

## FT100C-V

Weather Resistant VoIP Telephone

25500867 Rev A0 1123

**Limited Warranty:** This product's limited warranty can be found at [www.fedsig.com/SSG-Warranty](http://www.fedsig.com/SSG-Warranty).

### SAFETY MESSAGES TO INSTALLERS AND USERS

- Read and understand instructions before installing or operating equipment.
- Do not install this device near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Only use attachments and accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel.
- Prior to installation, consult local building and electrical code requirements.
- **WARNING: ELECTRICAL HAZARD** – This product should be installed by a licensed electrician according to all electrical and building codes.
- **WARNING: DISLOCATION HAZARD** – To prevent injury, this apparatus must be securely attached to the floor or wall in accordance with the installation instructions.



**Table 1 Specifications**

<b>Electrical Performance</b>	
Ringer Output	>80 dB
Microphone	Noise reducing dynamic
Receiver	Hearing and compatible
<b>Category</b>	
Ethernet I/F	10/100 MBPS
Protocol	SIP RFC 3261 compatible
Power Input - Method #1 - Method #2	802.3 AF compliant PoE switch or power injector 24 Vdc at 1A power adapter
CODECS Supported	G711, A-LAW AND $\mu$ -LAW G722.1 (SIREN7) G722.2 (AMR-WB) G729.1 (G729J AND G729EV)
Relay Contact	Fuse protected to 1 A at 30 Vdc
<b>Environmental</b>	
Weather and Corrosion Resistant	Enclosure NEMA 3R
Temperature	-22° to +140°F (-30° to +60°C)
Humidity	0 to 100% RH
<b>Mechanical</b>	
Hook Switch (Cradle Switch) Life	>1 000 000 Operations

Body Construction	GE VALOX™ 357 engineering polymer
Faceplate	Steel, corrosion protected and powder coated
Dimensions (H X W X D)	12 X 9.6 X 3.9 inches (305 x 245 x 99 mm)
Net Weight Including Mounting Plate	7 lb (3.2 kg)
Shipping Dimensions	15 X 11.5 X 5 inches (381 x 293 x 127 mm)
Shipping Weight Including Mounting Plate	8 lb (3.7 kg)
Handset Material	High impact ABS
Standard Mounting	Vertical wall
Wiring Access	7/8" opening for owner-supplied fitting
Hardware Material	Stainless steel

**Table 2 A-Compliance**

FCC	Part 15, Class A
ICES-003	Class A
IEC	61000-6-2: 2005 60950-1
CISPR	22: 2008
Weatherproof Enclosure	Type 3R

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**GENERAL:** The Federal Signal FT100C-V telephone is designed to provide safe, reliable communication in areas prone to high humidity, chemical vapors, dust, and physical abuse.

The FT100C-V Telephone is compatible with most SIP-based IP PBX servers that comply with SIP RFC 3261. Users can remotely monitor and program settings through a web browser to configure telephones on their network.

## Features

- Enclosure
  - VALOX™ body construction
  - Weather and corrosion resistant
  - Spring-loaded hinged door
- Temperature range -22° to +140°F (-30° to +60°C)
- 12-key teleseal keypad
- Waterproof connections and stainless steel fittings for longer life
- Corrosion protected and powder coated steel faceplate
- Magnetic reed hook switch – no moving parts
- Easily mounted on any sturdy, vertical structure
- Noise reducing microphone allows a high level of intelligibility in locations with high background noise
- Heavy duty K-type industrial handset
- Handset retainers to maintain on-hook status
- Modular parts for easy service
- Compatible with inductively coupled hearing aid devices
- Adaptive full duplex operation
- Compatible with most SIP-based IP PBX servers that comply with SIP (RFC 3261)
- Network web management interface
- The discovery utility makes it easy to detect, locate, and launch the web-based configuration screens

- Product self-diagnostic testing available through web interface
- Network-adjustable speaker volume and microphone sensitivity sets the default levels. User-adjustable volume control on Handset
- PoE 802.3af enabled (Power-over-Ethernet) or alternate power source
- Web-based user interface allows remote setup of network, product operations, updates, self-diagnostics, and other functional access
- Auxiliary relay – multiple activation selectable through web interface.
- Dual speeds of 10 Mbps and 100 Mbps
- Network/Web management
- Dial Out Extension supports the addition of comma delimited pauses before sending additional DTMF tones
- Network downloadable product firmware
- Tamper proof design
- Autoprovisioning and Device Configuration Export/Import saves setup time on multiple deployments
- Configurable audio files
- Event Monitoring / Triggers (Refer to VoIP Configuration Guide – Part Number 25500857)
- Peer-to-peer capable

## Supported Protocols

The WRT-VoIP Telephone with Keypad supports:

- SIP (Session Initiation Protocol)
- HTTP Web-based configuration
  - Provides an intuitive user interface for easy system configuration and verification of WRT-VoIP Telephone with Keypad operations.
- DHCP Client
  - Dynamically assigns IP addresses in addition to the option to use static addressing.
- TFTP Client
  - Facilitates hosting for the autoprovisioning configuration file.
- RTP
  - Facilitates autoprovisioning configuration values on boot.
- Audio Encodings
  - PCMU (G.711 mu-law)
  - PCMA (G.711 A-law)
  - G722.1 (Siren7)
  - G722.2 (AMR-WB)
  - G729.1 (G729J & G729EV)

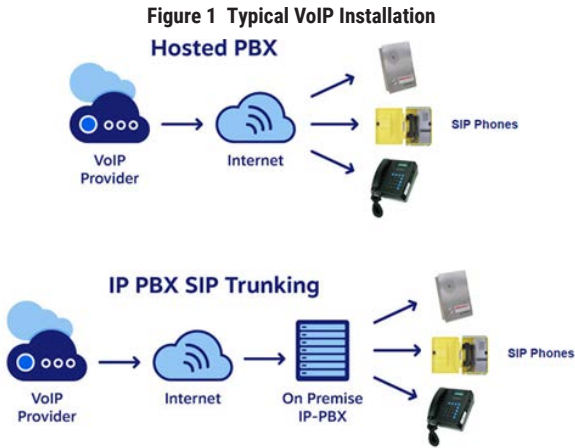
## Supported SIP Servers

As a SIP device, this product will operate with most IP PBX servers.

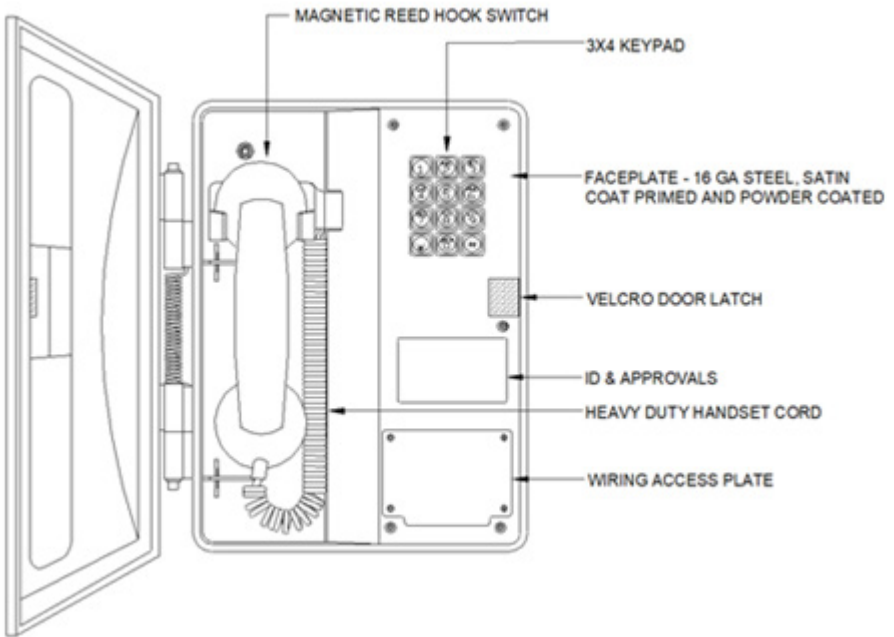
## Installation

The Voice-over-IP (VoIP) FT100C-V Telephone is a Power-over-Ethernet (PoE 802.3af) and Voice-over-IP (VoIP) two-way communications devices that easily connect into existing local area networks (LANs) with a single cable connection.

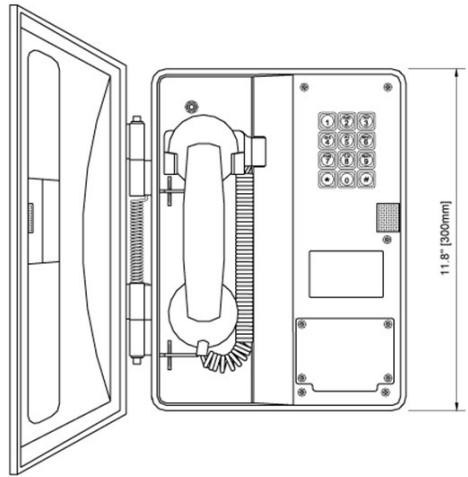
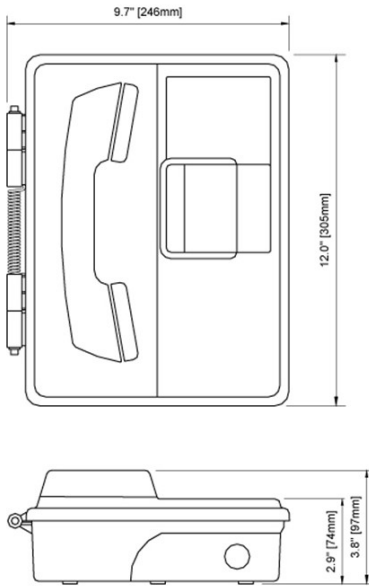
Figure 1 illustrates how the FT100C-V-VoIP Telephone can be installed as part of a VoIP phone system.



**Figure 2 Features**



**Figure 3 Dimensions**



## NOTICE

**ELECTROSTATIC HAZARD:** The VoIP PCBA is susceptible to damage from electrostatic discharge (ESD) and is protected by a metal shield. If it is necessary to remove the shield, take suitable precautions.

## ⚠ WARNING

**SHOCK HAZARD:** If using an auxiliary power supply, ensure that it is unplugged during installation to avoid an accidental shock or circuit damage.

### NOTES:

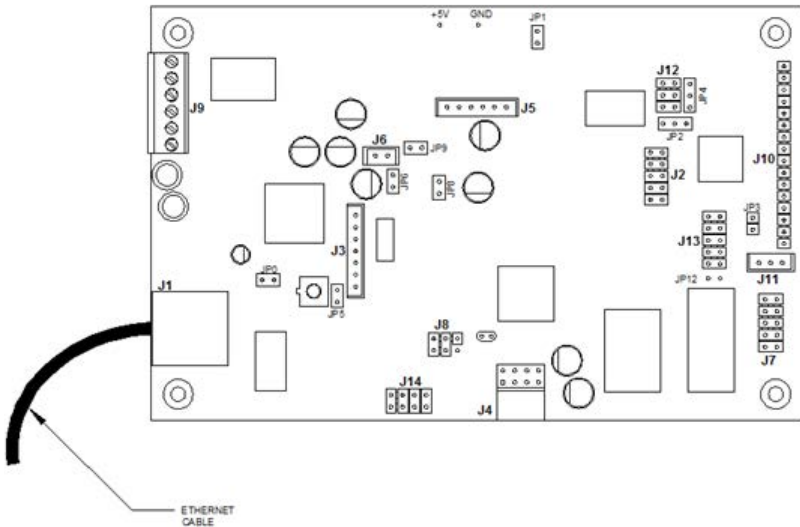
- Determine if power to operate the telephone will be provided via the Ethernet or if external power will be required. If external power is required, install an auxiliary power supply
- To maintain Ingress Protection / NEMA ratings, use appropriately rated hardware and waterproofing techniques.
- Choose a wall location that is free of obstructions and permits space for conduit runs.
- Ensure that mounting can support 7 lb (3.2 kg) and any additional foreseeable load.

To install the telephone:

1. Separate the faceplate from the housing.
2. Use the template provided or the enclosure itself to locate and drill holes for the mounting screws.
3. Secure the unit to the wall with user-supplied 1/4" or M8 screws.
4. Bring the network cable into the enclosure through the conduit entrance and plug into the RJ-45 connector on the PCBA. See Figure 4.

**Figure 4 Wiring**

TOP VIEW OF VoIP PCBA



5. If using an alternate power supply, connect the supply to the terminal block J9. Before doing so, determine if power is supplied over the Ethernet cable.
6. Connect the on-board relay if utilized.
7. Reconnect the faceplate harness.
8. Ensure that all connections are secure.
9. Verify that the telephone is properly connected by pressing the RESET switch for less than five seconds to announce the IP address. LEDs on the RJ45 connector indicate network connection and activity.
10. Replace the faceplate.
11. Set up and configure the telephone if changes are required to the default settings.
12. Call to and from another telephone, preferably a VoIP device, to test the unit.

## Operation

FT100C-V VoIP telephones may be set up for either keypad dialing or auto-dialing.

If the telephone is configured for keypad, dialing operation is identical to most other single-line telephones.

If the telephone is configured for auto dialing, lift the handset and press the number assigned to the extension to be dialed.

FT100C-V VoIP telephones dial the programmed number when the handset is lifted.

Adjust the receiver volume with the switch in the handset.

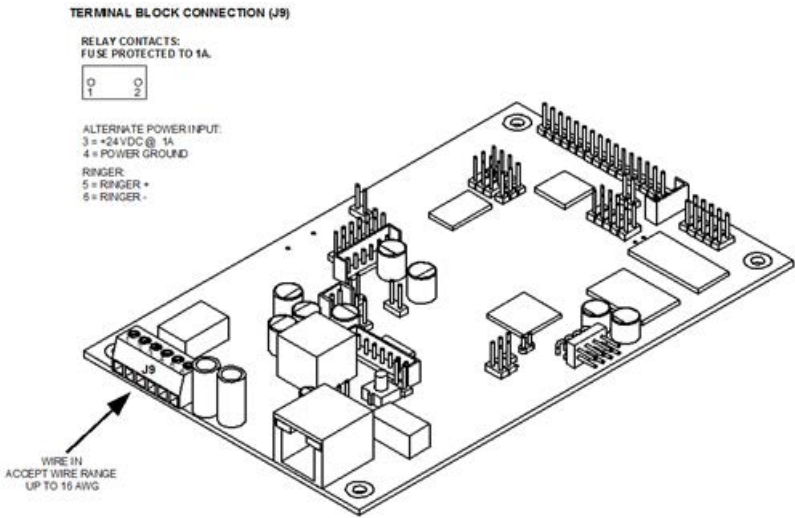
## Setup

### Connections

Figure 6 shows the pin connections on the J9 (terminal block). This terminal block can accept a wire range from 16 AWG to 26 AWG.

**NOTE:** As an alternative to using PoE power, 24 V at 1 A can be supplied to the terminal block.

**Figure 5 Terminal Block Connections**



### Connecting a Device to an Auxiliary Relay

The FT100C-V Telephone incorporates one on-board relay located on the PCBA, which enables users to control a low current external relay or device. An external relay can control a ringer, strobe light, door lock or any other apparatus. The on-board relay is protected by a 1 A, non-replaceable fuse. Power switched by the relay should not exceed 0.5 A at 30 Vdc. The PCBA is not designed to handle AC voltages.

## NOTICE

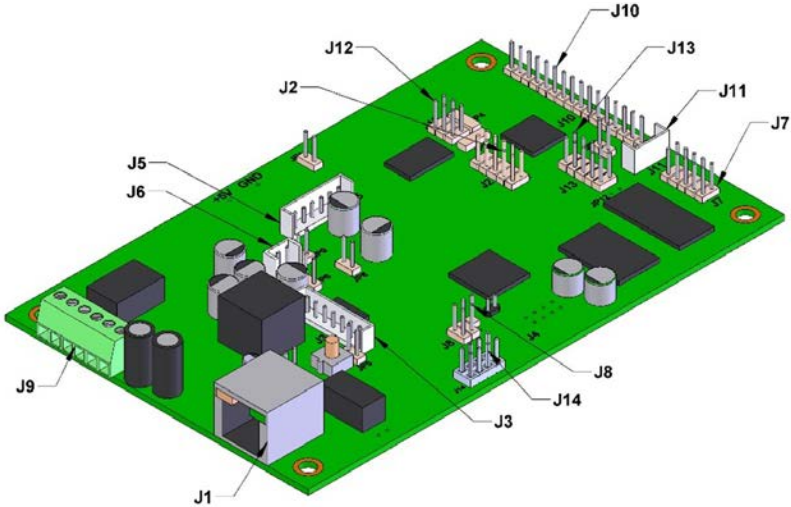
**The relay circuitry contains a non-replaceable 250 VAC 1 A fuse. If the fuse blows, the board must be returned to Federal Signal or an approved service center for repair.**

The telephone relay activation time is selectable through the web interface. The relay is controlled by DTMF tones generated from the phone to which the VoIP phone is connected no matter which one initiated the call. The DTMF tones are selectable from the web interface as well.

**NOTE:** The three-digit code for the auxiliary relay must be sent in conformance with RFC2833 DTMF generation.

See Figure 6 and Table 3 to identify the connector locations and functions.

**Figure 6 Connector Locations**



**Table 3 Connector Functions**

Connector	Function
J1	PoE Network Connection (RJ-45)
J2	Hands free Microphone Interface/LED Interface
J3	Not used
J4	JTAG Interface
J5	Handset/Reed Switch Interface
J6	Speaker Interface
J7	Keypad Interface
J8	RS232 Port
J9	Terminal Block (see Figure 5)
J10	Not used
J11	Handset V.C. Interface
J12	ISP-DIP/Debug UART

### Network Connectivity and Data Rate

When you plug in the Ethernet cable or power supply, the square, green Link light above the Ethernet port indicates that the network connection has been established. (See Figure 7.) The Link light changes color to confirm the auto-negotiated baud rate:

- This light is yellow at 10 Mbps.

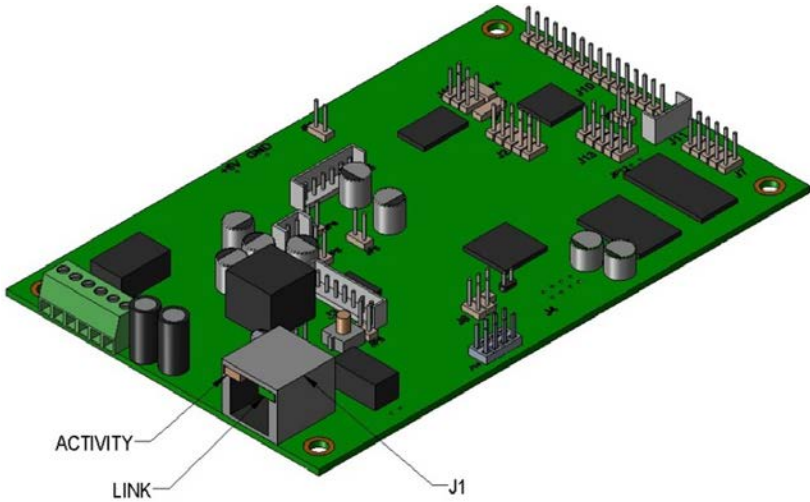


- It is orange at 100 Mbps.

## Verify Network Activity

The square, yellow Activity light blinks when there is network activity.

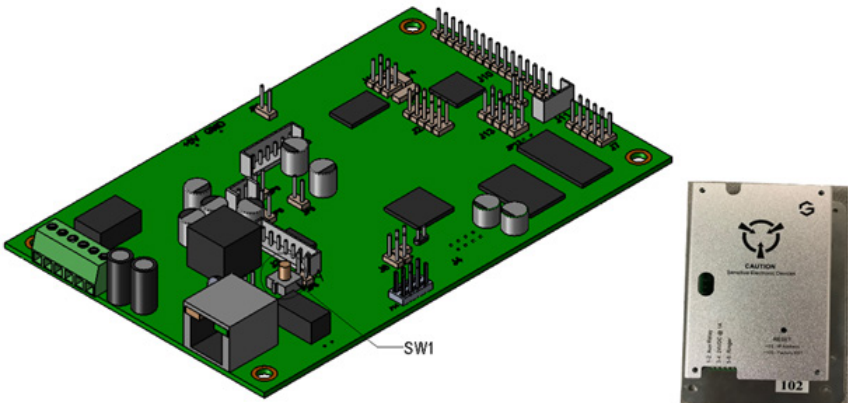
Figure 7 Network Activity



## Reset Switch

When the telephone is operational and linked to the network, use the Reset Test Function Management (RESET) switch (Figure 8) on the Telephone board to announce the telephone's IP address, and verify that the audio is working. The message comes through the handset receiver.

Figure 8 RESET Switch



## Announcing the IP Address

To announce a telephone's current IP address, press and release the RESET switch (SW1). **Do not hold the button for more than five seconds.**

### NOTES:

- The telephone will use DHCP to obtain the new IP address (DHCP-assigned address or default to 10.10.10.10 if a DHCP server is not present).
- Pressing and holding the RESET switch for longer than five seconds restores the telephone to the factory default settings.

## Restore the Factory Default Settings

When troubleshooting configuration problems, it is sometimes convenient to restore the device to a known state.

**NOTE:** Each telephone is delivered with factory set default values.

To set the factory default settings:

1. Press and hold the RESET switch (SW1) for more than five seconds.
2. The telephone announces that it is restoring the factory default settings.

The telephone uses DHCP to obtain the new IP address (DHCP-assigned address or default to 10.10.10.10 if a DHCP server is not present).

## Adjust the Volume

You can adjust the volume through the Device Configuration Page.

For further instructions, reference 25500857 FT VoIP Telephone Setup Guide.

## Field Repairs

Field repairs must be carried out only by qualified technicians using OEM parts. Substitution of parts voids the warranty and may pose a hazard to users of the equipment.

### **NOTICE**

**ELECTROSTATIC HAZARD: The VoIP PCBA is susceptible to damage from electrostatic discharge (ESD) and is protected by a metal shield. If it is necessary to remove the shield, take suitable precautions.**

To make repairs to the telephone:

1. Disconnect the telephone IP Cable and Aux Power if necessary.
2. Carefully remove the front cover assembly and separate it from the housing by disconnecting the harness plugs. Note that the handset and all electronics are attached to the front plate.
3. Perform the necessary repairs or adjustments.
4. Carefully replace the front plate and install all the screws. Do not overtighten the cover screws. There is a flexible gasket between the cover and the body; excessive tightening of the screws deforms the gasket and reduces the weather resistance of the set.

## Handset Replacement

Refer to the instruction sheet included with the replacement handset.

To replace the handset:

1. Disconnect the handset wiring from the PCBA.

2. If the phone is equipped with an armored cord handset, remove the anchor screw from the armored cord lanyard.
3. Loosen the handset cable gland and pull out the cord.
4. Install the new replacement handset and tighten the gland.
5. Rewire the handset cord to the PCBA.

## Ringer Replacement

To replace a ringer:

1. Disconnect the ringer wiring from the terminal block on the PCBA.
2. Remove the screws that hold the ringer to the housing.
3. Install the new ringer and gasket.
4. Reconnect the ringer wiring to the terminal block.

## Main Circuit Board Replacement

To replace the circuit board:

1. Label any wiring attached to the circuit board. Disconnect the wiring and ribbon cable.
2. Remove the two screws holding the circuit board in place. Carefully remove the board.
3. Install the new board and reconnect the wiring.
4. If the configuration had been changed from the factory default settings, reprogram the telephone.
5. Make and receive calls from another telephone to test it.

## Maintenance and Service

**Technical Assistance:** Contact our Technical Support Team at +1 708-587-3587 or [signalsupport@fedsig.com](mailto:signalsupport@fedsig.com).

**Repair Service:** A return authorization is required. Contact your Authorized Distributor or Federal Signal Customer Support. Defective products under warranty will be repaired or replaced at Federal Signal's discretion.

**Product Returns:** Returns require authorization from Federal Signal. Contact your Authorized Distributor for more information on our return policy or to request a return.

## Ordering Replacement Parts

Table 4 Replacement parts

Description	Part Number
Handset 4' Curly Cord C/W VC, Tx and Rx	P007228
PCBA- VoIP	P007395



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Safety and Security Systems

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