



Product Manual 35097
(Revision -, 3/2018)
Original Instructions

Security Appliance
Tofino Xenon Firewall

Configuration and Service Manual

**General
Precautions**

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.

Practice all plant and safety instructions and precautions.

Failure to follow instructions can cause personal injury and/or property damage.

**Revisions**

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, check manual **35097, *Customer Publication Cross Reference and Revision Status & Distribution Restrictions*, on the *publications page* of the Woodward website:**

www.woodward.com/publications

The latest version of most publications is available on the *publications page*. If your publication is not there, please contact your customer service representative to get the latest copy.

**Proper Use**

Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.

**Translated
Publications**

If the cover of this publication states "Translation of the Original Instructions" please note:

The original source of this publication may have been updated since this translation was made. Be sure to check manual **35097**, *Customer Publication Cross Reference and Revision Status & Distribution Restrictions*, to verify whether this translation is up to date. Out-of-date translations are marked with . Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions— A bold, black line alongside the text identifies changes in this publication since the last revision.

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Warnings and Notices

Important Definitions



This is the safety alert symbol used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER - Indicates a hazardous situation, which if not avoided, will result in death or serious injury.

WARNING - Indicates a hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION - Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.

NOTICE - Indicates a hazard that could result in property damage only (including damage to the control).

IMPORTANT - Designates an operating tip or maintenance suggestion.

WARNING

**Overspeed /
Overtemperature /
Overpressure**

The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage.

The overspeed shutdown device must be totally independent of the prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.

WARNING

**Personal Protective
Equipment**

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage.

Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:

- Eye Protection
- Hearing Protection
- Hard Hat
- Gloves
- Safety Boots
- Respirator

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

WARNING

Start-up

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.

WARNING

**Automotive
Applications**

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

Electrostatic Discharge Awareness

NOTICE

Electrostatic Precautions

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:
 Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).
 Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.
 Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.
 To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual **82715**, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Follow these precautions when working with or near the control.

1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
 - Do not touch any part of the PCB except the edges.
 - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
 - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

Safety Symbols

	Direct Current
	Alternating Current
	Both Alternating and Direct Current
	Caution, risk of electrical shock
	Caution, refer to accompanying documents
	Protective conductor terminal
	Frame or chassis terminal

Regulatory Compliance

European Compliance for CE Marking

CE

North American Compliance:

FCC

EN 61131-2

EN 60950-1

Optionally Available:

UL 508

ATEX Zone 2

ISA 12.12.01-Class I, Div. 2

IEC 61850-3

IEEE 1613

Chapter 1.

General Information

Introduction

The Tofino Xenon is an industrial Firewall with Loadable Software Modules (LSM). The security appliance provides network segmentation, policies, Layer 2/3/4 filtering, and Denial of Service (DoS) rate limit controls. Deep Packet Inspection (DPI) monitoring of Modbus communications is also available via the Enforcer LSM. The device has two (2) RJ45 10/100BaseT(X) and one (1) USB interface ports. The V.24 interface port is not activated by the firmware. The device is DIN-rail mounted (wall mount optional), supports dual 24 Vac or 12/24(1-4 A)/48 Vdc input voltage, and is available in standard (0 to 60 °C) and extended (-40 to 70 °C) operating temperature ranges.

Purpose and Scope

The purpose of this manual is to provide the necessary background information for installing, configuring, and operating the Tofino Xenon Firewall appropriately. Topics covered include mechanical installation, electrical wiring, firmware installation, software configuration (via service tools), as well as troubleshooting and diagnostic information.

Intended Applications

The combined firewall and Modbus TCP network communication security functionality of the Tofino Xenon is well suited for creating and protecting industrial control system networks. Woodward [26479 MicroNet Cyber Security Manual](#) describes how this device can provide a security boundary between embedded control systems (LAN) and either a security DMZ or a customer WAN. The Tofino Xenon is similar to, and often used in combination with, the MOXA EDR-810 to create cyber secure MicroNet Plus control systems.

Chapter 2.

Reference Documents and Information:

Applicable Woodward Part Numbers:

1711-1385 (Firewall)

10-004-487 ([Firmware file *.tfo](#))

10-004-488 (Configuration file 10-004-488.tpf)

10-004-489 (License Activation Key – Manufacturer Assigned, Appliance Specific)

Woodward Documentation:

[26479 MicroNet Cyber Security Manual](#)

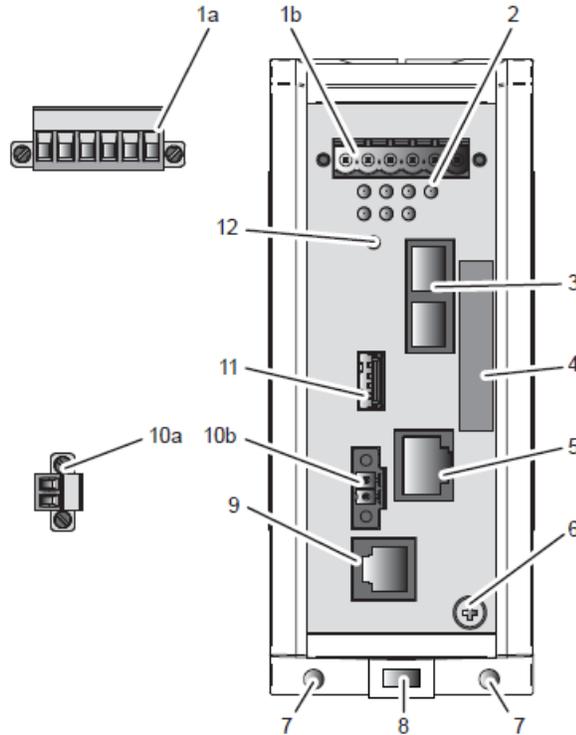
Manufacturer Resources:

<https://www.tofinosecurity.com/products/>
Tofino Configurator

Chapter 3.

Installation and Connections

The device is DIN-rail mounted (wall mount optional) and supports dual 24 Vac or 12/24(1-4 A)/48 Vdc input voltage power supplies. Additional details and mounting dimensions are available in the [Tofino Xenon Installation Guide.pdf](#).



1a	6 pin, screwable terminal block for redundant supply voltage and signal contact	
1b	Terminal block connection	
2	LED display elements	
3	Ethernet port 1 NET 1 alternatively, depending on device variant	RJ45 socket for 10/100 Mbit/s twisted pair connections DSC multimode socket for 100 Mbit/s F/O port
4	Tofino ID	
5	Ethernet port 2 NET 2 alternatively, depending on device variant	RJ45 socket for 10/100 Mbit/s twisted pair connections DSC multimode socket for 100 Mbit/s F/O port DSC singlemode socket for 100 Mbit/s F/O port
6	Grounding screw	
7	Hole for mounting using a wall mounting plate	
8	Locking gate for removing the device	
9	V.24 interface The V.24 interface is not active in this version of the firmware.	
10a	2 pin, screwable terminal block for digital input	
10b	Terminal block connection	
11	USB interface	
12	Save/Load/Reset button	

Table 6: Front view (using the example TofinoXe-0200M2T1.....)

Figure 3-1 Device Panel Connections

Chapter 4.

Configuring the Firewall:

The Tofino Xenon appliance (P/N 1711-1385) is pre-configured with the default Woodward configuration 10-004-488 (10-004-488.tpf). Custom configurations (*.tpf) can be installed as described in the following procedures of this section.

Table 4-1 Default Configuration Comparisons compares parameters between the various configurations for the device.

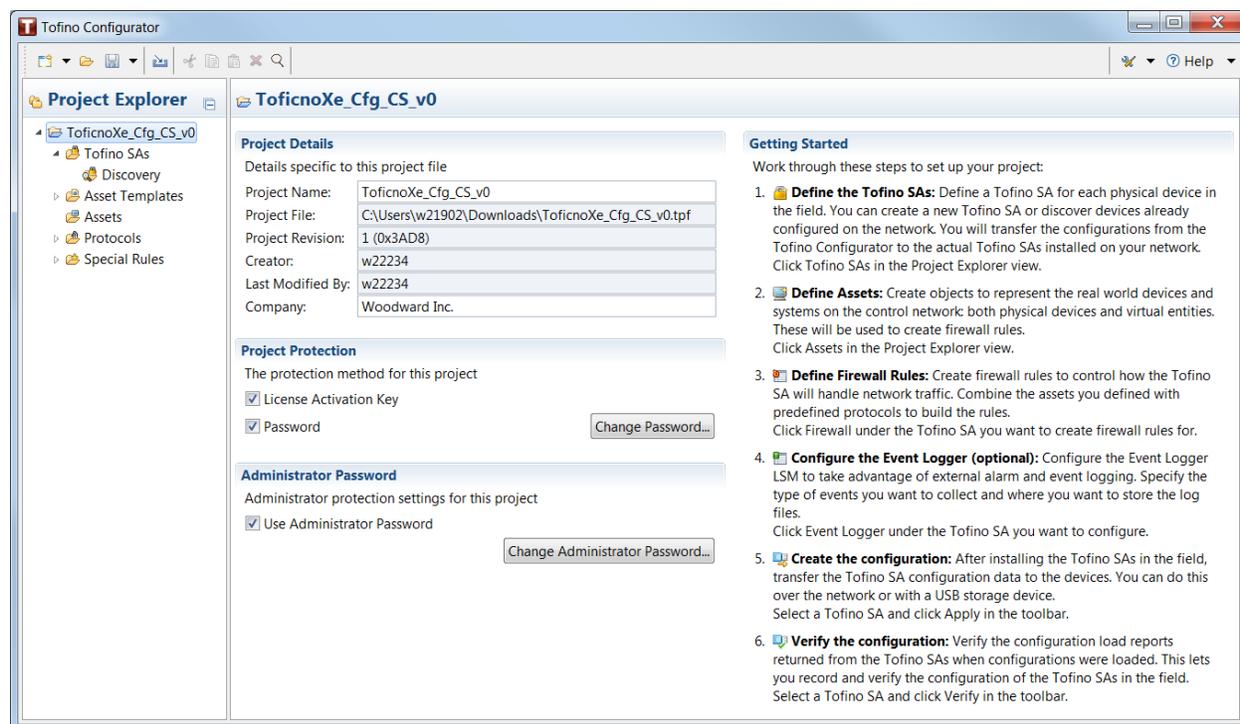
Table 4-1 Default Configuration Comparisons

Parameter	Configuration	
	Firmware Default	Woodward Cyber Secure
Woodard Configuration P/N	N/A	10-004-488
Username (User/Admin)	N/A	N/A
Password (User/Admin)	N/A	ServiceUser@1
Operating Mode	Test	Operational
Port Net1	(public)	(public)
Port Net2	(secure/private)	(secure/private)
Modbus TCP Policy	N/A	
Communications Method	Both USB and Network	Network Only

Connect to the Firewall

The firewall provides two (2) service connections: Encrypted USB port and a network connection from the [Tofino Configurator](#) to the NetConnect LSM service on the appliance. This section presents the network connection method.

Launch the [TofinoConfigurator.exe](#) service tool and then browse/select the desired configuration *.tpf file. The application will prompt you to enter the password credentials associated with the file (default for both User/Admin: ServiceUser@1). To proceed with view-only privileges, select CANCEL in the Admin login screen.



It is recommended to place the appliance in TEST mode prior to changing the configuration. This minimizes the impact to the public network by allowing all traffic to pass and only flagging traffic which would otherwise be blocked.

If the router has been configured previously and no knowledge about the configuration exists, press the SAVE LOAD RESET button on the firewall three (3) times and then wait 30 seconds for the device to reboot. This will erase all settings and restore the firmware defaults. The firmware default also places the appliance in TEST mode. Otherwise, TEST mode can be entered via the General tab, Status = Test after establishing a connection as described below.

Attach a cable from the local Ethernet connection on the service computer to the NET2 (secure/private) RJ45 port on the front of the firewall. Attach a second cable from the NET1 (public) RJ45 port on the front of the firewall to a physical network router/switch with access to the same Default Gateway as the service computer adapter. This creates a network loop from the service computer, through the Tofino Xenon, and back to the service computer. The connections in Figure 4-1 Service Connections are for servicing and configuring the appliance only. Typical connections for normal operation are illustrated in the EACMS Architecture diagram in the Woodward [26479 MicroNet Cyber Security Manual](#) and below in Figure 4-2 Typical Operation Connections.

IMPORTANT

The appliance does not have or utilize an IP address for any interface connections. Traffic to/from the service computer must pass through (NET1 and NET2 ports) the appliance for the TofinoConfigurator.

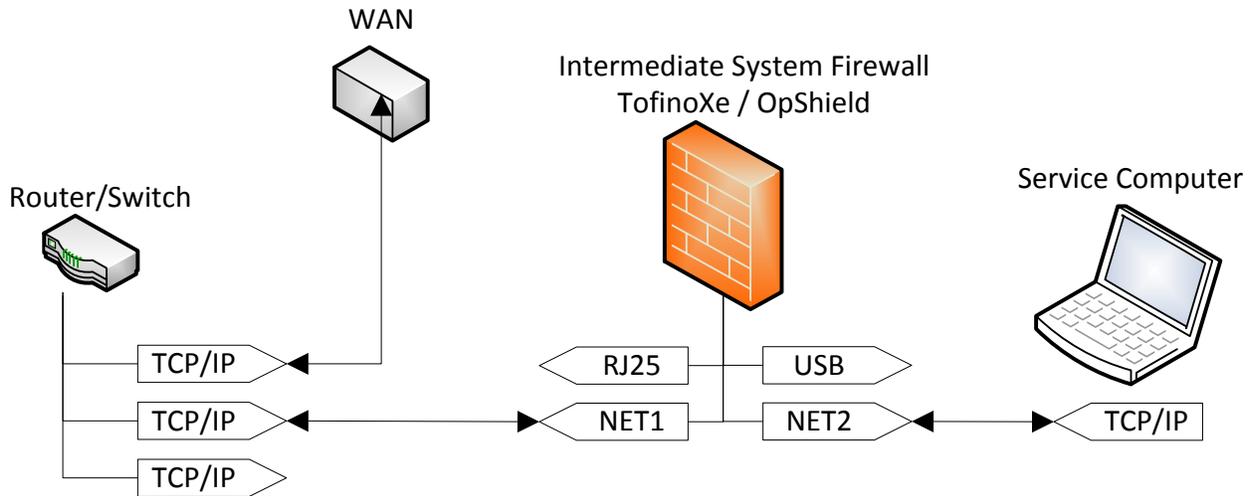


Figure 4-1 Service Connections

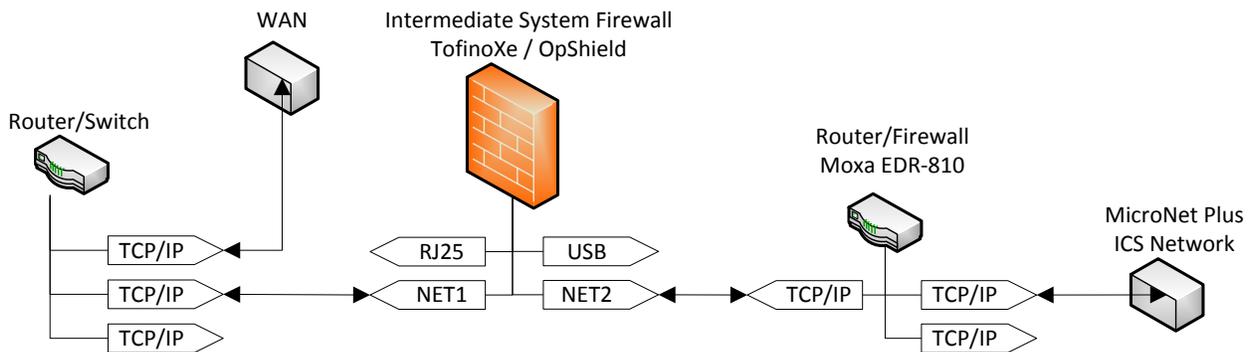
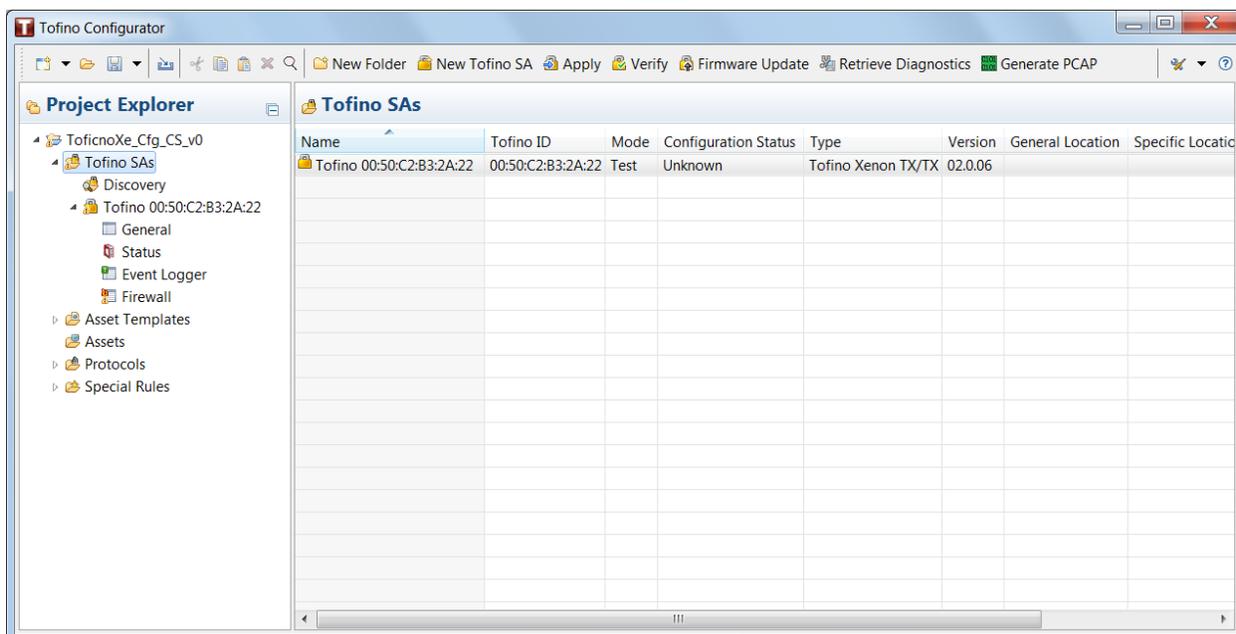
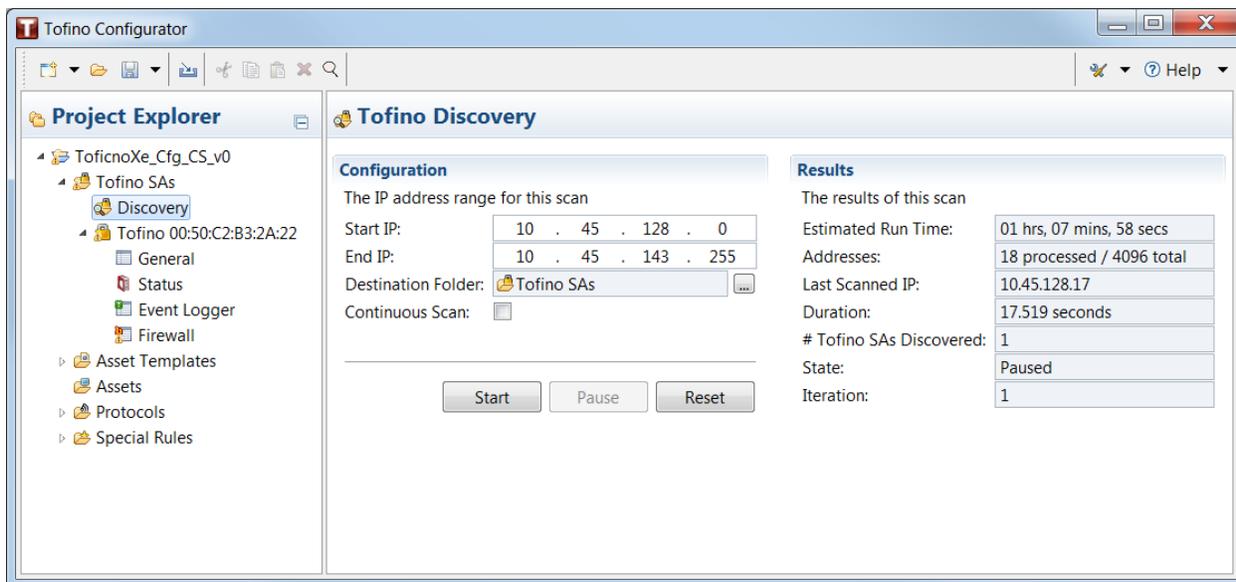


Figure 4-2 Typical Operation Connections

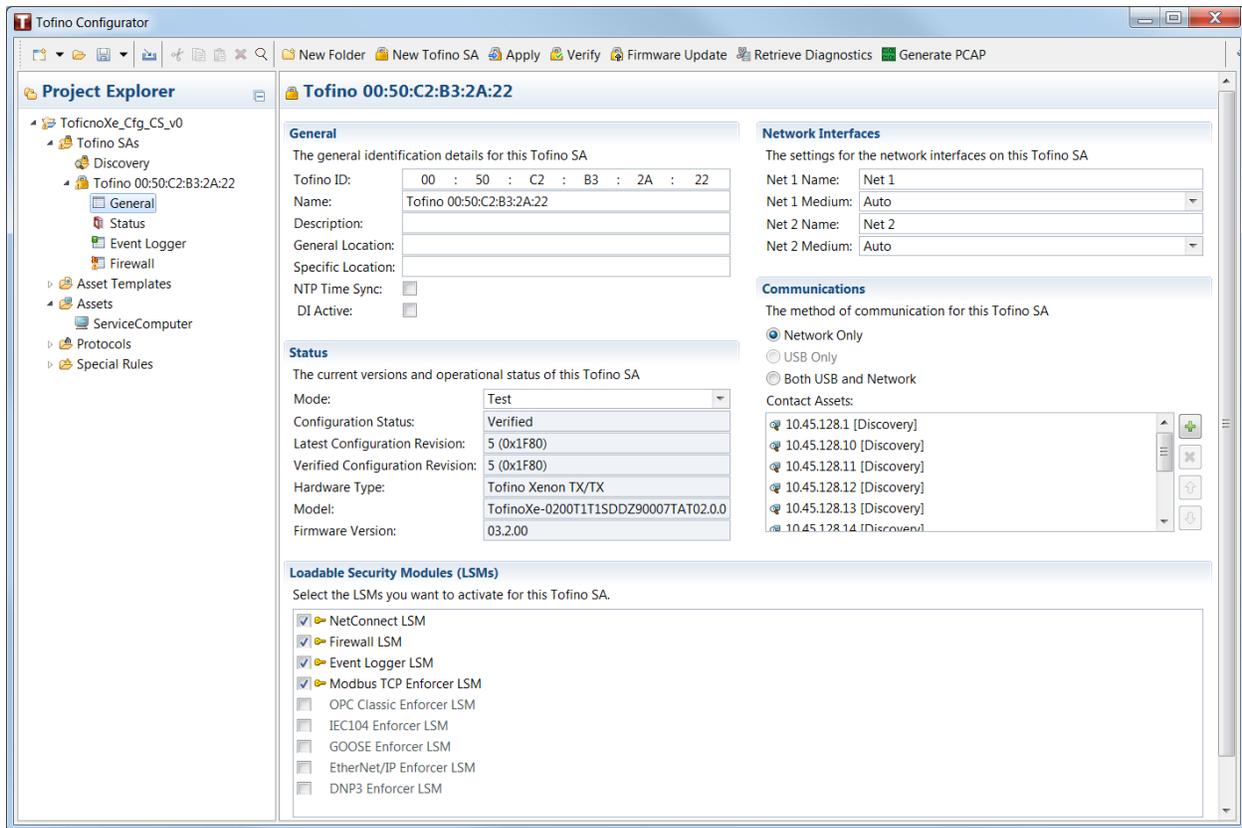
If the router has been configured previously and no knowledge about the configuration exists, the Tofino Discovery feature will scan an IP address range and detect the appliance. First, identify the subnet of the network the service computer is connected to. Entering "ipconfig" at a cmd.exe prompt will identify the Default Gateway and Subnet Mask used by the service computer. For example, if the Default Gateway = 10.45.128.1 with Subnet Mask = 255.255.240.0, then the scan range would be Start IP = 10.45.128.0 and End IP = 10.45.143.255.

After the Start IP and End IP scan addresses are entered, click Start and any detected appliances will appear in the Tofino SAs directory as well as in the list on the Tofino SAs tab.



Status/Overview Screen

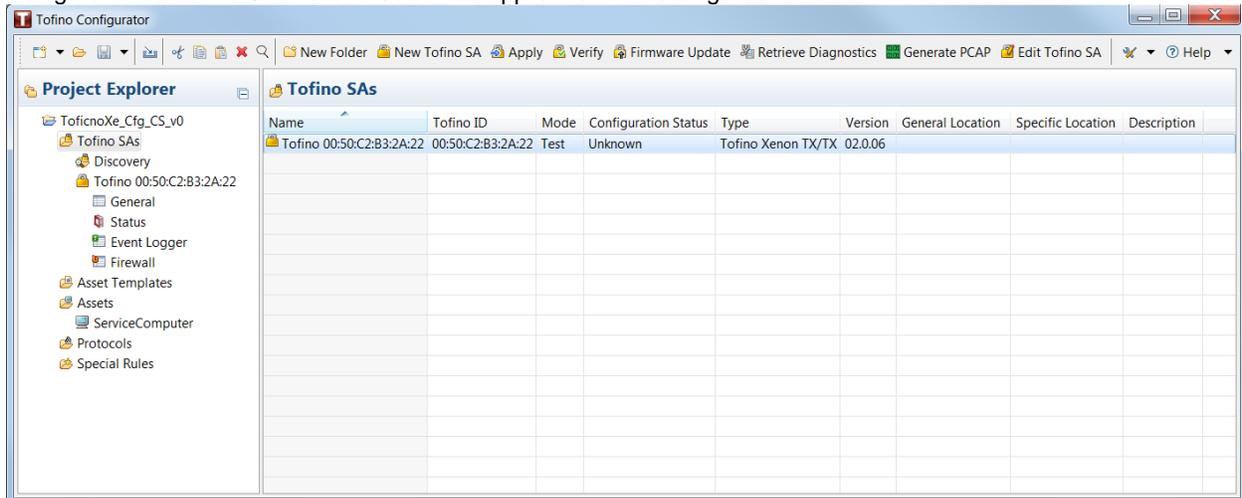
Navigate to Tofino SAs, <appliance MAC address>, General to view or set the Status Mode. Note that this is the screen where TEST mode can be set prior to configuration updates. Also note that the list of LSMs currently licensed in this example image includes the NetConnect LSM which is a prerequisite for network connections from TofinoConfigurator.



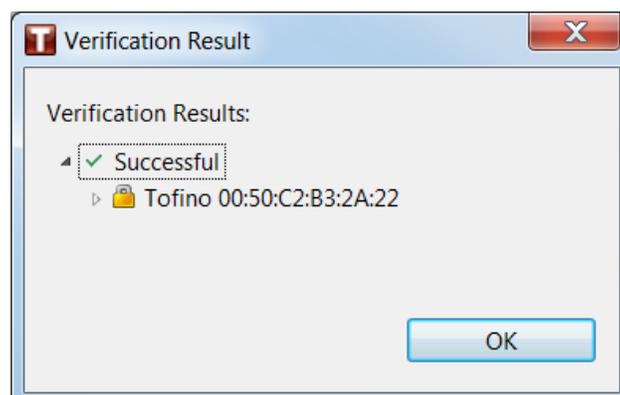
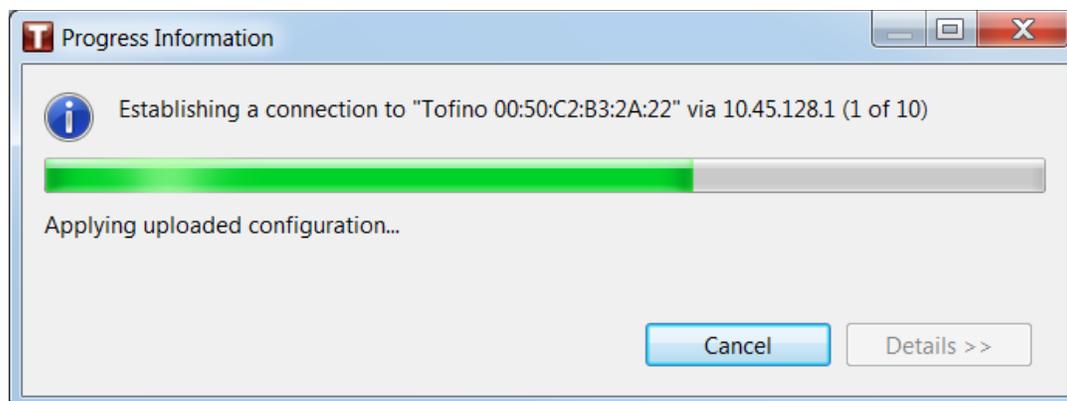
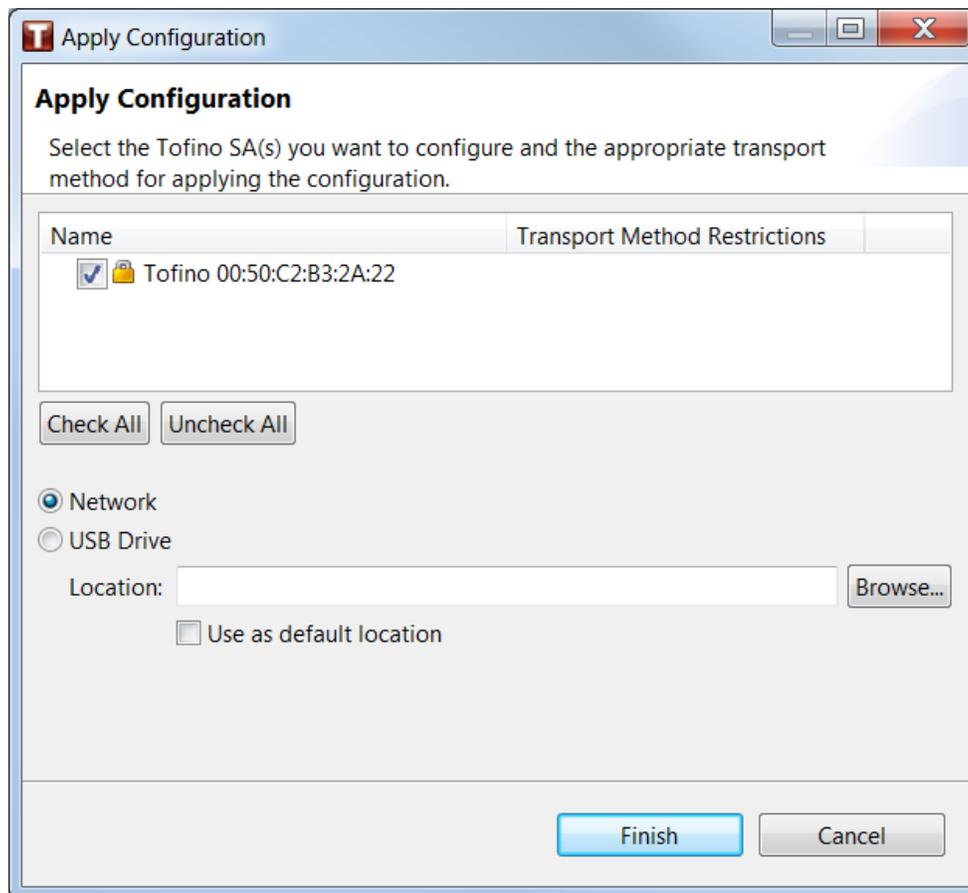
System Configuration

Load/Save a Configuration

Navigate to the Tofino SAs list and select the appliance to be configured



Click the Apply command icon from the header



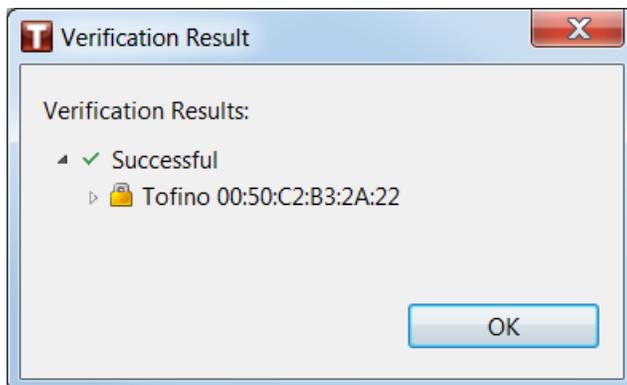
Verify Active Configuration:

Verification that the correct configuration is active in the appliance is possible using the Verify command icon.

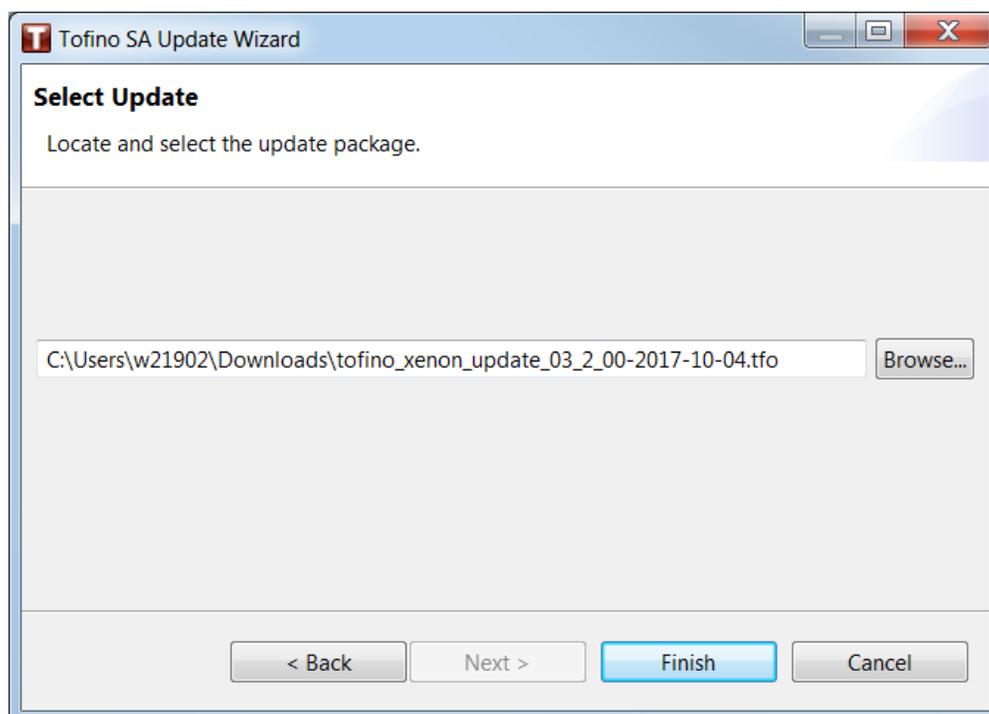
NOTICE

It is not possible to download/retrieve the active configuration. Security of the configuration is discussed in the Load/Save a Configuration section.

Navigate to the Tofino SAs list and select the appliance to be verified
Click on the Verify command icon in the header

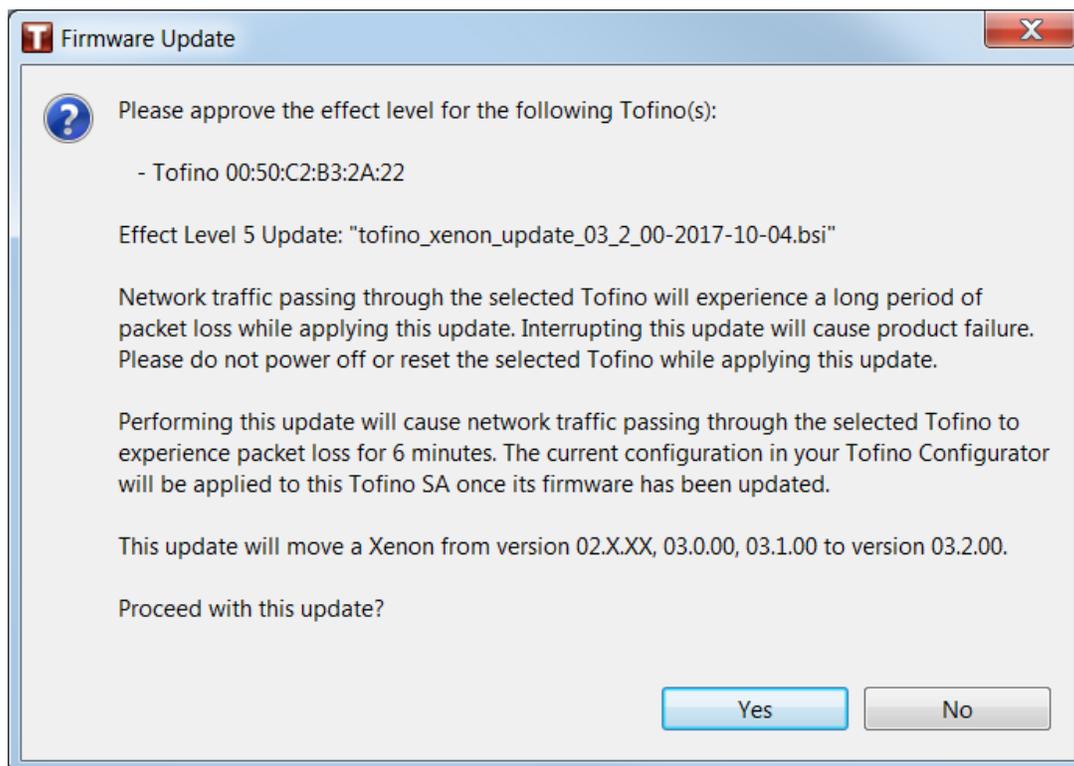
**Firmware Update**

Navigate to the Tofino SAs list and select the appliance to be updated.
Browse and select the desired firmware *.tfo file.

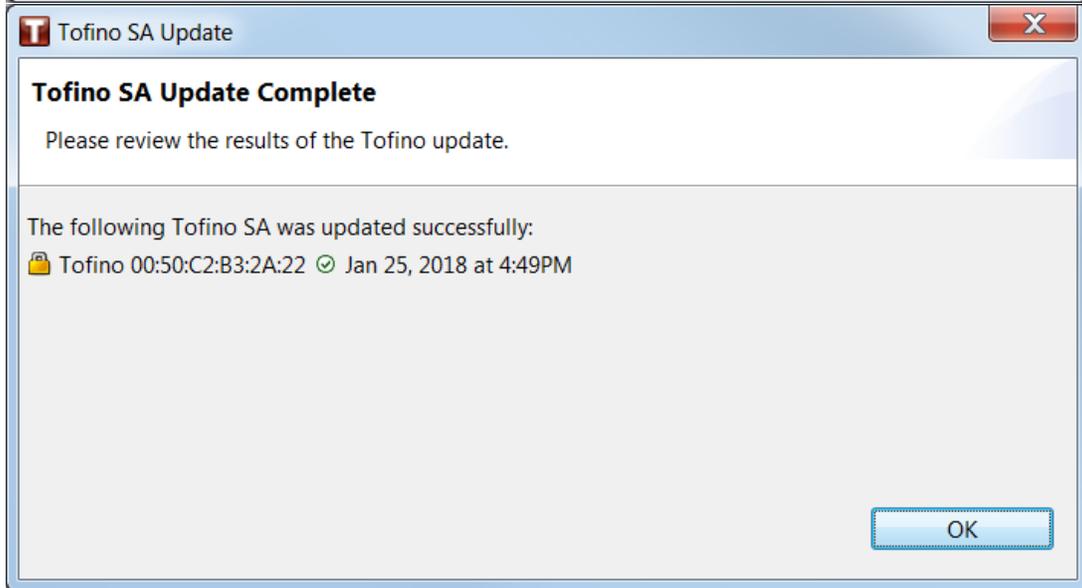
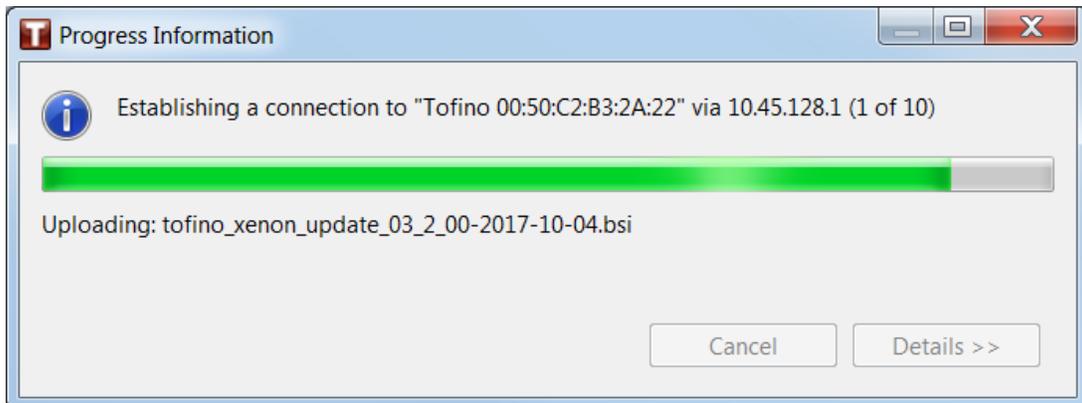


NOTICE

Firmware updates impact network operations. It is recommended to isolate the appliance from critical networks before proceeding and avoid all power-cycles or RESET commands during the upload (approximately 6 minutes) to prevent product damage. Acknowledge the long interruption of network traffic during the update and that power interruptions or RESET commands during the update process will cause product failure. Click No to cancel the update procedure if additional preparations are needed.

**NOTICE**

Do not power-cycle or RESET the appliance until the update has completed (approximately 6 minutes).



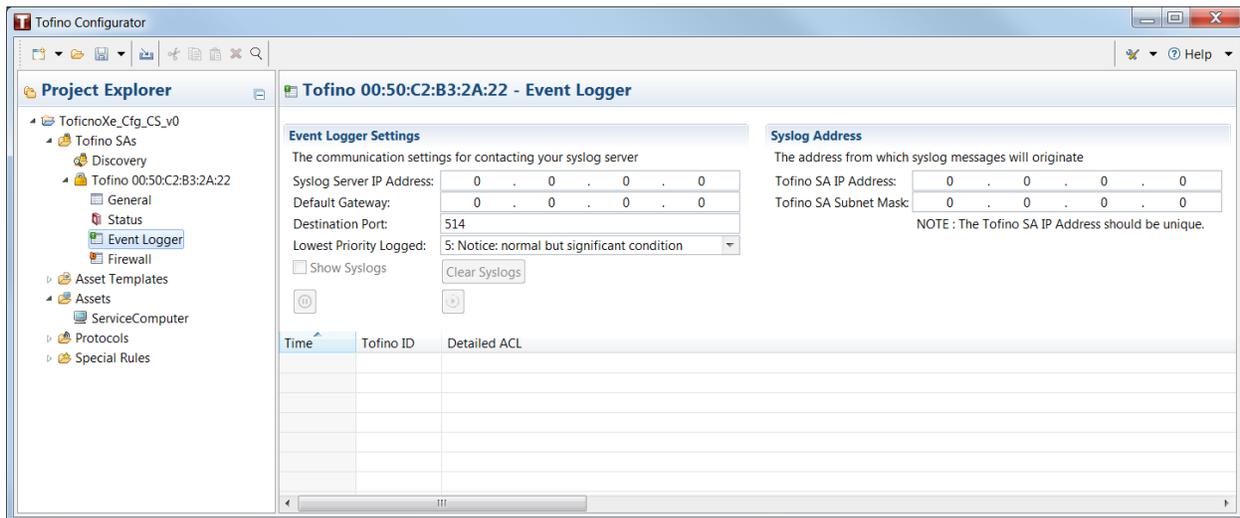
SIEM Log File Configuration

The standard event logging configuration utilizes a separate networked SysLog server. The Tofino appliance is configured to send all SIEM information to the server. In addition to the native interface of the SysLog server, the event logs can be viewed via TofinoConfigurator.

Navigate to the Tofino SAs tab

Select the Tofino appliance to be configured/viewed

Click on Event Logger



Specify the IP address and Default Gateway of the SysLog server.

Select the threshold level for events (default is 5: Notice for normal, but significant conditions). Emergency events are always logged and larger threshold numbers will log additional events of lower priority.

Configure Firewall Security

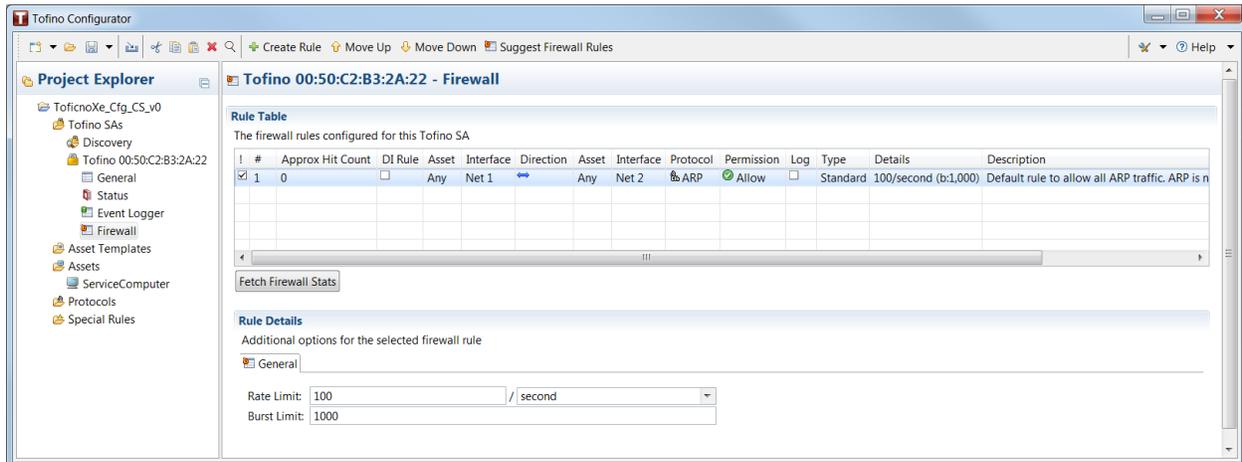
Policies/Rules Table

Navigate to the Tofino SAs tab

Select the Tofino appliance to be configured

Click on Firewall

Current policies/rules are displayed. The +Create Rule and Suggested Firewall Rules command icons can also be used to modify the configuration.



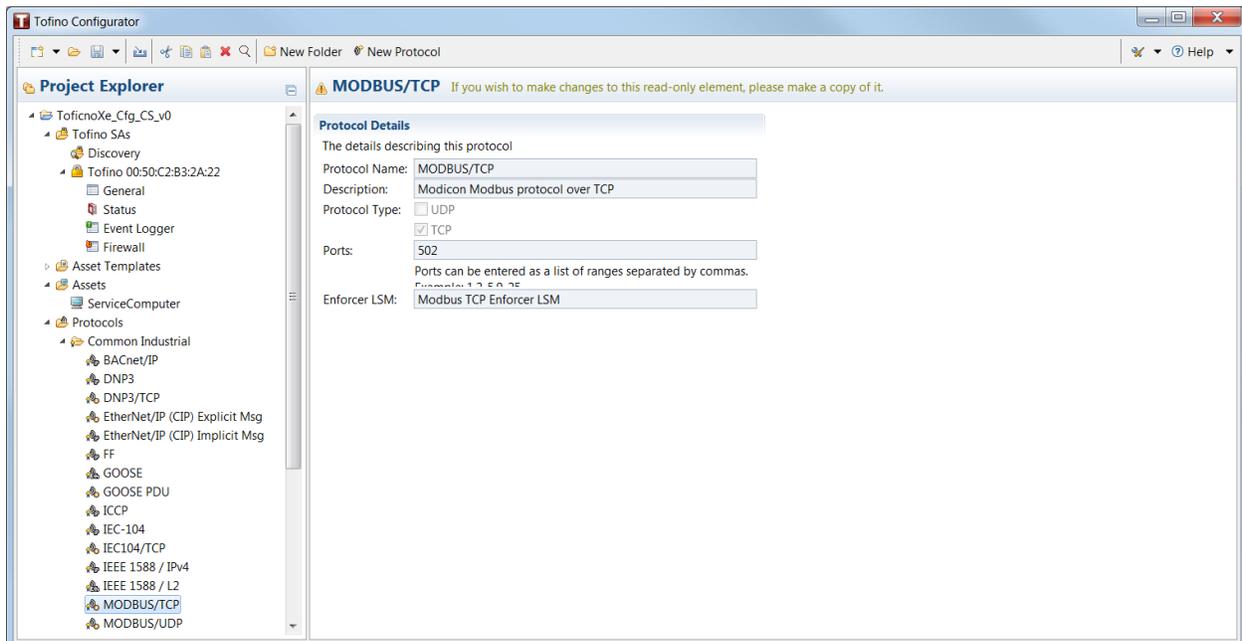
Modbus TCP Policy

Navigate to the Protocols tab

Select the Common Industrial tab

Click on MODBUS/TCP

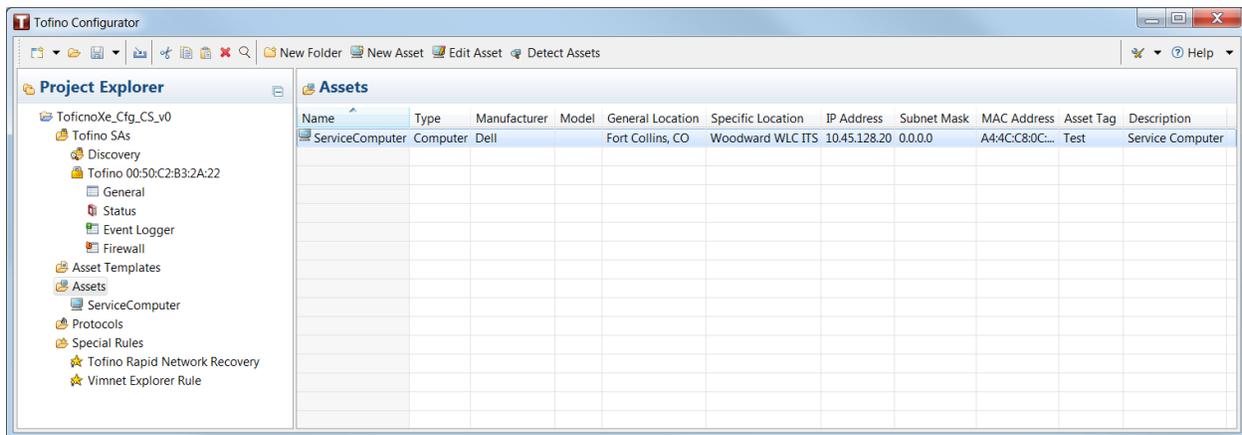
The current/active Modbus/TCP policy is displayed



Configure Network Assets

Navigate to the Assets tab

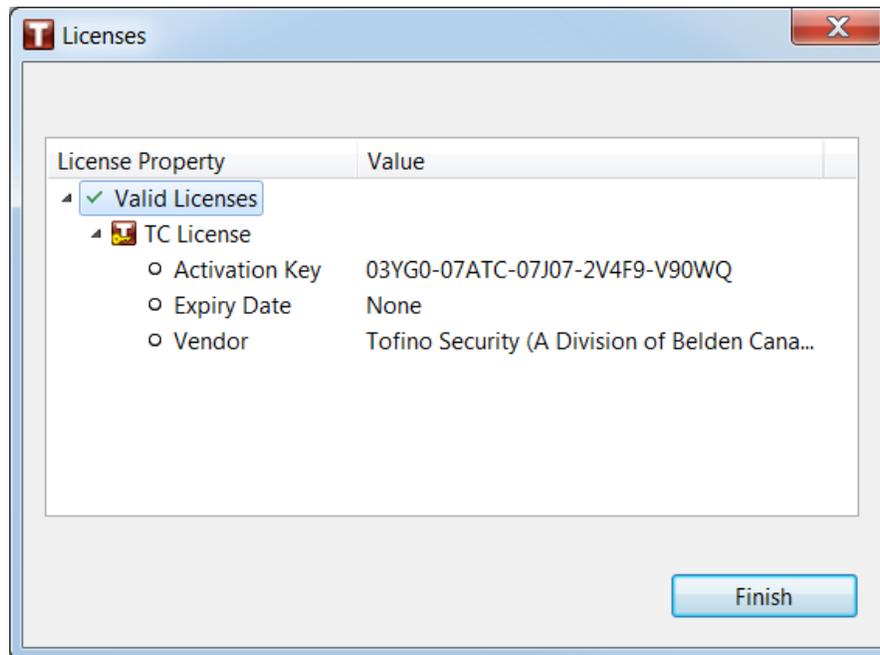
The current/active assets authorized on the network are displayed



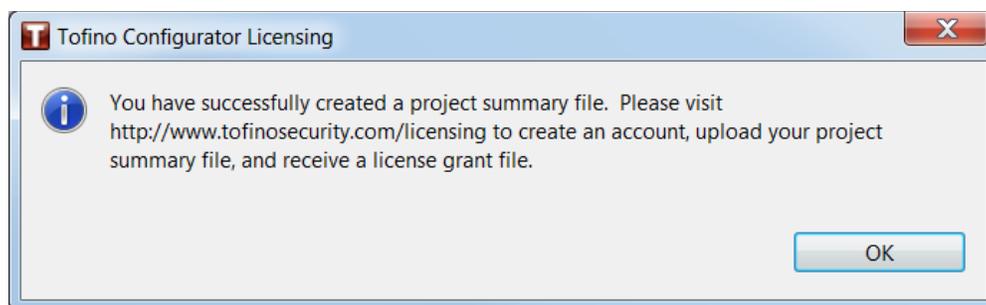
LSM Installation and Licensing

Loadable Software Modules (LSM) are licensed individually and must be associated with the License Activation Key assigned to a specific appliance S/N. This requires an update and installation of a license grant file from the manufacturer. The process is as follows:

1. Open the Preferences dialog (upper-right corner) and select Licensing → View Licenses
2. Note the License Activation Key



3. Open the Preferences dialog (upper-right corner) and select Licensing → Export Project Summary File
4. Select the desired directory to save the *.psf file and click Save



5. Generate a License Grant file
 - 5.1. Open a web browser
 - 5.2. Login to the Tofino Customer Portal (Login required: <TBD email>, <TBD pswd>)
 - 5.3. Navigate to the Projects page and create a New Project
 - 5.4. Upload the *.psf file generated above
 - 5.5. Navigate to the License Grant page and create a License Grant file
6. Import the License Grant file
 - 6.1. Return to TofinoConfigurator
 - 6.2. Open the Preferences dialog (upper-right corner) and select Licensing → Import License Grant File
 - 6.3. Download the *.psf file to the appliance
 - 6.4. A pop-up dialog will indicate the status of the license upgrade
7. Update the configuration on the appliance to load and activate the new licenses

PCAP/Wireshark Interface

Navigate to the Tofino SAs tab

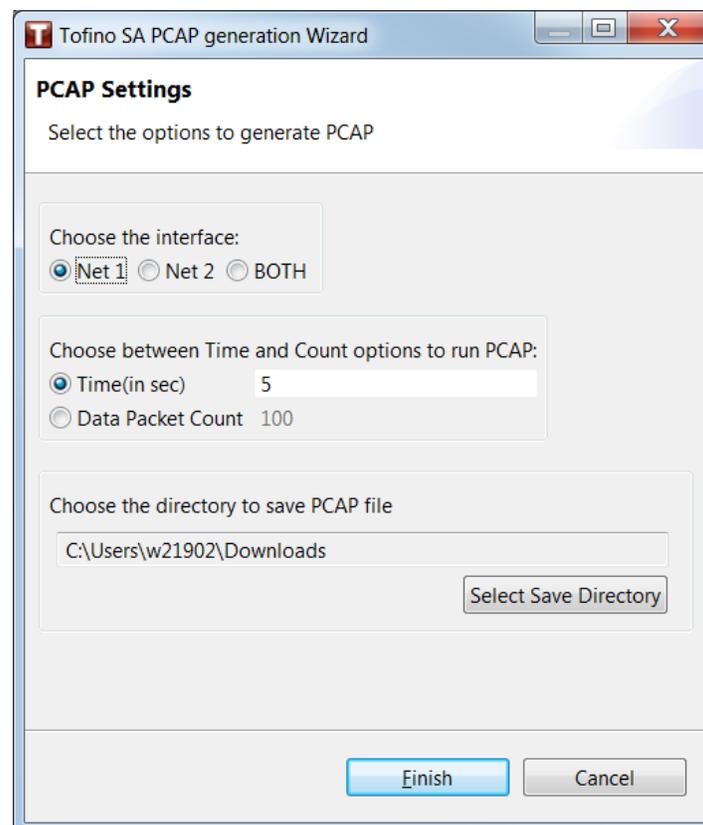
Select the Tofino appliance to be tested/debugged

Click on the Generate PCAP command icon

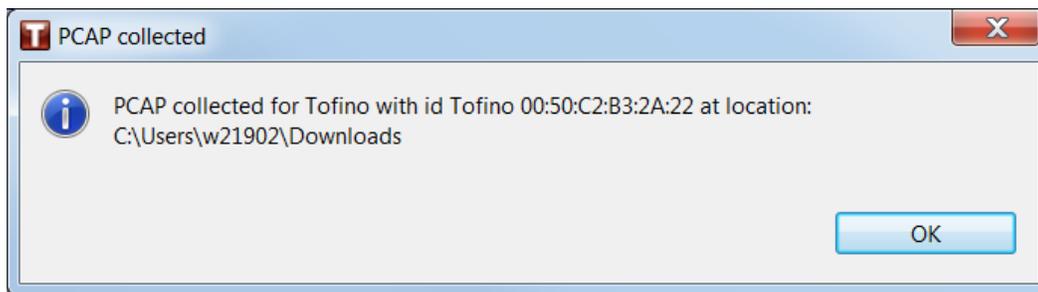
Select the desired parameters and specify the desired Save Directory for the PCAP file.

NOTICE

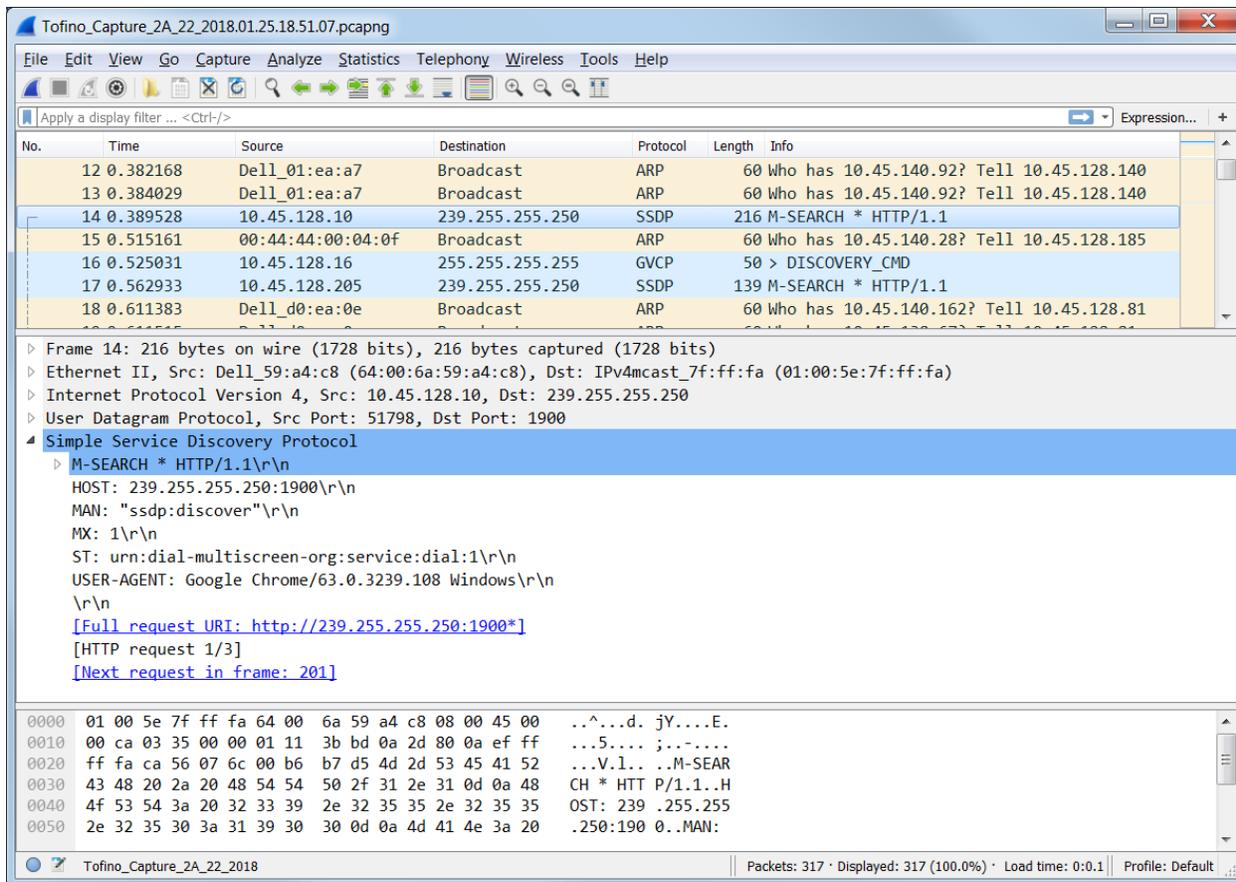
The standard configuration is NET2 (secure/private) and NET1 (public).



When the specified time/packet-count is complete, a pop-up dialog will confirm that the PCAP file has been collected.



This *.pcapng file can be send to the system administrator or support team for troubleshooting and debug assistance.



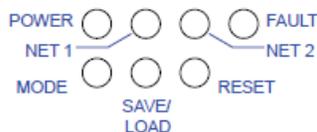
Configuration Compliance Interface

Configuration Compliance Monitoring systems may interface with the Tofino appliance via TofinoConfigurator. This allows the monitoring system to gather sufficient Tofino configuration information for detecting any changes. This one-time process is performed as follows:

1. Prepare the configuration compliance monitoring system as required
2. Start TofinoConfigurator in CCM (headless) mode from a cmd.exe prompt:
 - 2.1. Path_of_tofinoConfigurator.exe ccm path_project.tpf | more <TBD This command will be tested prior to release>
3. After the configuration compliance monitoring system has been configured/trained, return the Tofino appliance to OPERATIONAL mode. This can be accomplished either by a power-cycle or via TofinoConfigurator (Mode = OPERATIONAL on the Tofino SAs, <appliance MAC address>, General tab).

Chapter 5.

LED Status/Troubleshooting Guide



LED	Display	Color	Activity	Meaning
POWER	Supply voltage	—	None	Supply voltage is too low
		Yellow	Lights up	Supply voltage 1 or 2 is on
		Green	Lights up	Supply voltages 1 and 2 are on
NET 1 and NET 2	Link status	—	None	Device detects an invalid or missing link
		Green	Lights up	Device detects a valid link
		Flashes 3 times a period	Flashes 3 times a period	Port is switched off
FAULT	System and USB save/load errors	Red	None	The signal contact is closed - it is not reporting any detected errors.
		Yellow	Very short flashing in cycles of 0.5 s	A detected USB load or save error occurred. See table 8 on page 28.
		Yellow	Flashing	Device is transmitting and/or receiving data
MODE	Network mode	Green	None	The device is in Unconfigured mode.
		Green	Lights up	The device is in operational mode.
		Yellow	Long flashing	The device is in test mode.
SAVE/ LOAD	Preparation Saving process	Green	Lights up (5 s)	The saving of the device diagnostic or log files to the USB storage device is about to begin.
	Preparation Loading process	Yellow	Lights up (5 s)	The load of the configuration files from the USB storage device is about to begin.
RESET	Preparation Reset process	Yellow	Lights up (5 s)	The reset of the device to the factory defaults is about to begin.
MODE RESET	Execution Saving process	Green	Flashing alternately in left to right sequence	The device saves the diagnostic files or log files on the USB device.
	Execution Loading process	Yellow	Flashing alternately in right to left sequence	The device loads the configuration files from the USB device.
MODE SAVE/ LOAD RESET FAULT	Execution Reset process	Yellow	Flashing simultane- ously	The reset of the device to the factory defaults is in progress.

Chapter 6.

Product Support and Service Options

Product Support Options

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

Consult the troubleshooting guide in the manual.

Contact the manufacturer or packager of your system.

Contact the Woodward Full Service Distributor serving your area.

Contact Woodward technical assistance (see “How to Contact Woodward” later in this chapter) and discuss your problem. In many cases, your problem can be resolved over the phone. If not, you can select which course of action to pursue based on the available services listed in this chapter.

OEM or Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

A **Full Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.

An **Authorized Independent Service Facility (AISF)** provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.

A **Recognized Turbine Retrofitter (RTR)** is an independent company that does both steam and gas turbine control retrofits and upgrades globally, and can provide the full line of Woodward systems and components for the retrofits and overhauls, long term service contracts, emergency repairs, etc.

A current list of Woodward Business Partners is available at www.woodward.com/directory.

Product Service Options

The following factory options for servicing Woodward products are available through your local Full-Service Distributor or the OEM or Packager of the equipment system, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is originally shipped from Woodward or a service is performed:

Replacement/Exchange (24-hour service)

Flat Rate Repair

Flat Rate Remanufacture

Replacement/Exchange: Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime. This is a flat-rate program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call your Full-Service Distributor in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Full-Service Distributor.

Charges for the Replacement/Exchange service are based on a flat rate plus shipping expenses. You are invoiced the flat rate replacement/exchange charge plus a core charge at the time the replacement unit is shipped. If the core (field unit) is returned within 60 days, a credit for the core charge will be issued.

Flat Rate Repair: Flat Rate Repair is available for the majority of standard products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be. All repair work carries the standard Woodward service warranty (Woodward Product and Service Warranty 5-01-1205) on replaced parts and labor.

Flat Rate Remanufacture: Flat Rate Remanufacture is very similar to the Flat Rate Repair option with the exception that the unit will be returned to you in “like-new” condition and carry with it the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205). This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

For instructions about sending your MicroNet Plus Cyber Secure control to Woodward for repairs, please consult your product manual. It is suggested that you change the password of the Administrator account to the default value (“Admin@1”) before sending it to Woodward. This will make it possible for Woodward to make appropriate changes to your control without removing your account configuration.

If you do not provide Administrator account credentials to Woodward for performing the work, Woodward will return the Password Manager configuration to the default configuration (see 3.1 Password Manager Configuration / Using Default Settings). It will be your responsibility to reconfigure the accounts to a secure and appropriate configuration.

When shipping the item(s), attach a tag with the following information:

- Return authorization number
- Name and location where the control is installed
- Name and phone number of contact person
- Complete Woodward part number(s) and serial number(s)
- Description of the problem
- Instructions describing the desired type of repair

Packing a Control

Use the following materials when returning a complete control:

- Protective caps on any connectors
- Antistatic protective bags on all electronic modules
- Packing materials that will not damage the surface of the unit
- At least 100 mm (4 inches) of tightly packed, industry-approved packing material
- A packing carton with double walls
- A strong tape around the outside of the carton for increased strength

NOTICE

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Replacement Parts

When ordering replacement parts for controls, include the following information:
The part number(s) (XXXX-XXXX) that is on the enclosure nameplate
The unit serial number, which is also on the nameplate

Engineering Services

Woodward offers various Engineering Services for our products. For these services, you can contact us by telephone, by email, or through the Woodward website.

Technical Support
Product Training
Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact. Emergency assistance is also available during non-business hours by phoning Woodward and stating the urgency of your problem.

Product Training is available as standard classes at many of our worldwide locations. We also offer customized classes, which can be tailored to your needs and can be held at one of our locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability.

Field Service engineering on-site support is available, depending on the product and location, from many of our worldwide locations or from one of our Full-Service Distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface.

For information on these services, please contact us via telephone, email us, or use our website:
www.woodward.com.

Contacting Woodward's Support Organization

For the name of your nearest Woodward Full-Service Distributor or service facility, please consult our worldwide directory at www.woodward.com/directory, which also contains the most current product support and contact information.

You can also contact the Woodward Customer Service Department at one of the following Woodward facilities to obtain the address and phone number of the nearest facility at which you can obtain information and service.

Products Used in

Electrical Power Systems

<u>Facility</u>	<u>Phone Number</u>
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany:	
Kempen	+49 (0) 21 52 14
51	
Stuttgart	+49 (711) 78954-
510	
India	+91 (124) 4399500
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
Poland	+48 12 295 13 00
United States	+1 (970) 482-
	5811

Products Used in

Engine Systems

<u>Facility</u>	<u>Phone Number</u>
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (711) 78954-510
India	+91 (124) 4399500
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
United States	+1 (970) 482-
	5811

Products Used in Industrial

Turbomachinery Systems

<u>Facility</u>	<u>Phone Number</u>
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
India	+91 (124) 4399500
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
Poland	+48 12 295 13 00
United States	+1 (970) 482-
	5811

Technical Assistance

If you need to contact technical assistance, you will need to provide the following information. Please write it down here before contacting the Engine OEM, the Packager, a Woodward Business Partner, or the Woodward factory:

General

Your Name _____

Site Location _____

Phone/Cell Number _____

email (Fax Number) _____

Appliance/Device Information

Manufacturer _____

S/N Serial Number _____

MAC Address (if available) _____

Firmware Version (if available) _____

Application _____

(power generation, marine, etc.) _____

Status Information

Control/Governor #1

POWER (LED) Status _____

MODE (LED) Status _____

NET 1 (LED) Status _____

NET 2 (LED) Status _____

FAULT (LED) Status _____

Order/Warranty Information

Woodward Part Number _____

Woodward Rev. Letter _____

Symptoms

Cybersecurity Related

H/W or S/W Related

Description _____

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.

Glossary

Acronym/Term	Definition/Description
LAN	Local Area Network - The network behind the router (private/protected zone or access-controlled)
NAT	Network Address Translation - A routing method which modifies network address information of data packets to map one IP address space into another. IP masquerading is one application of NAT which helps to hide private networks behind a single public IP address.
Firmware	A binary computer program which provides the core security and device functionality used by higher-level software applications.
LSM	Loadable Software Module is licensed code which provides configurable functionality for the Tofino Xenon appliance.

Revision History

New Manual - —

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 35097-.



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Woodward has company-owned plants, subsidiaries, and branches, as well as authorized distributors and other authorized service and sales facilities throughout the world.

Complete address / phone / fax / email information for all locations is available on our website.