Commander function (1-50) from the drop-down list box. To activate the Informer, a matching Commander function must be decoded. To select, click any one or combination of 16 zones by clicking a check box. The zone selection applies to all digital Informer codes. Enter a unit number 0 to 255. Codes sent for this unit number activates the Informer. The Informer also decodes All-Call commands. (Federal Signal Digital decoding is an optionally purchased option.) Enter a Digital Unit Number to allow the Informer to be individually controlled. Blank or zero (0) = All-Call.</p> <p><b>EAS:</b> For each EAS code, select a valid event code from the drop-down list box. Enter up to three EAS location codes. If the location code is programmed for one-ninth of the state, it responds when an activation for the entire state is sent as well. (EAS decoding is an optionally purchased option).</p> |
| 128-Bit Encryption Key (I-FSK Option Only) | <p>Use the 128-Bit Encryption Key to decode encrypted transmissions from the Federal Commander Digital System. The key consists of 16 numbers that can range from 0-255. Each number must match the corresponding encryption key used at the Commander's base station encoder. An encryption key of all zeros disables encryption.</p> <p>Set each number to 0 if the Informer is programmed with V2.16 or earlier Hex code. Pre-encryption program files have an encryption code of 255 in all fields. I-SW (V2.20 and greater) software automatically converts encryption keys containing all 255s to 0 (encryption disabled) when the Informer is programmed. The Encryption Key is not used if Digital decoding is not used.</p>  |

| Function                        | Description   |
|---------------------------------|---|
| Auto Reset Time                 | The number of seconds to wait before resetting after the carrier is dropped. Set from 0-127 seconds in 0.5-second steps, that is, 126.5 seconds.  |
| Audible Alarm Length            | The number of seconds the audible alarm will sound. Set from 0-254 seconds in 1-second steps.   |
| Speaker Timed Reset Time        | The number of seconds the Monitor function are active after an activation command is received. Set from 0-3600 seconds in 1-second steps.<br><b>NOTE:</b> The Audible Alarm Length time must expire before the speaker audio can be heard.                    |
| Relay #1 & Relay #2 Timed Reset | Sets the relay on duration, off duration, and total relay activation duration. Set the on and off times from 0-127 seconds in 0.5-second steps. Set the total time from 0-3600 seconds in 1-second steps. (Relay outputs are an optionally purchased option.) |

## RF Alignment and Test Instructions

**NOTICE**

**PROPER ALIGNMENT REQUIRED:** *The Informer has been aligned at the factory to cover the specified range of frequencies and should not require realignment if the unit is programmed to a frequency within this range. The ranges are 30-50 MHZ, 150-170 MHZ, and 450-470 MHZ.*

**NOTICE**

**EQUIPMENT DAMAGE:** *Always use appropriate ESD prevention to prevent damage to the Informer and test the Informer after programming.*

## Required Equipment

A Communications Analyzer with the following features is required to align the radio:

- RF Signal Generator
- RF Frequency counter
- SINAD meter
- Modulation meter
- Voltmeter
- Oscilloscope (optional)

The appropriate encoders are required to encode: Tone, DTMF, CTCSS, EAS, or Digital codes as applicable.

## Aligning and Testing the PDB

### Preparation

To prepare the Informer for aligning and testing:

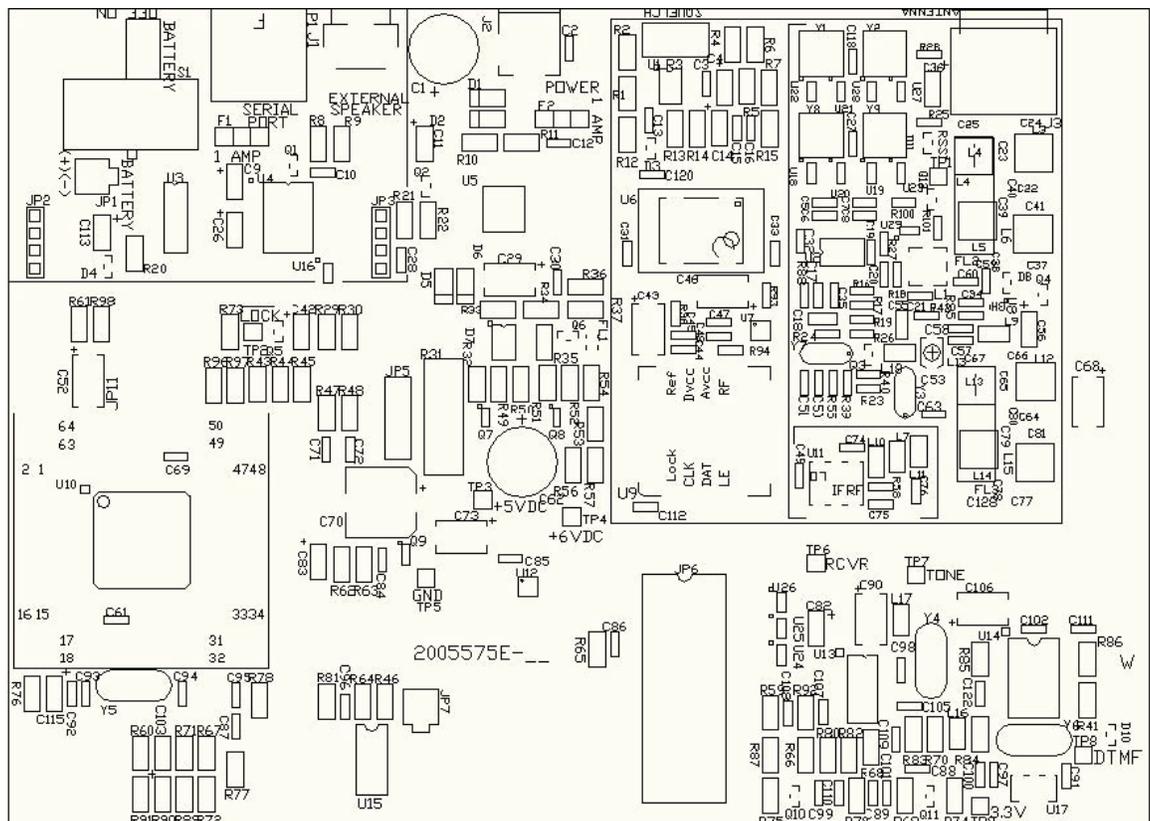
1. Verify that the RF frequency(s) and coding sequence(s) to be aligned and tested have been properly programmed into the Informer.
2. Remove the Informer PCB from the plastic housing.
3. Remove the battery connection from the PCB. Do not remove the keypad and speaker from the PCB.
4. Place on a non-conductive surface adjacent to the housing.

### Connections

To connect the power supply to the Informer:

5. Connect the 9 Vdc power supply to the Informer.
6. Plug the power supply into the AC outlet.

**Figure 1 Informer Test Point and Parts Location Drawing**



9. Set the VCO frequency to the receive frequency of - 21.4 MHz, unless the unit is a Low band VHF unit, then set the frequency to be 21.4 MHz + the receive frequency.
10. Adjust the frequency of the VCO using the trimmer cap in TCXO U6 until the frequency is within +/- 300 Hz.

### Aligning the Receiver and Setting Squelch

For Low Band (30-50 MHz), High Band (150-170 MHz), and UHF (450-470 MHz), the units have been pre-tuned to cover these frequency ranges and require no further front end tuning. The discriminator, L1, and the I.F., C74, have been aligned by the factory, and should not need to be re-aligned when changing programming (steps 2 and 3).

To align the receiver and set squelch:

1. Inject a 100  $\mu$ V signal into the receiver and modulate the signal with a 1 kHz tone at 3 kHz (1.5 kHz for narrowband) deviation.
2. Monitor the receive audio at test point TP6 with an oscilloscope and carefully adjust coil L1 for the most level.  
**NOTE:** The level at test point TP6 should be 900 mV<sub>p.p</sub> +/- 200 mV.
3. Connect a distortion meter to TP6 and slowly adjust variable cap C74 for the lowest distortion. This value should be less than 3.0%.
4. Connect a SINAD meter to test-point TP6 and reduce the level of the RF signal from the service monitor until the SINAD meter reads 12 dB. This value should be less than 0.35  $\mu$ V for all bands.
5. Press the monitor button to monitor speaker audio. Adjust the squelch pot (R3) until squelch just breaks. Verify the 1 kHz tone is heard over the speaker when the unit is un-squelched and the speaker is muted when squelched.

Radio alignment is now complete.

### Testing the Decoders

To test the decoders:

1. Set the RF level to 0.5 microvolts ( $\mu$ V) for all decode tests.
2. Run the appropriate decode tests matching the programming of the Informer.

### CTCSS

To test the CTCSS:

1. Perform this test with Monitor Mode Squelch selected when the Informer is programmed. Place the Informer in Monitor Mode.
2. Modulate the service monitor with the proper CTCSS tone at 750 Hz (375 Hz for narrowband) of deviation and inject a 1 kHz tone at 3 kHz (1.5 kHz for narrowband) deviation for a total deviation of 3.75 kHz (1.875 kHz for narrowband). Confirm that the 1 kHz is heard in the speaker when the CTCSS tone is present.
3. Remove the CTCSS tone and confirm that the speaker quiets.

### **Single Tone and Two-Tone Sequential**

To test the Single Tone and Two-Tone Sequential:

1. Encode the appropriate Single or Two Tone sequential tones at 3 kHz (1.5 kHz for narrowband) deviation.
2. Confirm that the unit decodes each tone set and that the ALERT LED flashes unless the TEST LED is programmed to turn on.

**NOTE:** The TAR cannot decode two-tone codes while a tone is being generated by the TAR.

### **DTMF**

To test the DTMF:

1. Set the encoder to send DTMF codes with a timing of 50 ms digit on time and 50 ms digit off time at 3 kHz (1.5 kHz for narrowband) of deviation.
2. Encode the appropriate DTMF strings as programmed into the Informer. Confirm that the unit decodes each set of DTMF codes, and that the ALERT LED flashes after each decode (unless the TEST LED is programmed to turn on).

### **EAS and Digital**

To test the EAS and Digital:

1. Set the encoder to send EAS or Digital codes at 4 kHz (2 kHz for narrowband) of deviation.
2. Encode the appropriate EAS or Digital codes as programmed into the Informer.
3. Confirm that the unit decodes each set of codes and that the ALERT LED flashes after each decode (unless the TEST LED is programmed to turn on).

### **Checking the Power Supplies (Test if a supply problem is suspected)**

To check the power supply:

1. Turn the Battery switch ON.
2. Confirm +6.75 to 6.90 Vdc at test point TP4.
3. Confirm +5 Vdc +/- 0.10 V at test point TP3.
4. Confirm that the Green AC POWER LED is on steady.
5. Unplug the wall transformer and confirm that the AC POWER LED starts to flash.
6. Reduce the voltage of the variable supply to 5.0 Vdc and confirm that the unit shuts off.

### **Testing the Display and Controls (Confirms proper re-assembly)**

To test the display and controls:

1. Disconnect the service monitor from the unit.
2. Reassemble the Informer into the housing after alignment is complete.
3. Press the MONITOR button and confirm that the ALERT LED lights steady red. (Monitor must be enabled in software to perform this test.)

## Getting Service

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4. Press and hold the MONITOR button for longer than 5 seconds.
5. Confirm that squelch noise is heard in the speaker.
6. Press the Volume Up button and confirm that the volume of the noise goes up.
7. Press the Volume Down button and confirm that the volume of the noise goes down.
8. Press the RESET button and confirm the following actions occur:
  - Squelch noise is shut off.
  - Confirm that a beep is heard from the speaker.
  - Confirm that the TEST and the ALERT LED's (yellow and red) light momentarily.

End of Alignment and Test.

## Getting Service

If you are experiencing any difficulties, contact Federal Signal Customer Care at 800-548-7229 or 708-534-3400 extension 5822 or Technical Support at 800-524-3021 or 708-534-3400 extension 7329 or through e-mail at [techsupport@fedsig.com](mailto:techsupport@fedsig.com). For instruction manuals and information on related products, visit <http://www.fedsig.com/>.