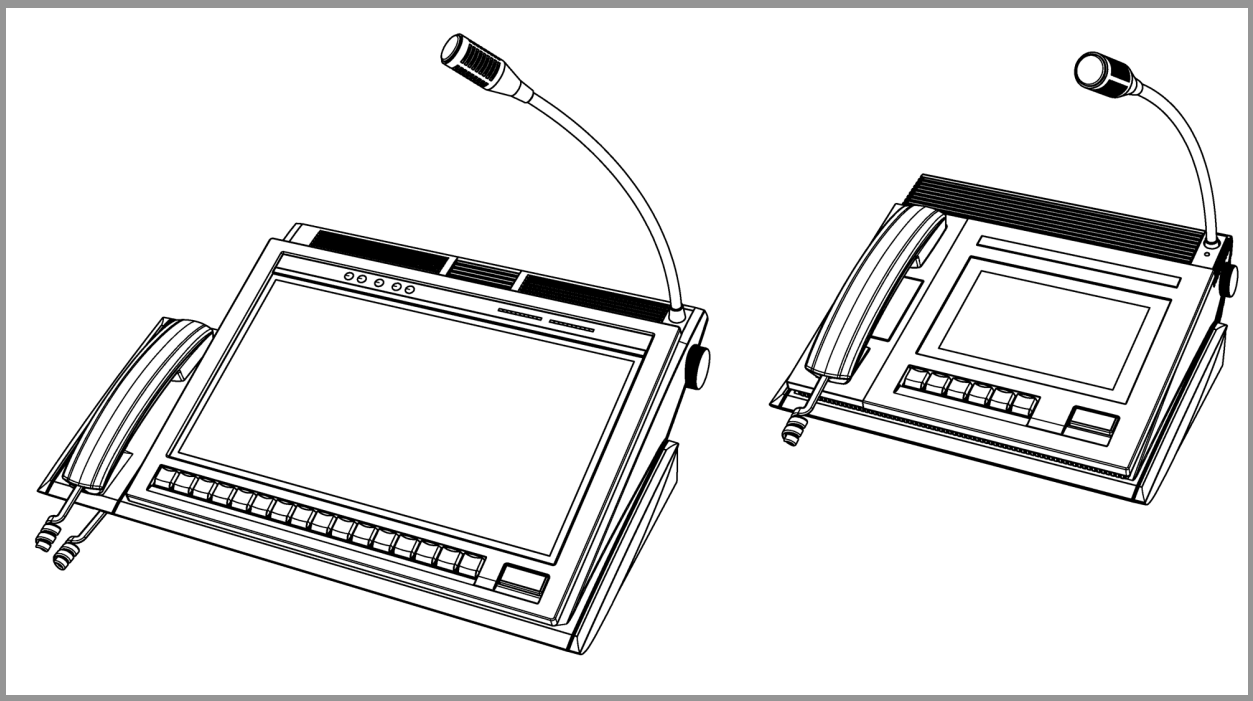
TELEX

IP-3100 Series IP Console

IP-3102-B, IP-3102-E, IP-3102-PS, IP-3108-B, IP-3108-E,
IP-3108-PS, IP-3118-B, IP-3118-E, IP-3118-PS



en Technical Manual

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1 Notices

1.1 Proprietary notice

The product information and design disclosed herein were originated by and are the property of Bosch Security Systems, LLC. Bosch reserves all patent, proprietary design, manufacturing, reproduction, use and sales rights thereto, and to any article disclosed therein, except to the extent rights are expressly granted to others.

1.2 Copyright notice

1.3 Warranty notice (limited)

For warranty and service information, see http://www.telex.com/warranty.

1.4 Factory service center

Factory Service Center
Bosch Security Systems, LLC
Radio Dispatch Products
140 Caliber Ridge Drive
Greer, SC 29651

1.5 Contact information

Sales
E-mail: TelexDispatch@us.bosch.com
Phone: (800) 752-7560
Fax: (402) 467-3279

Customer service repair
E-mail: repair@us.bosch.com
Phone: (800) 553-5992

Technical support
E-mail: TelexDispatchtechsupport@us.bosch.com
Knowledge database: http://knowledge.boschsecurity.com/
Web: www.telex.com

1.6 Claims

No liability will be accepted for damages directly or indirectly arising from the use of our materials or from any other causes. Our liability shall be expressly limited to replacement or repair of defective materials.

1.7 Warning

Notice!
This is a class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

1.8 PC & Network Security consideration

No system can be 100% protected against security threats. However, there are measures both manufacturers and users can do to help reduce the likelihood of a malicious attack resulting in either the loss of data or system takeover. We evaluate and improve our products continuously to protect against such attacks. This is only one safeguard used to reduce the likelihood of such an event. There are many more considerations needed to implement measures to strengthen your network security.

We strongly recommend the following considerations:

- Deploy Dispatch products and software on isolated networks that do not connect to other networks, when possible.
- Apply the latest Windows updates and install up-to-date IT security software.
- User rights should be properly administered using group policies to prevent unauthorized use of USB connected devices.
- If the Dispatch network must connect to other networks, install and properly maintain firewalls and intrusion detection systems.
- If Dispatch devices or computers use the Internet to connect, a VPN or tunnel connection should be utilized. Examples of such products are those made by DCB (Data Communications for Business), Cisco, and others.

Notice!
Bosch recommends utilizing the services of IT professionals knowledgeable about network design and security when designing, installing, and configuring dispatch networks and deploying PCs. By default, the Telex Dispatch products using the Windows operating system has Windows Update enabled along with Windows Defender (firewall and anti-virus). Disabling these features is not recommended unless it is part of an internal IT security program that uses customized security policies along with appropriate anti-virus and firewall software.

2 Introduction

2.1 Overview

The IP-31XX product line provides a reliable all-in-one device for dispatching in the Telex ecosystem. The IP-31XX products is configured for any dispatch system that is currently supported by the existing Telex Dispatch IP consoles. The IP-31XX products have built in dispatch audio equipment as well as phone handset support that works out of the box with the C-Soft console.
Product setup and configuration were engineered to be easy, user friendly, and straightforward. The device is remotely managed through an IP network using our Telex System Manager application. Firmware upgrades, design changes, and device management can be achieved without physical access to the device.
Configuration and other tools can also be used to manage the device on the IP-31XX touchscreen with ease.
This system supports your dispatch needs with the backing of our feature-rich C-Soft console. The IP-31XX is compatible with all legacy Telex Dispatch IP products.

2.2 Requirements

Network Requirements

- 10 mbps or faster network
- Static IP addresses or DHCP option

Telex System Manager Requirements

- V3.210 or higher

2.3 Features

- Full Dispatch Console application integration onto device
- Provides the ability to map programmable keys to Dispatch Console application functions
- Supports SIP telephone interface
- Supports standard IP wireline interfaces such as DMR AIS, P25 DFSI, P25 CSSI, NEXEDGE with upgraded console model
- Simple device configuration using Telex System Manager application
- IP Remote management of device(s)
- Provides basic parameter setup from touchscreen including network setup, touchscreen calibration, etc
- Phone handset support
- Gooseneck support
- IPv6 compliant for addressing and product configuration
- IP-3118 supports dual Ethernet ports for redundancy
- Foot-switch input
- External Speaker output
- Headset connection support when using RHB-1 Gen2

3 Product licenses and options

Part Number	CTN	Description
F.01U.418.445	IP-3102 Base	IP console 2 Lines, 1 SIP
F.01U.418.446	IP-3102 Enterprise	IP console 2 line, Enterprise edition (supports 1 lines SIP telephony, 2 lines Per-line Call Playback, DMR-AIS or NEXEDGE interfaces)
F.01U.418.447	IP-3102 Public Safety	IP console 2 line, Public Safety edition (includes Enterprise features plus 2 lines P25 DFSI/CSSI interface with encryption)
F.01U.418.448	IP-3108 Standard	IP console 8 Lines, 2 SIP
F.01U.418.449	IP-3108 Enterprise	IP console 8 line, Enterprise edition (supports 6 lines SIP telephony, 8 lines Per-line Call Playback, DMR-AIS or NEXEDGE interfaces)
F.01U.418.450	IP-3108 Public Safety	IP console 8 line, Public Safety edition (includes Enterprise features plus 8 lines P25 DFSI/CSSI interface with encryption)
F.01U.418.451	IP-3118 Standard	IP console 18 Lines, 2 SIP
F.01U.418.452	IP-3118 Enterprise	IP console 18 line, Enterprise edition (inlcudes 12 line SIP telephony, 18 lines Per-line Call Playback, DMR-AIS or NEXEDGE interfaces)
F.01U.418.453	IP-3118 Public Safety	IP console 18 line, Public Safety edition (includes Enterprise features plus 18 lines P25 DFSI/CSSI interface with encryption)
F.01U.392.877	IP-UPGRADE-E	Field upgrade IP-31XX Standard to IP-31XX Enterprise
F.01U.392.878	IP-UPGRADE-PS	Field upgrade IP-31XXStandard/Enterprise to IP-31XX Public Safety
F.01U.392.880	IP-INCLINE	Console inclination mechanism
F.01U.392.779	IP-KBD-EXTEND	Extended keyboard, 32-key pad module
F.01U.392.883	HANDSET-IP-30XX	Console replacement handset
F.01U.392.881	PWR-IP-300X	Replacement power supply for IP-3002/IP-3008
F.01U.392.882	PWR-IP-3018	Replacement power supply for IP-3018
F.01U.392.884	KEYSET-RED	10-piece red keyset
F.01U.392.885	KEYSET-GREEN	10-piece green keyset
F.01U.392.886	KEYSET-BLUE	10-piece blue keyset
F.01U.392.887	KEYSET-YELLOW	10-piece yellow keyset
F.01U.392.888	KEYSET-ORANGE	10-piece orange keyset

Part Number	CTN	Description
F.01U.392.889	KEYSET-BLACK	10-piece black keyset
F.01U.411.699	RHB-1 GEN 2	Remote Headset Box

Notice!
All IP Console entries are pre-licensed devices and do not require any additional licensing operations. A IP console possessing a standard license is upgradeable to an Enterprise or Public Safety license by purchasing the IP-UPGRADE-E or IP-UPGRADE-PS option. For more information, refer to *Licensing, page 50*.

4 Hardware installation

4.1 Unboxing

Included in the box:
- IP-31XX unit
- AC Power Adapter
- US Power Cord
- IP-31XX Inclination Bracket (optional)
- IP-31XX Keypad Module (optional)

4.2 Hardware setup

Optional keypad module and inclination mechanism installation
- If using an inclination bracket, attach inclination unit using instructions included with the bracket.
- If using a side keypad module, attach the module using instructions included with the keypad module.

IP-3102/IP-3108 power and Ethernet cables connections

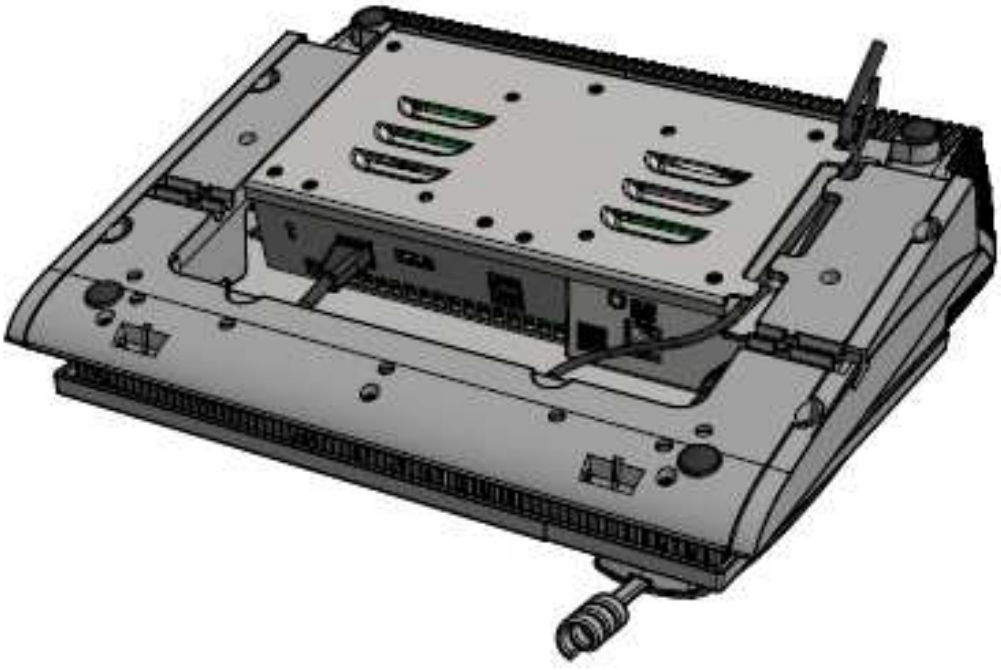


Figure 4.1: Power and Ethernet cable connection for IP-3102 and IP-3108

IP-3118 power and Ethernet cables connections

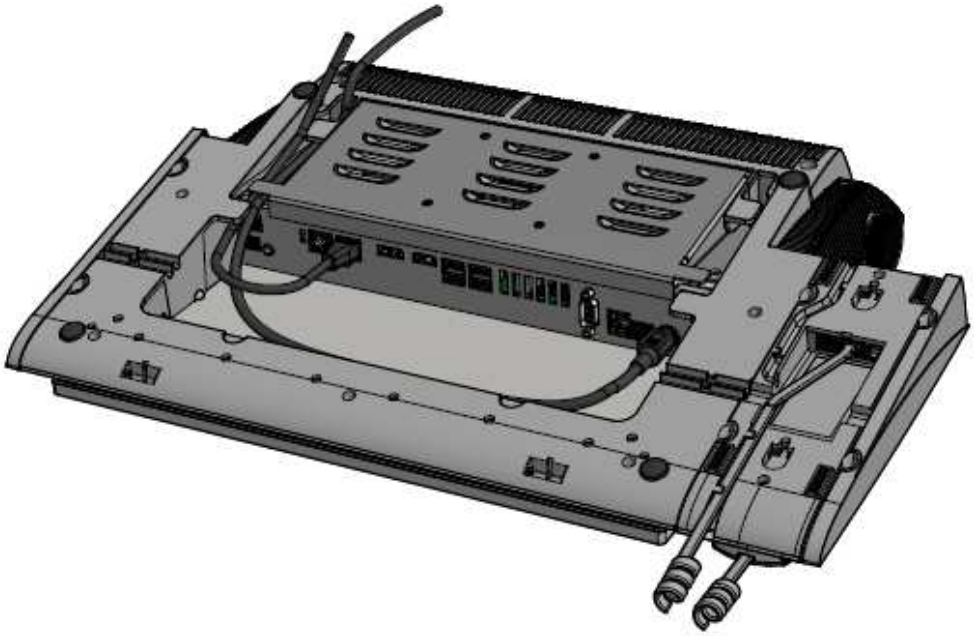


Figure 4.2: Power and Ethernet cable connection for IP-3118

1. Connect the **Ethernet cable**.
2. Guide the **cable** through the recessed channel.
3. Verify all cable connections are properly seated.

Power on the device

IP-3102/IP-3108 power on

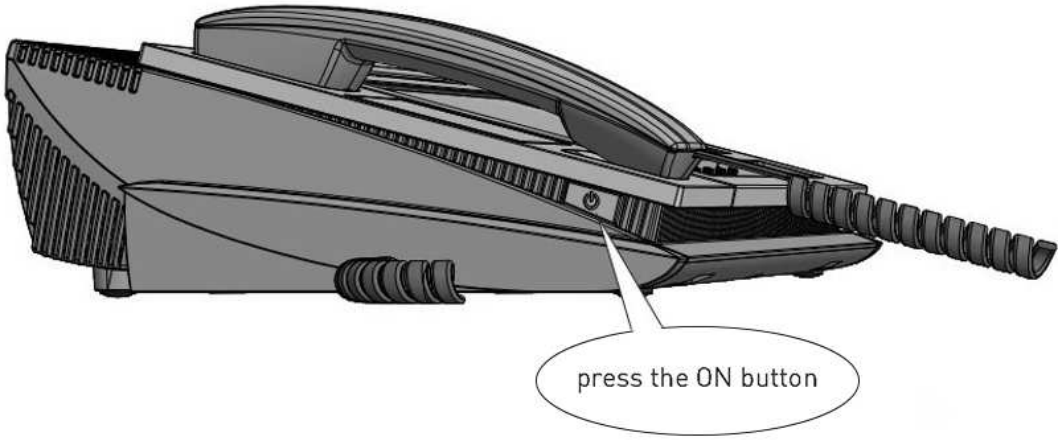


Figure 4.3: Power button for the IP-3102 and IP-3108

IP-3118 power on

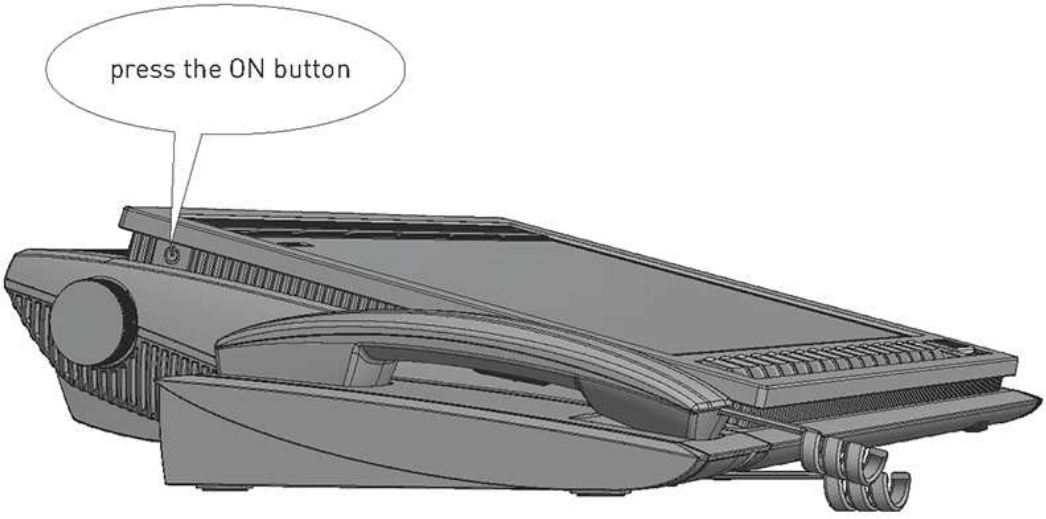


Figure 4.4: Power button for IP-3118

To **start the device**, do the following:

- Press the **power button** located on the side of the device.
  The unit turns on and the factory-defined default design loads.

5 Controls and indicators

5.1 IP-3102/IP-3108

Figure 5.1: IP-3102/IP-3108 Reference View

Number	Item
1	Handset speaker
2	Handset PTT
3	Handset microphone
4	ON/OFF button
5	Programmable keys
6	PTT key
7	Touchscreen display
8	Volume control
9	Handset status LED
10	Microphone LED
11	Unselected speaker
12	Gooseneck microphone

Number	Item
13	VU meter display
14	Stripe
15	Selected speaker
16	Hook switch
17	Dial pad

Stripe

The **Stripe** is an ergonomically designed horizontal area along the top side of the display. It comprises a number of visual indicators to provide the operator information with a quick glance.

	Power	Blue	Short Blink: OFF (power saving mode) Long Blink: SLEEP (standby) Continuous: ACTIVE (operating)
	Disk	Blue	Blinking indicates read/write activity of SSD
	Touchscreen	Red	Illuminated when touchscreen is disabled
		Bar-Graph Displays	Green: loudspeakers volume level Red: VU-meter (actual signal level at the loudspeakers and the microphone)
	Handset LED	Red	OFF: Handset on hook ON: Handset off hook
	Microphone LED	Red	Illuminated red while the microphone is active.

Programmable Keys

The Programmable Keys consist of 16 mechanical keys aligned below the display. Key content is programmable in the Console Designer application. Each key can be programmed to any UI button in the Dispatch application, including the following functions:

- Line Push To Talk (PTT)
- Line Select
- Line Mute
- Frequency Control
- Popup button
- Alert
- Annunciation
- Auto Dial
- Group Select
- Mute Main
- Page
- Page Manual
- Page Stack
- Page Send
- Relay Control
- RX All
- TX All

	6 x Programmable Key	Configure the programmable keys in the console Designer application.
	PTT (Push To Talk) Key	OFF: PTT inactive ON: PTT active

5.2 IP-3118

Figure 5.2: IP-3118 Reference View

Number	Item
1	Handset speaker
2	Handset PTT
3	Handset microphone
4	Programmable keys
5	PTT key
6	Touchscreen display
7	Unselected volume control
8	Unselected speaker
9	VU meter display
10	Gooseneck microphone
11	Selected Speaker
12	Control keys
13	Stripe
14	ON/OFF button
15	Selected volume control

Number	Item
16	Hook switch
17	Dial pad

Stripe

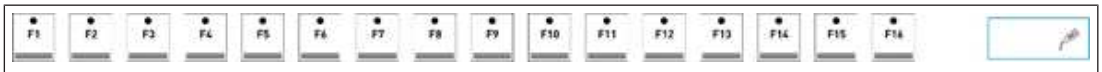
The **Stripe** is an ergonomically designed horizontal area along the top side of the display. It comprises a number of visual indicators to provide the operator information with a quick glance.

	Power	Blue	Short Blink: OFF (power saving mode) Long Blink: SLEEP (standby) Continuous: ACTIVE (operating)
	Disk	Blue	Blinking indicates read/write activity of SSD
	Touchscreen	Red	Illuminated when touchscreen is disabled
	Warning	Red	Illuminated when an error has been detected
	Brightness DOWN Key		Press to decrease the brightness of the display and all visual indicators
	Brightness UP Key		Press to increase the brightness of the display and all visual indicators
	Home/Touch Disable Key		Long press disables touchscreen Short press (re) enables touchscreen
	Volume DOWN Key		Press to decrease volume of left and right speakers
	Volume UP Key		Press to increase volume of left and right speakers
	Bar-Graph Displays		Green: loudspeakers volume level Red: VU-meter (actual signal level at the loudspeakers and the microphone) Orange: display brightness level
	Microphone LED		Illuminated red while the microphone is active.

Programmable Keys

The Programmable Keys consist of 16 mechanical keys aligned below the display. Key content is programmable in the Console Designer application. Each key can be programmed to any UI button in the Dispatch application, including the following functions:

- Line Push To Talk (PTT)
- Line Select
- Line Mute
- Frequency Control
- Popup button
- Alert
- Annunciation
- Auto Dial
- Group Select
- Mute Main
- Page
- Page Manual
- Page Stack
- Page Send
- Relay Control
- RX All
- TX All



	16 x Programmable Key	Configure the programmable keys in the console Designer application.
	PTT (Push To Talk) Key	OFF: PTT inactive ON: PTT active

6 Hardware overview

6.1 Touchscreen monitor

The **Touchscreen Monitor** comprises a high-brightness, ultra-wide viewing angle TFT LCD. The display connects to the embedded computer via LVDS interface. The respective controller with a USB interface to the embedded computer operates the touchscreen.
On the IP-3118, LCD brightness and all visual indicators on the stripe are adjustable using the Brightness UP and DOWN keys. Use the Home/Touch Disable Key to disable the touchscreen temporarily for cleaning.

6.2 Embedded computer

Both hardware console platforms incorporate an industrial-grade single board computer, which operates the embedded touch screen monitor and provide flexibility for external connectivity and internal audio interfaces.
The motherboard is based on Intel's integrated circuits with the SSD drive for faster boot times. The heat generated by integrated circuits transfers to an internal heat sink, without a fan. As a result, both hardware platforms operate silently with no moving parts.

6.3 Gooseneck microphone amplifier

The **Gooseneck Microphone** connects to a logarithmic audio amplifier equipped with programmable gain, noise gating thresholds, and compression ratios. The amplifier's noise gating feature suppresses ambient noise, which automatically removes undesired noise below the configured threshold. When a higher threshold is set, the microphone should be closer to the mouth and speech must be louder to get through the amplifier. The compression feature enables compression of the output signal dynamics in order to minimize the difference between soft/low and loud speech. The amplifier is also capable of limiting extremely loud speech, thus preventing distortion and popping. Gooseneck microphone gain is adjustable using the **TSM** (Telex System Manager) application.

6.4 Selected and unselected speakers amplifier

A linear audio power amplifier with programmable gain drives the speakers.
For the IP-3102/IP-3108 consoles, the amplifier's gain is adjusted using the volume knob, located on the rear right side of the console. The volume knob adjusts the Selected and Unselected speaker simultaneously.
For the IP-3118 console, there are two independent volume knobs on the left and right side of the console, which allows independent adjustments for the Selected and Unselected speaker gain. The selected level immediately displays on the bar-graph display in green (20 volume levels + mute). The amplifier can deliver up to 8W (2 x 8W) of electric power to each speaker.

6.5 Handset

6.5.1 Handset microphone amplifier

The handset microphone connects to a logarithmic audio amplifier with programmable gain, noise gating threshold, and compression ratio. The amplifier's noise gating feature suppresses ambient noise, automatically removing undesired noise below the configured threshold. With a higher threshold, the microphone should be placed closer to the mouth and speech needs to be louder to get through the amplifier. The compression feature enables compression of the output signal dynamics in order to minimize the difference between soft/low and loud speech. The amplifier is also capable of limiting extremely loud speech thus preventing distortion and popping. Handset microphone gain is adjustable from the TSM application.

6.5.2 Handset earpiece amplifier

The handset speakers are driven by a linear audio amplifier with differential output, programmable gain, and limiting circuitry to prevent acoustic shock. The amplifier drives the speaker inside the handset with a signal, which is a composition of the output signal (USB audio data stream received from the computer and converted by a digital-to-analogue converter inside the USB codec chip) and a part of the microphone signal (so-called sidetone). The handset speaker gain is adjustable from the TSM application.

6.6 External connectors

6.6.1 IP-3102/IP-3108

Connections for external devices are available at the connector plate located underneath the console. Most of the connectors are standard interfaces, including USB, LAN, and Display Port.

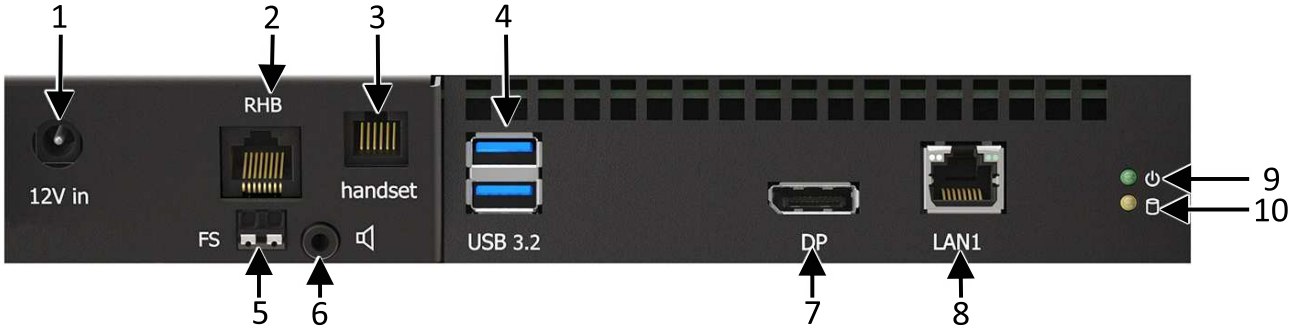


Figure 6.1: IP-3102/IP-3108 Console Connector Plate

#	Designator	Type	Note
1	12V Input	DC power conn. 5.5mm OD/2.1mm ID	Reserved
2	RHB	RJ-45	
3	HANDSET	RJ 6P/6C socket	Reserved
4	DUAL USB - 3.2	2 x USB type - A	Super Speed
5	FS (footswitch)	2-pin terminal block	24-16 AWG

#	Designator	Type	Note
6	Ext Spkr	3.5mm stereo jack	
7	DP	Display port connector	
8	LAN	RJ 8P/8C (RJ45)	1GB Ethernet
9	Power	LED	
10	Hard drive	LED	

Table 6.1: IP-3102/IP-3108 Signal Descriptions

6.6.2 IP-3118

Numerous connections for external devices are available at the connector plate located underneath console. Most of the connections are standard interfaces including USB, LAN, COM, Video, etc. Configure a digital input for the Footswitch PTT, if applicable.

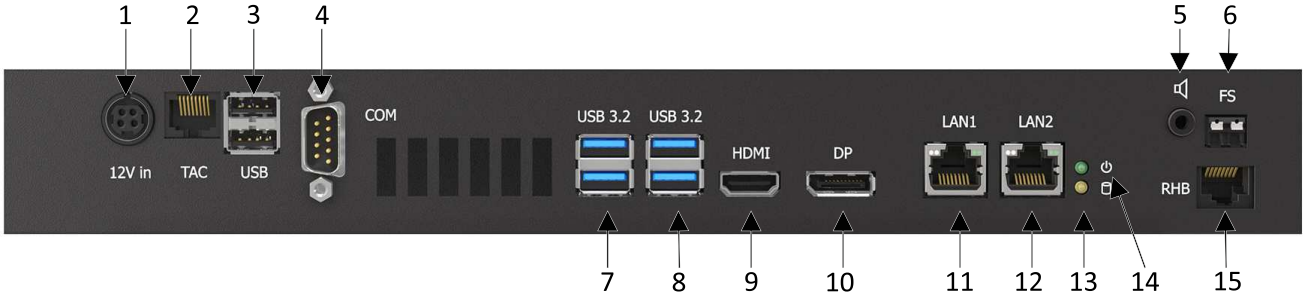


Figure 6.2: IP-3118 Console Connector Plate

#	Designator	Type	Note
1	12V Input	Mini Power DIN	Reserved
2	TAC	RJ45	Control Data from Handset Cradle
3	Dual USB- 2.0	2 x USB type - A	Full-speed, 500 mA
4	COM 1	DSUB-9 male	Reserved RS232 serial port
5	Speaker Out	Stereo jack 3.5 mm	
6	FS (footswitch)	2-pin terminal block	24-16 AWG
7	Dual USB-3.2	2 x USB type - A	Full-speed, 500 mA
8	Dual USB- 3.2	2 x USB type - A	Full-speed, 500 mA
9	HDMI	HDMI port connector	
10	DP	Display port connector	
11	LAN 1	RJ 8P/8C (RJ45)	1 GB Ethernet
12	LAN 2	RJ 8P/8C (RJ45)	1 GB Ethernet

#	Designator	Type	Note
13	Hard drive	LED	
14	Power	LED	
15	RHB	RJ-45	

Table 6.2: IP-3118 Signal Descriptions

7 Network requirements

7.1 IP operation overview

The network options today have essentially converged on Ethernet. A local electronics store may sell many of the components for both a wired or wireless network solution. For more advanced network applications, an in-house or external network hardware source may be required. These sources of information can also help with the design of the network, as well as provide sources for advanced networking equipment, such as routers and hubs from Cisco and other network vendors. This section is an overview of the protocols operating on the top of the Ethernet network.

7.2 Ethernet as physical layer

Ethernet is a network and has a low level method for transferring data from one location to another. Source and destinations are based on the MAC (Media Access Control) which is embedded in the Ethernet interface. The MAC Address is unique for all devices in the world and cannot be changed. The IEEE (Institute of Electrical and Electronics Engineers) controls the allocation of the MAC Addresses. The definition for Ethernet includes requirements for inter-operation at speeds of 10 and 100 Mbps. Higher speeds are available, but generally have not filtered down into end-user equipment.

7.3 Bandwidth

Each VoIP channel requires 50kBit of bandwidth while active. Full-duplex conversation requires 100kBit of bandwidth.
Some radio systems transmit go-ahead beeps when it is clear to talk. In order for the console operator to hear the beeps, the system must support full-duplex communication. Full-duplex bandwidth may only be required for the first few seconds of a conversation, due to the brief nature of the go-ahead beeps at the beginning of the transmission.
Additional vocoders available: Telex 32K (50 kbits/sec simplex), G.726 16K (34 kbits/sec simplex), G.726 32K (50 kbits/sec simplex), G.711 (82 kbits/sec simplex).

7.4 Multicast

In general, Telex Dispatch Systems require Multicast to function. The network must be able to create a static Multicast Address, accessible at all times.
Once an IGMP (Internet Group Management Protocol) join message is sent out, networks typically enable Multicast and then prune branches after a period of time. Due to intermittent usage patterns of 2-way radios, such a system can appear to work flawlessly for a period of time and then no longer work.
When using Cisco technology, IP PIM dense mode is recommended. Generally speaking, sparse-dense-mode can also be implemented effectively. We recommend explicitly joining the Multicast group with an IP IGMP static-join X.X.X.X command. For more information on Cisco and IGMP, visit www.cisco.com.
If running Sparse mode, by design Telex equipment only sends a IGMP join message when powered up or queried by routers. The routers need to be configured with a PIM Interval Timer to keep the Multicast group active. (See example below.)

7.5 IP PIM query-interval

To configure the frequency of PIM (Protocol Independent Multicast) router query messages, use the ip pim query-interval command in interface configuration mode.
To return the default interval, use the no form of this command:

```
ip pim query-interval seconds


no ip pim query-interval [seconds]
```

7.6 Internet group management protocol

IGMP can be used to control where Multicast is allowed to propagate. This should be limited to subnets utilizing the C-Soft program as the dispatch console and only when used on an intermittent basis (when the C-Soft program is used for a period of time and then shut down). When a console on the subnet is expected to be continually operational, Multicast must be active for the subnet at all times.

7.7 Network performance

Networks should perform well under any loading conditions. The default audio delay is 120ms, plus any delay added by the network. While delay alone does not cause issues, variable delay (also known as jitter) does. Jitter, in a network, cannot exceed the maximum packet buffer of any individual product buffer. Refer to the individual product manuals for these specifications. For example, the IP-223 or IP-224 can handle approximately 600ms of network jitter.

Notice!
Losing more than 5% of the total packets transmitted compromises audio quality and system performance. Optimally, packet loss should be less than 1%.

7.8 TCP/IP and UDP/IP

TCP/IP (Transmission Control Protocol/Internet Protocol) is the best-known protocol for use in computer communications. It is the basis for communications on the Internet and World Wide Web. It is a guaranteed method of transferring data between two computers. Being guaranteed means for every packet of information transferred from one computer to another an acknowledgement packet is returned. Additional handshaking is utilized from the outset of the data communications to ensure both ends of the connection. Because of this guaranteed communications and its implementation utilizing handshaking (no other method is available), TCP/IP adds a great deal of overhead to data communications is not desirable for audio traffic over a network. This is where UDP/IP finds its acceptance.
UDP/IP (Universal Datagram Protocol/Internet Protocol) has existed as long as TCP/IP as an unreliable method of data communications. The term unreliable should not be thought of as a problem for audio communications over a network connection. UDP allows for a computer to send a packet of data to another computer without the handshaking sequence required within TCP/IP. Because of this, the computer sending the packet has no confirmation the packet arrived at its destination. While the loss of packets can be a problem, it generally is accounted for when the UDP application is developed. In the case of VoIP, the loss of a packet, which only contains 10-40ms of audio, is not a problem, as the human ear generally ignores the small chunk of lost audio. The largest single factor in the loss of UDP/IP packets

is network design and loading. UDP applications use algorithms which makes the loss of information the largest single factor in UDP/IP network design and loading. As long as a network is well designed with capacity for all of its chartered requirements, packet loss can be a non-issue. Because of its lower overhead and its ability to Multicast, UDP/IP is the protocol of choice for VoIP development.

7.9 Multicast UDP/IP

Multicast is an extension to UDP/IP. It enables one computer to broadcast data packets to multiple recipients. This is an ideal model for radio communications when multiple people need to monitor the audio. A single VoIP connected radio is set up to broadcast Multicast VoIP packets when receiving audio. Since the Multicast packets can be received by any interested party, all consoles monitoring the audio can receive and decode the packets for playback. In addition to simplifying monitoring of audio traffic by multiple listeners, Multicast also greatly reduces the bandwidth requirement on the network. Instead of having to regenerate the received audio into a UDP/IP data stream to each individual monitor, which uses the bandwidth times the number of monitoring consoles, a single data stream is generated and monitored by all.

Implementation of a Multicast protocol requires a few things for seamless use on a network. First, clients must all support the protocol. This is accepted as given since all Telex Radio Dispatch products utilize Multicast for audio communications. Second, consider if the network infrastructure supports Multicast.

Multicast packets are defined to be all packets with a destination address between 224.0.0.0 and 239.255.255.255. Some of these addresses are commonly used for broadcast audio and are not necessarily available. When a computer opens a UDP/IP port within this address range, it also joins the group. By joining the group, a packet is sent out to all addresses saying it is interested in seeing the traffic on this Multicast address. Routers that receive this broadcast message to join a particular Multicast Address then pass packets through because the router is now aware a listener is interested in this traffic. The routers utilized in the network must support this. The protocol used to alert routers to parties who are interested in certain Multicast Address traffic is IGMP (Internet Group Management Protocol). Telex radio Dispatch products support IGMPv1, as defined in RFC 1112.

In addition to the joining of Multicast broadcast groups, clients on the network can also specify a packet TTL (Time To Live). The TTL is the number of routers the packet goes through before being stopped. As an example, the TTL for a particular broadcasting node on the network is set to 3. This means when a packet is transmitted, it arrives at the first router in the network. This router examines the TTL value in the packet and determines if it should pass it through since it is not zero. When it passes the packet, the router decrements the TTL value by 1 to a value of 2. The next router encountered by packets does the same, reducing the value of TTL to 1. The next router does the same and the TTL is reduced to 0. The next router the packet reaches examines the TTL value, sees it is zero, and the packet is not to be retransmitted. Setting a large TTL value may allow for packets to get from one host to another on a large network, but also adds additional bandwidth requirements due to the larger number of packets being transferred.

7.10 Telex Radio Dispatch port-centric method

As mentioned earlier, Telex utilizes Multicast for all audio communications. Typically only one Multicast is used for all traffic. In addition to a valid Multicast Address, a port number is required. The port is an additional two bytes of information ranging between 1054 and 65535 that further specifies how the data traffic should be handled. For example, assume the base Multicast Address chosen is 225.8.11.81. Port 1054 is used to distinguish channel 1's RX traffic. Port 1072 is used to specify channel 1's TX traffic. Channel 2 might use 1055 for RX and 1073 for TX traffic. By making each channel’s TX and RX ports different and unique, full-duplex audio can be supported and many channels of traffic can be supported using only one Multicast Address (full-duplex data transmission means data can be transmitted in both directions on a signal carrier at the same time). It is through this method a single console can pick and choose the particular radio resources available on the network without concern for what the console right next to it is utilizing.

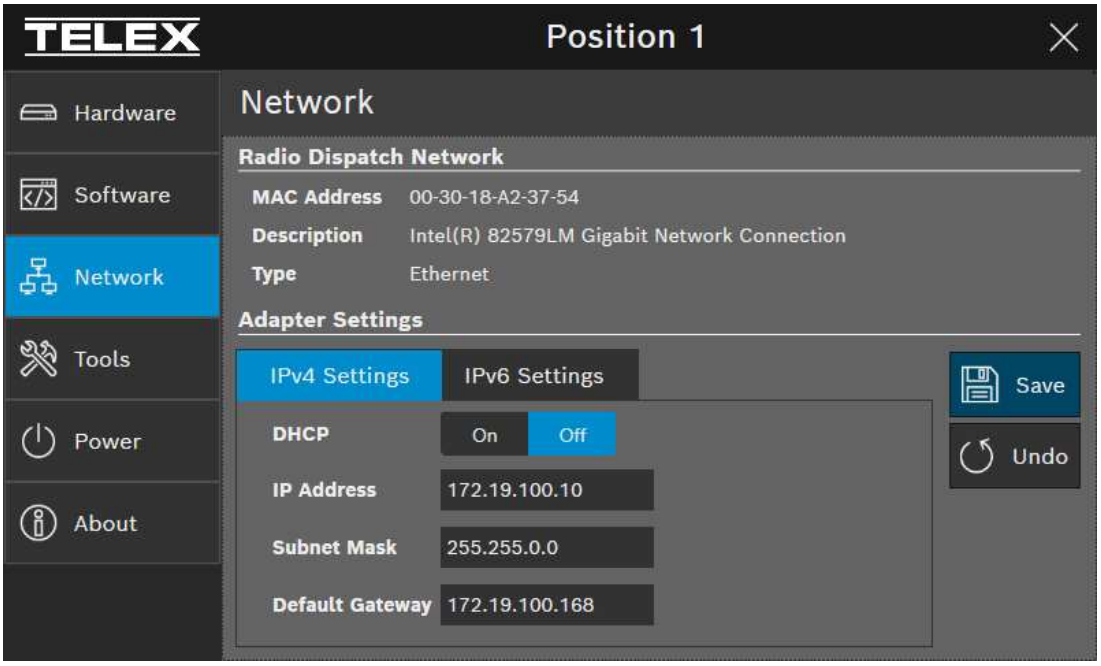
8 Network configuration

Notice!
The IP-31XX's initial network configuration is set to use DHCP. If a DHCP server is available, proceed to *Device configuration with Telex System Manager, page 29* to continue configuring the device.

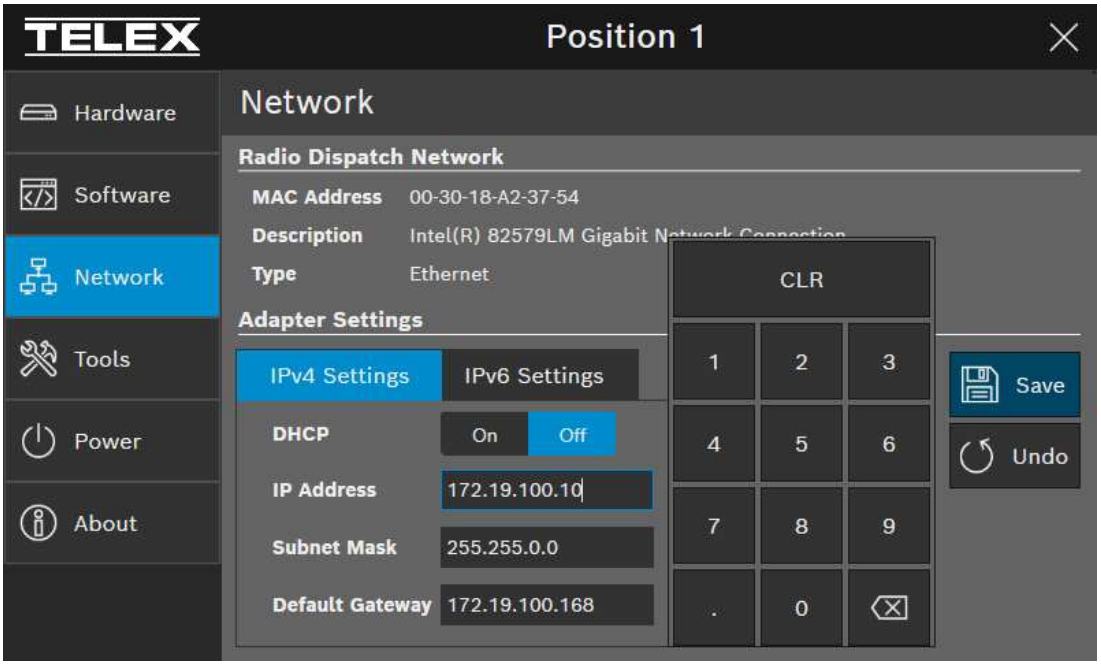
To **set the static IP address**, do the following:

1. Press the ***** and **# key** simultaneously on the keypad under the handset to open the Console Administrator Software.
   The Console Administrator Software opens.

2. Select the **Network tab**.



3. Click the **Off button** next to DHCP.
4. Use the touch screen to select the **IP Address**, **Subnet Mask** or **Default Gateway** field to edit.
   An input popup window opens.



5. Enter the **correct address** for your network.
6. Press the **Save button**.
   The newly set network settings apply immediately.

9 Device configuration with Telex System Manager

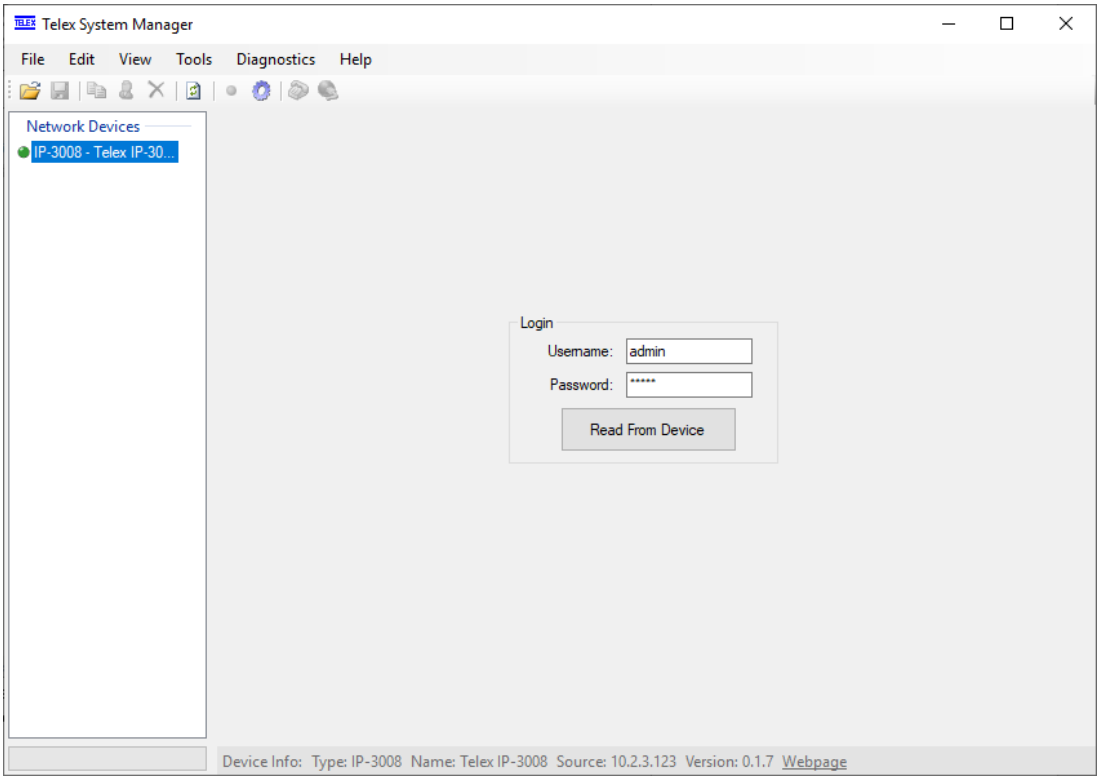
Install TSM (Telex System Manager) 3.210 or later to continue configuration of the IP-31XX device.

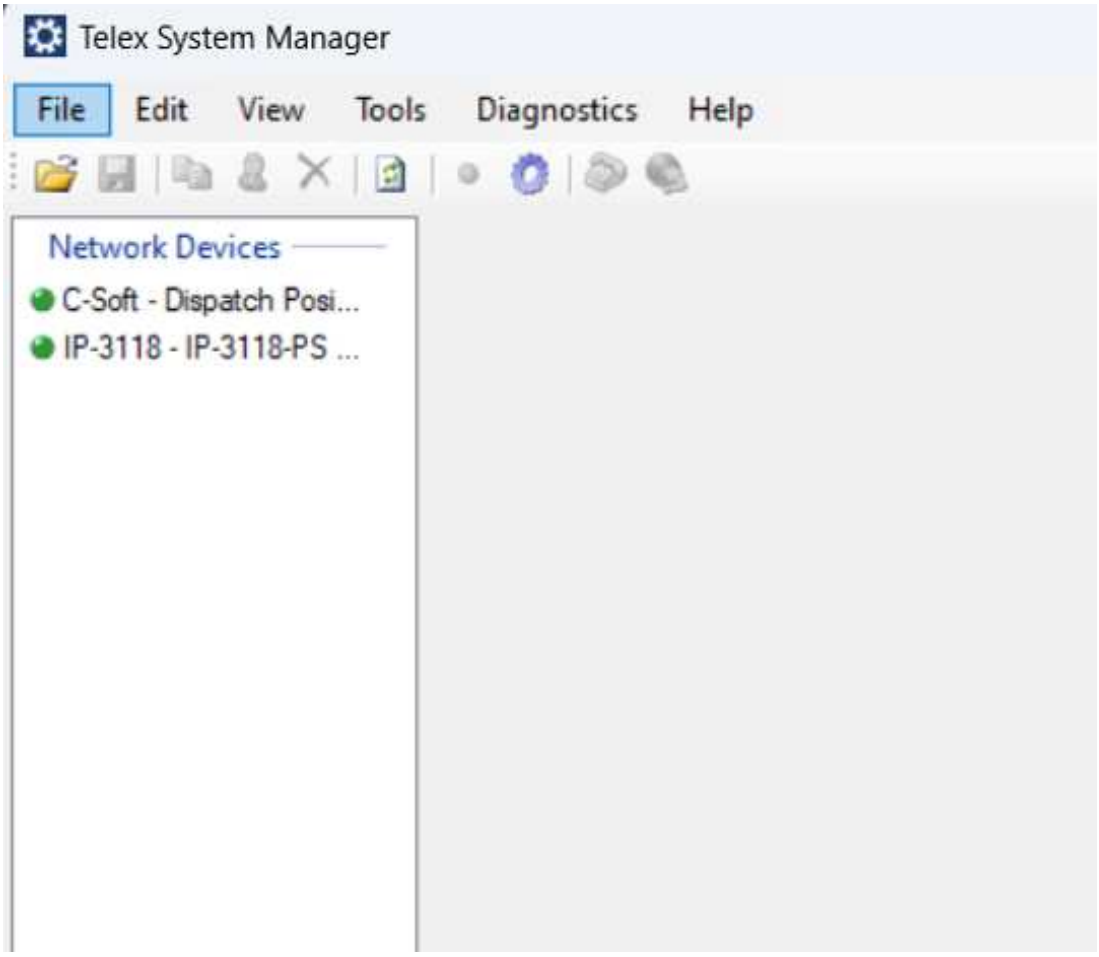
To **configure the device with Telex System Manager**, do the following:

1. Launch **TSM**.
   TSM launches and automatically attempts to detect all Telex devices on the network.

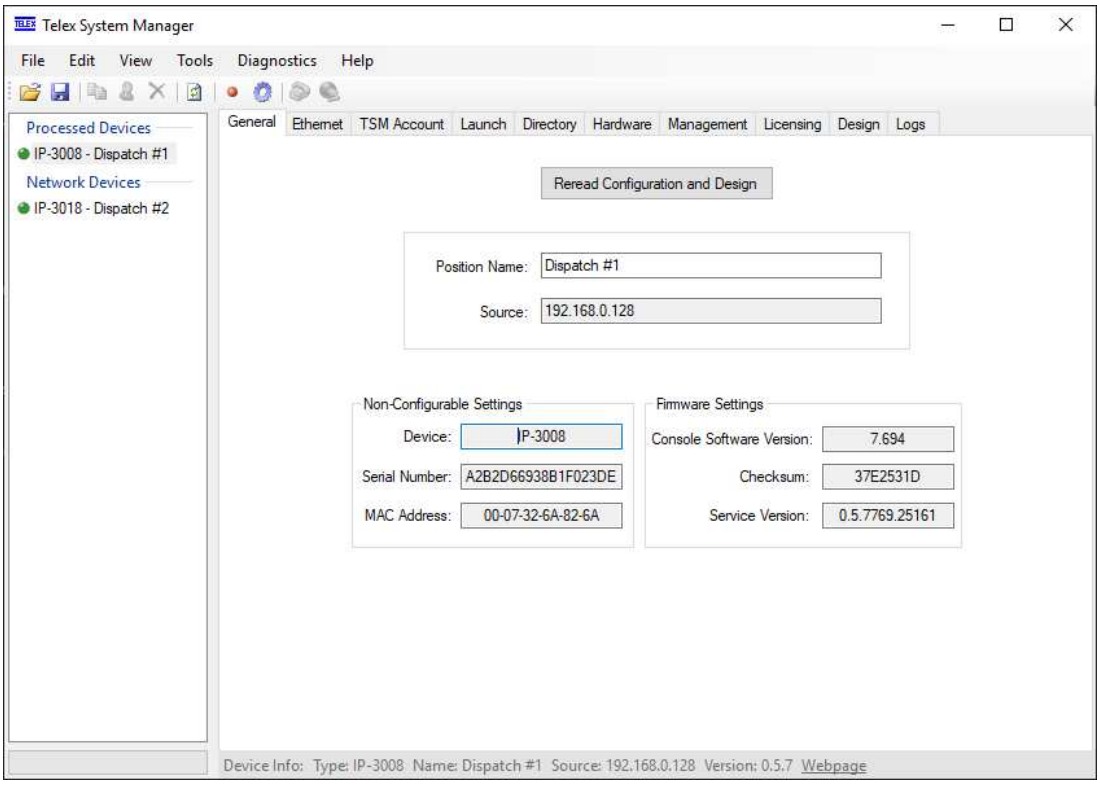
Notice!
If desired, adjust TSM's Device List filters by selecting View|Filter and verifying that IP-3102, IP-3108, and IP-3118 devices are selected.

2. Select the **IP-31XX device**.
   The device's login UI displays.





3. Enter the **default username** (admin).
4. Enter the **password** (admin).
5. Click the **Read from Device** button.
   TSM reads the IP-31XX configuration and design and then populates the information on each corresponding tab.



6. Make **changes** to the tabs, as necessary.
7. Use the **Write to Device tool** to send the updated configuration to the device.
   For more information, see *Write configuration / design to IP-31XX device, page 54*.

Telex System Manager Tab descriptions

Tab	Description
General	Displays general information about the device, including serial number, MAC, firmware version, firmware checksum, and allows setting position name.
Ethernet	Provides access to the device's networking parameters.
TSM Account	Provides access to changing the device's username and password required to utilize the TSM.
Launch	Displays information about the device's design, including Last Launched date and Default Design. This tab is read only.
Directory	Provides access to configuring the default directories for Audio, Images, Sounds, and GPS.
Hardware	Provides access to configuring hardware gain settings.
Management	Provides access to remotely managing the device's operational state.
Licensing	Provides access to device licensing operations.
Design	Displays information about the devices active design and provides a way to launch C-Soft Designer to edit the device's current design.
Logs	Provides the ability to retrieve various logs from the device remotely.

For more information on each tab, see *Telex System Manager, page 40*.

Notice!
For more information on using TSM and C-Soft Designer together, see *Streamlined design edit process, page 54*.

10 Console Administrator Software

The **Console Administrator Software** provides access to common tasks needed to manage the IP-31XX.

10.1 Hardware

Use the **Hardware** screen to see parameters and disk usage for the selected device.

Figure 10.1: Console Administration Software - Hardware Page

Device Parameters

Model Field
The **Model** field displays the model of the device.

License Field
The **License** field displays the current license on the device.

Position Name Field
The **Position Name** field displays the current position name

Serial Number Field
The **Serial Number** field displays the device serial number.

Image Version Field
The **Image Version** field displays the version of the device's Window image.

Disk Usage
The **Disk Usage** section displays all connected storage devices and shows the used and available space left on each device.

10.2 Software

Use the **Software** screen to see console parameters, design file parameters, and service parameters

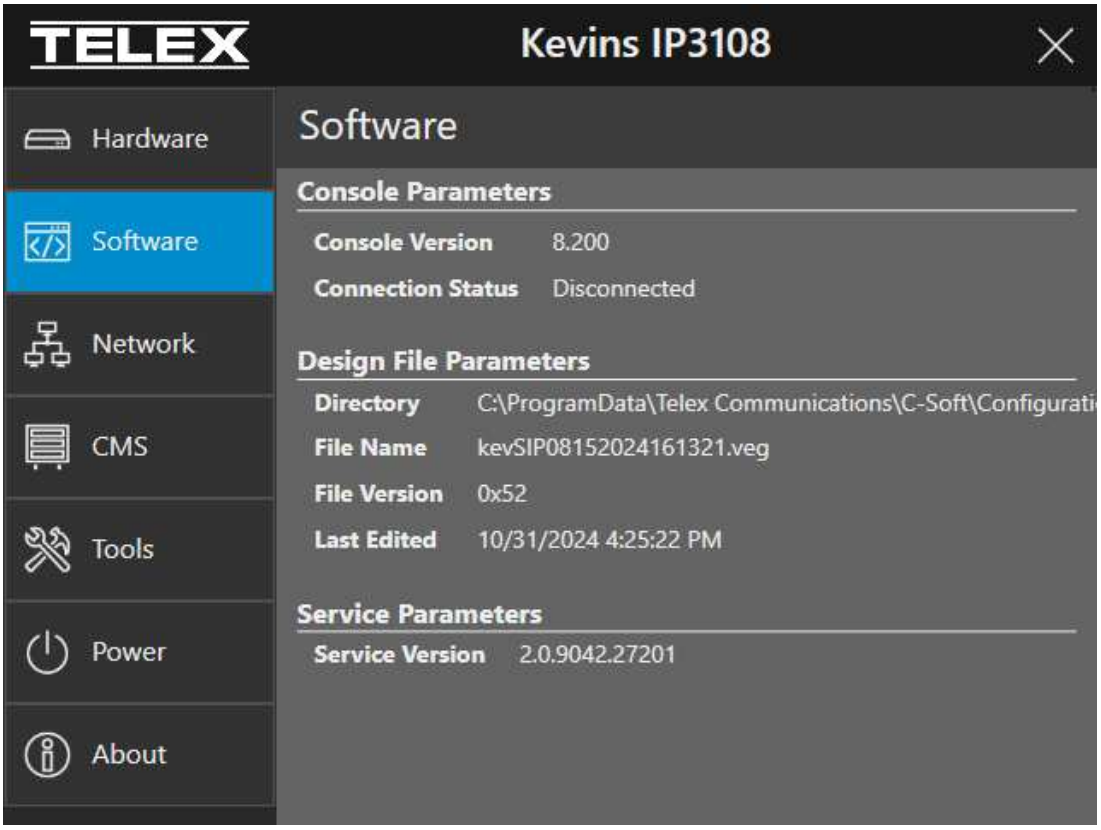


Figure 10.2: Console Administrator Software - Software Page

Console Parameters

Console Version Field
The **Console Version** field displays the version of C-Soft.

Connection Status Field
The **Connection Status** field displays the current connection status of C-Soft to the Console Administrator service.

Design File Parameters

Directory Field
The **Directory** field displays the directory of the active design file.

File Name Field
The **File Name** field displays the active design file name.

File Version Field
The **File Version** field displays the active design file version.

Last Edited Field
The **Last Edited** field displays the date of the last edit of the active design file.

Service Parameters

Service Version Field
The **Service Version** field displays the installed version of the Console Administrator service.

10.3 Network

Use the **Network** screen to display the network and adjust network adaptor settings.

Notice!
The IP-3102/3108 only has a single network adapter in the device, whereas the IP-3118 has two network adapters. The Network Tab for an IP-3118 has an additional Adapters column to select between the multiple adapters.

Network Adapter
The Network Adapter heading displays the selected network adapter. For example, Radio Dispatch Network displays in the screenshot because it is selected in the screen.

MAC Address Field
The **MAC Address** field displays the MAC Address for the network adapter.

Description Field
The **Description** field displays a description of the network adapter.

Type Field
The **Type** field displays the network adapter type.

10.3.1 Network IPv4 settings

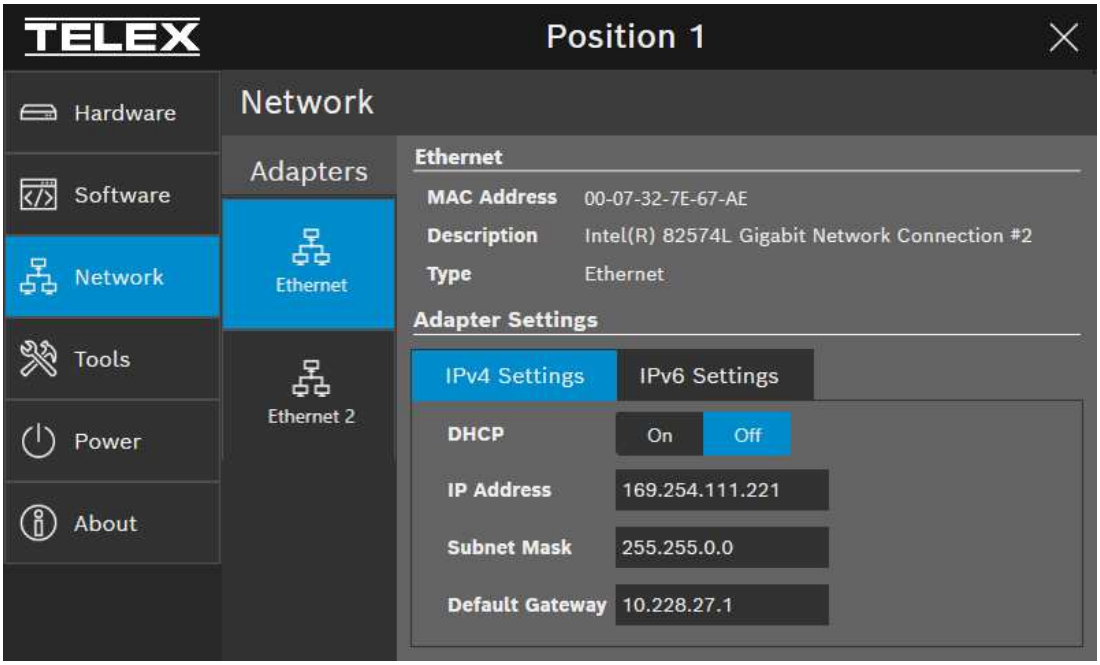


Figure 10.3: Console Administrator Software - Network Page IPv4

Adapter Settings for IPv4

DHCP Enabled Toggle
Use the **DHCP Enabled Toggle** to enable or disable DHCP on the device. If enabled, the IP-30XX acquires IP Addresses and other network configuration settings automatically when connected to the network.

Notice!
The network must allow DHCP service before the device can obtain network parameters.

IP Address Field
Use the **IP Address** field to display or set the device's IP Address. If a device's position name is not set, the device IP address identifies the device when using TSM for operations such as device detection, configuration updates, and software upgrades.

Subnet Mask Field
Use the **Subnet Mask** to display or set the unit's subnet mask address. The subnet mask distinguishes local addresses from addresses requiring the use of a gateway to reach other networks. Contact the Network Administrator to obtain the proper value for this field.

Default Gateway Field
Use the **Default Gateway** to display or set the unit's gateway address. A gateway address connects one network with another network.

10.3.2 Network IPv6 settings

Adapter Settings for IPv6

Notice!
The IPv6 Settings tab is Read Only.

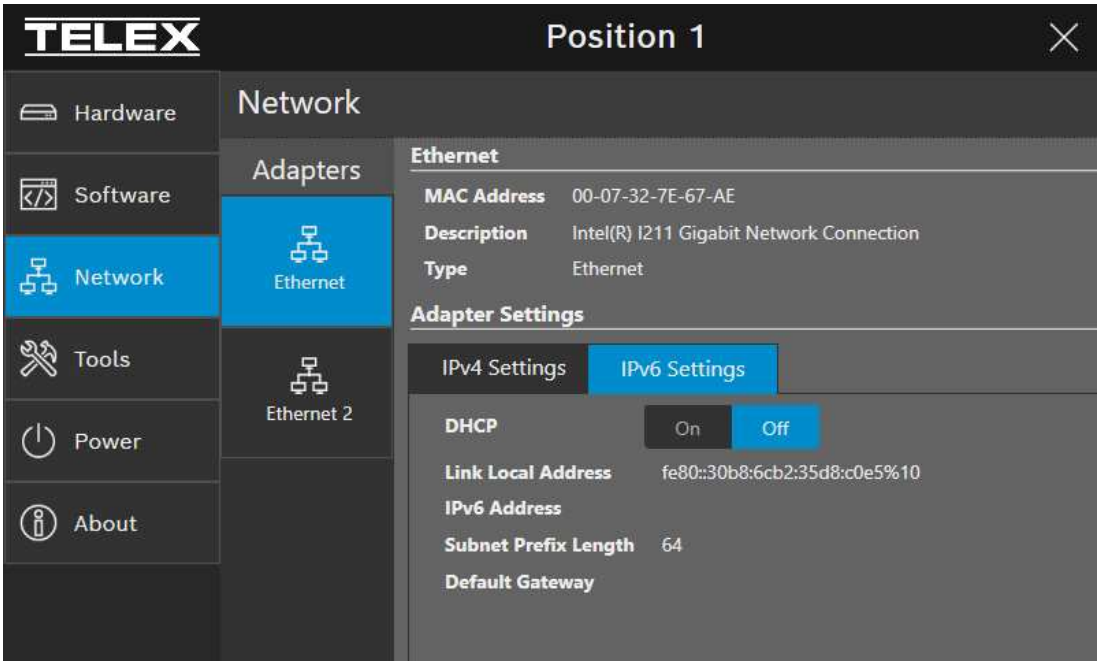


Figure 10.4: Console Administrator Software - Network Page IPv6

DHCP Field
Use the **DHCP Field displays the** DHCP state for the selected network adapter.

Notice!
The network must allow DHCP service before the device can obtain network parameters.

Link Local Address Field
The **Link Local Address** field is a 128-bit address field. It is not editable. It is an auto-configured address field and start with FE hexadecimal. The link local address routes local network devices only and cannot route to public networks. The link local address generates from a local device MAC address.

IPv6 IP Address Field
The **IPv6 IP Address** field displays the unit's IPv6 Address. The IPv6 address size is 128 bits in hexadecimal format. The 128-bit address has eight 16-bit blocks. Each 16-bit block converts to a 4-digit hexadecimal number separated by colons.

Subnet Prefix Length Field
The **Subnet Prefix Length** field displays how many bits of the global IPv6 address to use for the network portion. The prefix length in IPv6 corresponds to the subnet mask field in IPv4. However, rather than being 4 octets, like IPv4, the address is shown as an integer between 1 through 128.
The default for this field is 64.

Default Gateway Field
The **Gateway** field displays the unit's gateway IPv6 address. This is similar to the IPv4 setting. This address connects the device to another network.

10.4 Tools

Use the **Tools** section to restart the device application, clean disk space, reset login credentials, and calibrate the touch screen.

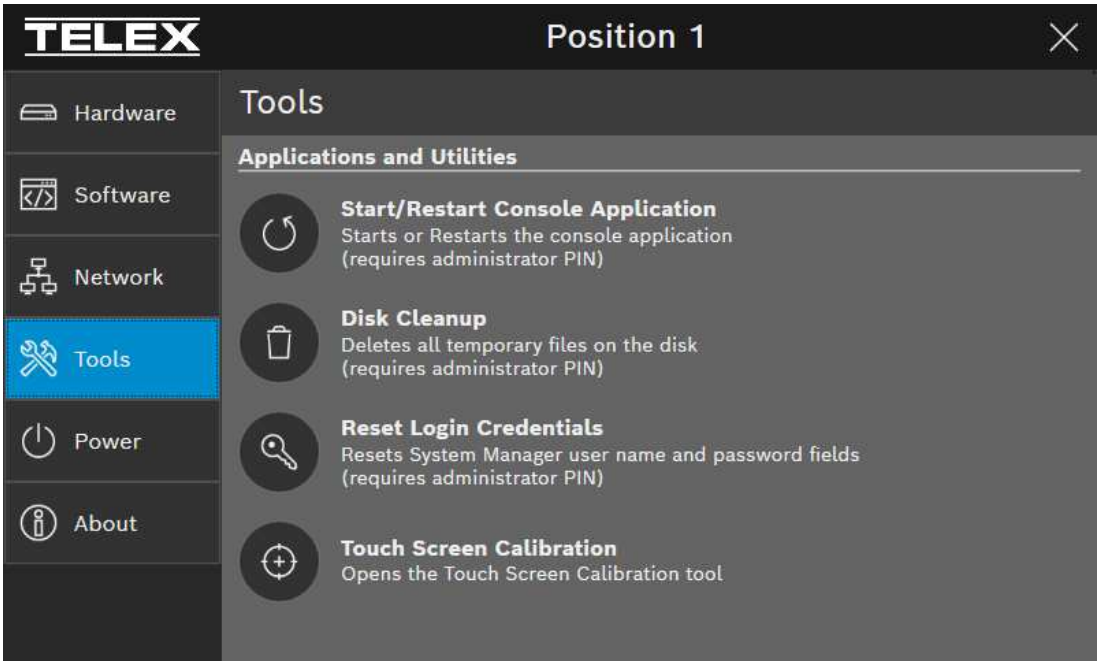


Figure 10.5: Console Administrator Software - Tools Page

Applications and Utilities

Restart Application Button
Use the **Restart Application** button to restart the C-Soft application.

Disk Cleanup Button
Use the **Disk Cleanup** button to perform a Windows disk cleanup to delete any unnecessary files on the device. It also deletes all cposi.txt files on the IP-30XX device. This may be necessary from time to time to clean up Windows Update files.

Reset Login Credentials Button
Use the **Reset Login Credentials** button to reset the device's TSM login to the default values.
Default values:
Username: admin
Password: admin

Touch Screen Calibration Button
Use the **Touch Screen Calibration** button to launch the calibration tool to capture touch screen input.

Notice!
The administrator PIN is 860168507. This PIN cannot be changed.

10.5 Power

Use the **Power** screen to restart or shut down the IP-31XX device.

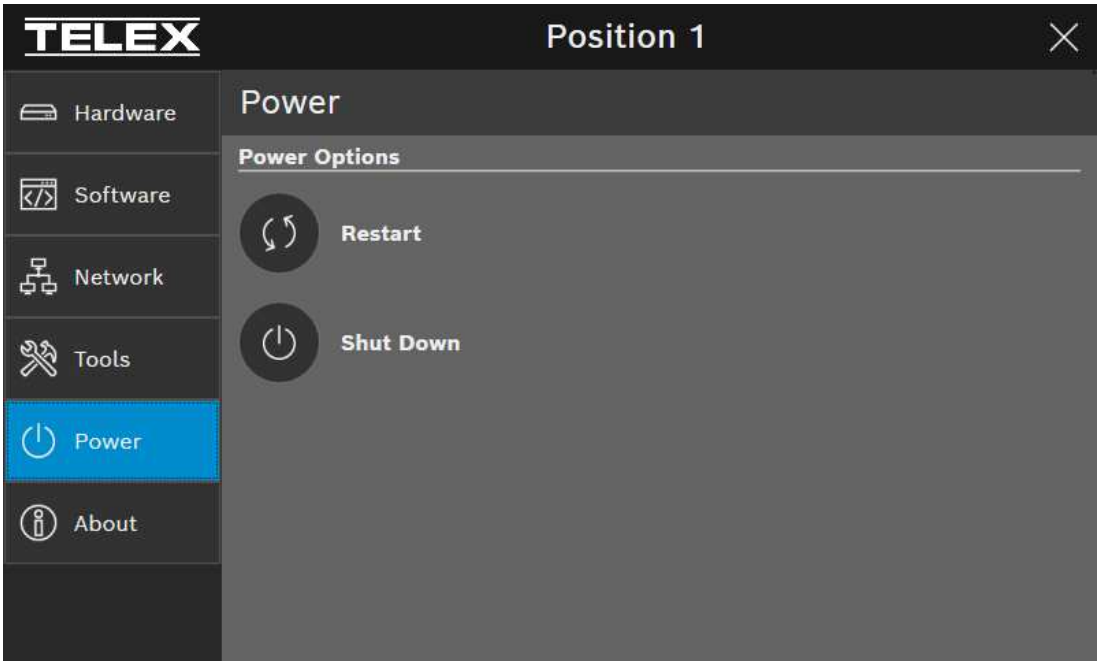


Figure 10.6: Console Administrator Software - Power Page

Power Options

Restart Button

Use the **Restart** button to restart the device.

Shut Down Button

Use the **Shut Down** button to shut down the device safely.

10.6 About

The **About** screen displays information about the Console Administrator Software, Bosch Security Systems contact information, and a link to the End User License Agreement.

Figure 10.7: Console Administrator Software - About Page

11 Telex System Manager

Use the **Telex System Manager** to manage both IP-31XX configuration and IP-31XX design.

11.1 New definitions

Similar to other Telex devices, the information displayed on TSM's General, Ethernet, TSM Account, Directory, and Hardware tabs reflect the IP-31XX's configuration.
The IP-31XX design displays the C-Soft design currently running on the device. TSM's Design tab displays design information for the device.
For simplified management, the C-Soft design and all necessary files (i.e., System List, images, sounds, SIP directory) are packaged into a single file called a Telex Design Archive (.tda). For more information, see *Design, page 52*, *Streamlined design edit process, page 54*, *Importing design, page 54*, and *Write configuration / design to IP-31XX device, page 54*. Telex System Manager and C-Soft Designer utilize the Telex Design Archive (.tda) file format to manage the IP-31XX's design.

11.2 Read from device

When TSM initially launches, the Network Devices list displays all detected Telex devices on the network.
After selecting the IP-31XX device, a prompt to enter the username and password appears. TSM uses this information to read the device's configuration and design.
The factory default values for these fields are:

– Username: admin
– Password: admin

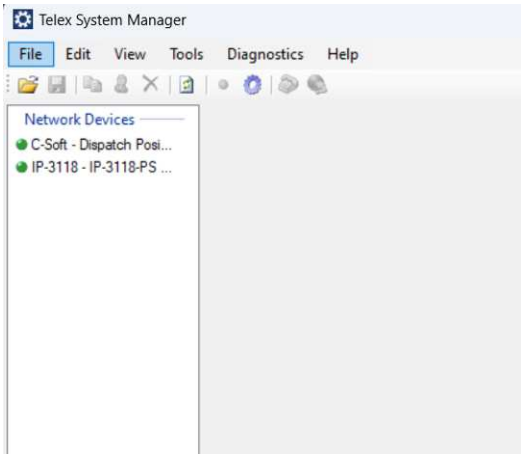


Figure 11.1: Telex System Manager

11.3 General

Use the **General** tab to enter device information and view general device settings.

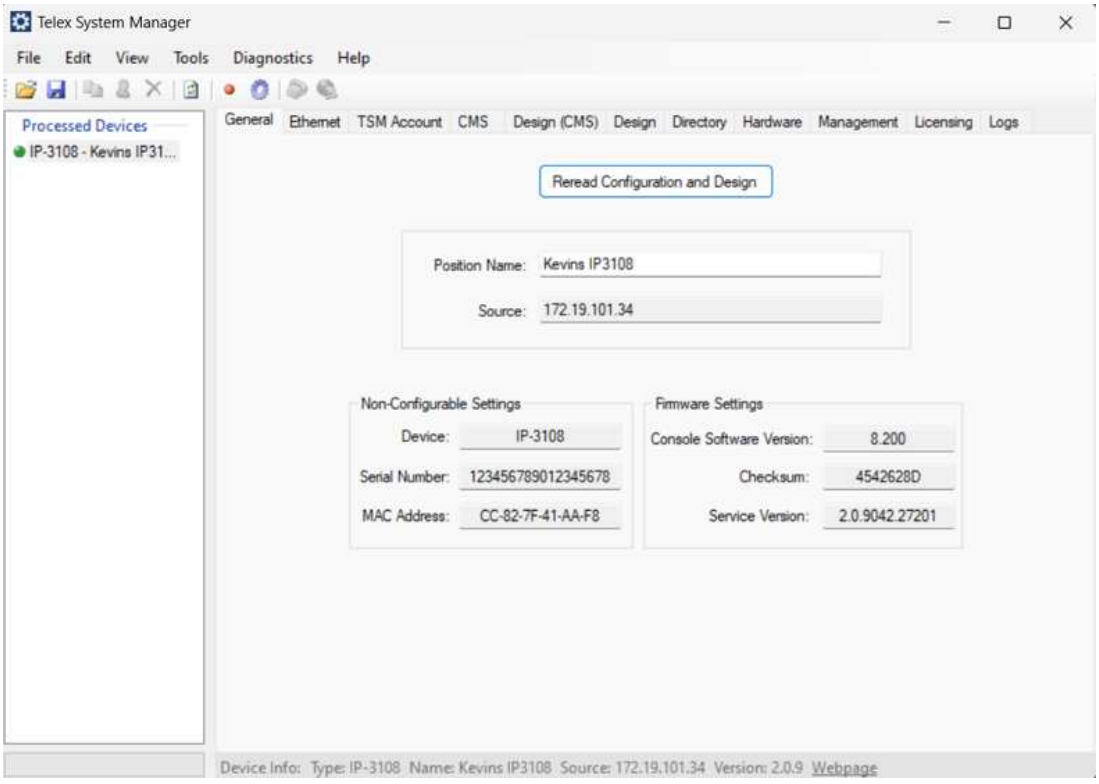


Figure 11.2: TSM IP-31XX General Page

Reread Configuration Button

Use the **Reread Configuration** button to have TSM reread the device configuration.

Position Name Field

Use the **Position Name** field to enter the position name of the IP-31XX.

Source Field

Use the **Source** field to display the IP address of the device

Non-Configurable Settings

Device Field

The **Device** field displays the device type.

Serial Number Field

The **Serial Number** field displays the device's serial number.

MAC Address Field

The **MAC Address** field displays the device's MAC address.

Firmware Settings

Console Software Version Field

The **Console Software Version** field displays the C-Soft version running on the device.

Checksum Field

The **Checksum** field displays the beginning checksum of the installed version of C-Soft.

Service Version Field

The **Service Version** field displays the service version running on the device.

11.4 Ethernet

Use the **Ethernet** tab to configure Ethernet on the device.

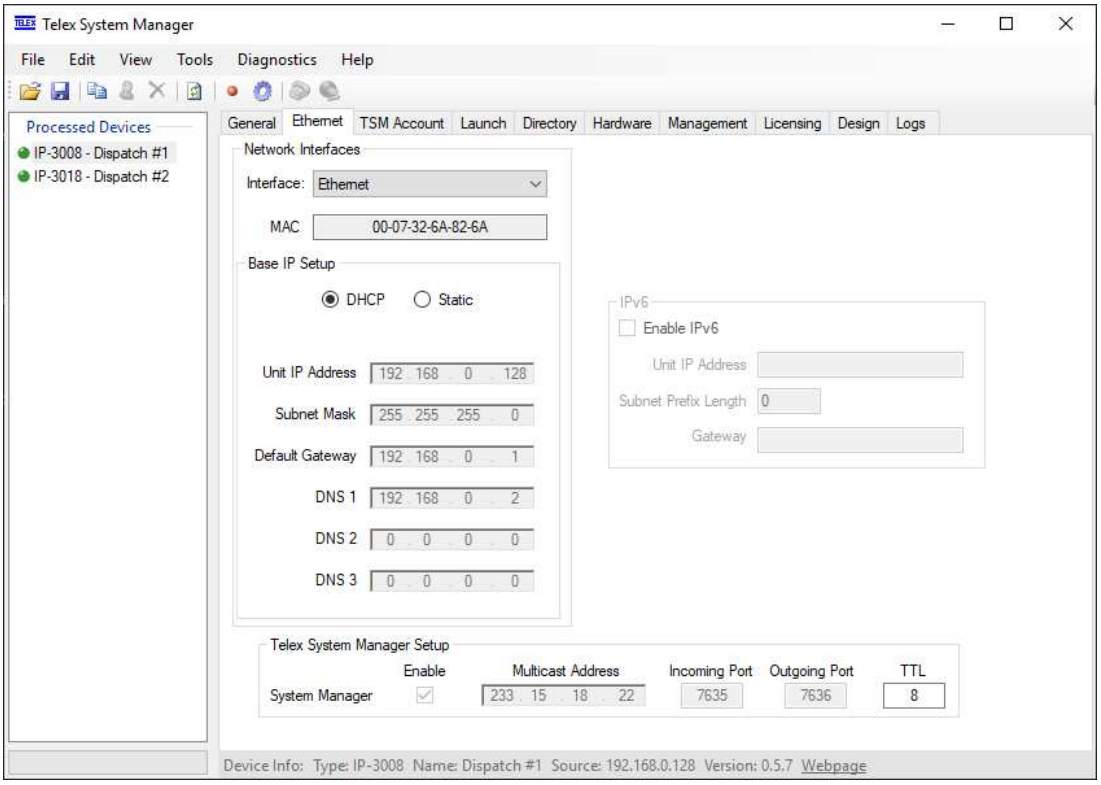


Figure 11.3: TSM IP-3XXX Ethernet Tab

Network Interfaces

Interface Drop Down Menu

Use the **Interface** drop down menu to select the network adapter on the device.

MAC Field

The **MAC** field displays the selected interface's MAC address.

Base IP Setup

DHCP Radio Button

Select the **DHCP** radio button to use DCHP addressing for the device. If selected, the Static Settings section displays the network configuration.

Static Radio Button

Select the **Static** radio button to use static addressing for the device. If selected, the Static Settings section is configurable.

IP Address Field

Use the **IP Address** field to enter the IP Address for the device.

Subnet Mask Field

Use the **Subnet Mask** field to enter the subnet mask address for the device. The subnet mask distinguishes local addresses from addresses requiring the use of a gateway to reach other networks. Contact your network administrator to obtain the proper value for this field.

Default Gateway Field
Use the **Default Gateway** field to enter the gateway address for the device. The gateway address connects devices to other networks outside of the device's network.

DNS 1 Field
Use the **DNS 1** field to enter the preferred DNS server address for the network adapter.

DNS 2 Field
Use the **DNS 2** field to enter the secondary DNS server address for the network adapter.

DNS 3 Field
Use the **DNS 3** field to enter the tertiary DNS server address for the network adapter.

IPv6

Enable IPv6 Check Box
The **Enable IPv6** check box, if selected, allows the device to be addressed and configured using IPv6. The Enable IPv6 is currently not available.

Link Local Address Field
The **Link Local Address** field is a 128-bit address field. It is not editable. It is an auto-configured address field that starts with FE in hexadecimal. The link local address routes the local network device only and cannot route to public networks. It generates from a local MAC address.
The Link Local Address field is only enabled when Enable IPv6 is enabled.

Unit IP Address Field
Use the **Unit IP Address** field to enter the device's IPv6 address. The IPv6 address size is 128 bits and shows in hexadecimal format. The 128-bit address has eight 16-bit blocks. Each 16-bit block converts to a 4-digit hexadecimal number separated by colons.

Subnet Prefix Length Field
Use the **Subnet Prefix Length** field to identify how many bits of the global IPv6 address to use for the network portion. The prefix length in IPv6 corresponds to the subnet mask field in IPv4. However, rather than having four octets like IPv4, IPv6 uses an integer between 1 and 128.
The default for this field is 64.

Gateway Field
Use the **Gateway** field to configure the device's gateway IPv6 address, similar to IPv4. This address connects the device to another network.

Telex System Manager Set Up

Enable Check Box
The **Enable** check box enables or disables System Manager Support on the device. This check box is not configurable.

Multicast Address Field
The **Multicast Address** field displays the multicast IP address to use for TSM support. This field is not configurable.

Incoming Port Field
The **Incoming Port** field displays the incoming port used for TSM support. This field is not configurable.

Outgoing Port Field

The **Outgoing Port** field displays the outgoing port used for TSM support. This field is not configurable.

TTL Field

The **TTL** field displays the TTL for TSM support

11.5 TSM account

Set up the **System Manager Account** login information from the TSM Account tab.

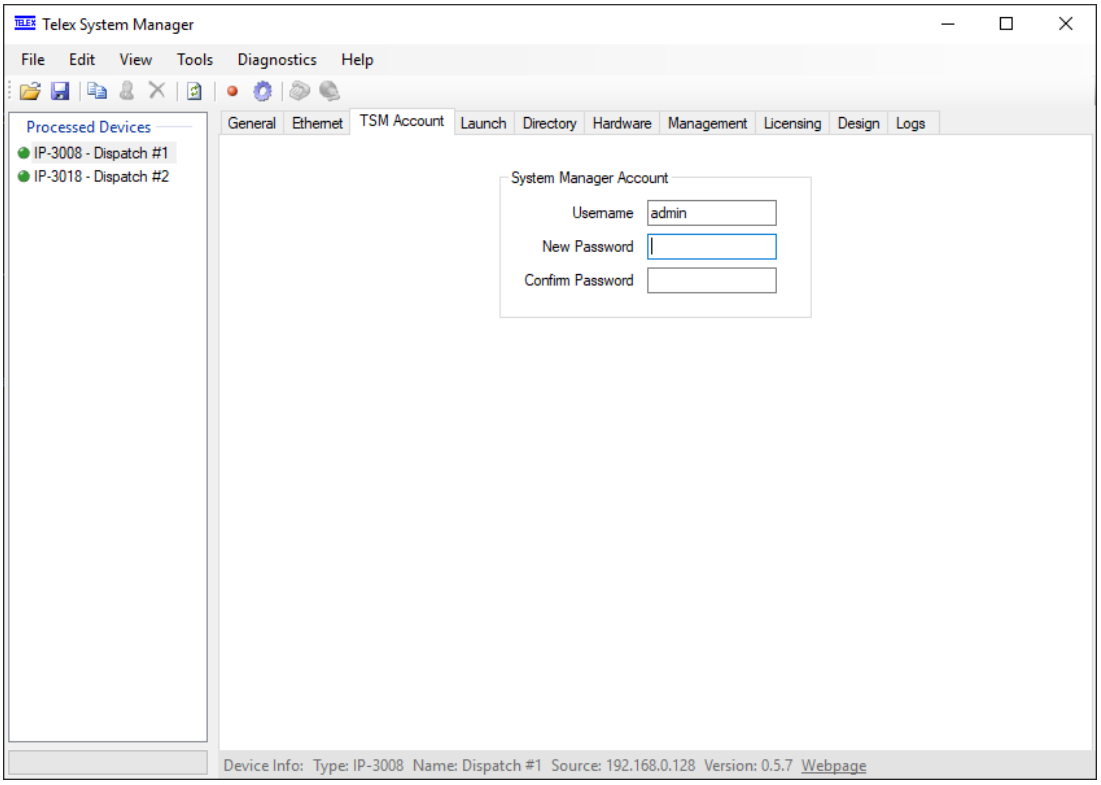


Figure 11.4: TSM IP-3XXX TSM Account Tab

System Manager Account

Username Field

Use the **Username** field to enter the device username for TSM.

New Password Field

Use the **New Password** field to enter a new password for TSM.

Confirm Password Field

Use the **Confirm Password** field to confirm the password for TSM.

11.6 Launch

Use the **Launch** tab to view where the last launched design file, the default design file, and the C-Soft executable reside in the device's file system.

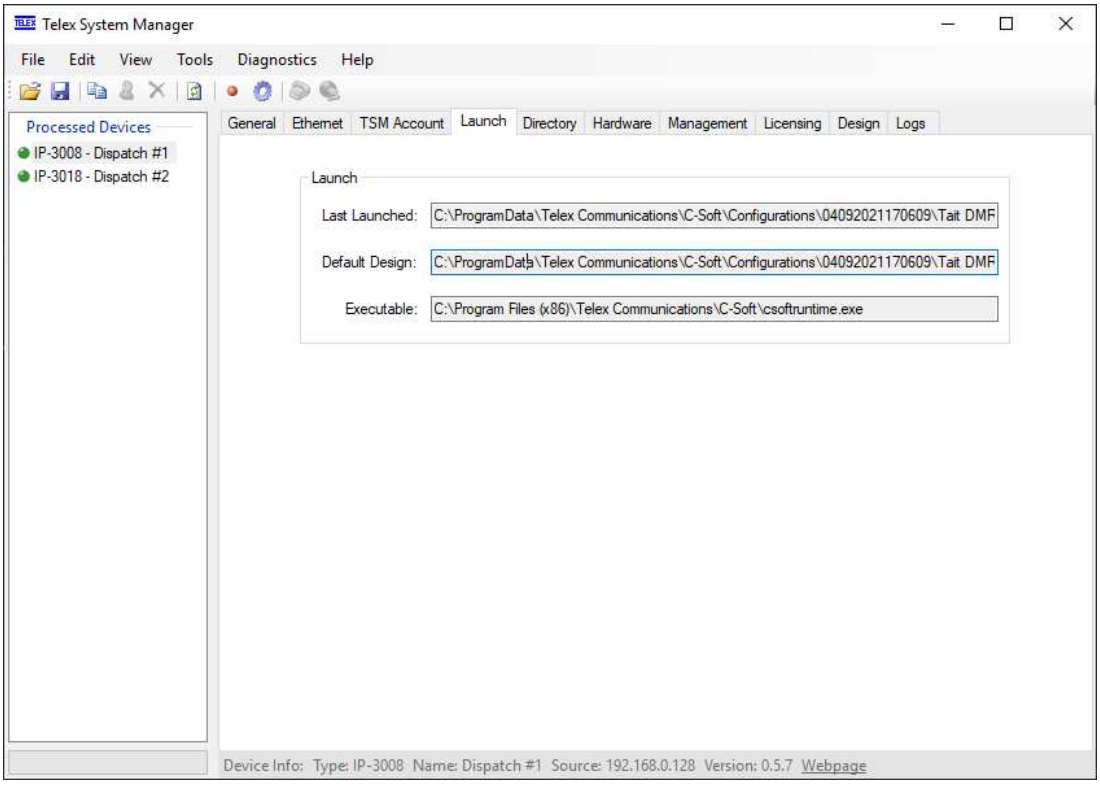


Figure 11.5: TSM IP-3XXX Launch Tab

Launch

Last Launched Field

The **Last Launched** field displays the file path to the last design file. This field is not editable; it populates when writing the Design to the device.

Default Design Field

The **Default Design** field displays the file path to the current default design file. This field is not editable; it populates when writing the Design to the device.

Executable Field

The **Executable** field displays the location of the current C-Soft executable. This field is not editable.

11.7 Directory

Use the **Directory** tab to set file paths for various Console Software resources and configuring the device's crossmutes file.

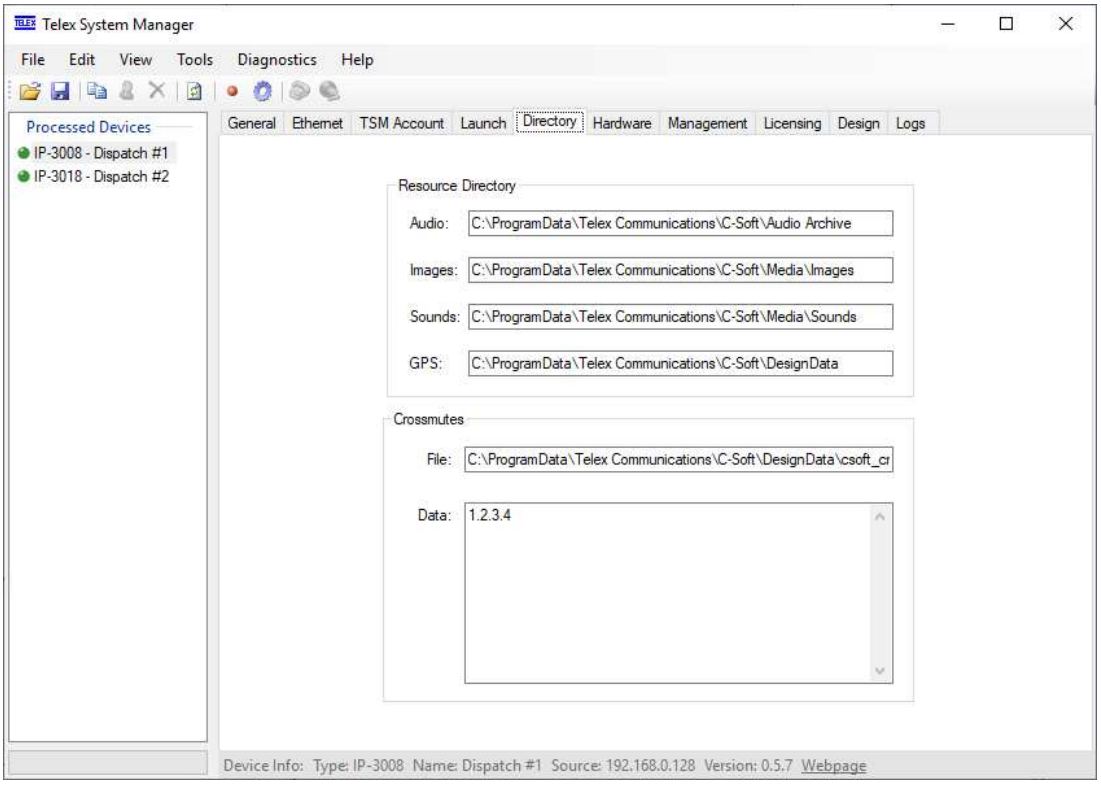


Figure 11.6: TSM IP-3XXX Directory Tab

Resource Directory

Audio Field

The **Audio** field displays the currently set directory for audio recordings in design files.

Images Field

The **Images** field displays the currently set directory for images in design files.

Sounds Field

The **Sounds** field displays the currently set directory for audio sources in design files.

GPS Field

The **GPS** field displays the currently set directory for KML files.

Crossmutes

File Field

The **File** field displays the currently set crossmutes file path.

Notice!
In order to avoid unintentionally overriding an existing Crossmutes file, TSM only allows the user to change either the Crossmutes File field or the Crossmutes Data field, but not both at the same time. After changing the Crossmutes file, it is necessary to set the Crossmutes file path, write and reread the device's configuration, and then make changes to the Crossmutes Data field.

It is recommended to leave the default value as C:\ProgramData\Telex Communications\C-Soft\DesignData\csoft_crossmutes.txt.

Data Field
Use the **Data** field to enter up to 200 IP address (one per line). The Crossmute file allows each position to have its own crossmute settings without requiring a different design file by populating the Local Console IP Address fields with a .txt file.
To **create a crossmute file**, do the following:
1. Ensure the **path** to the .txt file in File field is valid.
2. In the data field, enter **up to 200 IP Addresses** (one per line).

Notice!
Upon writing the configuration to the IP-31XX, the device creates or updates the specified crossmute file with the contents of the **Data** field. Creation or modification of the crossmute file only occurs if the Data field is populated.

3. Write the **configuration** to the device.
   The IP-31XX Console Software restarts, loading the updated crossmutes.
   For more information, refer to *Write configuration / design to IP-31XX device, page 54*.

11.8 Hardware

Use the **Hardware** tab to set gain levels for the handset speaker, handset mic, and the gooseneck microphone.

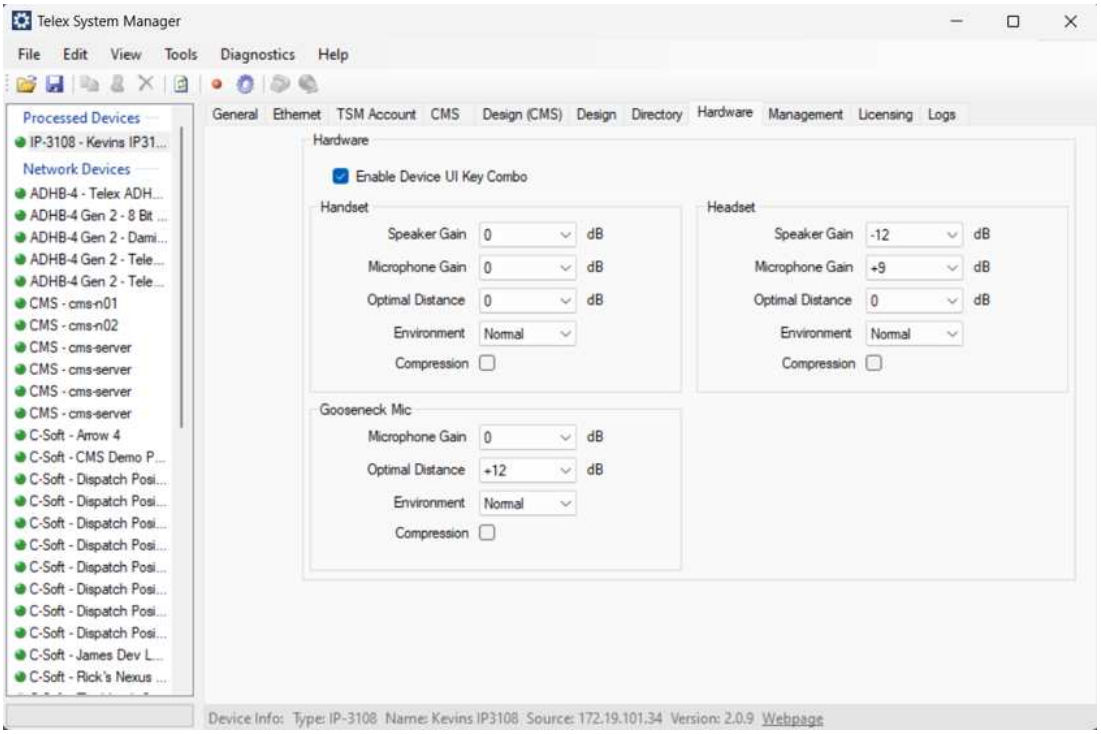


Figure 11.7: TSM IP-31XX Hardware Tab

Enable Device UI Key Combo Check Box

Use the **Enable Device UI Key Combo** check box to enable or disable the UI Key Combo for launching the Console Administration Tool.

Handset Speaker Gain Drop Down Menu

Use the **Handset Speaker Gain** drop down menu to set the dB level of the handset speaker gain on the IP-31XX device.

The range for this field is -42dB to +9dB.

The default is 0.

Handset Mic Gain Drop Down Menu

Use the **Handset Mic Gain** drop down menu to set the dB level of the handset microphone gain on the IP-31XX device.

The range for this field is -33dB to +9dB.

The default 0.

Gooseneck Microphone Gain Drop Down Menu

Use the **Gooseneck Microphone Gain** drop down menu to set the dB level of the gooseneck microphone gain on the IP-31XX device.

The range for this field is -33dB to +9dB.

The default 0.

11.9 Management

Use the **Management** tab to manage the device's operational state.

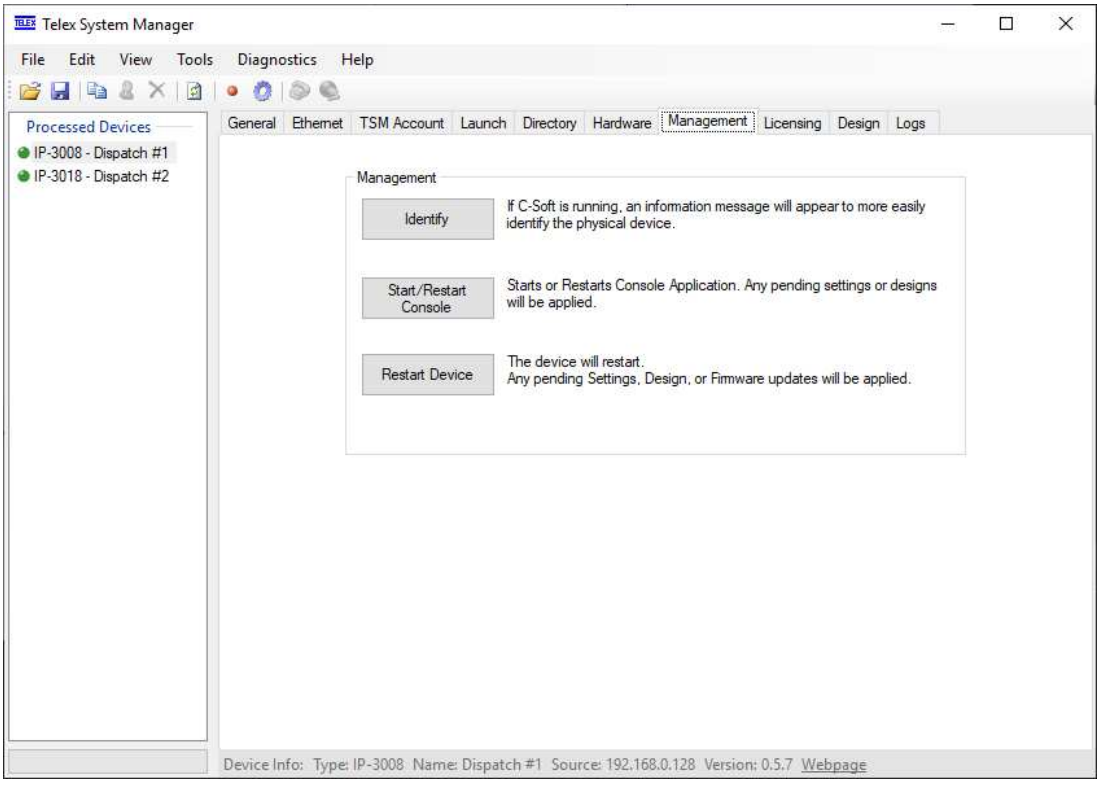


Figure 11.8: TSM IP-3XXX Management Tab

Management

Identify Button

The **Identify** button causes an information message to appear to assist in identifying the physical device. This is useful when configuring multiple IP-31XX because it allows easier correlation of physical device to device in TSM.

Start/Restart Console Button

The **Start/Restart Console** button starts or restarts Console Application. Any pending settings or designs are applied.

Restart Device Button

The **Restart Device** button restarts the device. Any pending settings, designs, or firmware updates are applied.

11.10 Licensing

The **Licensing Tab** displays the device's current license and provides access to licensing utilities. Since the IP-31XX device is pre-licensed, the licensing tab is only necessary for deploying a field license upgrades (IP-UPGRADE-E or IP-UPGRADE-PS).

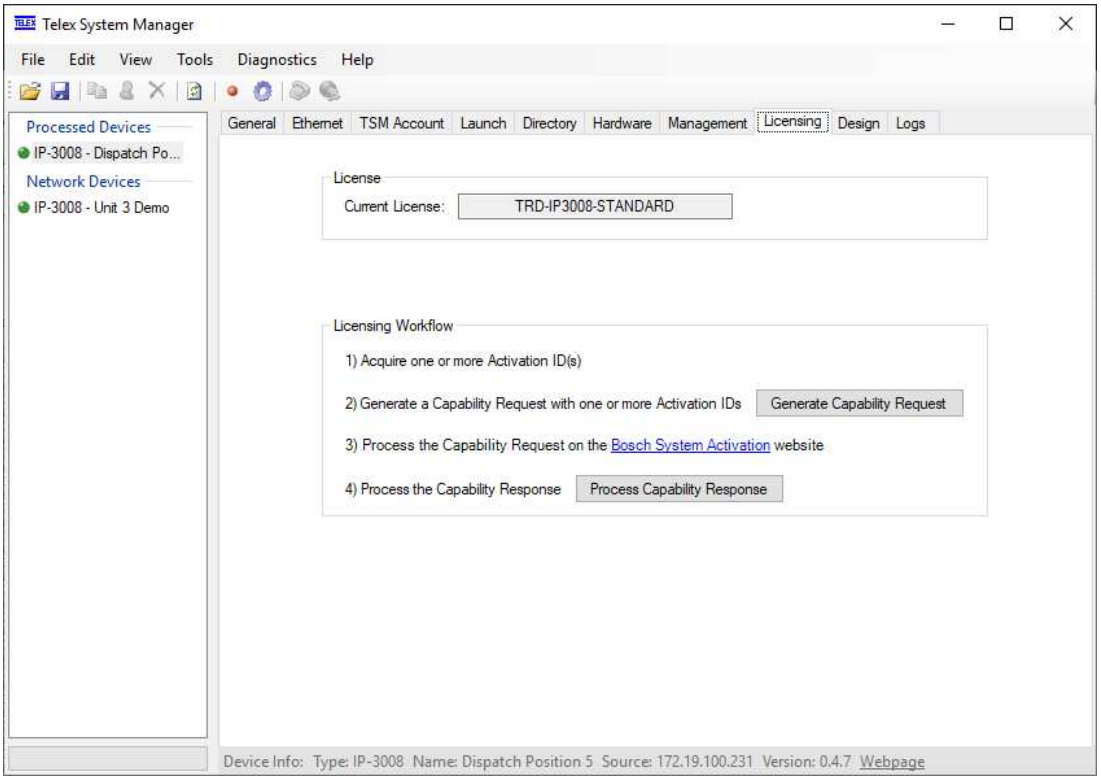


Figure 11.9: TSM IP-3XXX Licensing Tab

To **acquire and apply a field license upgrade**, do the following:

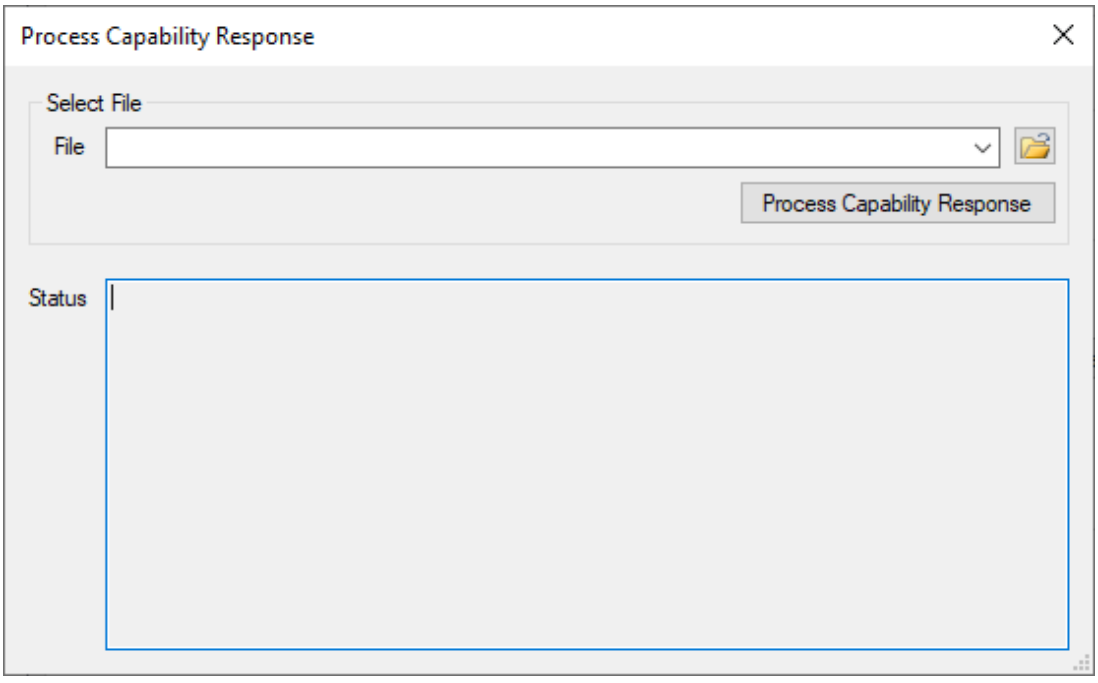
1. Contact your **Telex Dealer** to purchase a field upgrade.

They need the following information:

- Desired upgrade (Enterprise or Public Safety)
- Device MAC Address

Telex Radio Dispatch sends a USB drive containing the new license.

1. Connect the **USB drive to the computer running TSM**.
2. Using TSM, read from the **target IP-31XX**.
3. Navigate to the **device's Licensing tab**.
4. Press the **Process Capability Response** button.
   The Process Capability Response window opens.



5. Click the **Open File button**.
6. Select the **ResponseRequest_XXXXXXXXXXXX.bin file** from the provided USB drive, where XXXXXXXXXXXX matches the device's MAC address.
7. Press **Process the Process Capability Response button**.
   The Status text box displays feedback information from the device. If successful, the IP-31XX Console Software restarts using the new license.

11.11 Design

The **Design** tab displays information about the device's currently loaded design and provides a convenient way to launch C-Soft Designer to the device's current design.

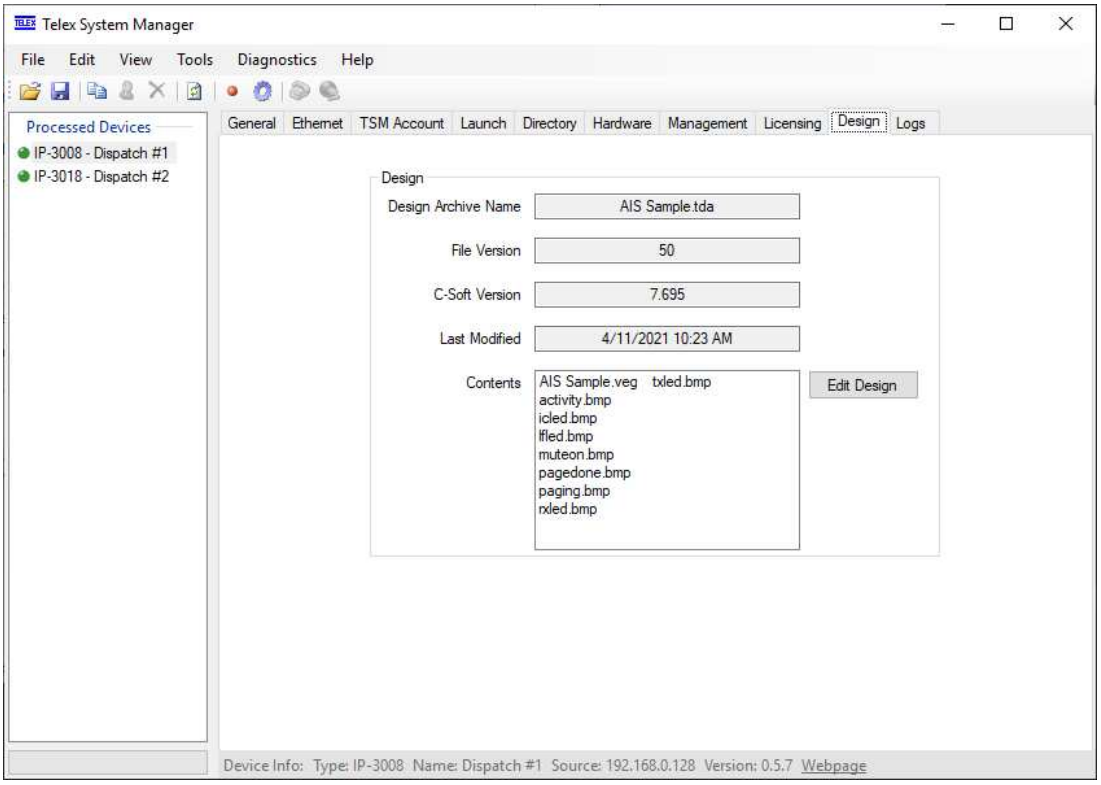


Figure 11.10: TSM IP-3XXX Design Tab

Design

Design Archive Name Field

The **Design Archive Name** field displays the file name of the active Telex Design Archive.

File Version Field

The **File Version** field displays the internal file version of the design. This information is useful when determining design compatibility between devices and debugging.

C-Soft Version Field

The **C-Soft Version** field displays the C-Soft Designer version used to save the design.

Last Modified Field

The **Last Modified** field displays a timestamp of when the design was edited.

Contents Field

The **Contents** field displays the file contents of the active design archive.

Edit Design Button

The **Edit Design** button launches C-Soft Designer to the downloaded design. If multiple C-Soft Designer versions are available, the desired C-Soft Designer executable can be selected in the TSM by selecting Options | Designer tab.

For more information on Design editing processes using TSM and C-Soft Designer, see Sections *Streamlined design edit process, page 54* and *Importing design, page 54*.

11.12 Logs

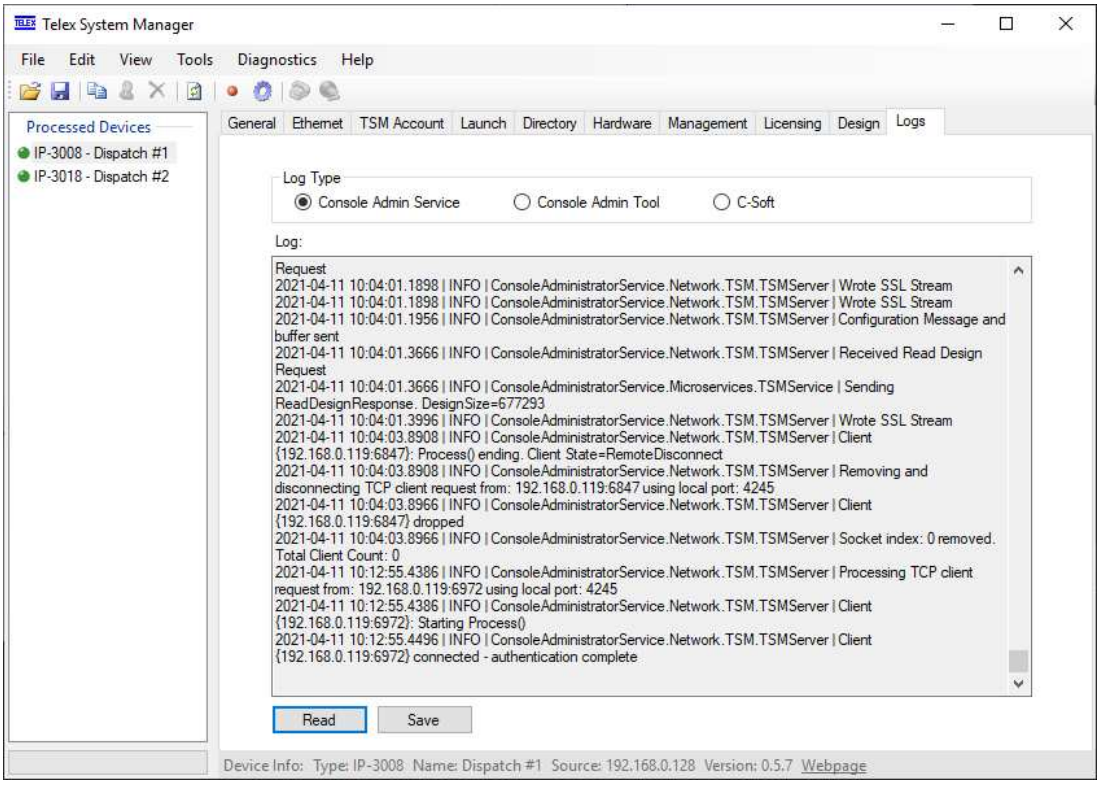


Figure 11.11: TSM IP-3XXX Logs Tab

Log Type

Console Admin Service Radio Button

The **Console Admin Service** button selects the Console Admin Service log.

Console Admin Tool Radio Button

The **Console Admin Tool** radio button selects the Console Admin Tool log.

C-Soft Radio Button

The **C-Soft** radio button selects the C-Soft log.

Logs Field

The **Logs** field displays the downloaded log.

Read Button

The **Read** button downloads the selected log and displays it in the log textbox.

Save Button

The **Save** button opens a File Save window to save the currently displayed log text.

11.13 Streamlined design edit process

TSM offers a streamlined Design edit process to easily manage an IP-31XX's active design. For more information, see the most current C-soft manual at www.telex.com.

To **streamline the design edit process**, do the following

1. Using TSM, read an **IP-31XX's configuration and design**.
2. Navigate to the **device's Design tab**.
3. Press the **Edit Design button**.
   C-Soft Designer launches, opening the IP-31XX's active design.

Notice!
The C-Soft Designer version matching the IP-31X's Firmware Version must be installed locally. If Designer is not installed to the default location, it may be necessary to set C-Soft Designer's path in TSM's Options | Designer tab.

1. Using C-Soft Designer, make **any desired changes** to the design file.
2. When finished, select **File | Save**.

Notice!
If the Design's path is relocated using File | Save As, TSM will not detect the updated Design, and the Design will need to be imported into TSM. See --- MISSING LINK --- for more information on importing.

3. Return to Telex System Manager, and follow **instructions** in *Write configuration / design to IP-31XX device, page 54* to write the design back to the IP-31XX.

11.14 Importing design

TSM can open an existing Telex Design Archive (*.tda) file, making it available to write to an IP-31XX. See the C-Soft Manual Section 10 for instructions on creating a TDA using C-Soft Designer.

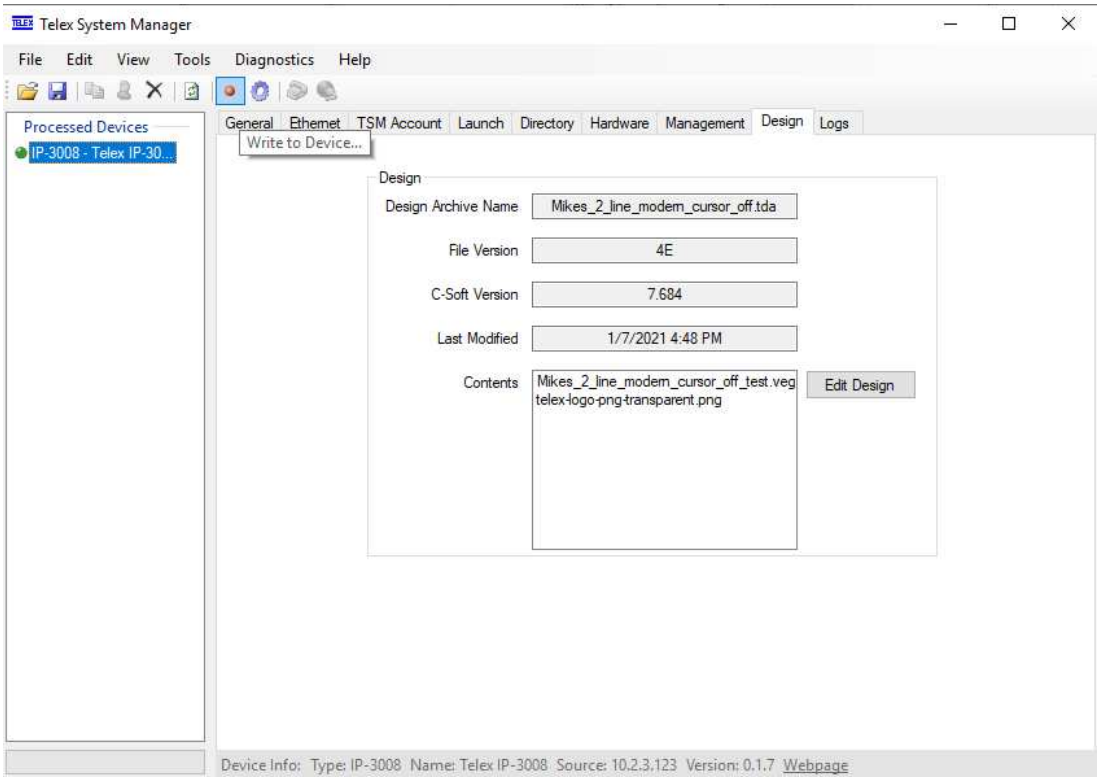
To **import a design**, do the following:

1. In Telex System Manager, select **File | Open**, or press the Open toolbar item.
2. Navigate to and select a **Telex Design Archive (*.tda) file**.
3. Continue with **instructions** in *Write configuration / design to IP-31XX device, page 54*to write the design to an IP-31XX device.

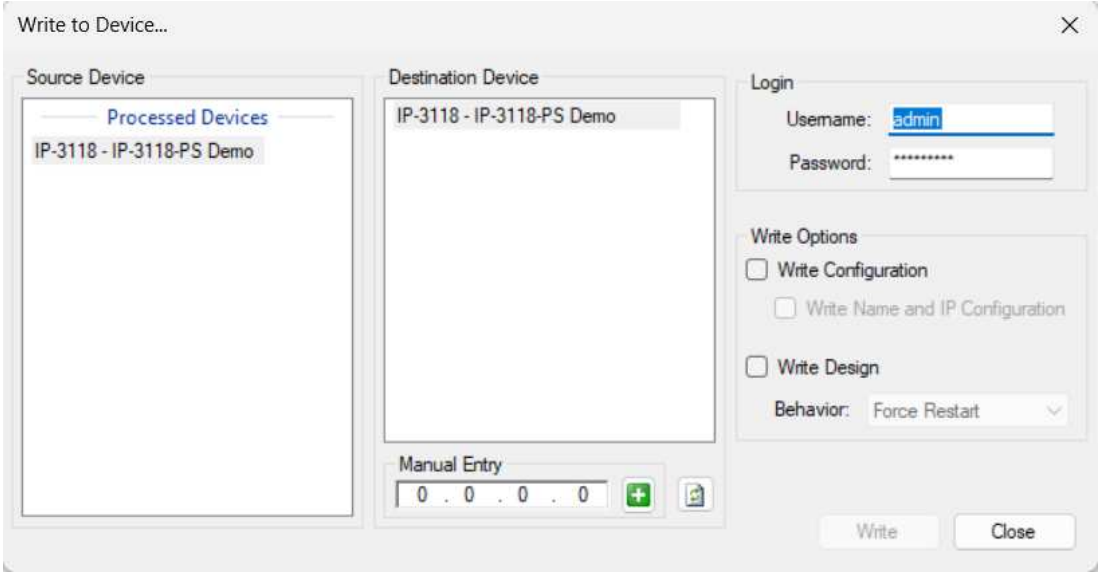
11.15 Write configuration / design to IP-31XX device

Upon modifying, the device's configuration or importing or editing a design, the updated configuration and/or design is written to an IP-30XX with the following

1. Follow **Sections** *Read from device, page 40* **or** *Importing design, page 54* **read an IP-31XX configuration or import a Telex Design Archive (*.tda)**.
2. Select **Write to Device**, available in the Tools menu or by pressing the Record toolbar item.



The Write to Device window opens.



1. Using the Source and Destination device lists, select the **source IP-31XX and destination IP-31XX device**.
2. Select the **Write Configuration checkbox** if writing the device configuration.
   Or
   Select the **Write Design check box** if writing a Design.
3. From the Behavior drop down menu, select **None**, **Prompt to Restart**, or **Force Restart**. These actions are applied after writing the design to the target IP-31XX.
   - **None**: The new design is applied the next time the device's Console Software launches.

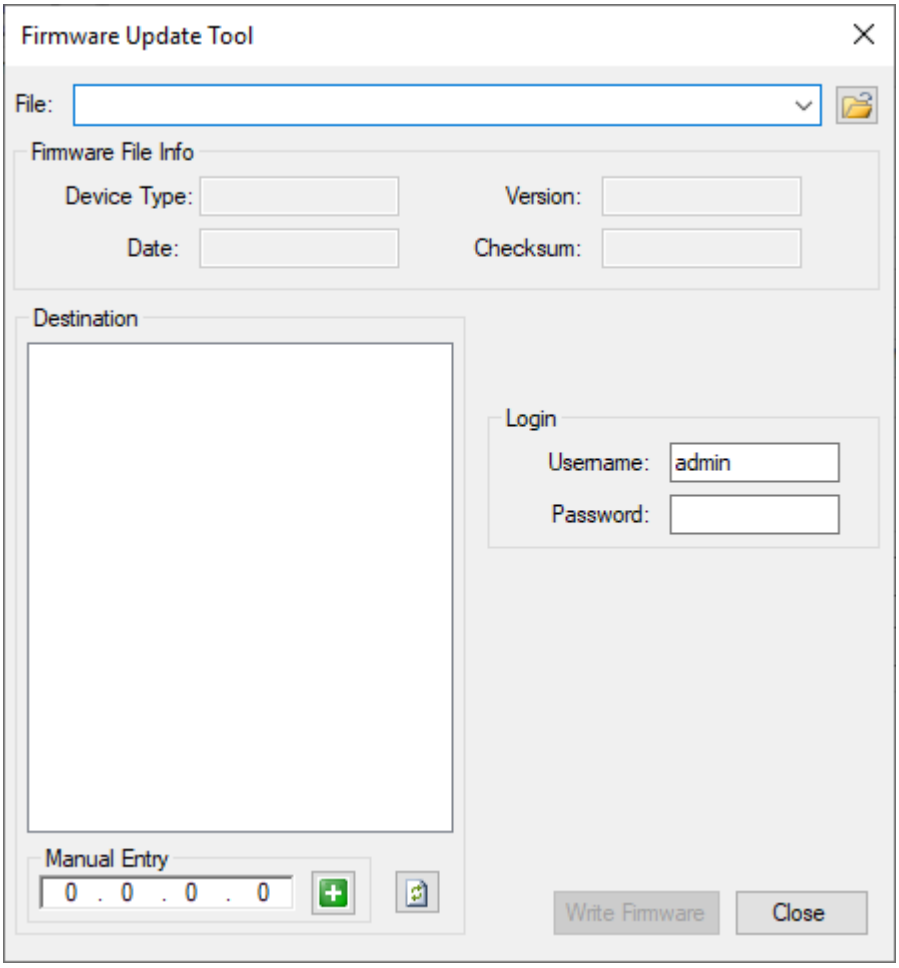
- **Prompt for Restart**: The Console Software displays a prompt asking if the dispatcher wishes to restart. If yes, the Console Software immediately restarts to load the new design. Otherwise, the new design is applied the next time the device's Console Software launches.
- **Force Restart**: The device's Console Software immediately restarts to load the new design.

4. Press the **Write button**.
   Depending on the configuration changes and selected write design behavior, the target IP-31XX's Console Software may restart to apply the updated configuration and/or design.

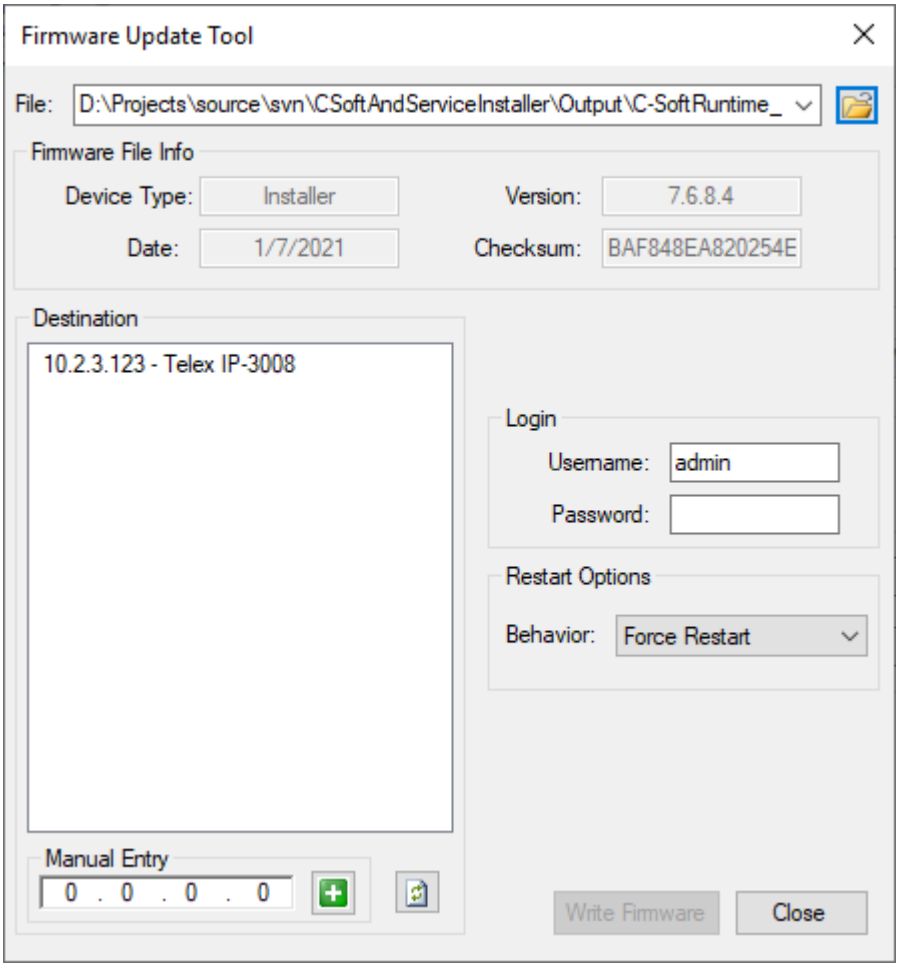
11.16 Update device firmware

Like other Telex devices, use Telex System Manager to update the IP-31XX's firmware.
To **update firmware**, do the following:

1. Select **Tools | Firmware Update**, or press the Firmware Update toolbar item.
   The Firmware Update Tool window opens.



2. In the Firmware Update Tool, press the **Browse for Firmware File button**.
3. Navigate to and select a **Telex Remote installation (.tri) file**.
   The Firmware Update Tool displays information about the selected Telex Remote Installation File, and updates the Destination device list with compatible devices.

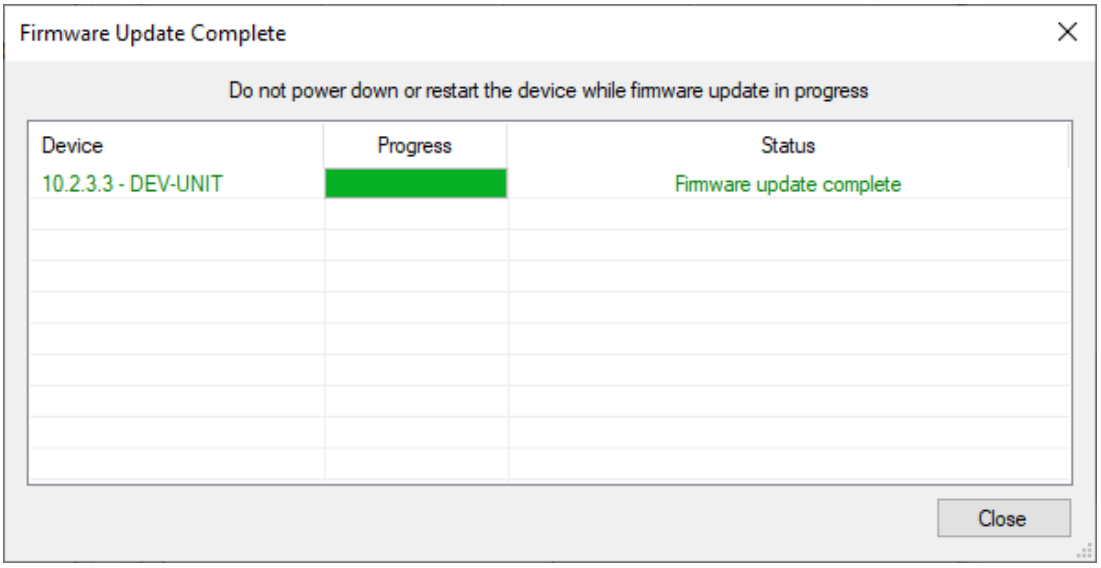


4. Select a **destination IP-31XX from the Destination devices list**.

1. Enter the **device's username and password**.

Notice!
The IP-31XX's default username and password is admin / admin.

2. Press the **Write Firmware button**.
The Firmware Update window opens and displays progress information on the firmware update.



The IP-31XX's Console Software closes, and the screen displays the installation progress information. When the firmware update is complete, the IP-31XX automatically re-launches the Console Software.

12 Cleaning and disinfecting the unit

Safe disinfectant solutions:

- Household bleach solution (100 ml to 2 liters)
- Isopropyl alcohol (≤ 70% alcohol)
- Clorox Disinfecting Wipes
- Clorox Healthcare Bleach Germicidal Wipes
- Clorox Commercial Solutions Hydrogen Peroxide Cleaner Disinfectant Wipes
- Lonza Disinfectant Wipes
- Lysol Brand Clean & Fresh Multi Surface Cleaner (20% cleaner solution to water ratio)
- Purell Professional Surface Disinfectant Wipes
- Sani-Cloth Prime Germicidal Disposable Wipes

Do NOT use the following material when cleaning/disinfecting your product:

- Isopropyl Alcohol at concentration > 70%
- Methyl Alcohol or Ethyl Alcohol at concentration > 35%
- Thinner or benzene
- Strong alkali lye
- Strong solvents
- Acids
- Detergents with fluoride
- Detergents with ammonia at concentration > 1.6%
- Abrasive cleaners
- Detergents with abrasives
- Formula 409
- Steel wool
- Sponges with abrasives
- Steel blades
- Cloth with steel threads

Cleaning

To **clean the IP-3100 series product**, do the following:

1. To prepare for cleaning the touchscreen, power down the unit or disable the touchscreen with a long press on the Home/Touch disable key on the stripe.
2. Do not get liquids inside the unit. Do not spray the product directly. Instead, use wet wipes or a damp cloth with the excess moisture squeezed off.
3. Select only non-abrasive cleaning wipes or cloths to avoid scratching the touchscreen.
4. Avoid highly concentrated alcohol (> 70%), non-diluted bleach or ammonia solutions, as these may cause discoloration.
5. Wipe the surfaces with the appropriate wipes or cloths and approved cleaning products, and allow them to dry.

Disinfecting

To **disinfect the IP-3100 series product**, do the following:

1. To prepare for disinfecting touchscreen, power down the unit or disable the touchscreen with a long press on the Home/Touch disable key on the stripe.
2. Dampen a new clean, non-abrasive cloth with an approved disinfectant. Ensure excess liquid is squeezed from the cloth. You may also use recommended pre-dampened wipes.

3. Read the manufacturer's instructions carefully. Many manufacturers require the surface to remain wet for a few minutes, so continuous wiping might by required.
4. Disinfect the surfaces by wiping them with the cloth or wipe, and allow the surface to dry.

13 Technical data

	IP-3102/IP-3108	IP-3118
Power supply	External 12V ±5% power supply Output Max: 12VDC @5A (60W) Input: 90 to 264VAC ~50/60Hz Level VI energy efficiency rating UL Certification	External 12V ±5% power supply Output Max: 12VDC @8.55A (102W) Input: 90 to 264VAC ~50/60Hz Level VI energy efficiency rating UL Certification
Active power	16.5 W (24.0 W maximum)	27.5 W (40.0 W maximum)
Display size	7.0 in	15.6 in
Display resolution	800 x 480	1920 x 1080
Touch screen	Yes - Projected Capacitive (PCAP) touchscreen	Yes - Projected Capacitive (PCAP) touchscreen
Processor	Intel N6210 - 1.2 GHz	Intel Quad-Core J6412
RAM	8 GB	8 GB
Hard drive	64 GB SSD	256 GB SSD
USB ports	2	4
Speakers	Selected and Unselected (2 x 8 W)	Selected and Unselected (2 x 8 W)
Volume control knobs	1	2
Volume control keys	No	Yes
Goose-neck microphone	Yes Maximum input: 120 dB SPL	Yes Maximum input: 120 dB SPL
Illuminated PTT key	Yes	Yes
Bar-graph VU meter displays	Yes	Yes
Control keys	0	5
Programmable keys	6 (labelled F1 to F6) Separate body and cover (allows for paper key legends)	16 (labelled F1 to F16) Separate body and cover (allows for paper key legends
Protection (sealing) grade	IP20 - Indoor use, limited amounts of falling dirt	IP20 - Indoor use, limited amounts of falling dirt
Headset connection	Yes, ability to attach an RHB-1	Yes, ability to attach an RHB-1
External speakers	Yes, 1/8” stereo connection port	Yes, 1/8” stereo connection port

	IP-3102/IP-3108	IP-3118
Footswitch interface	Yes	Yes
Handset with PTT	Integrated	Integrated
Dimensions W x D x H (in)	13.07 x 10.94 x 4.45	20.08 x 13.46 x 4.41
Dimensions W x D x H (mm)	332 x 278 x 113	510 x 342 x 112
Unit weight (lb.)	7.50 lb.	14.33 lb.
Unit weight (kg)	3.4 kg	6.5 kg
Operating temperature (F)	41° F to 104° F	41° F to 104° F
Operating temperature (C)	5° C to 40°C	5° C to 40°C
Storage temperature (F)	14° F to 122° F	14° F to 122° F
Storage temperature (C)	-10° C to 50° C	-10° C to 50° C
Humidity range	20% to 80% (non-condensing)	20% to 80% (non-condensing)
Certifications and approvals	EN 55032:2012 EN-55024:2010 EN-61000-3-2:2014 EN-61000-3-3:2013 IEC 60721-3-3:2019 IEC 60721-3-2:2018 FCC Part 15 Canada's ICES-003 Issue 6 RoHS REACH	

Dimensions

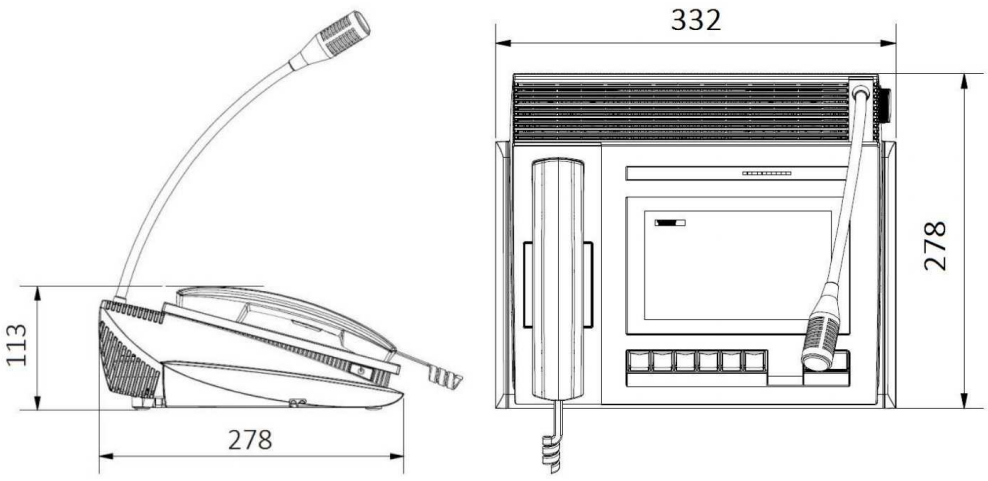


Figure 13.1: IP-3002/IP-3008 Physical Dimensions in mm

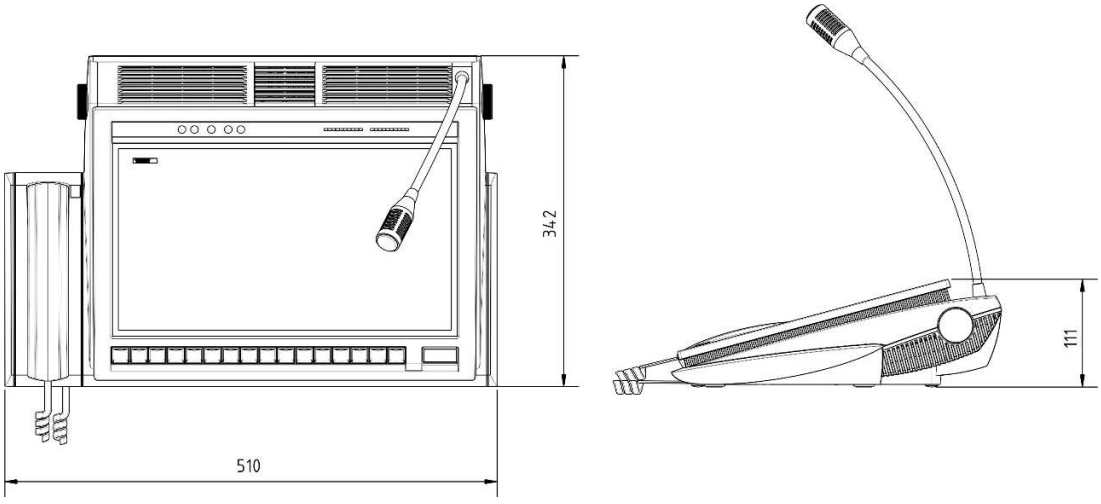


Figure 13.2: IP-3018 Physical Dimensions in mm

Dimensions

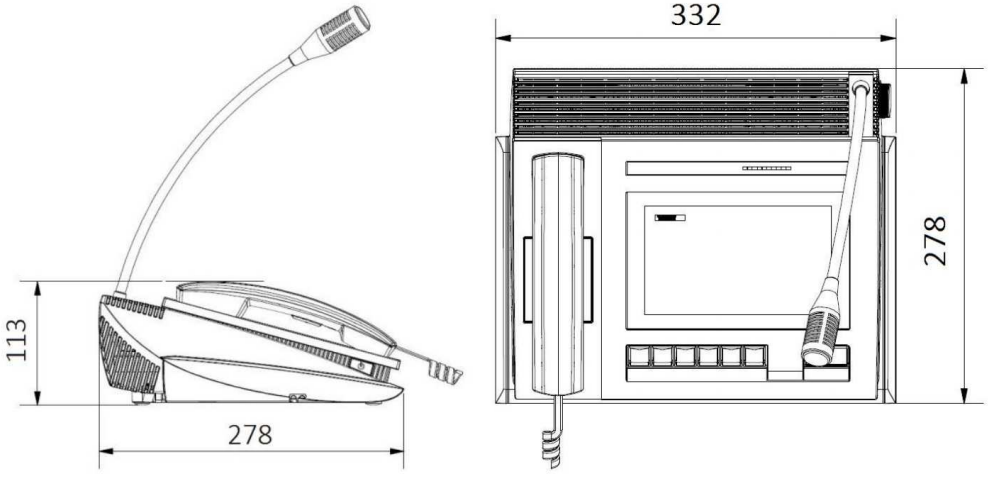


Figure 13.3: IP-3102/IP-3108 Physical Dimensions in mm

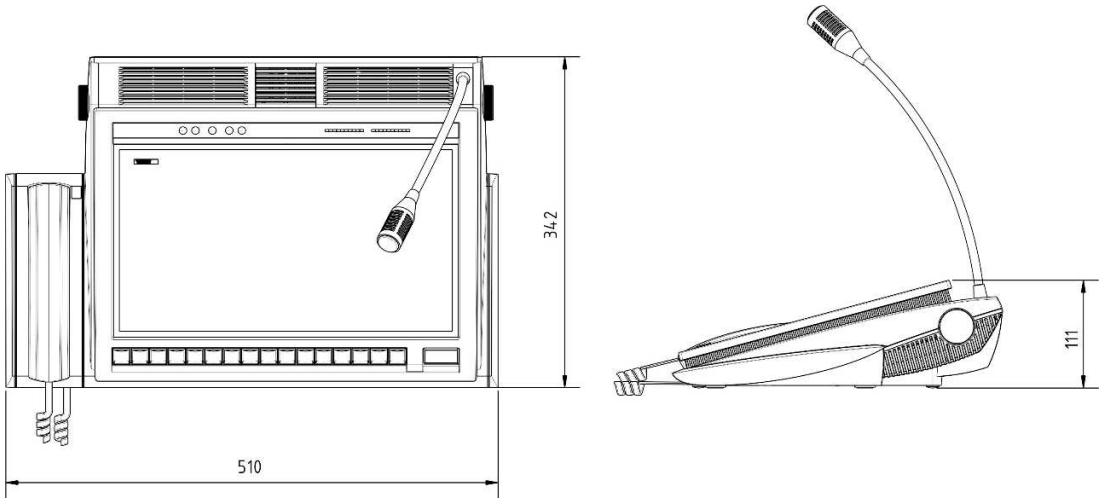


Figure 13.4: IP-3118 Physical Dimensions in mm

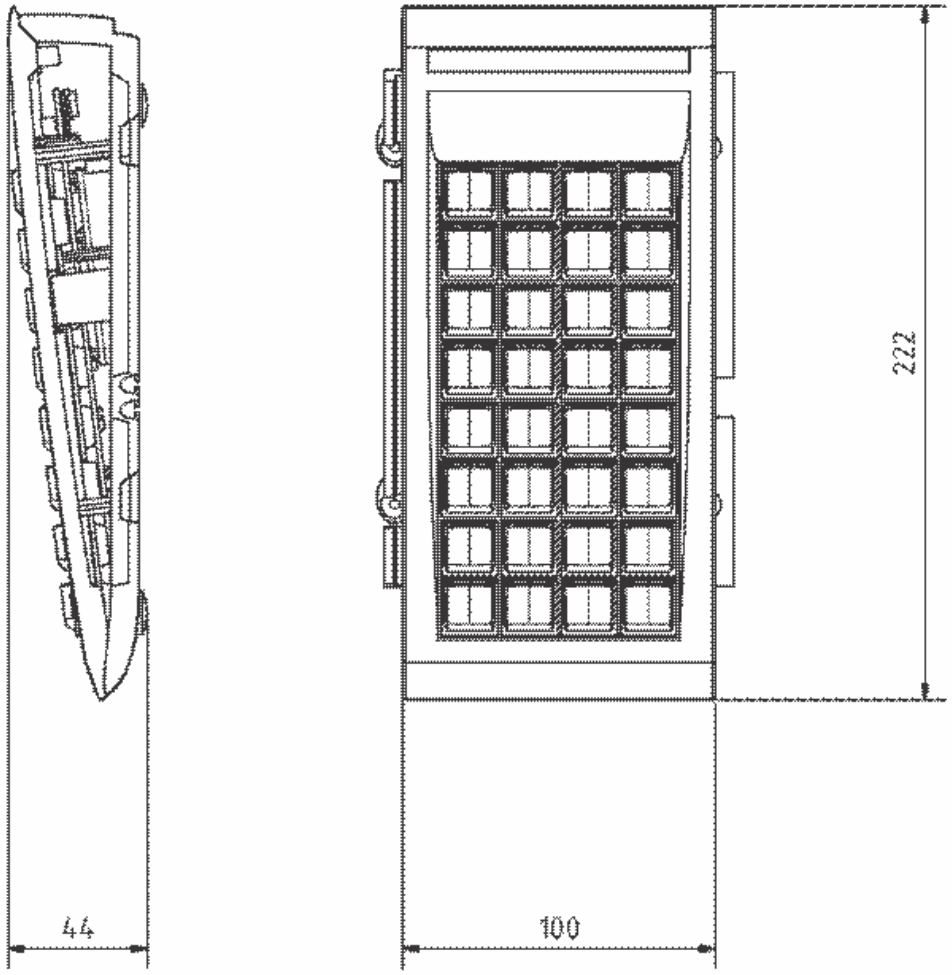


Figure 13.5: Optional Keypad Module Dimensions in mm

Bosch Security Systems, LLC
130 Perinton Parkway
Fairport, NY 14450
USA
www.telex.com

EU importer:
Bosch Sicherheitssysteme GmbH
Robert-Bosch-Platz 1
70839 Gerlingen
Germany

202502132154