infrastructure protection

TZ Centurion™ Bridge

Product Manual

TZ Centurion™ Bridge Model 7130CF Series

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About TZ

Telezygology, Inc. (TZ) is a wholly owned subsidiary of publicly listed intellectual property and technology development company,TZ Limited with design and engineering operations throughout the US and Europe and Australia.

TZ is a leader in the integration of intelligence and software control into everyday objects to enable new levels of functionality. Supported by a full product development capability, TZ technology is a platform on which many different solutions can be created by third parties seeking to integrate remote controlled intelligent locking and sensory devices to add functionality to their products.

TZ solutions fuse software controlled remote locking and fastening, environmental sensing, real time analysis and measurement to provide adopters with compelling benefits for their products and businesses.

Disclaimer

This document is intended to provide basic technical information related to the TZ Centurion™ Bridge model 7130CF.

This document is not meant to be an exhaustive statement of all relevant data. By using this document, however, you agree to accept and comply with the terms, conditions, notices and disclaimers contained in this document.

While TZ has used all due care and skill to ensure that the information contained in this document is accurate, correct and current at the time of publication, it does not warrant or represent that the information is free from errors or omissions, and does not accept responsibility for any defect in the information.

Use of Information Contained in This Document

The correct functions of the TZ Centurion Bridge will require consideration of installation and system integration issues such as networking for power and data, and subsequent programming for functionality.

The TZ Radial 4100 Series system described has not been tested or qualified for a specific application other than for compliance to the specification outlined. Specific qualification testing may be required for fit-for-purpose application design.

Caution

Changes or modifications not expressly approved by TZ could void the user's authority to operate the equipment (FCC Code of Federal Regulations Title 47 Part 15.21).

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1. TZ Centurion™ Bridge 7130CF

Figure 1: TZ Centurion™ Bridge interconnect module

1.1. Introduction

Telezygology, Inc. (TZ) is the inventor of intelligent fastening, locking and actuation devices that, in combination with TZ software and communication gateways, provide a networked platform that extends traditional access control networks to asset level protection and creates compelling security, locking, monitoring and control applications across a number of market segments.

TZ control networks consist of TZ Radial, TZ SlideHandle and other locking devices, interconnect modules, physical and environmental sensors and industry standard access control input translators, all of which can be connected to and controlled from stand-alone control devices and computers via the internet.

This manual only provides detailed technical information about the TZ Centurion Bridge model 7130CF. Please refer to the appropriate system or component manual for information on other TZ products.

1.2. Device Overview

The TZ Centurion Bridge 7130 series of devices are Ethernet gateways that control a medium sized sub-network of TZ SMArt Locking Devices to provide access control and monitoring of a variety of cabinets and intelligent enclosures. The TZ Centurion network may be accessed through either the TZ web client utility embedded on the TZ Centurion Bridge or the separate TZ Centurion Server enterprise application.

Communication between the individual TZ devices on the sub-network is accomplished through daisy-chained components and an RS-485 serial data network.

The TZ Centurion Bridge is the core component of the TZ Centurion security, monitoring, environmental sensing and management system which is designed to provide unprecedented security and environmental monitoring for maximum efficiency and control over a variety of enclosure types. The TZ Centurion Bridge is capable of monitoring and controlling a total of 32 users (web UI), 8, 32 or 70 TZ SMArt locking devices (TZ intelligent locks and/or TZ RFID readers), and 500 unique RFID cards. Larger installations may require the TZ Centurion Server to coordinate multiple TZ Centurion Bridges.

1.3 Contents of the Standard Package

The TZ Centurion Bridge 7130CF comes complete with the following items:

- TZ Centurion™ Bridge 7130CF
- SDHC 2Gb card
- CD
- Quick Start Guide
- TZ Centurion Bridge 7130 Series Product Manual
- TZ Device Discovery Application
- SNMP MIB file
- Adobe® Acrobat Reader®
- Product Registration Information

1.4 System Example

Figure 2 shows an example of a TZ network system that may be used to control and monitor multiple computer racks and provide access to authorised parties when warranted.

The TZ network allows an administrator — on or off-site — to monitor and control cabinets and other areas secured with TZ intelligent locks and devices.

Each of these components is controlled by the TZ Centurion Bridge, allowing activity and measurement by any device in the network to be viewed on the embedded administration web interface.

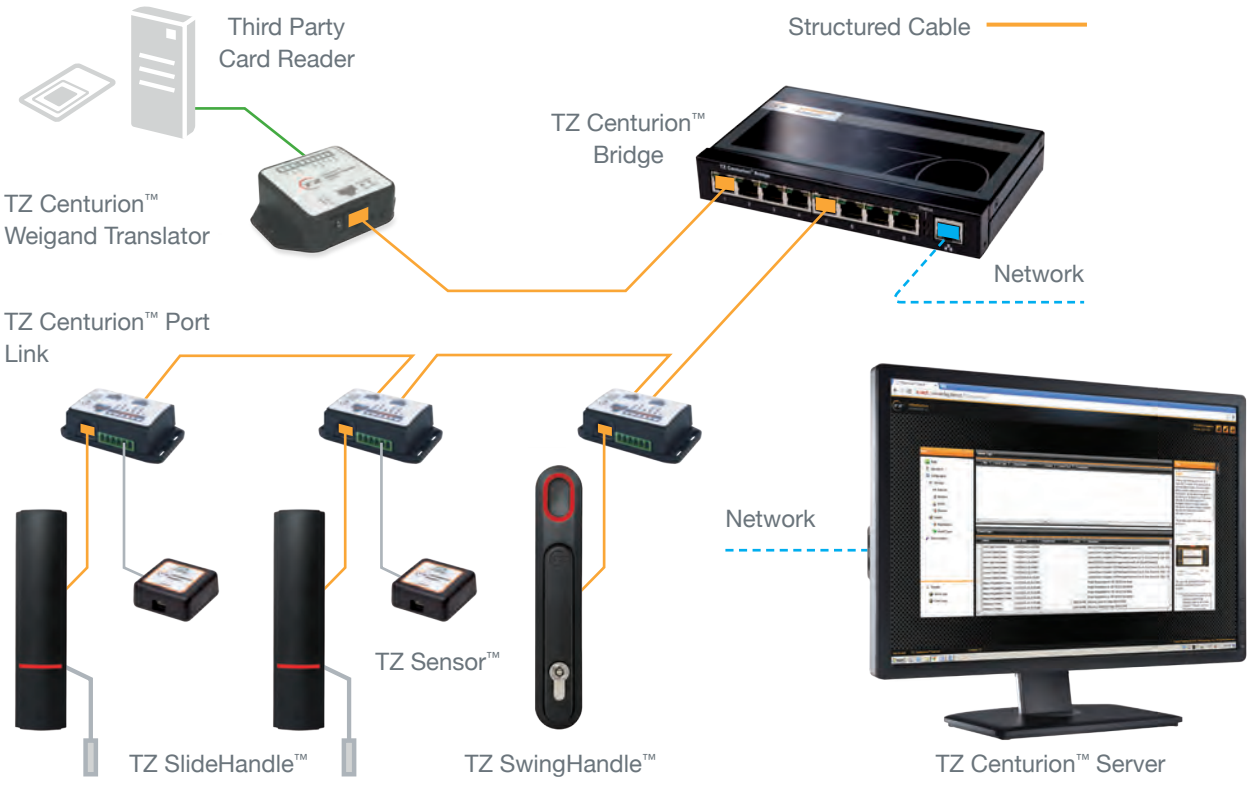


Figure 2: TZ Centurion™ Bridge System

2. Best Practices

It is always best to plan out your cabling before installation to ensure that you have the proper cable lengths on hand when you start installation of the TZ Centurion system. Plans and cable requirements will differ significantly depending on the layout of the system, infrastructure and type of cabinets and doors.

Be aware that there are several different types of cabling and communication protocols used in the TZ Centurion System.

To connect the TZ Centurion Bridge to the existing network, standard straight through UTP CAT5e/6 with RJ45 connectors is required. The TZ Centurion Bridge communicates across the network via standard Ethernet (802.3) protocol.

Cabling between the TZ Centurion Bridges, TZ Centurion Port Links, TZ Radial devices, TZ SlideHandle devices and TZ Centurion RFID / Wiegand Translator devices is also via standard straight through UTP CAT5e/6 with RJ45 connectors. However, the TZ Centurion Bridge uses the RS-485 serial protocol to communicate with the TZ Centurion Port Links, TZ Radial devices, TZ SlideHandle devices and TZ Centurion RFID / Wiegand devices.

It is common practice to use cabling of different colours for different traffic in the data center. (blue = data, white = VoIP, purple = 1GB backbone, etc.) The CAT5e/6 cable between TZ devices and/or cabinet patch panels should be differentiated by colour from the cabling carrying Ethernet traffic in the data center or building.

As CAT5e/6 cables connecting TZ intelligent locks to TZ Centurion Port Links may be routed inside a cabinet door and be subjected to flexing as the door is opened and closed. As such, it is recommended to use UTP Stranded CAT5e/6, and that the cables be tucked away and well secured to appropriate surfaces.

For cable used for infrastructure from a cabinet back to a TZ Centurion Bridge it is recommended to use UTP Solid CAT5e/6.

The maximum cable length from a TZ Centurion powered devices (Bridge or Multi Port Link) to a TZ TZ SMArt locking device is 100 m / 328 ft.

The Temperature, Humidity and Liquid sensors use 2 m / 6.6 ft. of standard 4-conductor cable that end in a terminal block. This plugs into the TZ Centurion Port Links. If necessary, the cable can be looped and secured or cut to length if distances are shorter.

The door sensors for the TZ SlideHandle locks have a 1.2 m / 4 ft. length of 2 wire cabling attached to them. They may be cut to length, as the cabling layout requires. Due to various cabinet designs and materials, door sensor placements have to be tested prior to final placement. Initial testing can be done with a volt-ohm meter or the “continuity / beep” function on a multi-meter. Final placement of the door sensors should be confirmed with the TZ Centurion system running to ensure that the contact closure is registering properly with the software interface. See the TZ Sensor manual for more detailed instructions.

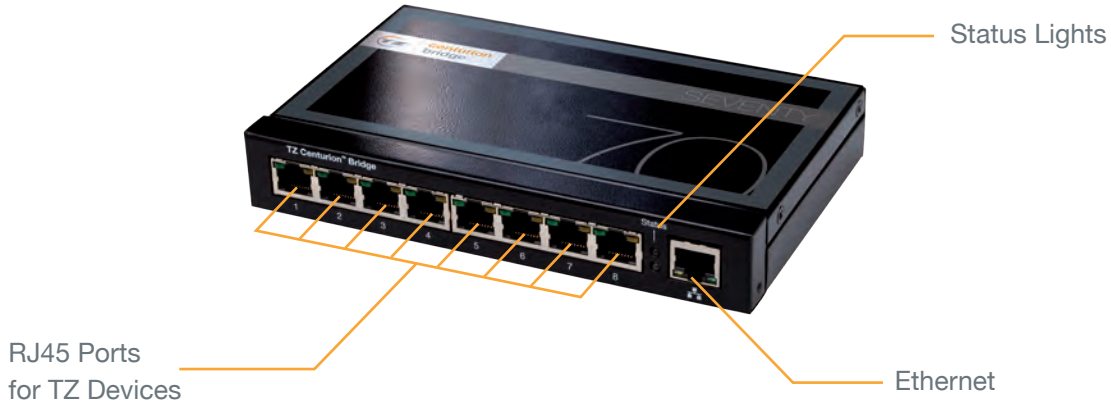


Figure 3: TZ Centurion™ Bridge front connections for TZ devices and the Ethernet connection

3. Electrical Connections and Indicators

The TZ Centurion™ Bridge has several different electrical connections and indicators. The front panel of the unit (shown in Figure 3) has the following connections and indicators:

- One RJ45 port used to connect to an Ethernet Local Area Network (LAN). The TZ Centurion Bridge may be powered via Power-over-Ethernet (PoE) through this port per the IEEE 802.3af standard for installation of eight devices or less. Note that the TZ Centurion Bridge is to be connected only to PoE networks routed within the facility.
- Two status LEDs.
- Eight RJ45 ports that accept RJ45 (8P8C) plugs used to make connections to the TZ device network. Note: These accept the same Category 5e/6 (Cat 5e/6) cabling used in Ethernet connections. However, the TZ Centurion Bridge communicates to devices attached to it (locks and readers) via RS-485 serial communications, NOT 802.3 Ethernet. These ports do not communicate with Ethernet or other computer networks. Only the cabling from TZ devices should be connected. TZ recommends the best practice of using a different colour of Cat 5e/6 cabling for the devices connected to the TZ Centurion Bridge than that used for Ethernet throughout the environment (e.g., blue for Ethernet, orange for TZ Centurion devices).

The rear panel of the unit (shown in Figure 4) has the following connections:

- One power port that accepts a 2.1 mm center positive 24V barrel plug from a compatible DC power supply
- Two 32VDC 5A auxiliary output dry contact switch connections.
- Two contact closure auxiliary inputs.
- One reset switch.
- One SDHC card slot used for additional logging and data storage capability. (The unit supports full size SDHC cards up to 2GB – no adapters or micro SD cards.)

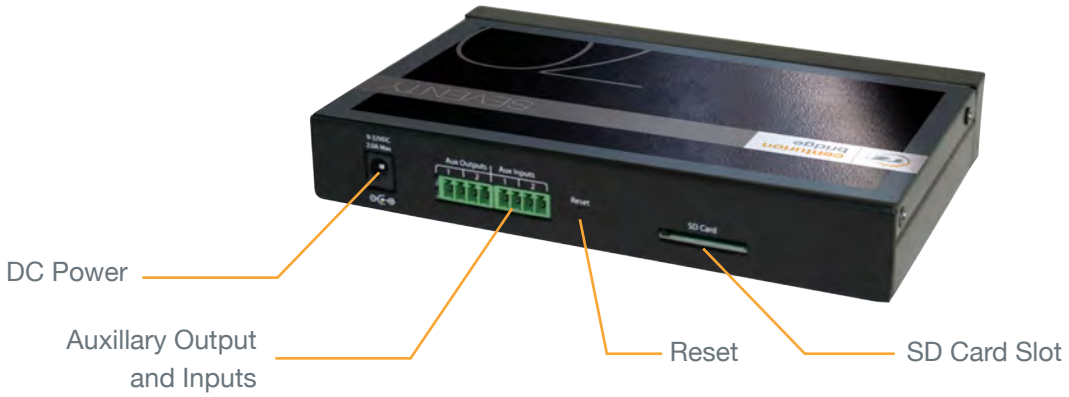


Figure 4: TZ Centurion™ Bridge rear connections for power, auxiliary analog sensors, auxiliary dry contact outputs, reset button and slot for an additional SDHC card

4. Connecting Devices

TZ SlideHandle and TZ Radial™ Intelligent locks, TZ Centurion Wiegand Translators and RFID Readers, and other devices are all plugged into any of the eight RJ45 ports on the face of the unit. Devices may be connected to the TZ Centurion Bridge with up to 100 meters of standard Cat 5e/6 cable.

More than one device can be connected to any leg that emanates from the TZ Centurion Bridge by daisy-chaining the connection through the use of TZ Centurion Port Link or Multi Port Link devices. If the device is farther than 100m from the TZ Centurion Bridge, it may be necessary to use a TZ Centurion Multi Port Link in order to connect a power supply physically closer to the device. If the TZ Centurion Bridge is powered via PoE (Power over Ethernet), then the maximum distance without additional power is 7m.

5. TZ Centurion Bridge Mechanical Installation

The TZ Centurion Bridge can be mounted to a wall or other solid surface via the two mounting slots on the bottom of the unit with either M3 or #6 pan head screws. When mounting, orient the unit so that the LEDs are visible and the necessary connections are accessible.

If anchors are used for the mounting screws, use an anchor that is appropriate for the material of the wall or surface. Make sure that the anchor is driven flush or sub flush to the wall, and drive the screws so that there is approximately a 1 mm (approximately 0.040 inch) gap between the wall and the bottom of the screw.

Place unit so that the screws go through the center of the mounting slots and push the TZ Centurion Bridge to the front or back so that the unit is secure.

Connect the TZ devices to the eight RJ45 ports in the front of the unit.

Connect the TZ Centurion Bridge to an available 10/100/1000Mbps port on the local Ethernet network by using Cat5/6 cable. If the Ethernet complies with the IEEE 802.3af Power-over-Ethernet standard, the unit will start up. Note that the TZ Centurion Bridge is to be connected only to PoE networks within the facility. If necessary, connect the 24V power supply to the jack in the back of the unit.

Note: The TZ Centurion Bridge may be connected to both PoE and a 24V power supply at the same time. In this case, the TZ Centurion Bridge will default to drawing power from the 24V power supply. In the event of a power outage on the 24V power supply, the TZ Centurion Bridge will power down and reboot using the PoE source if power is still being supplied over the Ethernet cable. When power resumes on the 24V adapters, the Centurion Bridge will automatically switch over.

To complete the installation and begin the configuration, it is necessary to find the IP address of the TZ Centurion Bridge and communicate with it via the web interface.

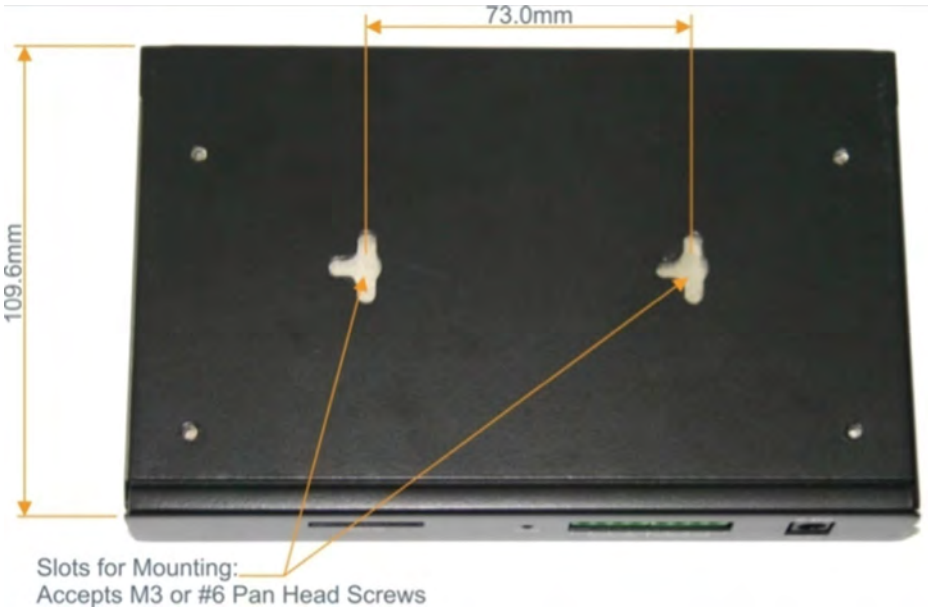


Figure 5: View of the slots on the bottom of the TZ Centurion™ Bridge used for mounting the device.

6. Locating and Viewing the TZ Centurion Bridge on the Network

6.1. Via a Directly Connected Computer

The TZ Centurion Bridge can be directly connected to a computer with an Ethernet port. If this method is used, simply open up a browser and type in the default IP address 169.254.1.1 in the URL.

To avoid IP conflicts, it is recommended that Wireless LAN (WLAN) connections are turned off while the TZ Centurion Bridge is connected to the PC/Laptop via the LAN port.

6.2. Within a Subnet

When plugged in to a Local Area Network (LAN) via an Ethernet connection, the TZ Centurion Bridge will make contact with the router or server running the Dynamic Host Configuration Protocol (DHCP) Server in order to obtain an appropriate IP address. In conjunction with a web browser, the IP address is used to view all information and configuration options for the TZ Centurion Bridge within a web browser window.

In order to find the IP address of the TZ Centurion Bridge, run the TZ Centurion Bridge Console Program found on the CD that is included with the unit. The program may also be downloaded from the website http://www.tz.net/products/tz-centurion. The program must be run on a computer that is running Microsoft Windows® 7 or higher that is on the same subnet as the TZ Centurion Bridge.

The TZ Centurion Bridge Console will display a screen showing the IP address, MAC address, and name of the TZ Centurion Bridge devices on the local subnet, as shown in Figure 6.

Either click on the TZ Centurion Bridge in question, or type the IP address for the appropriate TZ Centurion Bridge into an Internet web browser. You will be prompted for a user name and password. The default user name and password are both “admin.” As soon as your system is set up and running, these should be changed as described in Section 10. The remaining details for setting up the TZ Centurion Bridge and all of the connected devices are covered in the following sections.

Note: the TZ Centurion Bridge Console uses UDP port 30303 to communicate across your Ethernet network. If the Console application cannot find any TZ Centurion Bridge devices on your network, please check your MS Windows firewall to ensure that UDP port 30303 or the TZ Centurion Bridge Console application have been set as exceptions.

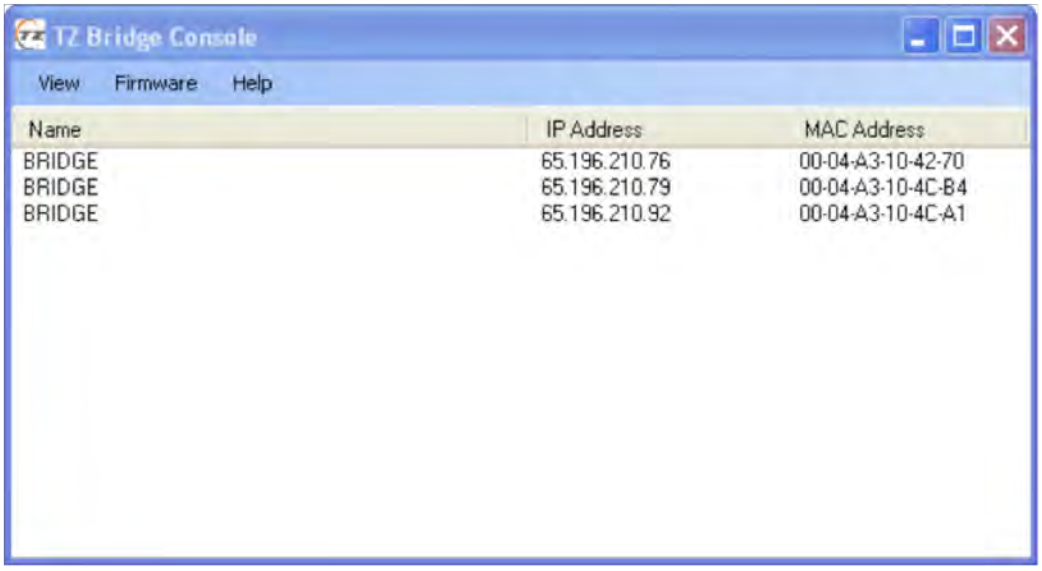


Figure 6: Screenshot of the TZ Centurion™ Bridge Console screen, locating two units on the local subnet

7. TZ Centurion Bridge Ethernet Configuration

Any and all settings and information pertinent to the version of Firmware, Ethernet, SNMP, or Auxiliary IO for the TZ Centurion™ Bridge are set in the System tab.

7.1 TZ Centurion™ Bridge Settings

Within the System tab, the first sub tab is labeled “About this Centurion Bridge” and it contains all of the basic product firmware and serial number information. The Primary and Secondary Name — which is only used when the device is located with the TZ Centurion Bridge Console, or when the TZ Centurion Server is used to control the device — are set in this sub tab. The units of measurement for the sensors (Celsius or Fahrenheit) are also set in this tab.

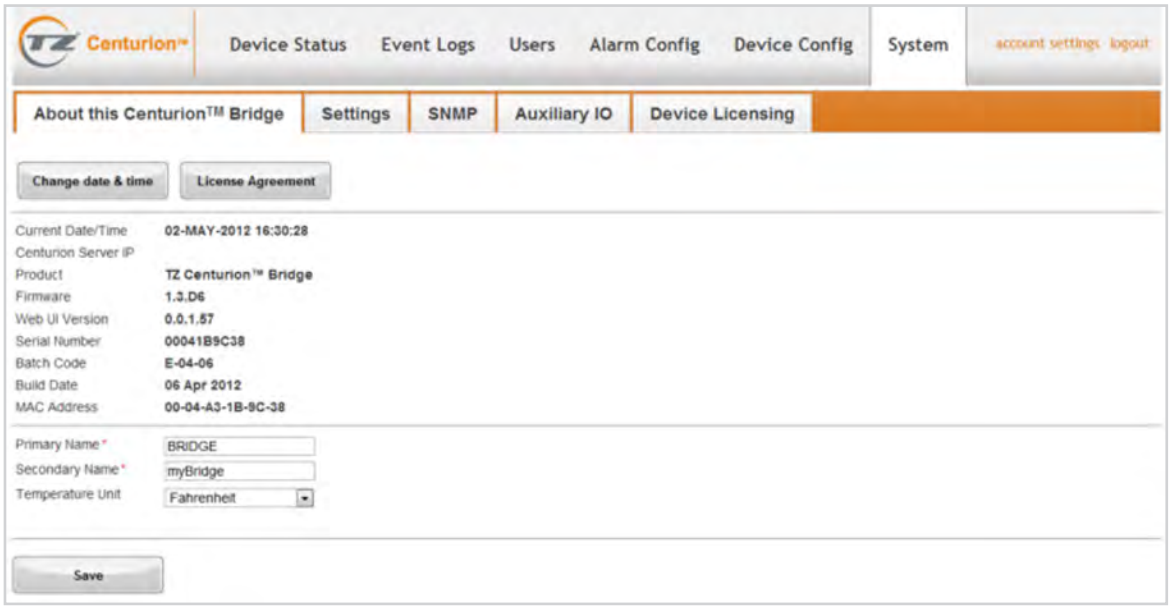


Figure 7: Information concerning the product firmware, serial number, and units of measurement are all found on the “About this Centurion Bridge” sub tab of the System tab.

7.2. Network Settings Sub Tab

All of the settings for how the TZ Centurion Bridge communicates with the local subnet, as well as many of the buttons that initiate communication with the TZ Devices are found in the Settings sub tab of the System tab as shown below:

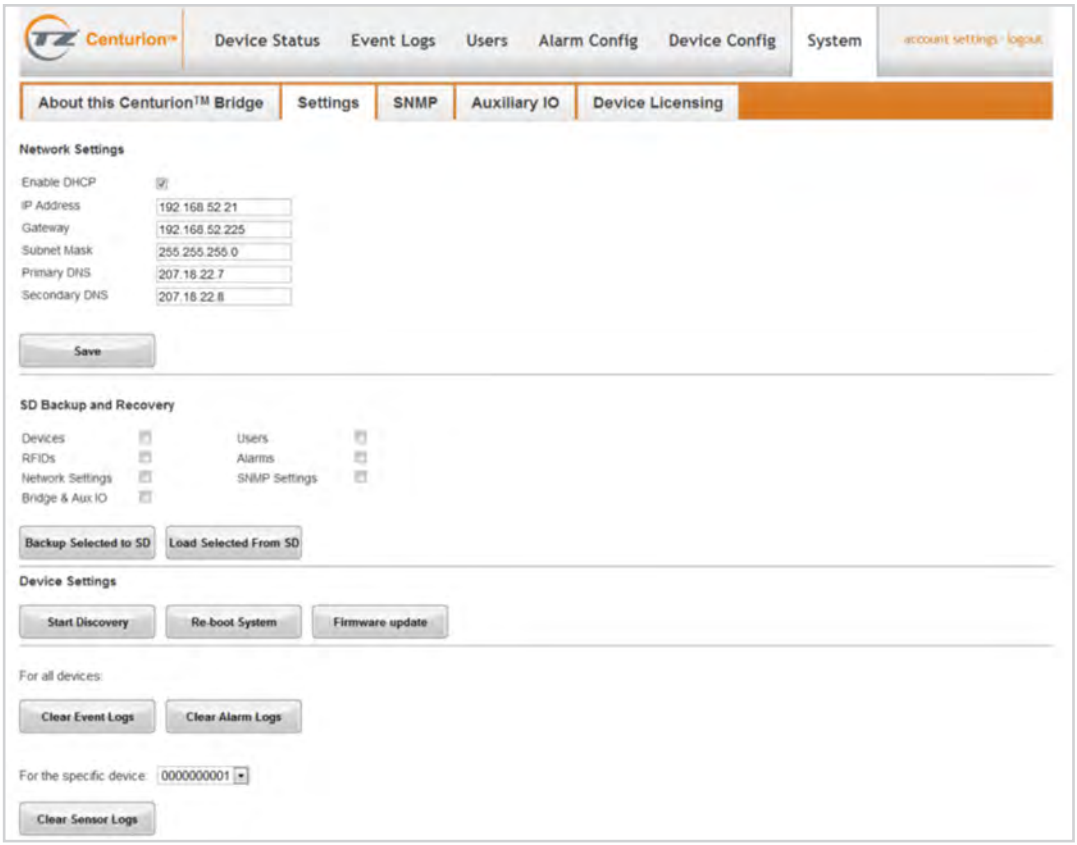


Figure 8: Ethernet, IP Settings, and control of the TZ Centurion™ Bridge are all found on the Network Settings sub tab of the System tab.

As a default, the TZ Centurion Bridge uses DHCP to dynamically retrieve an IP address. If DHCP is used, the IP address will likely change over time based on the IP lease policies of the local system administrator. But the IP address can always be found by using the TZ Centurion Bridge Console utility as described in Section 6.

TZ recommends using a Static IP Address when that option is available. Using a Static IP Address allows the URL/IP Address used to access the TZ Centurion Bridge to remain constant. Static IP Address is required when managing the TZ Centurion Bridges via the TZ Centurion Server. To setup a Static IP Address, simply uncheck the “Enable DHCP” checkbox, and the appropriate IP information can be typed into the appropriate fields below.

7.3 SNMP Configuration Sub Tab

The TZ Centurion Bridge implements a simplified version of community based Simple Network Management Protocol (SNMPv1 with community support and SNMPv2c) as an option to control many of the common TZ device functions. SNMP is most often used in conjunction with Network Management Stations (NMS) and Traps as a standardized way to control network attached devices (ie., printers, switches, servers).

The TZ Centurion Bridge uses standard SNMP query operations to synchronously monitor and set control variables of itself and attached devices. In addition, the TZ Centurion Bridge generates traps to asynchronously alert a listening trap consumer of system events. The SNMP Configuration page, shown below, allows the user to configure the SNMP agent on the TZ Centurion Bridge. Following is a brief description of what each setting does.

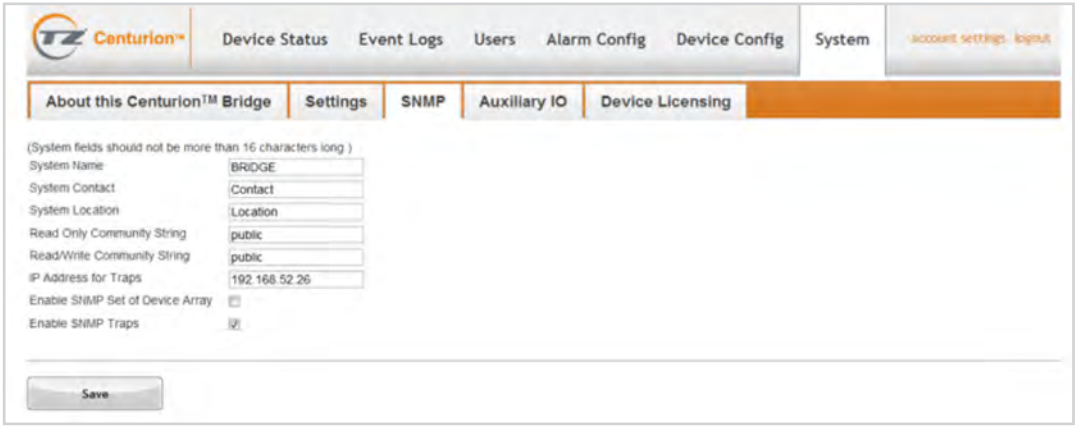


Figure 9: SNMP settings are all found on the SNMP sub tab of the System tab.

System Name:	Indicates the mib-2 standard system name of the device (mib-2.system.sysName). This field is read only, and corresponds to the "Primary Name" of the device as set in the "About" tab.
System Contact:	Field to set the mib-2 standard contact information for the device, usually a name, phone number, or email address (mib-2.system.sysContact).
System Location:	Field to set the mib-2 standard location information for the device (mib-2.system.sysLocation).
Read Only Community string:	Settable string indicating the community whose members can query (Get, GetNext) the The TZ Centurion Bridge's SNMP database, but not write (Set) the values. The Read Only community of the Bridge also acts as the SNMP Trap community.
Read/Write Community String:	Settable string indicating the community whose members have full access to the The TZ Centurion Bridge's SNMP database (Get, GetNext, Set). As a safety measure, the value of "allowEdit" in the enterprise specific section TZ MIB must be set before any device specific data can be changed. See details in the following section describing The TZ Centurion Bridge specific MIB entries.
IP Address for Traps:	Field to set the address of an SNMP trap consumer. The TZ Centurion Bridge allows a single trap consumer and assumes the trap community is the same as the Read/Write community.
Enable SNMP Set of Device Array:	Selecting this checkbox allows SNMP writes (Set) to the TZ Centurion Bridge's device array. More on writing to the device array via SNMP can be found in the "Enable Setting of Device Values" section below.
Enable SNMP Traps:	Selecting this checkbox enables the sending of traps to the specified SNMP consumer IP address.

Accessing SNMP data on the bridge requires the proper setting of community strings for both the bridge and the SNMP consumer (NMS device from which SNMP control/ monitoring will take place). For an NMS device to be able to read SNMP data from the bridge (i.e. ability to issue SNMP "Get" or "GetNext" requests), at minimum a string must be placed in the "Read Only Community String" field. This string acts as a password when trying to read the device's information from an NMS. For a network device to be able to write data to the settable SNMP fields (e.g., ability to issue SNMP "Set" requests), a private string must be placed in the "Read/Write Community String" field. An NMS device with the same Read/Write community string will have the ability to read and write SNMP data on the bridge.

7.3.1. Supported standard OIDs and Traps

The TZ Centurion Bridge implements the full complement of SNMP standard "system" (mib-2.1) Object Identifiers (OIDs), as found in the base internet.mgmt control structure. Many of these values are set in the SNMP Configuration Stub as described above. These values represent the general system information necessary to identify the device on the SNMP network.

In addition to the basic system information, the TZ Centurion Bridge implements the minimum standard SNMP traps. They are as follows:

- coldStart: Indicates the system has restarted, and a ROM value has been changed. This indicates that the device array has been reset or modified by use of the "reset" switch on the back of the bridge.
- warmStart: Indicates the bridge has gone through a normal maintenance reboot or user initiated power cycle. No changes were made to the internal ROM, and execution has been resumed normally.
- authenticationFailure: Indicates a network device has attempted to access (Get) SNMP information on the bridge without proper community authentication.

7.3.2 MIB file and Enterprise specific OIDs

A full complement of device specific OIDs have been created to handle control of TZ specific parameters. These parameters are described in the TZ-(xx).mib, included on the CD that came in the box, or which can be downloaded from the following link: http://ixp.tz.net/tz-centurion. The TZ mib file is updated to describe additional TZ devices periodically, but this document will only go over the centurionBridge section (OID: private.enterprises.tz.1).

The Centurion Bridge OIDs are separated out into three sections: product, setup, devices. Each section and corresponding database entries are described below. For a quick reference, comments have been entered into the MIB file to describe each data point along with setting and translation hints.

7.3.2.1 Product Section (OID: .tz.centurionBridge(1).1)

The "product" section of the mib file describes specific property values of the product.

Name	OID	Access	Type	Description
name	.1	Read Only	String	Product name
version	.2	Read Only	String	Firmware version of device
date	.3	Read Only	String	Firmware build date of the device

7.3.2.2. Setup Section (OID: .tz.centurionBridge(1).2)

The “setup” section of the mib file describes trap consumer information.

Name	OID	Access	Type	Description
trapNumber	.1	Read Only	Integer	Number of trap listeners supported (Set to 1)
trapTable	.2	N.A.	Sequence Table	OID space holder for the table holding trap consumer information
trapEntry	.2.1	N.A.	Table Entry	OID space holder for entry in trapTable
trapReceiverNumber	.2.1.1	Read Only	Table Key	Position Key of table entries
trapEnabled	.2.1.2	Read/Write	Integer (bool)	Value set to 1 enables the sending of traps. Value set to 0 disables the sending of traps. Corresponds to the value of the “Enable SNMP Traps” checkbox.
trapReceiverIP Address	.2.1.3	Read/Write	IP Address	The IP address to which traps will be send when enabled.
trapCommunity	.2.1.4	Read/Write	String	Community string traps are sent to for NMS devices that support this feature.

7.3.2.3. Devices Section (OID: .tz.centurionBridge(1).3)

The “devices” section of the TZ mib file exposes specific device control variables and traps for accessing and controlling TZ locks and other devices attached to the Bridge. The following sections define the values, traps, and control variables in the devices section of the TZ mib file.

7.3.2.3.1. Device Overview

The “devices” section of the mib file exposes specific device control variables and traps for accessing and controlling TZ locks and other devices attached to the Bridge. Each device has a list of entries in a table called “deviceTable”. The number of entries in the table is hard coded according to the “deviceNumber” object. When accessing a device, the terminating OID number indicates the device offset in the table starting with a zero offset. Querying a device that doesn’t exist will return default table values.

Example 1: The “Open” state of the fourth device in the table would be at the following OID:
tz.centurionBridge.3.2.1.6.3

Example 2: The primary name of the 10th device in the table would be the following OID:
tz.centurionBridge.3.2.1.2.9

7.3.2.3.2. Device Values

The following table details the readable values of the deviceTable section as well as the deviceNumber value that defines the table size.

Name	OID	Access	Type	Description
deviceNumber	.1	Read Only	Integer	Number of devices supported corresponds to the number of entries in the device Table
deviceTable	.2	N.A.	Sequence Table	OID space holder for the table holding device info
deviceEntry	.2.1	N.A.	Table Entry	OID space holder for entry in device-Table
deviceInde	.2.1.1.[0:deviceNumber-1]	Read Only	Table Key	Position Key of device in table
deviceName	.2.1.2.[0:deviceNumber-1]	Read/Write	String	Device primary name
deviceName2	.2.1.3.[0:deviceNumber-1]	Read/Write	String	Device secondary name
humidityAlarm	.2.1.13.[0: deviceNumber-1]	N.A.	Integer	This trap is sent when a user defined humidity alarm is detected, and sent again when the alarm is cleared. The table below describes values returned by this trap
temperatureAlarm	.2.1.14.[0: deviceNumber-1]	N.A.	Integer	This trap is sent when a user defined temperature alarm is detected, and sent again when the alarm is cleared. The table below describes values returned by this trap

7.3.2.3.4. Humidity and temperature alarm value translation

Devices with a humidity sensor and/or temperature sensor attached will send an alarm with a 32 bit integer to indicate the state of the alarm, the value of the alarm, and the position of the alarm. The following table explains how to decipher this integer.

Alarm	Bytes	Bit	Translation
Humidity	0,1	-	Current Reading (%) x 10 (eg. 250 (decimal) = 25%)
Temperature	2	0,1	Associated Input 01(binary) = Device attached to Input 1 10 (binary) = Device attached to input 2 00 = invalid
		2-6	Unused
		7	Status of Alarm 1 = Alarm has been set 0 = Alarm was set, but has been cleared
	3	-	Unused
Temperature	0,1	-	Current Reading (Unit Dependent) x 10 (eg. 270 (decimal) = 27°C) (eg. 720 (decimal) = 72°F)
	2	0,1	Associated Input 01 = Device attached to Input 1 10 = Device attached to input 2 00 = invalid
		2-6	Unused
		7	Status of Alarm 1 = Alarm has been set 0 = Alarm was set, but has been cleared
	3	-	Unused

7.3.2.3.5. Enable Setting of Device Values

The final value in the devices section of the TZ mib file is the “allowEdit” tag (OID: .tz.centurionBridge.devices.3.0). This tag represents an integer with a Boolean value that, when set to 0, effectively write locks the settable deviceTable values. The value of this corresponds to the current setting of the “Enable SNMP Set of Device Array” as found on the “SNMP Settings tab”. The allowEdit tag serves as a safety measure against accidently changing device values. Because edits to the deviceTable are only aloud when allowEdit is set to 1 (1 and 0 are the only accepted values), it is highly recommended that allowEdit is normally set to 0 to safeguard from unintended changes to the deviceTable.

7.4 Auxiliary IO Sub Tab

Setting for the inputs and outputs on the bridge can be found in the Auxiliary IO sub tab as shown below:

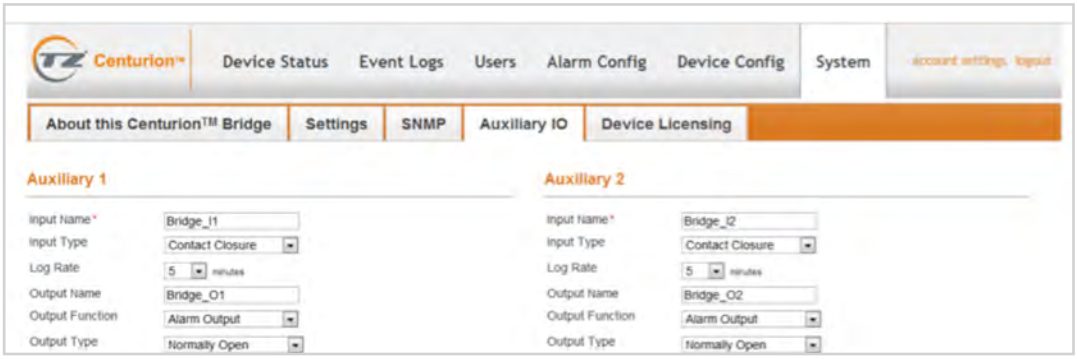


Figure 10: Bridge Auxiliary IO settings are all found on the Auxiliary IO sub tab of the System tab

TZ Centurion Bridge Auxiliary IO settings follow a similar pattern to device settings discussed later in this document. Configurable values include a name for each input and each output, as well as logging behaviour and functionality. The Bridge's inputs are simple digital contact closures, and are always set accordingly. The Bridge's Auxiliary outputs have two different settable functionalities. The default Output Function for these outputs is as an alarm indicator. Setting an Auxiliary output as Alarm Output enables it to be actuated in the event of an alarm. This setting works in conjunction with the Output Type when applied to an alarm (see Configuring Alarms section below). When used in this way the output will indicate an associated alarm has happened by either opening (Output Type: Normally Closed) or closing (Output Type: Normally Open).

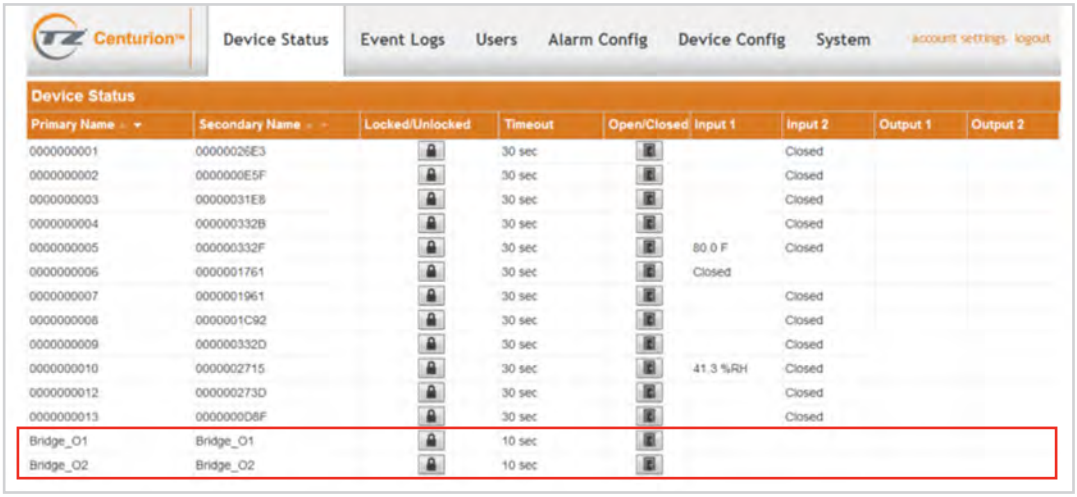


Figure 11: Bridge Auxiliary outputs as Solenoid devices

In addition to the Alarm Output setting, the Bridge's Auxiliary outputs have a Solenoid option. When set to Solenoid, the specified output will take on the properties of a lock device on the system. Figure 11 above shows both of the available outputs as solenoids. This feature allows the Bridge's Auxiliary outputs to actuate different kinds of locking devices, such as standard magnetic electronic locks, while providing the same access controls as a TZ lock. This is useful, for example, to provide web and/or RFID access to third party systems using the same mechanisms as with the TZ SlideHandle™.

7.5. Device Licensing Sub Tab

Typically, the TZ Centurion™ Bridge is provided with a license already loaded right out of the box, but in some cases it might be necessary reinitialise a license in the field. Valid licenses can be entered into the Device Licensing sub tab of the System tab as shown below.

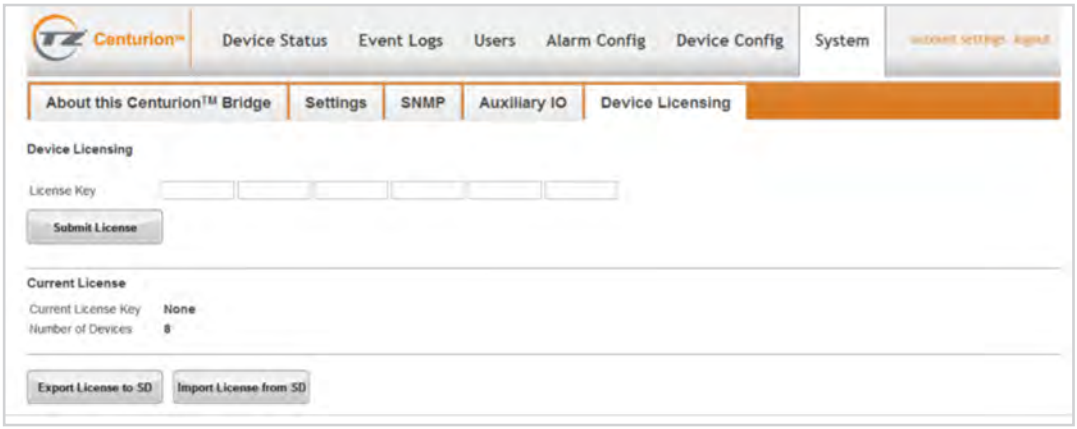


Figure 12: Device Licensing sub tab can be found under the System tab.

A TZ Centurion Bridge's current license can be manually stored to an SD card using the "Export License to SD" button. When necessary, licenses can then be reinstalled using the "Import License from SD" button. Successfully entered licenses will result in a "License Check Successful" popup message. Unsuccessful license updates will result in a "License Check Failed" message popup message with additional information to prompt the user for action. Failed license checks can be the result of invalid or incorrectly typed license keys, or the need for a firmware upgrade.

For more information on obtaining additional licensing for a TZ Centurion Bridge, please contact your TZ sales representative.

7.6 Device Status Tab

Upon first logging in to the configured TZ Centurion™ Bridge, the user is presented with a page that shows the status of every device that the user has permission to see, as shown below in Figure 13.

Figure 13: The Device Status tab shows the status of every device monitored by the TZ Centurion™ Bridge. It is the default view presented when a user logs in.

The status of every TZ Radial or TZ SlideHandle, the output from every sensor and the presence of any RFID reader or card reader can be seen from this page. The specific meaning of the lock and door icons is portrayed in Table 1 on the following page. To open a particular lock, click on the door sensor  icon.

The lock will open immediately, and the door state icon should change from closed  to open  . If the device is a TZ SlideHandle or if a door sensor (i.e. a reed switch or similar) is connected, then when closing, the open  icon will only change to the closed  icon when the sensor also reports a closed door.

To unlock or enable locks to be opened with a simple “Push to release”, click on the locked  icon and it will indicate a change to the unlocked  icon and the Unlock Timeout will begin counting down. Reconfiguring the TZ Radial devices and the sensors connected to them is discussed in the next section.

TZ SlideHandle™	Device Status	Door State	Description
Solid Red 	 Locked	 Closed	Handle is down, unlocking is not enabled, door is closed
Solid Green 	 Locked	 Open	Handle is up (via authorised access), unlocking has timed out, door is open
	 Unlocked *Push down on top of handle to unlock*	 Open	Handle is up (via authorised access), unlocking is enabled, door is open
Flashing Orange 	 Unlocked *Push down on top of handle to unlock*	 Closed	Handle is down, unlocking is enabled, door is closed
		 Open	Handle is down, unlcoking is enabled, door is open (For example, after handle was inadvertently closed with the door open)
Flashing Red 	 Locked	 Open	Handle is down, unlcoking is not enabled, door is open
	 Error	 Error	Handle opended with key Communication problem

Table 1: Explanation and behavior of icons and TZ SlideHandle™ in the Device Status tab

8. Configuring TZ Network Devices (Network)

During the first log in session, and any time a new device is added to the network, the TZ Centurion™ Bridge must be instructed to discover the device within its network. This is done by clicking on the “Start Discovery” button found under the Settings subtab of the System tab – as shown below in Figure 14.

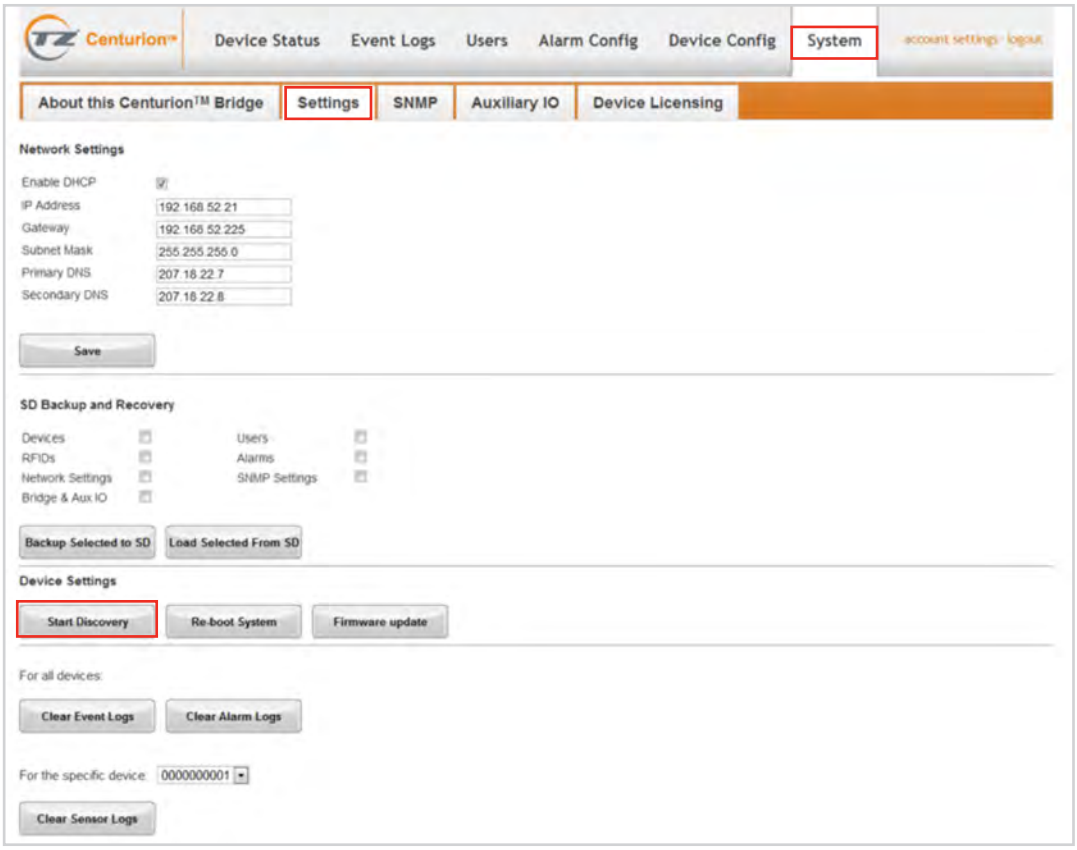


Figure 14: The Start Discovery button tells the TZ Centurion™ Bridge to check for new devices on its own RS-485 network

Once this is done, go back to the Device Config tab and click the “Edit” button to display a screen that allows specific settings to be edited for each specific device as explained in the next sections.

8.1. Configuring TZ Radial™ Devices

If there are any TZ Radial locks in the network, clicking on the corresponding "Edit" link will bring up a window that allows much of the information to be edited, as shown in Figure 15.

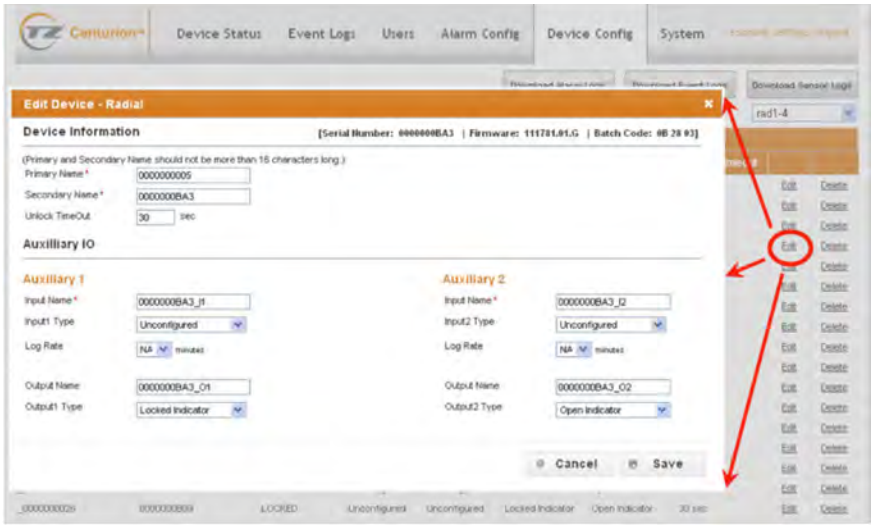


Figure 15: Configuring a TZ Radial™

The fields are used as follows:

Primary Name:	This is the name used to designate this device from other devices throughout this web interface. Using a meaningful and easily recognisable string in this field can simplify network set up and management. The initial default is a number assigned during the device discovery process. Note: TZ recommends using names that easily identify the location of the device in your environment.
Secondary Name:	This is an additional text field that can be used to store additional info about the TZ Radial™ (e.g., location, cabinet number, etc.) The initial default is the serial number of the device.
Unlock TimeOut:	In some applications, the TZ Radial is not unlocked directly. Rather, it is put into a mode (push-to-release) that waits to sense a push on the door to which the device is attached. When the TZ Radial™ senses this pressure, it automatically ejects the stud, thus opening. The Unlock TimeOut field defines how long the TZ Radial™ stays in this "ready" mode.
Auxiliary Input Name:	String used to describe the device attached to the auxiliary input (temp sensor, humidity sensor, etc.).
Auxiliary Input Type:	There are different types of sensors that can be attached to the auxiliary inputs of a TZ Radial™ lock. The choices are N/A, Temperature, Relative Humidity, Contact Closure and a Liquid / Leak sensor. Use this drop down to designate what type of sensor is connected to each lock.
Auxiliary Log Rate:	Data from the sensors can be logged for later review. The rate at which data is stored is designated with this drop down.
Auxiliary Output Type:	• Locked Indicator: will turn on (sink current) when the TZ SlideHandle or TZ Radial is locked. • Unlocked Indicator: will turn on (sink current) when the TZ SlideHandle or TZ Radial is unlocked. • Open Indicator: will turn on (sink current) when the associated Auxiliary Input is connected to a contact closure / door sensor, and the door is open. • Alarm Output: the output will depend on an alarm, which will depend on the Auxiliary Input of some other TZ device.

8.2. Configuring RFID Readers

If there are any RFID readers or Wiegand devices on the TZ network, they will show up on the Device Configuration tab (not the Device Status tab) and their basic information can be found and edited by clicking the appropriate Edit link as shown in Figure 16 below.

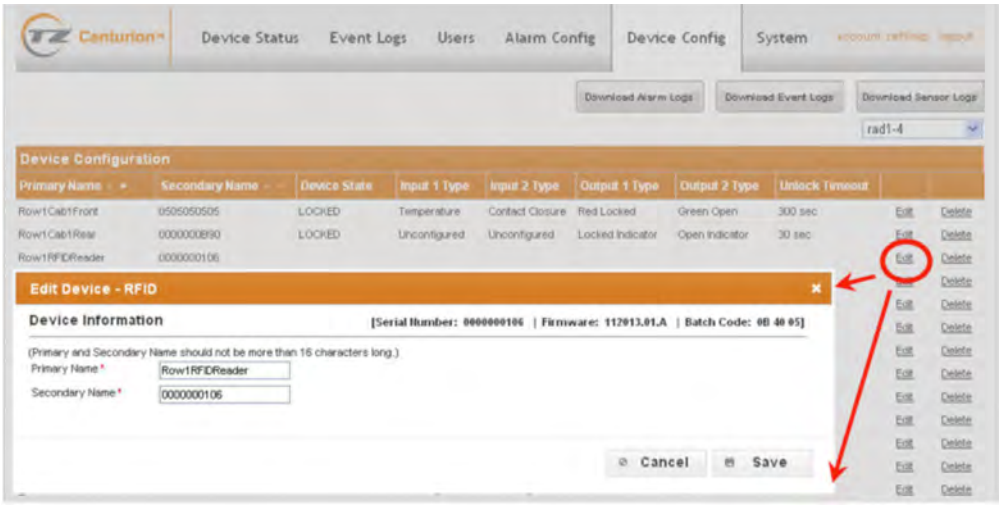


Figure 16: Configuring a TZ Centurion™ RFID Reader

8.3. Configuring TZ SlideHandle™ Locks

Configuring TZ SlideHandle Intelligent Locks is similar to configuring TZ Radial Intelligent Locks, although some information may not be editable in order to reflect specific functionality differences in the hardware (e.g., TZ SlideHandle AuxIn2 is configured to be a door sensor.) This is shown in Figure 17 below:

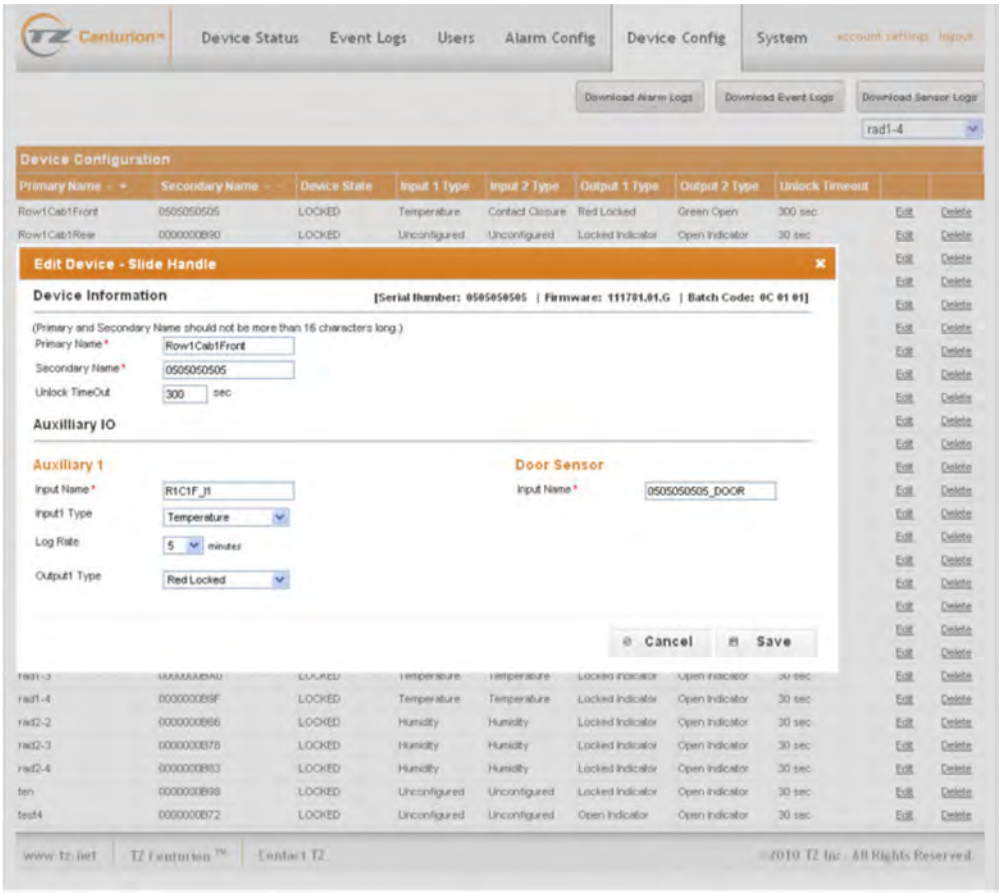


Figure 17: Configuring a TZ SlideHandle™

8.4. Downloading Logs

Under the Device Config tab, there are buttons which allow users to download the different logs stored within the non-volatile memory of the TZ Centurion Bridge.

8.4.1. Download Sensor Logs

Clicking this button will download a comma separated text file containing all of the recorded sensor readings.

8.4.2. Download Alarm Logs

Clicking this button will download a text file containing all of the details of whenever an alarm was activated or deactivated.

Clicking this button will clear the internal log of all of the non-alarm events (e.g. doors being opened, cards being swiped, users being added to the system, etc.) from non-volatile memory.

8.4.3. Download Event Logs

Clicking this button will download a text file containing the details of all the non-alarm events. (e.g., doors being opened, cards being swiped, users being added to the system, etc.)

8.5. Other Buttons under the System tab

The buttons for Re-booting the System, updating the TZ Centurion Bridge firmware, or clearing either the different logs are all found on the Settings sub tab of the System Tab as shown in Figure 18 below:

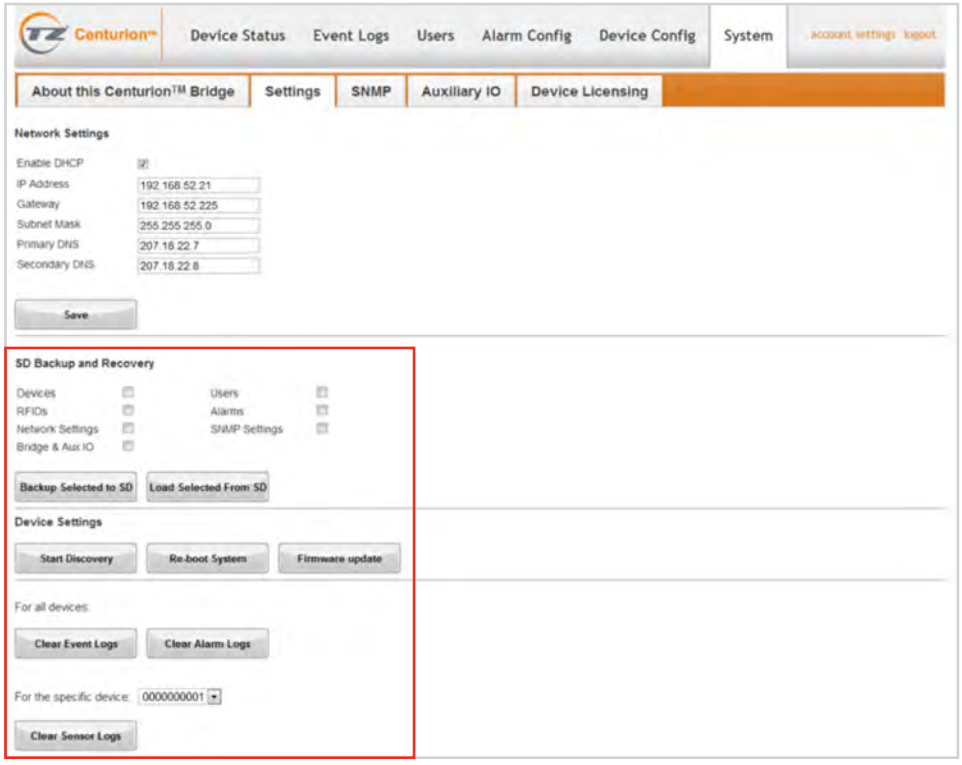


Figure 18: The SD Backup and Recover Functions, Re-boot System, Firmware Update, Clear Event Logs, Clear Alarm Logs, and Clear Sensor logs buttons are all found on the Settings sub tab of the System tab.

8.5.1. SD Backup and Recovery

For quick recovery or information in the event of miss configuration or hardware reset, the TZ Centurion Bridge has the ability to backup to and recover from an installed SD card. To maintain information granularity and allow the user to save and recover certain information while discarding other information, the backup and recovery functions separate data into logical chunks that can be selected for backup or recovery via provided check boxes. Each check box is named according to the data type it is associated with. Selecting a check box and then pressing "Backup Select to SD" button will result in the selected data being written in files to the SD card's "./BACKUP" directory. Similarly, selecting a check box and pressing the "Recover Selected from SD" button will result in the system locating the specific data on the SD card and, if the file exists, loading the data back into the TZ Centurion Bridge. Further information on each specific data chunk and associated backup file is detailed in the following sections.

- Devices: The "Devices" data includes all the information found under the "Device Config" main tab. This includes the following information for each devices: the primary and secondary names, unlock timeout setting, input names, input types, input log rates, output names, output types, serial number, firmware, and batch code. When checked during a backup function, the resulting file will be named "TZDev.dat." When checked during a recovery function, the system will look for the "TZDev.dat" file and, if found load the data contained within back into the onboard device table.
- RFIDs: The "RFID" data includes all RFIDs stored under the "Users/RFID" Tab including the RFID number, user name, and access credentials. When checked during a backup function the resulting file will be named "TZRFID.dat". When checked during a recovery function, the system will look for the "TZRFID.dat" file and, if found, will load the data contained within back into the onboard RFID user table.
- Network Settings: The "Network Settings" are those found under the "System/Settings" tab. This includes the DHCP settings, IP Address, Gateway, Subnet Mask, and Primary and Secondary DNS. When checked during a backup function, the resulting file will be named "TZIP.dat." When checked during a recovery function, the system will look for the "TZIP.dat" file and, if found, will load the data contained within back into the Network Settings.
- Bridge & Aux IO: The "Bridge & Aux IO" data includes the user settable information under the "System/About this Centurion™ Bridge" tab, including the Bridge's Primary and Secondary names as well as the Temperature Unit selection. In addition, the Bridge's Auxiliary I/O settings are also saved with this checkbox. Auxiliary I/O information includes the Primary and Secondary Input and Output names, Input log rates, Input and Output Types, and the Output Function settings. When checked during a backup function, the resulting file will be named "TZBridge.dat." When checked during a recovery function, the system will look for the "TZBridge.dat" file and, if found, will load the data contained within back into the Bridge's non-volatile onboard memory.
- Users: The "User" data includes all the users stored under the "Users/LOGINS" tab including the Login Name, Password, Full Name, Web Permission and access credentials. When checked during a backup function, the resulting file will be named "TZUsers.dat". When checked during a recovery function, the system will look for the "TZUsers.dat" file and, if found, will load the data contained within back into the user table.
- Alarms: The "Alarm" data includes any alarm that has been setup under the "Alarm Config" Tab. This information includes the alarm Title, Source, Min and Max Triggers, Min and Max Reset and alarm Action. When checked during a backup function, the resulting file will be named "TZAlarm.dat". When checked during a recovery function, the system will look for the "TZAlarm.dat" file and, if found, will load the saved alarms back into the Alarms table.
- SNMP Settings: The "SNMP" data includes all the information found under the "System/SNMP" tab. This includes the System Name, System Contact, System Location, Read Only and Read/Write Community Strings, Trap Receiver IP Address, and Enable feature settings. When checked during a backup function the resulting file will be named "TZSNMP.dat." When checked during a recovery function, the system will look for the "TZAlarm.dat" file and, if found, will load the saved SNMP settings back found within back into the Bridge's non-volatile onboard memory.

8.5.2. Re-boot System

Clicking this button will perform a soft reboot of the system. All devices and settings of the system are kept and reread from non-volatile memory when the system re-boots.

8.5.3. Firmware Update

Clicking this button will bring up a screen where binary files containing new firmware and/or new web pages can be uploaded. The binary files will end in ".tar" and are made available by TZ as new software releases and updates.

If the .tar file contains additions to the web UI, the user will be guided through additional screens that reload the new webpage into the browser.

If the .tar file contains new operating firmware, the device will automatically beep and reboot after a few seconds to organize the data internally.

8.5.4. Clear Event Logs

Clicking this button will clear all of the event logs from non-volatile memory.

8.5.5. Clear Alarm Logs

Clicking this button will clear all of the alarm logs from non-volatile memory.

8.5.6. Clear Sensor Logs

Clicking this button will clear all of the data of the specified sensor from non-volatile memory.

9. Event and Alarm Logs

An "event" occurs every time a TZ Radial or TZ SlideHandle is opened or closed, an RFID is swiped (even if it does not open anything), or if any user / RFID information has been added or changed. An "alarm" is a test or condition that is defined using the different sensors within the network — and the alarms themselves are defined in the "Alarm Config" tab discussed in Section 0. Both events and alarms are displayed in the "Event Logs" tab shown below in 19.

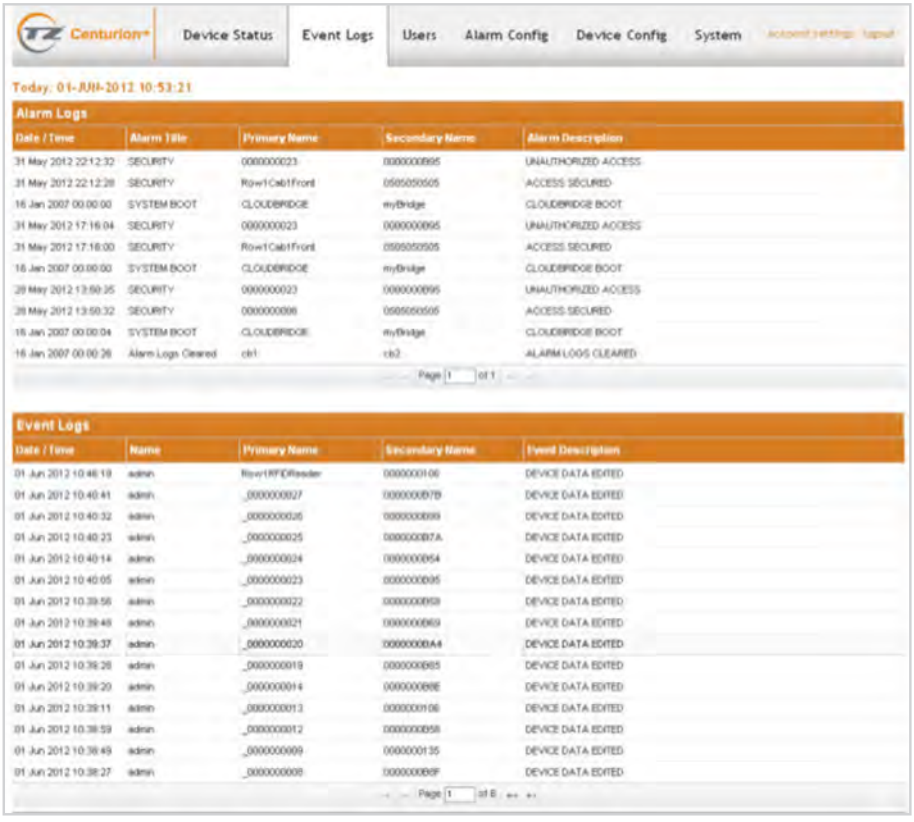


Figure 19: The most recent events and alarms are presented under the Event Logs tab.

9.1. Configuring Alarms

Alarms can be created for any condition that can be detected by any single sensor in the TZ network. When an alarm is triggered, one of several things may happen:

- The time and date of the occurrence is logged.
- Dry contact switches can be used to control other devices through use of the Auxiliary Output pins on the unit.

This functionality is primarily defined through the “Alarm Config” tab, although some preliminary set-up may be required in the “Device Config” tab.

If the reading from a particular sensor is to be used for the alarm, then confirm that the sensor is configured correctly. For example, if an alarm is required to monitor temperature – then make sure that a temperature sensor is connected to the appropriate radial, and as shown in Figure 21 under the “Device Config” tab the input type of that particular Radial should be set to Temperature. The name placed in the “Input Name” will be necessary when defining the alarm – so if appropriate, it may be changed here as well.

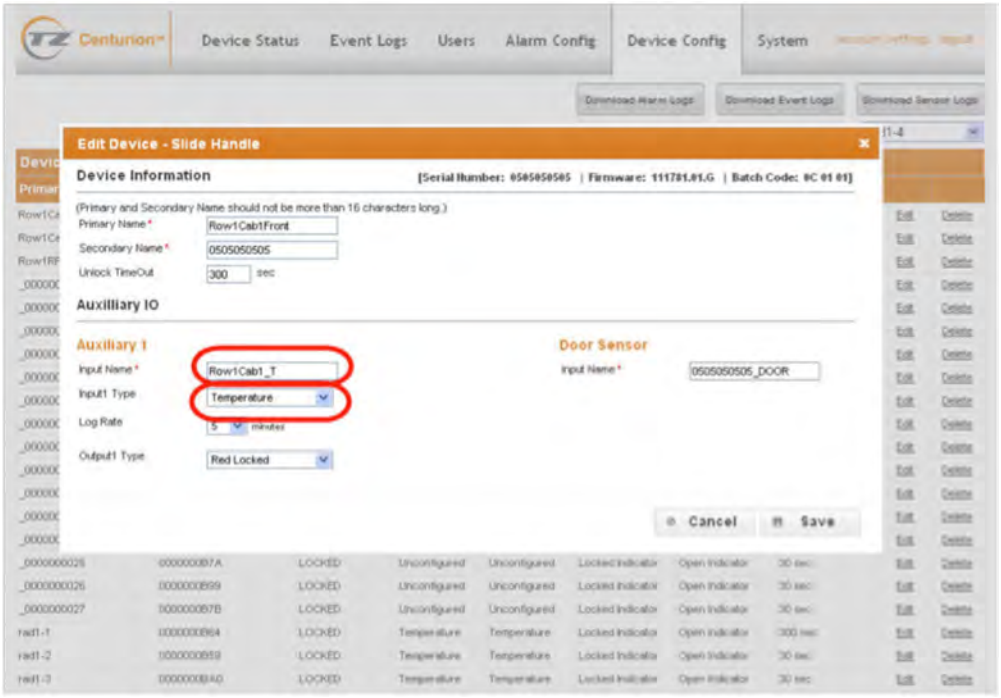


Figure 20: Confirming that a sensor that is connected to a radial is configured properly for use as an alarm.

Under the “Alarm Config” tab, clicking on the “Add Alarm” button brings up the following screen:

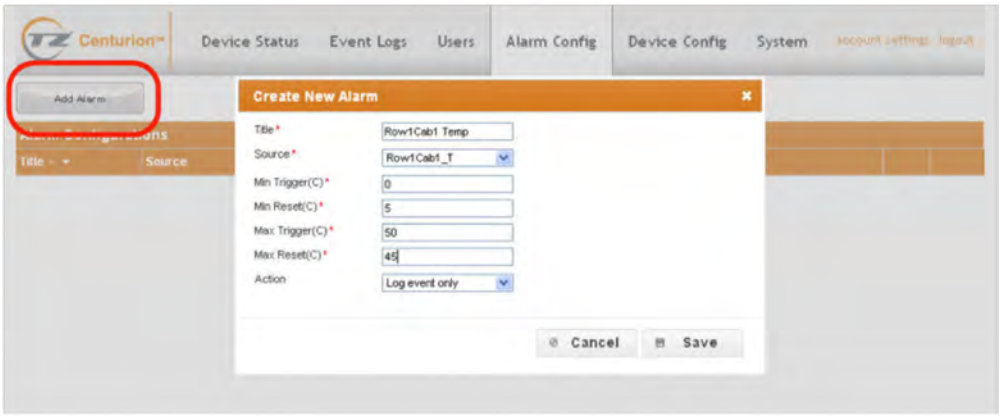


Figure 21: Defining a new alarm.

The resulting window displays all of the fields needed to define an alarm:

- Title: Enter a Title name, using up to 15 characters including blanks and punctuation that identifies the particular alarm. This text will appear in the alarm log and on the “Event Logs” tab if the alarm is ever tripped.
- Source: Select the appropriate sensor by choosing the proper input from the “Source” dropdown box.
- Minimum Trigger and Reset Values: When the reading from a sensor reaches below the Minimum Trigger value, the alarm will activate and will continue to be active until the reading rises above the Minimum Reset value.
- Maximum Trigger and Reset Values: When the reading from a sensor exceeds the Maximum Trigger value, the alarm will activate and will continue to be active until the reading rises above the Maximum Reset value.
- Action: Select the appropriate action from this drop down.

If the status of any alarm changes, a trap will be sent to the IP address that is specified under the SNMP sub tab of the System tab.

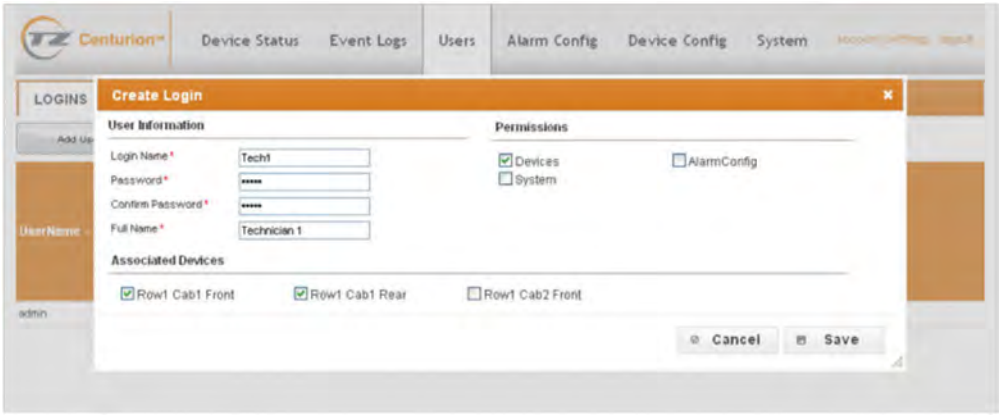


Figure 22: Creating a login so another user can view portions of the connected network over the internet.

10. Adding and Modifying User Accounts

User accounts and RFID cards are created and managed in the Users tab. Only the people with appropriate administrative privileges can add users and assign RFID cards, and there is only one administrative login for each box. By default, this account uses the login “admin” and password “admin”, and this will always be the first login presented on the web page. The login and password should be changed upon installation using the same basic procedure outlined in Section 9.1.

10.1. Creating or Editing a New Login Account

New login accounts are created through the Logins sub tab under the Users tab. Login Users are users who will have access to the TZ Centurion Bridge management interface to add devices, set alarms, add RFID users and view log events. The TZ Centurion Bridge supports up to 16 Login Users.

Clicking on the “Add User” button will bring up the above screen.

Enter the appropriate information in the Login Name, Password and Full Name fields, and check all of the devices that this user should be able to view when he or she is logged in.

The check-boxes under the Permissions label are used to determine which tabs the user can view when they log in. They are as follows:

- **Devices:** The user will be able to view and edit all of the settings of the individual devices in the TZ network via the “Device Config” tab.
- **Users:** The user will be able to add additional login users via “Logins” sub tab under the “Users” tab.
- **Alarm Config:** The user will be able to define alarms via the “Alarm Config” tab.
- **System:** The user will be able to view and edit the Network Settings (IP address, etc.), SNMP trap information, and Auxiliary IO settings via the sub tabs under the System tab. The “Edit User” screen is essentially the same and is used to change any of this information for an existing user.

10.2. Adding or Modifying RFID Accounts

In order for an RFID card to be recognized and given access to the system, it must be added through the use of the Users / RFID tabs. The process is started by clicking the “Add RFID” button to bring up the “Create RFID User” screen. The RFID card should then be swiped into any of the system’s readers, and the remaining information (user name and which devices the user should have access to) should be entered as shown in Figure 24.

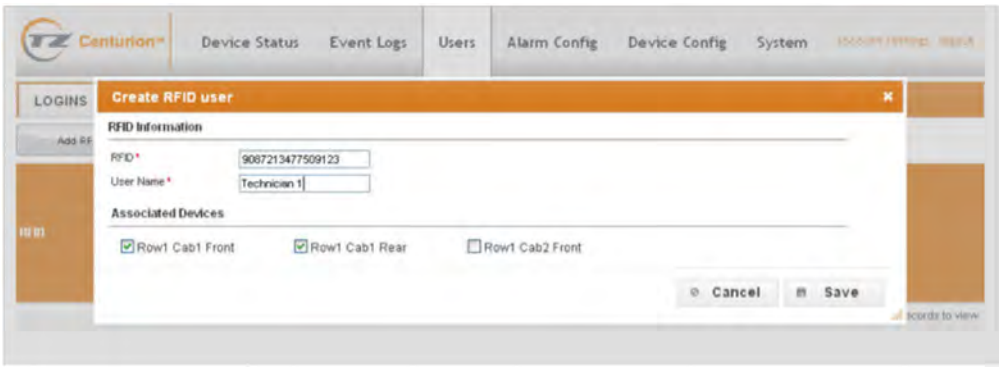


Figure 24: Setting up an RFID so that a user can open specific cabinets.

The “Edit RFID” screen is essentially the same, and is used to modify information for an existing RFID card.

11. Resetting the Device and Recovering Configurations

If the TZ Centurion Bridge is not operating properly, the unit can be reset and rebooted by disconnecting and reconnecting the power. The unit will reset, and all of the configurations, definitions and log entries (e.g. what devices are connected, what users are allowed to do, and what alarms are defined) will be reread from non-volatile memory.

To perform a full factory reset, insert a paperclip or similar object through the small hole labeled “Reset” on the rear of the unit. Press and continue to hold the button within while reconnecting the power. The unit should beep once, pause, and at the beginning of the second beep the unit will erase the internal non-volatile memory.

Appendix 1: Specifications

Specifications Overview

Specifications subject to change to suit particular application requirements.

Physical And Mountings

> Dims: 173mm x 110mm x 28mm (6.8” x 4.3” x 1.1”)

> Weight: 540 g (1.2 lbs)

> Mounting: Screws through bottom

CAUTION:

This product should not be installed in a way that compromises the Ingress Protection (IP) rating of the enclosure in which it is mounted. Do not drill or otherwise produce metal shavings around electronic equipment.

Environmental and Performance

> Operating temperature: -15°C to +55°C (+5°F to +131°F)

> Storage temperature: -55°C to +85°C (-67°F to +185°F)

> Humidity (operating): 95% RH at 50°C (122°F)

> Non-combustible

> Ingress protection: IP 21

Electrical

> Supply voltage: 12/24VDC

> Power usage: 1W (does not include connected devices)

> 1 x Ethernet Port, Power-over-Ethernet IEEE 802.3af

> 2 x Dry Contact outputs, 32VDC 5A (Active when powered with external 24V DC power supply only)

> 2 x Contact Closure auxiliary inputs

> SD card port

> RS-485 multi-drop communications interface via RJ45

> RJ45 pin out: 1: +Coms | 2: -Coms, 3 & 4: Not Used | 5: Gnd | 6 & 7: Not Used | 8: +V

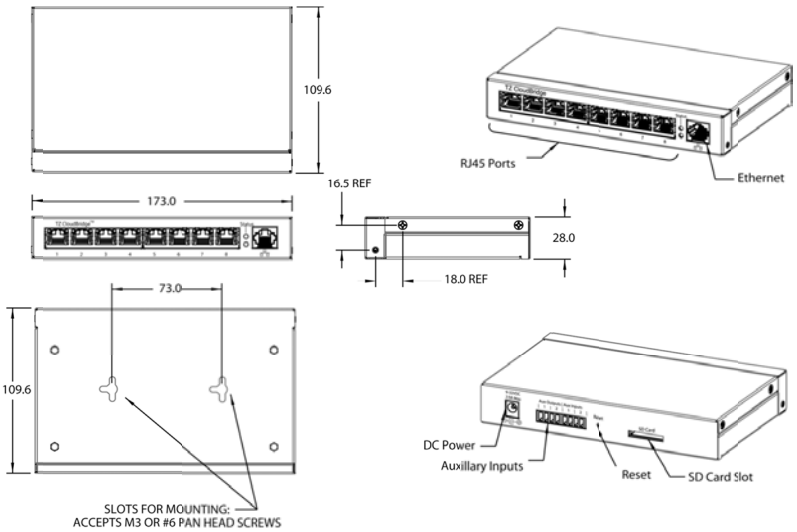
Standards Compliance

> FCC Part 15 Class B, CE, UL (c-us) per IEC/UL/CSA 60950-1

> RoHS compliant

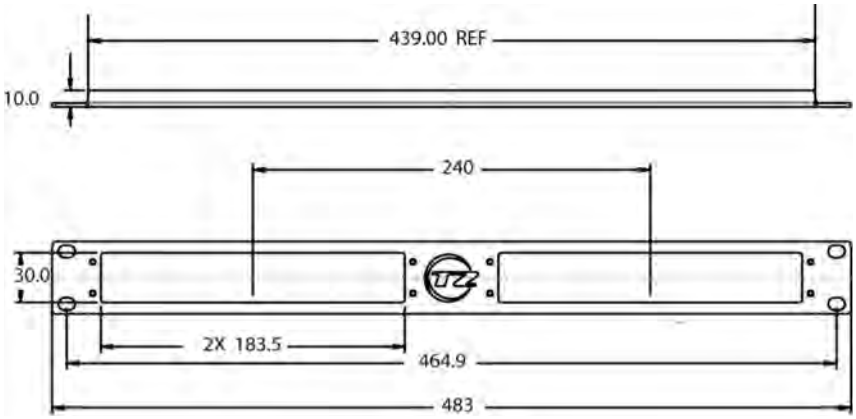
> One Year Limited Warranty

Dimensions (mm)



Appendix 2: 1 U Rack Mount Adapter

An optional 1U rack mount adapter (part 112386) along with blanking plates (part 112550, not shown) are available for the mounting the TZ Centurion Bridge in standard computer racks.



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