



FEDERAL SIGNAL

Safety and Security Systems / **Alerting & Notification**

Advancing security and well-being.

SS2000+

Manual 255400A

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SAFETY NOTICES

People's lives depend on your selection of suitable equipment and installation sites and your safe installation, service, and operation of our products. Federal Signal recommends the following publications from the Federal Emergency Management Agency for assistance with planning an outdoor warning system: 1. The "Outdoor Warning Guide (CPG 1-17), 2. "Civil Preparedness, Principles of Warning" (CPG 1-14), 3. FEMA-REP-1, Appendix 3 (Nuclear Plant Guideline), and 4. FEMA-REP-10 (Nuclear Plant Guideline). Contact Federal Warning System's Customer Care Center at: <http://www.alertnotification.com> or 1-800-524-3021 for further information about these publications.

It is important to read, understand and follow all instructions shipped with this product. In addition, listed below are some other important safety instructions and precautions you should follow.

PLANNING

- If suitable warning equipment is not selected, the installation site for the siren is not selected properly or the siren is not installed properly, it may not produce the intended optimum audible warning. Follow Federal Emergency Management Agency (FEMA) recommendations.
- If sirens are not activated in a timely manner when an emergency condition exists, they cannot provide the intended audible warning. It is imperative that knowledgeable people, who are provided with the necessary information, are available at all times to authorize the activation of the sirens.
- When sirens are used out of doors, people indoors may not be able to hear the warning signals. Separate warning devices or procedures may be needed to effectively warn people indoors.
- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near sirens.
- Activating the sirens may not result in people taking the desired actions if those to be warned are not properly trained about the meaning of siren sounds. Siren users should follow FEMA recommendations and instruct those to be warned of correct actions to be taken.
- A siren that doesn't work won't provide any warning. After installation, service, or maintenance, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.
- If future service and operating personnel do not have these instructions to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees. Also give a copy to anyone who is going to service or repair the siren.

SAFETY NOTICES

People's lives depend on your safe installation, service and operation of our products. It is important to read, understand and follow all instructions shipped with this product. In addition, listed below are some other important safety instructions and precautions you should follow:

INSTALLATION & SERVICE

- Electrocutation or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore experienced electricians in accordance with national, state and any other electrical codes having jurisdiction should perform installation. All work should be performed under the direction of the installation or service crew safety foreman.
- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings and restrict access to areas near the sirens. Sirens may be operated from remote control points. Whenever possible, disconnect all siren power including batteries before working near the siren.
- After installation or service, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.
- If future service personnel do not have these warnings and all other instructions shipped with the equipment to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees. Also, give a copy to anyone who is going to service or repair the sirens. For additional copies, call the Federal Warning Systems Customer Care Center at 800-524-3021 or write to them at 2645 Federal Signal Drive, University Park, IL 60484.

OPERATION

- Failure to understand the capabilities and limitations of your siren system could result in permanent hearing loss, other serious injuries or death to persons too close to the sirens when you activate them or to those you need to warn. Carefully read and thoroughly understand all safety notices in this manual and all operations-related-items in all instruction manuals shipped with equipment. Thoroughly discuss all contingency plans with those responsible for warning people in your community, company, or jurisdiction.

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1 Features and General Description

1.1 Features

- Streaming Wave files from PC for Encodes or Voice Messages
- Compatible with SE3000 Encoder software and Commander software
- Printer port for Standalone operation
- Printer messages can be sent to serial printer
- Two Serial Ports, one for control and one for extra peripheral devices or control
- Multiple Codes / Functions stackable under each button including Relay outputs
- Two-Tone, MSK Packet Digital, EAS and DTMF encode
- MSK Packet Digital and DTMF decode
- FLASH / Programming Port
- 24 Activation Buttons on front panel
- I2C port for External relays or Keyboard for additional activation buttons
- 20 Optically Isolated Remote Activation Inputs built in
- Status LEDs and LCD display
- Level Meter for Setting Receive, Transmit, Line Inputs and Mic Levels
- Two Line Inputs for Transmission of External Audio Sources
- XLR Input for Transmission from Distant Microphone, Dynamic or Amplified
- Phantom Power Supply for Amplified Microphones
- External Mic Input VOX
- Three Aux and One PTT Relay Outputs
- High or Low Impedance Receive Audio Input and Transmit Audio Output
- Carrier Detect from Transceiver, or VOX
- Selectable Carrier Detect Polarity
- Monitor Speaker to Monitor Incoming and Outgoing Traffic
- Powered from 12 to 30 VDC, will run on standard 12 or 24 V backup power

1.2 General Description

The SS2000+ can be used as a standalone 2-Tone, DTMF, EAS and MSK Encoder and/or it can be used as a modem with the Federal Commander PC based control and status monitoring system.

Federal Signal recommends the SS2000+ be powered from an Uninterruptable Power Supply to allow operation in the event of a power failure.

In the event that power fails or is disconnected from the SS2000+ for more than 30 days, the Date and Time will need to be set.

Encoding

Up to 3 codes can be programmed under each of 60 functions. These can be Two-Tone/Single-Tone codes, EAS, DTMF codes up to 16 characters, Federal Signal Digital Codes and Cycling the 3 relay outputs, or calling another activation key. Each code can be set to be sent from 1 to 3 times.

The 24 activation buttons activate functions 1 - 24. The internal remote activation inputs can be used to activate functions 1 – 20.

Each activation function can be configured for “Auto Prompt Send” or “Auto Send”. Auto Prompt Send prompts the user to press the “SEND” button after an activation button has been pressed before initiating the activation. With Auto Send, the activation is sent out when the user presses the activation button without being prompted to press “SEND”. The same methodology is used with “Auto Prompt Send Auto Report” and “Auto Send Auto Report” modes which include an automated system wide poll after the activation. Each activation can be logged on a line printer.

Modes of Operation

The SS2000+ can be set in either Standalone or Computer mode. In either mode, any poll requests or activation commands from the Commander will update the clock in the SS2000+ to match The Commander’s time and date. The SS2000+ updates its internal clock to match the computer’s time, then sends the Digital message. All incoming reports are logged, sent to Commander and the LCD display. Incoming DTMF messages are converted to Digital format, logged and sent to Commander as well.

The SS2000+ can also receive streamed audio / encode data from Commander or the SE3000 software and transmit it out as audio.

Standalone Two-Way Operation

Standalone mode is intended to be used without a host PC application. The SS2000+ will not function as a 2-way radio modem for the SE3000 or Commander software applications when in Standalone mode.

In Standalone mode, the SS2000+ acknowledges and prints incoming status reports and alarms from remote devices. Acknowledgements confirm message receipt and keeps remote devices from repeating transmissions.

The SS000+ is configured with two lists of unit numbers, one for digital units and one for DTMF units. Both types can exist in the same system. When a "Report - All" is executed the SS2000+ will poll the active units in the Digital list first, logging each poll and response. When complete, the SS2000+ will poll the units in the DTMF list, logging each poll and response. The DTMF status or alarm messages are converted to the same format as the Digital information. The incoming DTMF and Digital messages are decoded and displayed on the LCD.

Computer Mode Operation

The SS2000+ keypad and display are still operational in Computer mode but the SS2000+ does not acknowledge incoming digital messages. It passes all messages to the host PC application.

Automatic Logging

The SS2000+ displays all incoming and outgoing messages on its LCD display. The SS2000+ will print all status reports on a line printer if the printer is enabled in the configuration. If Com port 2 is configured for Printer Messages, the statuses and alarms are sent there as well. The SS2000+ also logs each time it is powered up, all manual encode activations, outgoing poll requests, and the results of each step in the self test procedure.

Testing and Alignment

The SS2000+ has a calibrate function and an LED bar graph to aid in setting the receive and transmit levels. It also incorporates a comprehensive built in test routine to test every circuit of the unit. The internal monitor speaker allows the user to hear all incoming and outgoing transmissions to aid in system setup and troubleshooting.

Audio Inputs

The SS2000+ has 2 line level inputs, each with its own PTT line, a local mic input with PTT, and an XLR balanced input incorporating a VOX PTT for balanced or distant mics. The XLR input can provide a ghost supply for amplified mics. Amplified or non-amplified mics can be used.

Serial Ports

The SS2000+ also incorporates 2 serial ports. Com #1 is used for interfacing with Commander or Encoder software. Com #2 can be used to send printer messages or received text messages to a display or peripheral device. Com #2 can also be used to interface with Commander or Encoder software.

Relay Outputs

The SS2000+ has 3 relay outputs that can be programmed to activate when an activation button is pressed. Each relay has an Off time and an On time. Alternatively, each relay can be configured to activate when the unit has not been polled in 30 minutes, when an RTU reports a fault, or when PTT or Carrier Detect are active.

Remote Activation Inputs

The SS2000+ has 20 remote activation inputs that can be driven by a contact closure. These inputs are optically isolated and activate buttons 1 through 20. Debounce time for remote inputs is 250 ms. An input held closed for extended time will not generate multiple activations. Buttons to be activated by remote inputs must be programmed as "Auto Send".

Transceiver Interface

The transceiver interface features a balanced 600 Ohm input and output (optional 10K Ohms) and can accept a wide range of transceiver types and levels. The transmit audio from other encoding equipment can be interrupted during the transmissions of the SS2000+ by the PTT relay. The unit also monitors if other equipment is currently transmitting before attempting to transmit. Carrier detect can work with either polarity or from a VOX.

2 Specifications

2.1 Electrical

D.C. Power Input	Input Voltage 12-30 VDC
Current Draw	<300 mA Standby, <700 mA max

2.2 Signaling Formats

MSK Digital encode / decode,	1200 Baud Decode Sensitivity ≤ 21 dB SINAD for highest modem tone
DTMF encode / decode,	35 mS/5 mS to 100 mS/100 mS timing Decode Sensitivity ≤ 21 dB SINAD
Two-Tone encode	282 Hz – 3000 Hz, Timing, 0.5 sec min to 8 sec max

2.3 Serial Ports

Protocol, RS232C	9600 / 115200 Baud,N,8,1
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2.4 FLASH Programming Port

For programming	9600 Baud,N,8,1
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2.5 Printer Port

IEEE 1284 Parallel printer port

2.6 Transceiver Interface Port

Receive Audio Input	Audio Input Level 50 to 10,000 mV _{P-P} for Low Z, 600 Ohms 500 to 10,000 mV _{P-P} for High Z, 10K Ohms Set to 1 V _{P-P} at TP11 MOV and Transorb surge protection 600 / 10K Ohms, jumper selectable
Transmit Audio Output	Audio Output Level 200 to 1200 mV _{P-P} for Low Z, 600 Ohm

	200 to 1200 mV _{P-P} for High Z, 10K Ohm MOV and Transorb surge protection 600 / 10K Ohms, jumper selectable
Relay Outputs	2 Amp @ 30 VDC, 0.5 Amps @ 120 VAC
PTT Sense Input	100K input impedance < 100K Ohms, or < 1.0 VDC relative for active state.
Carrier Detect Input	< 100K Ohms, or < 1.00 VDC relative for active state.
VOX Carrier Detect	Active in 50mS, at 15% of maximum deviation
AUX Relay Outputs	2 Amp @ 30VDC, 0.5 Amps @ 120 VAC

2.7 Monitor Speaker

Monitors	Transmit and receive audio
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2.8 Local Mic Input

Type	Dynamic, non-amplified mic
Levels	10 to 150 mV _{P-P} nominal input, 10K Ohms

2.9 External Mic Input

Balanced, Low Impedance, Dynamic mic. Sensitivity adjustable from;	10 to 150 mV _{P-P} for non-amplified 30-570 mV _{P-P} for amplified 10K Ohms Impedance with VOX OR Jumper Selectable for Amplified mic, 48 VDC Phantom power,
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2.10 Line Input

Levels	0.25 to 5.0 V _{P-P} , 894 mV _{P-P} nominal input, with PTT closure input, active w/ < 3K Ohms
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2.11 Remote Activation Inputs

Active with < 1.5K to ISO GND (2mA)

2.12 I²C / Keyboard Expansion Port

I2C Port Protocol Philips Standard I²C.

2.13 Ethernet Network Connection

Ethernet:	
Standard	IEEE 802.3
Physical Layer	10/100 Base-T
Data Rate	10/100 Mbps (auto-sensing)
Mode	Half-duplex and full-duplex support (auto-sensing)
Connector	RJ-45

2.14 Environmental

Operating Temperature	0 °C to +60 °C
Humidity	0-95% Non-Condensing

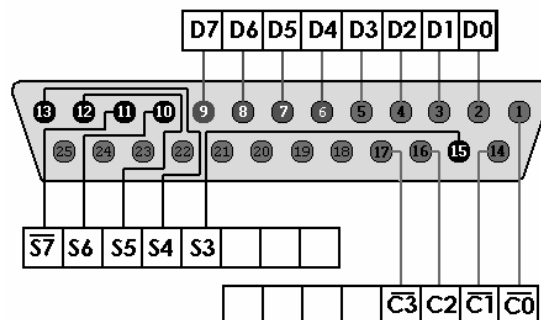
3 Connectors, Indicators, Controls and Jumpers

3.1 Controller Board Connectors

J1 – Printer Port - Internal

- 1 – STB not
- 2 – AFD not
- 3 – PD0
- 4 – ERROR not
- 5 – PD1
- 6 – INIT not
- 7 – PD2
- 8 – SLIN not
- 9 – PD3
- 10 – GND
- 11 – PD4
- 12 – GND
- 13 – PD5
- 14 – GND
- 15 – PD6
- 16 – GND
- 17 – PD7
- 18 – GND
- 19 – ACK not
- 20 – GND
- 21 – BUSY
- 22 – GND
- 23 – PE
- 24 – GND
- 25 – SLCT
- 26 – GND

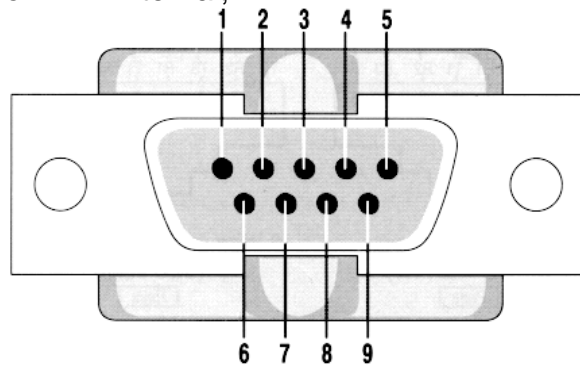
J1 – Printer Port – External;



J2 – Serial Port – Com 2 - Internal

- 1 – NC
- 2 – NC
- 3 – RXD
- 4 – RTS
- 5 – TXD
- 6 – CTS
- 7 – NC
- 8 – NC
- 9 – GND
- 10 – GND

J2 – Serial Port – Com2 – External;

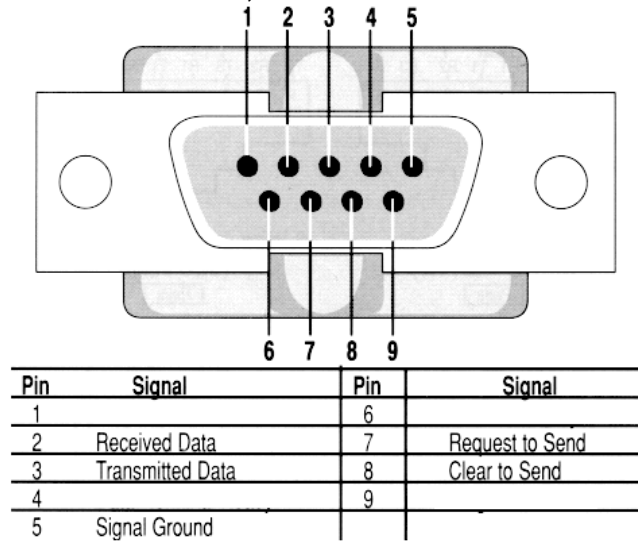


Pin	Signal	Pin	Signal
1		6	
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4		9	
5	Signal Ground		

J3 – Serial Port – Com 1

- 1 – NC
- 2 – NC
- 3 – RXD
- 4 – RTS
- 5 – TXD
- 6 – CTS
- 7 – NC
- 8 – NC
- 9 – GND
- 10 – GND

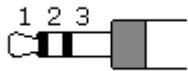
J3 – Serial Port – Com1 – External;



J5 – DC Power In - External
 Center – 12 to 30 VDC input
 Outside – GND

J6 – Local Mic Input - Internal
 1 – Mic PTT not
 2 – GND
 3 – Mic audio

J6 – Local Mic Input – External;



1 – Mic audio, 2 – PTT active low, 3 – Ground

J7 – Monitor Speaker Output - Internal
 1- Monitor audio
 2- GND

J8 – Test Generator Output - Internal
 1- Signal Output
 2- GND

JP1 – LCD Display - Internal
 1 – GND
 2 – VCC

- 3 - Contrast
- 4 - Reset
- 5 - Write not
- 6 - Enable
- 7 - AD0
- 8 - AD1
- 9 - AD2
- 10 - AD3
- 11 - AD4
- 12 - AD5
- 13 - AD6
- 14 - AD7
- 15 - VCC
- 16 - GND

JP2 – Option - Internal

- 1 - Input
- 2 - GND

JP3 – Key Switch - Internal

- 1 - Input
- 2 - GND

JP4 – Front Keypad and Display - Internal

- 1 - Colum 4
- 2 - Colum 3
- 3 - Colum 2
- 4 - Colum 1
- 5 - Row 1
- 6 - Row 2
- 7 - Row 3
- 8 - Row 4
- 9 - Row 5
- 10 - Row 6
- 11 - Row 7
- 12 - Row 8
- 13 - Row 9
- 14 - Row 10
- 15 - Row 11
- 16 - Row 12
- 17 - Report LED
- 18 - TXD LED
- 19 - Transmit LED

- 20 – RXD LED
- 21 – Receive LED
- 22 – Level Meter LED #5
- 23 – Level Meter LED #4
- 24 – Level Meter LED #3
- 25 – Level Meter LED #2
- 26 – Level Meter LED #1
- 27 - +10V
- 28 - +10V
- 29 – GND
- 30 – GND

JP5 - Remote Activation Inputs I2C Port - Internal

- 1 – VCC
- 2 – I2C Clock
- 3 – I2C Data
- 4 – I2C INT #1
- 5 – I2C INT #2
- 6 – GND

JP6 – microSD FLASH Memory Card Holder - Internal

- 1 – NC
- 2- Slave Select Not
- 3 – Master Out / Slave In
- 4 – Switched 3.3V
- 5 – Serial Clock
- 6 – Ground
- 7 – Master In / Slave Out
- 8 - NC

P1 Upper – External I2C Port - External

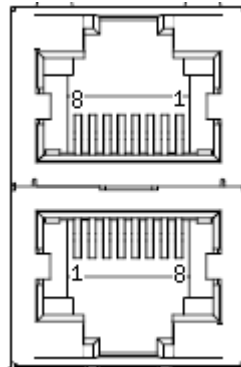
- 1 – NC
- 2 - VCC
- 3 – I2C Clock
- 4 – I2C Data
- 5 – I2C INT #1
- 6 – I2C INT #2
- 7 – GND
- 8 – NC

P1 Lower – Programming / FLASH Port - External

- 1 – NC
- 2 - NC
- 3 – TXD / MISO

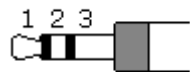
- 4 – RXD / MOSI
- 5 – GND
- 6 – SCK
- 7 – Reset
- 8 – NC

P1 – External;



P2 - Line Level Inputs - External

- Top Tip – Input # 2
- Top Ring – Input #2 PTT not
- Top Shield – GND
- Bottom Tip Input # 1
- Bottom Ring – Input # 1 PTT not
- Bottom Shield – GND

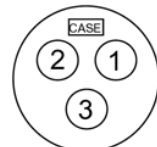


1 –Audio, 2 – PTT active low, 3 – Ground

P3 – Balanced Mic Input - External

- 1 – GND
- 2 – Balanced Input
- 3 – Balanced Input
- 4 – GND

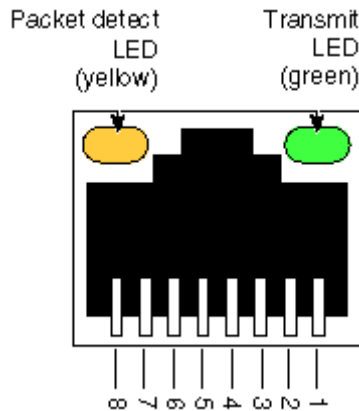
XLR MALE



- PIN 2 +
- PIN 3 +
- PIN 1 ⚡
- CASE ↗

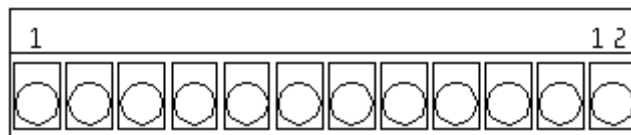
M1 – Ethernet Port - External

- 1 – TXD+
- 2 – TXD-
- 3 – RXD+
- 4 – EPWR+
- 5 – EPWR+
- 6 – RXD-
- 7 – EPWR-
- 8 – EPWR-



TB1 – Relay outputs - External

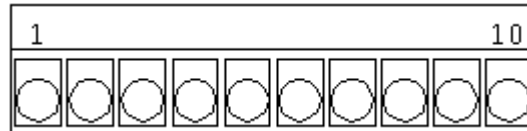
- 1 – Aux 1 Common
- 2 – Aux 1 Normally Closed
- 3 – Aux 1 Normally Open
- 4 – Aux 2 Common
- 5 – Aux 2 Normally Closed
- 6 – Aux 2 Normally Open
- 7 – Aux3 Common 1
- 8 – Aux3 Normally Closed 1
- 9 – Aux3 Normally Open 1
- 10 – Aux3 Common 2
- 11 – Aux3 Normally Closed 2
- 12 – Aux3 Normally Open 2



TB2 – Transceiver Interface - External

- 1 – PTT Common
- 2 – PTT Normally Open

- 3 – PTT Normally Closed
- 4 – Local TX Audio, audio is disconnected when SS2000+ transmits
- 5 – TX Audio Hi
- 6 – TX Audio Low
- 7 – RX Audio Hi
- 8 – RX Audio Low
- 9 – Carrier Detect
- 10 – GND



3.2 Remote Activation Inputs Board Connectors

P1 – I2C Port - Internal

- 1 – VCC
- 2 – I2C Clock
- 3 – I2C Data
- 4 – I2C INT #1
- 5 – I2C INT #2
- 6 – GND

J1 – Remote Activation Inputs 1 – 5 - External

- 1 – Remote Activation Input # 1
- 2 – Iso GND
- 3 – Remote Activation Input # 2
- 4 – Iso GND
- 5 – Remote Activation Input # 3
- 6 – Iso GND
- 7 – Remote Activation Input # 4
- 8 – Iso GND
- 9 – Remote Activation Input # 5
- 10 – Iso GND

J2 – Remote Activation Inputs 6 – 10 - External

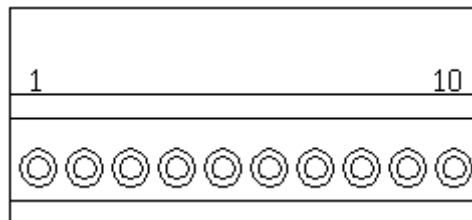
- 1 – Remote Activation Input # 6
- 2 – Iso GND
- 3 – Remote Activation Input # 7
- 4 – Iso GND
- 5 – Remote Activation Input # 8
- 6 – Iso GND

- 7 – Remote Activation Input # 9
- 8 – Iso GND
- 9 – Remote Activation Input # 10
- 10 – Iso GND

- J3 – Remote Activation Inputs 11 – 15
- 1 – Remote Activation Input # 11
 - 2 – Iso GND
 - 3 – Remote Activation Input # 12
 - 4 – Iso GND
 - 5 – Remote Activation Input # 13
 - 6 – Iso GND
 - 7 – Remote Activation Input # 14
 - 8 – Iso GND
 - 9 – Remote Activation Input # 15
 - 10 – Iso GND

- J4 – Remote Activation Inputs 16 – 20
- 1 – Remote Activation Input # 16
 - 2 – Iso GND
 - 3 – Remote Activation Input # 17
 - 4 – Iso GND
 - 5 – Remote Activation Input # 18
 - 6 – Iso GND
 - 7 – Remote Activation Input # 19
 - 8 – Iso GND
 - 9 – Remote Activation Input # 20
 - 10 – Iso GND

J1, J2, J3 & J4;



3.3 Indicators

LCD Display

Aux LED

Digital / DTMF / Tone Encode

Transmit / PTT

Digital / DTMF / Decode

Receive / Carrier Detect

Receive Signal Level, 5 LED Bar

Audible Tone in monitor speaker w/ key presses

M1 Ethernet Module

Top Left Yellow LED - Network link status

Off - no link has been detected.

On - a link has been detected.

Top Right Green LED - Serial port activity/Network activity

Off - the serial channel is idle.

Blinking - serial data is transmitted or received

3.4 Controls

Transmit Audio Level – V2

Receive Audio Level – V3

Local Mic Input Level – V4

Monitor Speaker Level – V5

Line #1 and Line #2 Input Levels – V6 and V7

External Mic Input Level – V8

3.5 Jumpers

JU1 - DTMF Decode Speed

Jumpered = 35 ms/5 ms

Open = 50 ms/50 ms

JU3 – External Mic Amplified or not

Jumpered for amplified mics

JU4A – Receive Audio Input Impedance

Center and Upper pins Jumpered = 10K Ohm

Center and Lower pins Jumpered = 600 Ohm

JU4B – Transmit Audio Output Impedance

Center and Upper pins Jumpered = 10K Ohm

Center and Lower pins Jumpered = 600 Ohm

JU4C – Carrier Detect Polarity

Center and Upper pins Jumpered = Active High

Center and Lower pins Jumpered = Active Low

JU4D – Carrier Detect or VOX

Center and Upper pins Jumpered = VOX

Center and Lower pins Jumpered = Carrier Detect Input

JU5 – Ghost Power to External Mic Input

Jumpered applies +46 VDC ghost power

4 Operating Instructions

4.1 Key Off

The SS2000+ keypad is secured with a key lock switch. When the key is in the OFF position, the LCD displays the "*** Keypad Locked ***" message along with the time and date.

** Keypad Locked **
SS2000+
08:28 11/01/2010 (s)

When the key is turned to ON position, the keypad becomes enabled and STANDBY screen displays on the LCD. The unit is now ready to accept the commands. When the unit is powered up the printer will print "SS2000+ On Line;

The LCD will display;

Press Function Key
F1..F24 to Activate
08:28 11/01/2010 (s)

4.2 Automatic Logging

The SS000+ displays all incoming and outgoing messages to the LCD display. If it is enabled in the configuration and on line, the SS2000+ logs any incoming statuses and alarms, DTMF or Digital to the printer. If Com port 2 is configured for Printer Messages, the statuses and alarms are sent there as well. The SS2000+ also logs each time it powered up, all manual encode activations, outgoing poll requests, and the results of each step in the self test procedure.

Any incoming DTMF or Digital status or alarm messages are decoded and displayed on the LCD indicating the Site number, the Siren Type and "Alarm" or "Status" depending on the message type.

Press Function Key
F1..F24 to Activate
Site# 001 FCD Alarm
08:28 11/01/2010 (s)

Whenever the SS2000+ attempts to transmit;

If the radio channel is busy and Carrier Detect is active, the LCD will display;

F01: Function Name
Waiting for Carrier

The SS2000+ will wait 10 seconds for the channel to clear before transmitting.

If other equipment is currently transmitting, the LCD will display;

F01: Function Name
Waiting for PTT

The SS2000+ will wait for other transmission to end before transmitting.

4.3 Communication Modes

The SS2000+ can be used in either “Standalone” or “Computer” mode. The mode the SS2000+ is in is indicated by the character at the end of the fourth line of the LCD panel. “s” for “standalone” or “c” for “Computer” mode. **To switch between modes press ‘MODE’ from the STANDBY screen.**

The SS2000+ will prompt with;

About to change Mode
to: standalone
Press SEND to Change
Or CLEAR to Cancel

Standalone Mode

4.3.1.1 General

In “Standalone” mode the SS2000+ will acknowledge any incoming Digital Alarms and log them. Any incoming DTMF alarms are converted to Federal Signal digital and logged as well.

4.3.1.2 Requesting Reports / Polling

The SS000+ is configured with two lists of unit numbers, one for digital units and one for DTMF units. When a "Report - All" is executed the SS2000+ will poll the units in the Digital list, logging each poll and response. When complete, the SS2000+ will poll the units in the DTMF list, converting the DTMF reply to the same format as the Digital information and logging each poll and response.

To request a report from all of the sites, press the "REPORT" key from the STANDBY screen.

The LCD will display;

Select:	
ALL or SITE	
REPORT	STANDBY

Press "ALL" and the SS2000+ will poll the sites in its site lists.

Press "CLEAR" to stop the process and return to the STANDBY screen.

To request a report from an individual site, press the "REPORT" key from the STANDBY screen.

Press "MODE / SITE";

The LCD will display;

Enter Site:
Sites = 1 to 256
REPORT SEND to START

Enter the site number.

Pressing "CLEAR" will clear the site number for re-entry.

Pressing "CLEAR" again or pressing "MENU" will stop the process and return to the STANDBY screen.

Press "SEND" and the SS2000+ will poll the site and log the results.

The LCD will display;

Site# 001	
Requesting Report:	
REPORT	STANDBY

Computer Mode

4.3.1.3 Requesting Reports / Polling

Any poll requests or activation commands from the Commander software are examined by the SS2000+ for time and date. The SS2000+ updates its internal clock to match then sends the Digital message.

When Commander sends a poll request the LCD will display;

Requesting Report:	
Site# 001	
REPORT	STANDBY

The resulting reports are logged and sent to Commander. Incoming DTMF messages are converted to Digital format, logged and sent to Commander as well. These transmissions are not acknowledged by the SS2000+.

4.3.1.4 Streaming Mode

In computer mode the SS2000+ can also receive streamed audio / encode data from Commander or the SE3000 software and transmit it out as audio.

When the SS2000+ is transmitting streamed audio encode data the LCD will display;

Streaming Audio

4.4 Encoding

Up to 3 codes can be programmed under each of 60 activation functions. These can be;

- Two-Tone/Single-Tone codes
 - 282Hz - 3000Hz, Timing, 0.5 sec min to 8 sec max
- DTMF codes up to 16 characters
 - 35mS/5mS to 100mS/100mS timing
- Federal Signal 1-way Digital Codes
 - 1 to 299 Individual site, 300=All Call, 1 to 16 for zones 1 to 16.
 - Function Number 1 to 50, 97=Cancel, 98=Quiet Test, 99=Reset
- Cycling the 3 relay outputs
 - off times and on times 0 to 999 seconds
- Calling another activation key

The 24 activation buttons activate functions 1 - 24. The internal remote activation inputs can be used to activate functions 1 – 20. External remote activation inputs can be plugged into the I²C port to allow activation of functions 21 – 60.

Each activation function can be configured for “Auto Prompt Send” or “Auto Send”. Auto Prompt Send prompts the user to press the “SEND” button after an activation button has been pressed.

F01:
SEND to Transmit

Once done, the unit will send out the codes for that function.

With Auto Send, the codes are sent out when the user presses an activation button or closes a remote activation input without prompting the user to press “SEND”. The LCD will display the name of the function activated;

Sending:
Function Name

There are also “Auto Prompt Send Auto Report” or “Auto Send Auto Report” modes that work the same way except the unit will poll the sites it is configured for, after the activation.

Press “CLEAR” to stop the process and return to the STANDBY screen.

4.5 Manual Activation

Press the “MAN ACT” button from the STANDBY screen.

The LCD will display;

Manual Activation;
Select:
ALL ZONE or SITE
MANUAL ACTIV STANDBY

Activating ALL Sites.

Press the “ALL” button and the SS2000+ to prompt for the desired function number.

Press "CLEAR" to stop the process and return to the STANDBY screen.

The LCD will display;

Enter Function:
1-50, 97=Cancel
98=QuietTest 99=Rset
MANUAL SEND to START

Enter the function number.

Pressing "CLEAR" will clear the function number for re-entry.

Pressing "CLEAR" again or pressing "MENU" will stop the process and return to the STANDBY screen.

Press "SEND" and the SS2000+ will transmit the function.

Activating a Zone

Press the "ZONE" button and the SS2000+ to prompt for the desired zone number. Press "CLEAR" to stop the process and return to the STANDBY screen.

The LCD will display;

Enter Zone:
Zones = 1 to 16
Press SEND to ENTER

Enter the zone number.

Pressing "CLEAR" will clear the zone number for re-entry.

Pressing "CLEAR" again or pressing "MENU" will stop the process and return to the STANDBY screen.

Press "SEND" and the SS2000+ will prompt for the Function so tend to this zone.

The LCD will display;

Enter Function:
1-50, 97=Cancel
98=QuietTest 99=Rset
MANUAL SEND to START

Enter the function number.

Pressing "CLEAR" will clear the function number for re-entry.

Pressing "CLEAR" again or pressing "MENU" will stop the process and return to the STANDBY screen.

Press "SEND" and the SS2000+ will transmit the function.

Activating an Individual Site

Press the "MODE/SITE" button and the SS2000+ to prompt for the desired site number. Press "CLEAR" to stop the process and return to the STANDBY screen.

The LCD will display;

Enter Site:
Sites = 1 to 255
Press SEND to ENTER

Enter the site number.

Pressing "CLEAR" will clear the site number for re-entry.

Pressing "CLEAR" again or pressing "MENU" will stop the process and return to the STANDBY screen.

Press "SEND" and the SS2000+ will prompt for the Function so tend to this site.

The LCD will display;

Enter Function:
1-50, 97=Cancel
98=QuietTest 99=Rset
MANUAL SEND to START

Enter the function number.

Pressing "CLEAR" will clear the function number for re-entry.

Pressing "CLEAR" again or pressing "MENU" will stop the process and return to the STANDBY screen.

Press "SEND" and the SS2000+ will transmit the function.

4.6 Menu Selections

Press the “MENU” button for the main Menu.

The LCD will display;

1. Printer Status
2. Send Calibrate
3. Set Date and Time
4. Test Mode

Press “1” from the menu to display the current printer status;
“Printer Off”, “No Paper”, “Printer Offline”, “Printer Error”, or “Printer OK”.

Printer OK
PRINTER STANDBY

Press “CLEAR” or “MENU” to return to the STANDBY screen.
Press “2” from the menu to send a calibration tone.

The LCD will display;

SEND to Transmit
CAL STANDBY

Press “SEND” to cause the SS2000+ to transmit a 10 second, 1kHz sinewave. This is used to set transmitter deviation.

The LCD will display;

SEND to Transmit
Sending

When the 10 seconds is up the LCD will display;

SEND to Transmit
CLEAR to Quit

Press “SEND” to send the tone for another 10 seconds or,

Press "CLEAR" or "MENU" to return to the STANDBY screen.

Press "3" from the menu to set the date and time;

The LCD will display;

<code>\+' or \-' to Change</code>
<code>SEND to move to Next</code>
<code> </code>
<code>16:24:38 11/01/2010</code>

Press "SEND" to move the pointer "|" to the next field.

Press "+" to cause the number in the field to increment.

Press "-" to cause the number in the field to decrement.

Press "CLEAR" or "MENU" to save the date and time on the display and return to the STANDBY screen.

Press "4" from the menu to start the self test;

The LCD will display;

<code>LCD Message Test;</code>
<code>Press (+) if OK.</code>
<code>Press (-) if Failed</code>
<code>CLEAR Key to quit.</code>

Installation

4.7 Programming the Unit

Plug the PC's com port into the programming serial port of the SS2000+ (lower port of P1 using Federal Signal Part Number 2005204 serial port adaptor and Part Number 1751134 six conductor telephone cable.)

Load the ini configuration file into the SS2000+ using SSLoader+ or HyperTerminal.

Using HyperTerminal

Start HyperTerminal and enter a name for the "New Connection".
Under "Connect Using", select the com port of the PC that you are going to use.
Under "Port Settings", select;
Bits per second – 9600,
Data bits – 8,
Parity – None,
Stop bits – 1,
Flow control – None.
Then click OK.


You will get a prompt from the SS2000+ "S_".

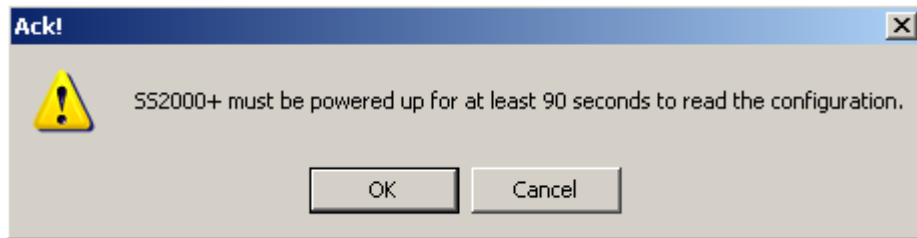
Hit "Enter" on the PC and the SS2000+ will respond with:

```
*****  
* SS2000+ Federal Signal Corp*  
*                               *  
* To Read ini from SS2000+; *  
* Transfer/Receive File/ *  
* Browse for folder/ *  
* Select Xmodem Then Receive *  
* Enter File Name and *  
* Select OK *  
*                               *  
* To Load Ini into SS2000+; *  
* Transfer/Send File/ *  
* Browse for file/ *  
* Select Xmodem Then Send *  
*****
```

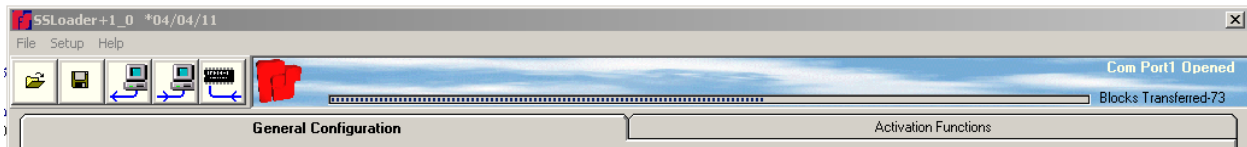
Follow the instructions contained in the SS2000+ response message to read or load the ini file into the SS2000+.

To Read / Download the ini configuration file from the SS2000+;

In SSLoader+ click the  Read button to read from the SS2000+. Selecting this option reads the INI-File in the unit. SSLoader+ will prompt with the warning;



Select OK and the SS2000+ will begin sending the INI file to SSLoader+.



Once downloaded, the program can be edited, saved and/or uploaded back to the SS2000+.

In HyperTerminal, select "Transfer" then "Receive File".
Browse to where you wish to save the file.
Under "Use receiving protocol", select "Xmodem" and click "Receive".
A pop-up will ask you what you wish to name the file.
Enter a name for the file and click "OK".
HyperTerminal will read the ini configuration file from the SS2000+ and save it where indicated and as the file name given.

Configuring the SS2000+ Options with SSLoader+

4.7.1.1 The General Configuration TAB

Digital Communications Frame

The screenshot shows the 'Digital Communications' configuration window. It is divided into two main sections: 'Digital Communications' and 'Digital Sites'.

Digital Communications Section:

- 128 Bit Encryption:** A row of eight input boxes, each containing '000'.
- Security Code:** A text box containing '65535'.
- Unit ID #:** A text box containing '901'.
- Repeat All-Calls:** A checked checkbox.

Digital Sites Section:

- A vertical slider on the left side.
- Site Active:** A checked checkbox.
- Site #:** A text box containing '001'.
- Repeaters Scheme #1:** Four input boxes labeled #1, #2, #3, and #4, all empty.
- Repeater Scheme #2:** Four input boxes labeled #1, #2, #3, and #4, all empty.

In this frame the 128 Bit Encryption key and Security Code are entered. All "0"s for the Encryption key means no encryption. "65535" for the Security Code means the system is open.

The Unit ID number must be entered and will be 900 to 999.

Checking "Repeat All-Calls" will set the SS2000+ to send any "ALL-Call" commands 3 times.

Under Digital Sites:

The slider at the left selects the RTU (siren Site) number. Once selected, the "Site Active" box must be checked if the unit is active. If repeaters are used for this site, they should be entered in the fields for "Repeater Scheme #1" and "Repeater Scheme #2". The SS2000+ will attempt to reach this site through Repeater Scheme #1, if entered, and if that fails it will attempt through Repeater Scheme #2. "Site Active" and repeater schemes, if used, must be entered for each site.

DTMF Communications Frame

The screenshot shows a window titled "DTMF Communications". At the top, there are two input fields: "DTMF Digit Time" with a value of "50" and "DTMF Gap Time" with a value of "50", both followed by "mS". Below these is a horizontal line and the text "DTMF Sites". Underneath, there is a vertical slider on the left. To the right of the slider is a checkbox labeled "Site Active" which is currently unchecked. Below the checkbox is a text box containing "001" followed by "Site #".

In this frame the DTMF Digit time and Gap time are entered. The digits can be 35 to 100mS in duration. The gap between digits can be 5 to 100mS.

Under DTMF Sites:

The slider at the left selects the RTU (siren Site) number. Once selected, the "Site Active" box must be checked if the unit is active.

Descriptions of Functions Reported by Remote Sites – Sent to Printer Frame

The screenshot shows a window titled "Descriptions of Functions Reported by Remote Sites - Sent to Printer". On the left, there is a vertical slider. To the right of the slider, there are two rows of input fields. The first row has a label "Function Name" and a text box containing "Function 01". The second row has a label "Function#" with a text box containing "01" and a label "Function Description" with a text box containing "Function 01".

When a site is polled it reports back the last function number that was run. This is where the name and description for the functions are entered. These names and descriptions are sent to the printer when the site reports back. Use the Slider on the left to select the function number and enter the name and description.

General Parameters Frame

Parameter	Value
AutoReport Delay	15 Sec
Report Request Timeout	5 Sec
Report Request Attempts	2
Under Run Buffer	1000 mS
Aux LED	None
Use Attached Printer	<input checked="" type="checkbox"/>
Front Porch Time	500 mS
Inter-Code Gap Time	500 mS
Time Zone	CST-Central
Use Daylight Savings Time	<input checked="" type="checkbox"/>

The Auto Report Delay is the number of seconds to wait after activating a function before requesting a Report. This can be 0 to 99 seconds.

The Report Request Timeout is the number of seconds to wait for a response from a Report Request before trying again or moving on to another site. This can be from 1 to 30 seconds.

The Report Request Attempts is the number of times to attempt a request for a Report from a site. This can be from 1 to 3.

The Under Run Buffer is the number of milliseconds of streaming VoIP data the SS2000+ will save in reserve. This is used to provide the SS2000+ with data to play if the data is momentarily interrupted.

The Aux LED can be set to activate with a WatchDogPoll (activates when there has been no poll requests to this unit in 30 minutes) or when an RTU (siren site) reports a fault.

Use Attached Printer is checked if a printer is to be used with the SS2000+.

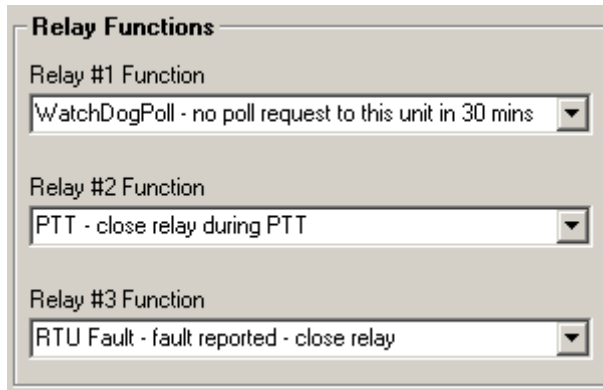
The Front Porch Time is the number of milliseconds between when the SS2000+ keys up a transmitter and when it begins sending the codes. This can be from 100 to 9999 milliseconds (0.1 to 9.999 seconds).

The Inter-Code Gap Time (Pause Duration) is the number of milliseconds the SS2000+ will wait between the end of one transmitted code and the beginning of the next.

The Time Zone selection should be set to the time zone the SS2000+ will operate in.

Use Daylight Savings Time is checked if the SS2000+ is in an area that uses Daylight Savings Time.

Relay Functions Frame



The screenshot shows a window titled "Relay Functions" with three dropdown menus. The first menu, "Relay #1 Function", is set to "WatchDogPoll - no poll request to this unit in 30 mins". The second menu, "Relay #2 Function", is set to "PTT - close relay during PTT". The third menu, "Relay #3 Function", is set to "RTU Fault - fault reported - close relay".

This is where the functions of the 3 relays can be selected. The relays can be set for;

None – The relay does not respond to any of these conditions and can be used for Activation Codes

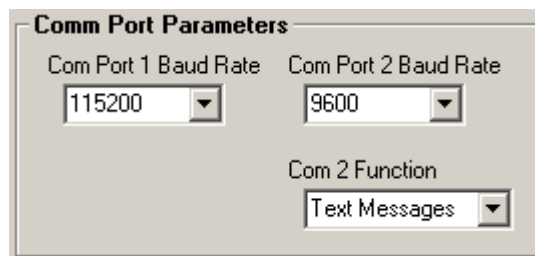
WatchDogPoll – relay is Normally Closed and opens if there are no poll requests to this unit in 30 minutes.

PTT – relay closed during any transmissions.

CD – relay closes when carrier detect is present or, if selected, VOX is active.

RTU Fault – relay closes an RTU (siren site) reports a fault.

Com Port Parameters Frame



The screenshot shows a window titled "Comm Port Parameters" with three dropdown menus. The first menu, "Com Port 1 Baud Rate", is set to "115200". The second menu, "Com Port 2 Baud Rate", is set to "9600". The third menu, "Com 2 Function", is set to "Text Messages".

In this frame the baud rates for com ports #1 (the Commander com port) and com port #2 (the accessory com port) can be set. The function of com port #2 must also be selected.


If “Text Message” is selected, the SS2000+ will send text messages from Commander to an attached display sign. If “Printer Message” is selected, the SS2000+ will send whatever messages are sent to the printer to a serial printer on com port #2. If “Control” is selected, com 2 can be used as a control port to Commander.

RTU Faults Frame

RTU Faults	
Mechanical RTU Faults	Electronic RTU Faults
<input checked="" type="checkbox"/> Intrusion	<input checked="" type="checkbox"/> Intrusion
<input checked="" type="checkbox"/> AC Fail	<input checked="" type="checkbox"/> AC Fail
<input checked="" type="checkbox"/> Battery	<input checked="" type="checkbox"/> Battery
<input checked="" type="checkbox"/> False Alarm	<input checked="" type="checkbox"/> False Alarm
<input checked="" type="checkbox"/> Chopper	<input checked="" type="checkbox"/> Charger
	<input checked="" type="checkbox"/> Amp Fail
	<input checked="" type="checkbox"/> Audio A - B

This frame lets the user select what conditions will be considered a fault by the SS2000+. There is a column for mechanical type sirens and electronics types.

Network Settings Frame

Network Settings	
<input checked="" type="checkbox"/> Enable Ethernet Communications	 Restore Defaults
<input type="radio"/> Obtain IP Address Automatically	
<input checked="" type="radio"/> Use the following IP Address-----	
IP Address:	<input type="text" value="10"/> <input type="text" value="10"/> <input type="text" value="10"/> <input type="text" value="1"/>
Subnet Mask:	<input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="0"/>
Default Gateway:	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
Device Identity Settings	
SmartMsg Server IP:	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
SmartMsg TCP Port:	<input type="text" value="16887"/>
Location:	<input type="text" value="My Location"/>

This frame configures how the SS2000+ will connect to an ethernet network. If “Enable Ethernet Communications” is checked, these settings are enabled.

The Factory Default settings are:

Obtain IP Address Automatically
IP Address: 10.10.10.1
Subnet Mask: 255.255.255.0
Default Gateway: 0.0.0.0

If “Obtain IP Address Automatically” is checked the SS2000+ will negotiate with the network for an IP address when it is connected.

If “Use the following IP Address” is checked the SS2000 will configure itself with the IP Address, Subnet Mask and Default Gateway entered below. These must be obtained from the system administrator and will be needed when RealPort drivers are installed any PC running Commander.

The “Device Identity” settings are used to identify the SS2000+ on a Code Spear network and will be assigned by the system’s administrator.

4.7.1.2 The Activation Functions TAB

Activation Functions Frame

This frame is used to program the codes under each of the 60 activation functions. The Slider on the left selects which button is being configured.

The name of the function is entered in the “Function Name” box.

The type of Activation Code can be selected for each of the 3 codes.

If Two Tone is selected, the entry box for the Two Tone code appears;

The 'Two-Tone' dialog box contains the following fields and controls:

- 'A' Tone: 1000
- 'A' Len: 1000 mS
- 'B' Tone: 440
- 'B' Len: 3000 mS
- Send: 1 Times (dropdown menu)
- Buttons: Cancel, Save

Here the frequencies of the “A” tone and the “B” tone are entered as well as their duration in milliseconds. The user can also select the number of times this code will be sent, from 1 to 3. When finished, click Save.

If DTMF is selected, the entry box for the DTMF code appears;

The 'DTMF' dialog box contains the following fields and controls:

- DTMF String: 1234567890*#ABCD|
- Send: 1 Times (dropdown menu)
- Buttons: Cancel, Save

Here the DTMF string that will be sent out can be entered. The user can also select the number of times this code will be sent, from 1 to 3. When finished, click Save.

If EAS is selected, the entry box for the EAS code appears;

The 'EAS' dialog box contains the following fields and controls:

- Origin Code: CIV (dropdown menu)
- Event Code: Select Event Code Below (dropdown menu)
- Location Code #1: [Empty]
- Location Code #2: [Empty]
- Location Code #3: [Empty]
- Duration: 00:15 (dropdown menu)
- Station ID: [Empty]
- EOM
- Buttons: Cancel, Save
- Location Codes icon

If this code is to be an EAS “End Of Message” check the EOM box and click Save.
If this code is NOT an EAS “End Of Message”;

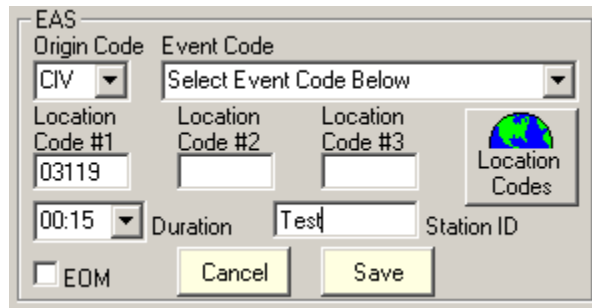
The user can select the Origination and Event codes. The Location codes are the area that this alert is intended for. Up to 3 location codes can be entered.

To find the location code for an area, click on the “Location Codes” button. The “Look Up Location Codes” box will appear;

From here you can select the state, the county and the county subdivision and the program will return the correct location code.

Click on the “X” and the “Look Up Location Codes” box will close. Enter the code it indicated in one of the location code entry boxes.

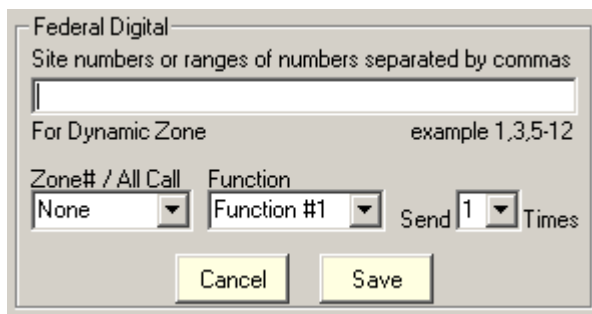
The Duration that the alert is intended to last must be selected and the “Station ID” entered.



The screenshot shows a dialog box titled "EAS". It contains several fields and controls: "Origin Code" is a dropdown menu with "CIV" selected; "Event Code" is a dropdown menu with "Select Event Code Below" selected; "Location Code #1" is a text box containing "03119"; "Location Code #2" and "Location Code #3" are empty text boxes; "Duration" is a dropdown menu with "00:15" selected; "Station ID" is a text box containing "Test"; there is an unchecked checkbox labeled "EOM"; and "Cancel" and "Save" buttons at the bottom.

When finished, click Save.

If Federal Digital is selected, the entry box for the Federal Digital code appears;



The screenshot shows a dialog box titled "Federal Digital". It contains a text box for "Site numbers or ranges of numbers separated by commas" which is empty; a label "For Dynamic Zone" with an example "example 1,3,5-12"; a "Zone# / All Call" dropdown menu with "None" selected; a "Function" dropdown menu with "Function #1" selected; and a "Send" dropdown menu with "1" selected followed by the word "Times". "Cancel" and "Save" buttons are at the bottom.

Here the user can select the “Zone” number the activation is intended for or “All Call” if it is for all sites. If the “Zone# / All Call” is left as “None” an individual site number can be entered in the box above.

Multiple sites can be entered if the software in the sites supports “Dynamic Zoning”. The site numbers are entered as site numbers or ranges of site numbers separated by commas;

Example: 1,3,5-12.

This will activate sites #1, #3 and sites 5 through 12.

The user can also select the number of times this code will be sent, from 1 to 3.

When finished, click Save.

If Relay Outputs is selected, the entry box for the Relay Outputs appears;

Relay#	Off Time	On Time
1	0 Sec	0 Sec
2	0 Sec	0 Sec
3	0 Sec	0 Sec

Relay Outputs do not work if configured for Relay Functions on General Configuration Tab

Cancel Save

Here the user can enter what any of the 3 relays will do when this code is activated. The Off Time is how many seconds the relay will wait after the activation to close. This can be from 0 to 999 seconds.

The On Time is how many seconds the relay will stay closed. This can be from 1 to 999 seconds. When finished, click Save.

These relay functions will not work if the relays have been configured for other tasks in the Relay Functions frame.

The Mode selection sets rather this code will be - “Auto Prompt Send”, “Auto Send”, “Auto Prompt Send Auto Report” or “Auto Send Auto Report”.

Auto Prompt Send prompts the user to press the “SEND” button after an activation button has been pressed before initiating the activation.


With Auto Send, the activation is sent out when the user presses the activation button without being prompted to press “SEND”.

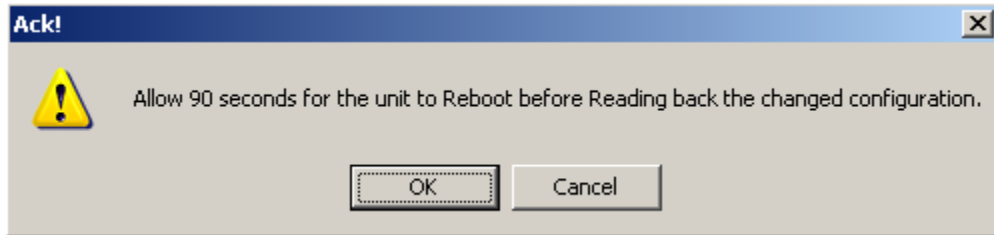
Auto Prompt Send Auto Report prompts the user to press the “SEND” button after an activation button has been pressed before initiating the activation. After the activation, the SS2000+ waits the number of seconds indicated by Auto Report Delay and polls the sites.

Auto Send Auto Report Initiates the activation immediately. After the activation, the SS2000+ waits the number of seconds indicated by Auto Report Delay and polls the sites.

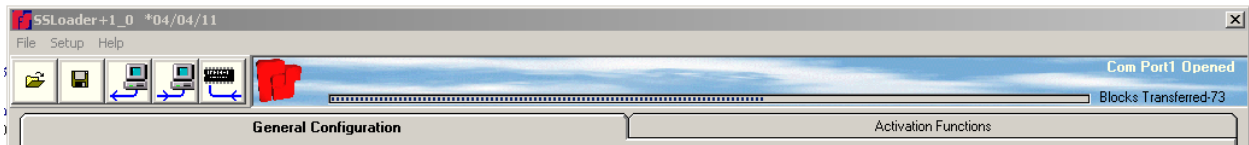
The Comment Sent to Printer when this Function is activated is where any printer comments can be entered. These are sent to the printer when this code is activated.

To Program / Upload ini configuration file to the SS2000+;

In SSLoader+ click the  Send button to upload a file to the SS2000+. SSLoader+ will prompt with the warning;



Select OK and SSLoader+ will begin sending the INI file to the SS2000+.



When the transfer is complete -



In HyperTerminal, select "Transfer" then "Send file".
Browse to the ini file you wish to upload.
Under "Protocol", select "Xmodem" and click "Send".
HyperTerminal will send the ini file to the SS2000+.

4.8 Connecting the Transceiver Interface

Unbalanced Interface

Connect the PTT relay COM output (TB2 pin 1) to TB10 - Ground.

Connect the PTT relay N.O. output (TB2 pin 2) to the transceiver and PTT input.

Connect the Carrier detect ground (TB2 pin 10) to the transceiver's ground.

Connect The Carrier detect (TB2 pin 9) to the transceiver's carrier detect output. The unit can be jumpered to accept either active low or active high carrier detect. If carrier detect is not available, the unit can be jumpered for VOX.

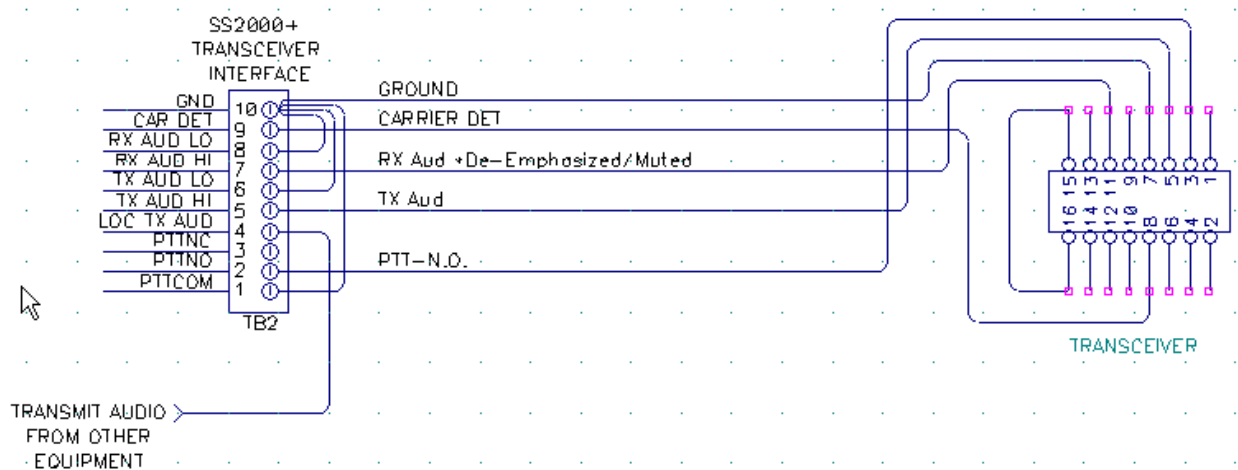
If other equipment is using this transceiver, connect it's transmit audio to TB2 pin 4. When the SS2000+ is transmitting, it will interrupt this tx audio.

Connect the Transmit audio Hi output (TB2 pin 5) to the transceiver's transmit audio input.

Connect the Transmit audio Low (TB2 pin 6) to TB10 - Ground.

Connect the Receive audio input Hi (TB2 pin 7) to the transceiver's receive audio output.

Connect the Receive audio Low (TB2 pin 8) to TB10 - Ground.



Balanced Interface

Connect the PTT relay COM output (TB2 pin 1) to TB10 - Ground.

Connect the PTT relay N.O. output (TB2 pin 2) to the transceiver and PTT input.

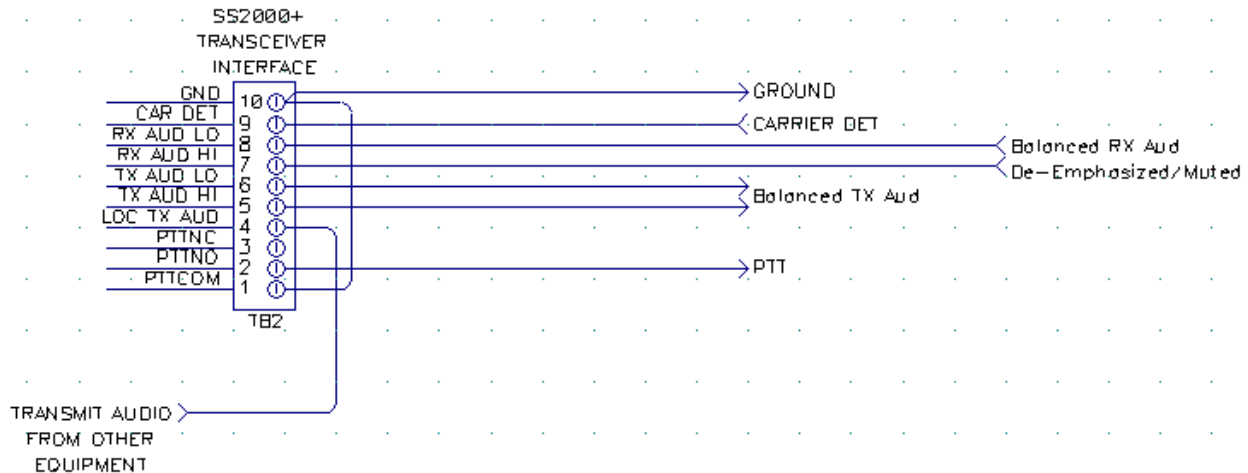
Connect the Carrier detect ground (TB2 pin 10) to the transceiver's ground.

Connect The Carrier detect (TB2 pin 9) to the transceiver's carrier detect output. The unit can be jumpered to accept either active low or active high carrier detect. If carrier detect is not available, the unit can be jumpered for VOX.

If other equipment is using this transceiver, connect it's transmit audio to TB2 pin 4. When the SS2000+ is transmitting, it will interrupt this tx audio.

Connect the Transmit audio Hi and Low outputs (TB2 pins 5 & 6) to the transceiver's transmit audio input.

Connect the Receive audio inputs Hi and Low (TB2 pins 7 & 8) to the transceiver's receive audio output.



4.9 Setting the Jumpers

JU1 - internal - DTMF Decode Speed, Jumpered = 35ms/5ms, Open = 50ms/50ms or greater.

JU3 – internal - External Mic Amplified or not, Jumpered for amplified mics

JU5 – internal - Ghost Power to balanced Mic Input, Jumpered applies +46 VDC

JU4A – Receive Audio Input Impedance
 Center and Upper pins Jumpered = 10K Ohm
 Center and Lower pins Jumpered = 600 Ohm

JU4B – Transmit Audio Output Impedance
 Center and Upper pins Jumpered = 10K Ohm
 Center and Lower pins Jumpered = 600 Ohm
 Usually Low Z (600 Ohm) will drive any type of input.

JU4C – Carrier Detect Polarity
 Center and Upper pins Jumpered = Active High

Center and Lower pins Jumpered = Active Low

JU4D – Carrier Detect or VOX

Center and Upper pins Jumpered = VOX

Center and Lower pins Jumpered = Carrier Detect Input

4.10 Setting the Levels

Start the Set Deviation function (Menu \ 2. Send Calibrate \ SEND).

Using V2, set the Transmit Audio output level for 3 kHz (1.5 kHz for narrow band) deviation from the transmitter.

Confirm that the first 3 to LEDs on the Level Display are on.

If a Local microphone is used;

While holding the microphone against the lower lip and speaking in a normal voice, holding the word "four", adjust V4 for 4 to 5 LEDs on the Level Display.

If an external balance microphone is used;

While holding the microphone against the lower lip and speaking in a normal voice, holding the word "four", adjust V8 for 4 to 5 LEDs on the Level Display.

If Line inputs are used;

Activate the Line input's PTT line and inject an audio signal.

Adjust V6 for the level of Line Input #1 or V7 for the level of Line Input #2 for 3 to 4 LEDs on the Level Display.

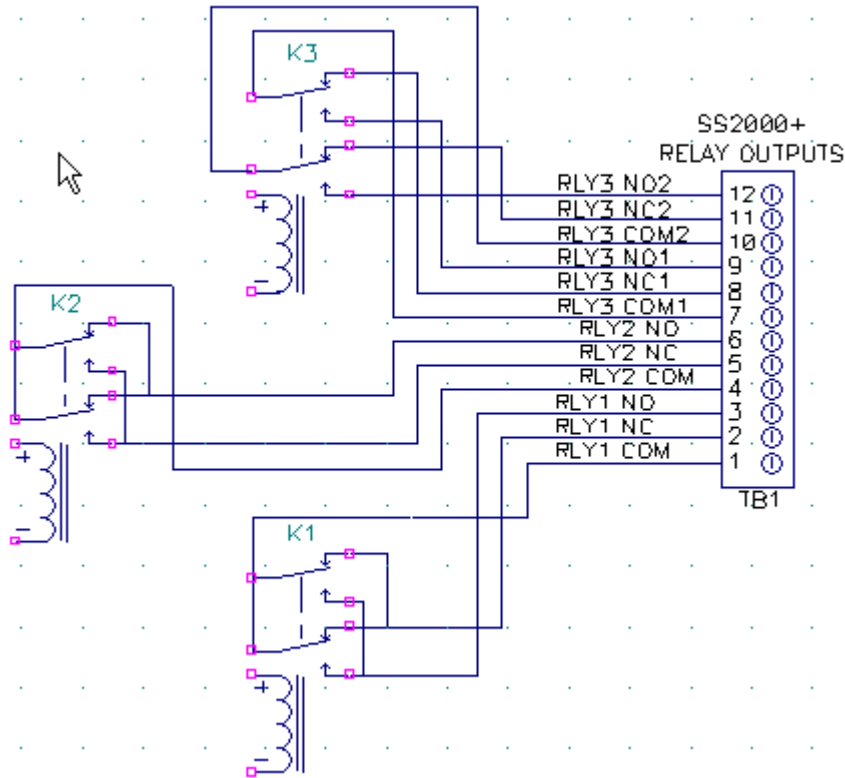
Inject a radio signal modulated by a 1 kHz tone at 3 kHz (1.5 kHz for narrow band) of deviation into the transceiver.

Using V3, set the level on the level meter until the first two LEDs are on then slowly increase the level until the third LED just comes on OR set TP11 for $1V_{P-P}$ ($354mV_{RMS}$).

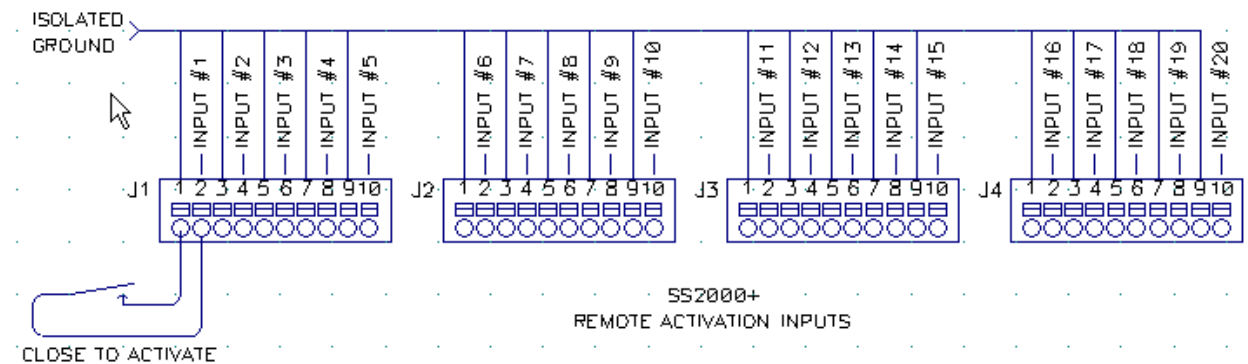
RTUs in the field should be configured with at least a 500mS front porch to be used with the SS2000+.

4.11 Connecting the Relay Outputs

All Relays are shown in the OPEN state.



4.12 Connecting the Remote Activation Inputs



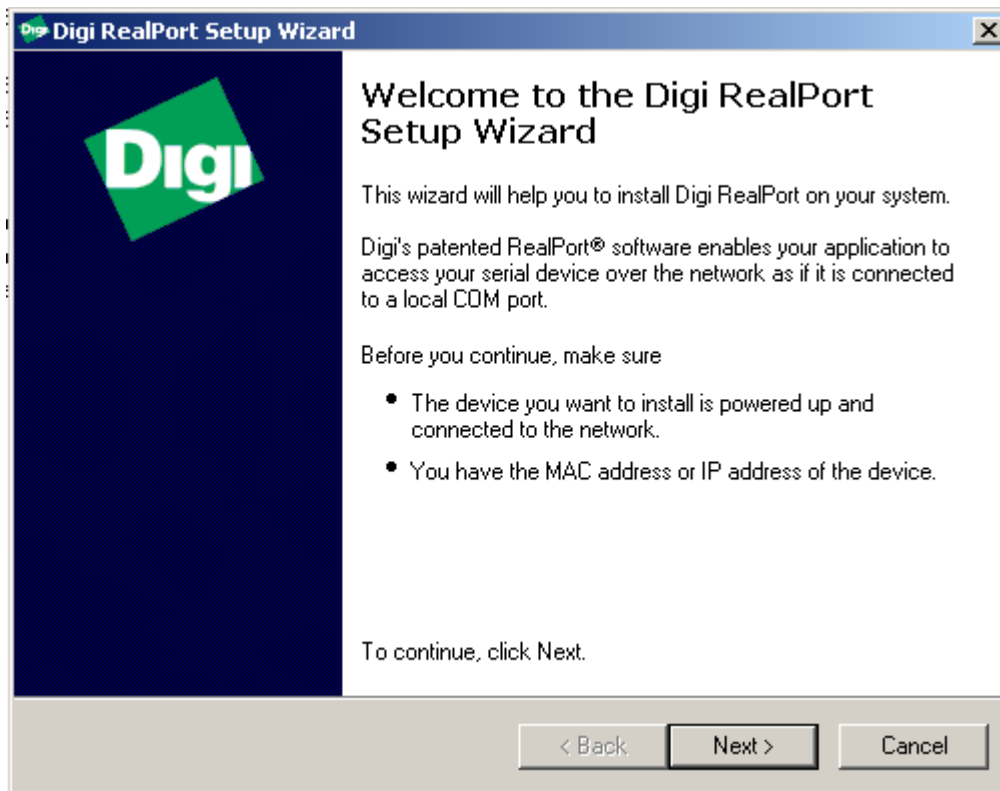
4.13 Configuring the SS2000+ for operation over Ethernet

Using SSLoader+ or Hyperterminal the SS2000+ will need to be configured for;
Use the following IP Address (ObtainIPAddress=manual).
IP Address is set to a **Static** address set aside for the SS2000+.
Subnet Mask is set for whatever is used for the network the SS2000+ is on.
Default Gateway is set for whatever is used for the network the SS2000+ is on.

4.14 Setting Up a Virtual Com Port on a PC

Communicating with the SS2000+ over an Ethernet connection requires installing the virtual com port drivers on the PC that is to be used.

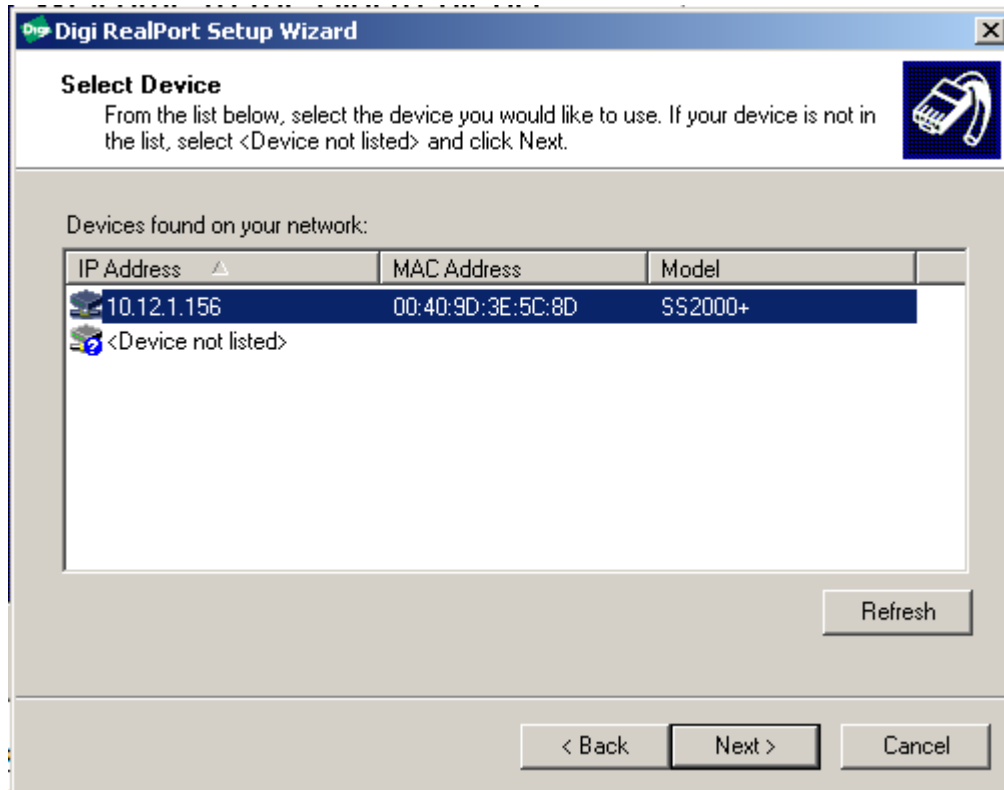
1. Open the folder for the appropriate OS in the RealPort driver folder.
2. Run the "Setup.exe". The Installer will prompt with;



3. Ensure that the SS2000+ has been powered up and plugged into the network for at least 1 minute and that the Static IP Address of the SS2000+ has been configured.

4.15 If the SS2000+ is on the same network as the PC/PCs that are to use it:

4. Click on Next >. The installer will prompt with;



5. If the SS2000+ shows up in the list, select it and click Next >.
6. If the SS2000+ is not in the list, select <Device not listed> and click Next>. The installer will prompt with;

Digi RealPort Setup Wizard

Describe the Device
Enter information for the device you would like to use.

1. Describe Your Device

Model Name: SS2000+

Serial Ports: 1

2. Enter its Network Settings

IP Address: 206 . 222 . 212 . 164

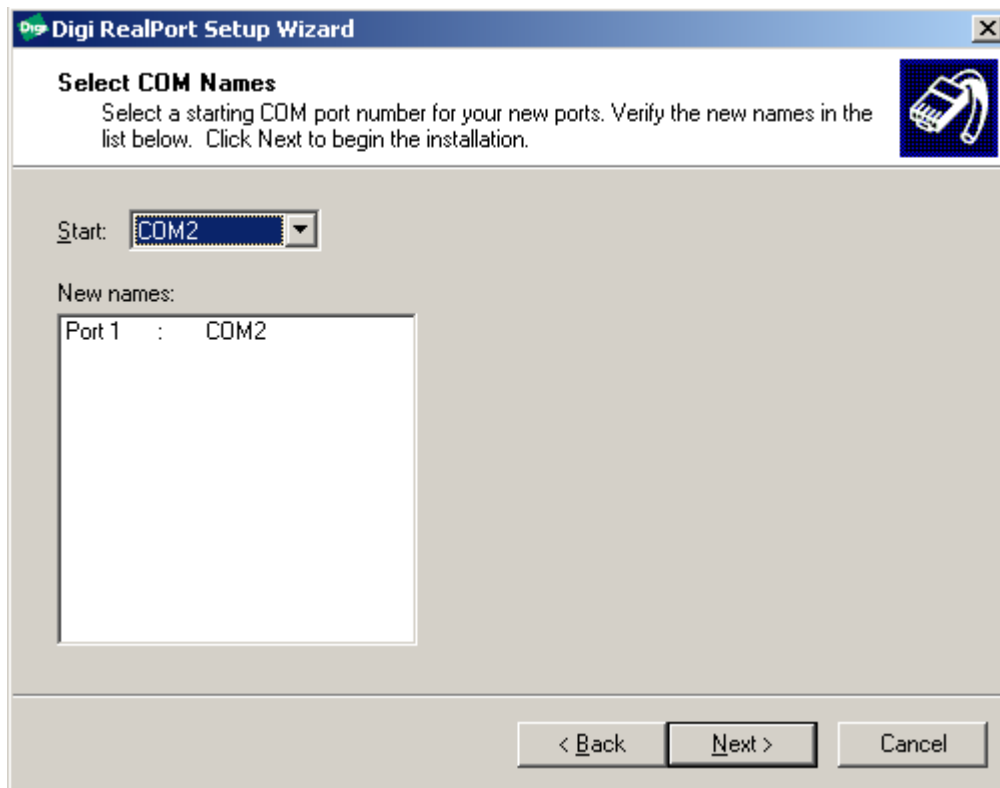
TCP Port: 771

3. Configure Additional Options

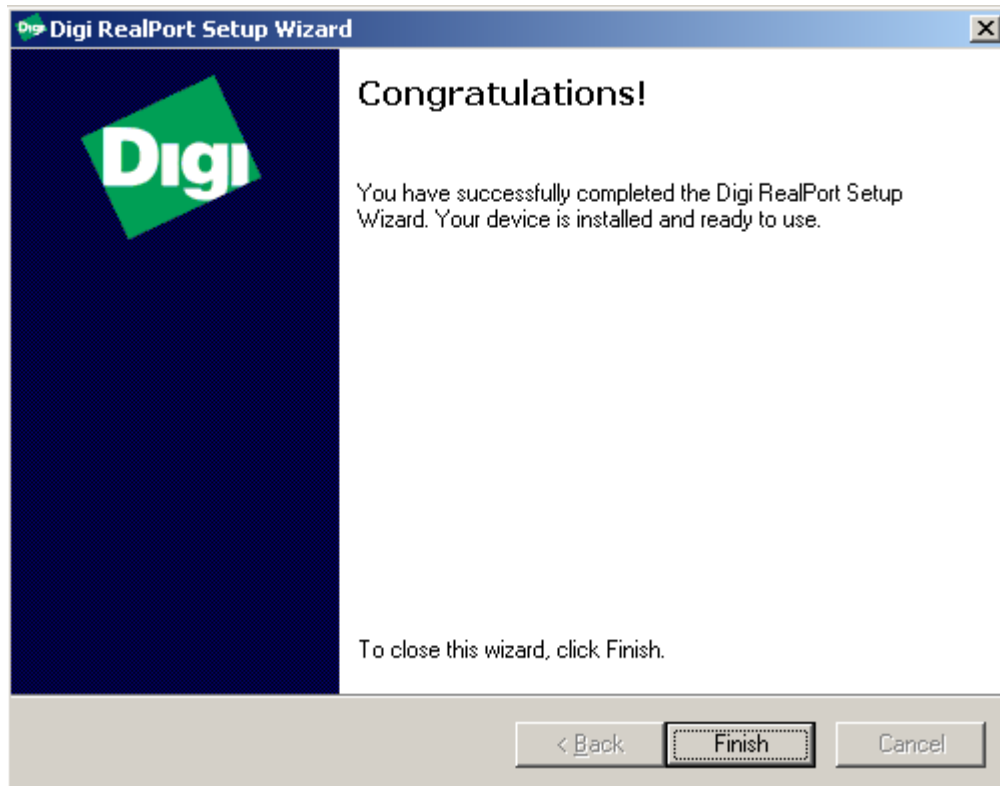
This Device Supports Encrypted RealPort

< Back Next > Cancel

7. Enter "SS2000+" in the "Model Name".
8. Select "Serial Ports" to 1.
9. Enter the Static IP Address of the SS2000+.
10. Check the "This Device Supports Encrypted RealPort" box and click Next>.



11. Select the com port to use and click Next>. The installer will install the drivers and configure the com port. The installer will prompt with;



12. Click Finish and the SS2000+ will be available on the virtual com port.

5 SERVICE AND WARRANTY

5.1 Service

There are no user serviceable parts inside the SS2000+. Servicing should be referred to an authorized Federal Signal Service center. Contact Federal Warning System's Customer Care Center at: 1-800-524-3021 for further service information.

5.2 Warranty

Limited Warranty

The Signal Division, Federal Signal Corporation (Federal) warrants each new product to be free from defects in material and workmanship, under normal use and service, for a period of one year on parts replacement and labor from the date of delivery to the first user-purchaser.

During this warranty period, the obligation of Federal is limited to repairing or replacing, as Federal may elect, any part or parts of such product which after examination by Federal discloses to be defective in material and/or workmanship.

Federal will provide warranty for any unit, which is delivered, transported prepaid, to the Federal factory or designated authorized warranty service center for examination and such examination reveals a defect in material and/or workmanship.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Batteries are not covered under warranty.

This warranty does not extend to any unit which has been subjected to abuse, misuse, improper installation or which has been inadequately maintained, or to units that have problems relating to service or modification at any facility other than the Federal factory or authorized warranty service centers.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL FEDERAL BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIAL OR WORKMANSHIP.

