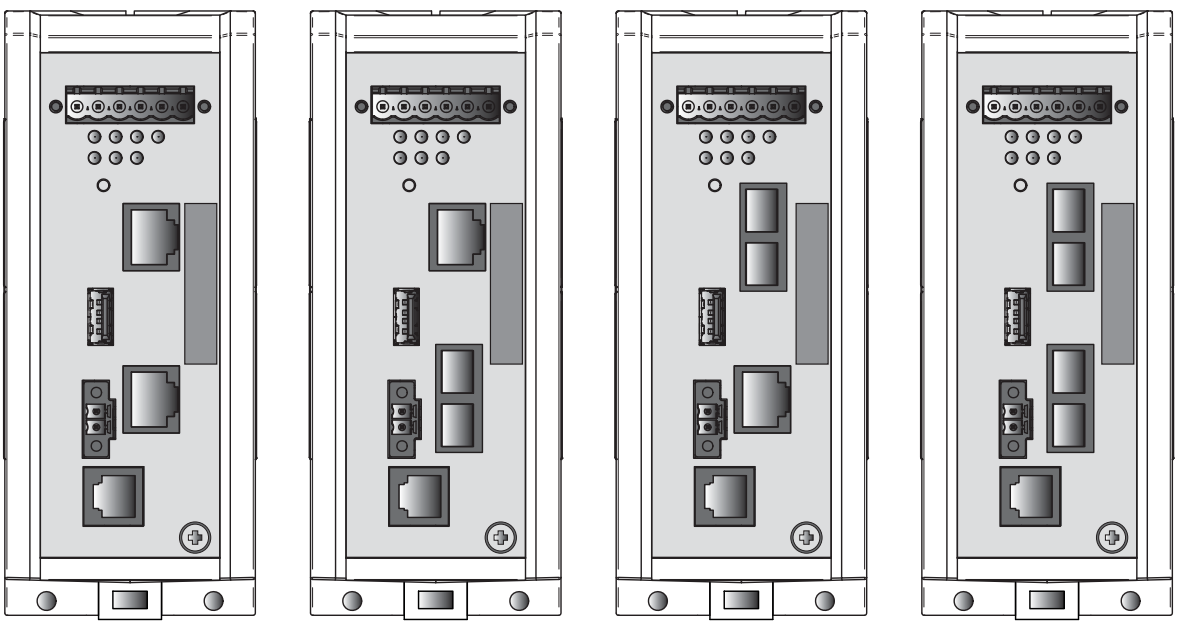
TOFINO SECURITY
A BELDEN BRAND

Hardware Installation Manual

Tofino® Xenon Security Appliance



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You can get the latest version of this manual on the Internet at the Tofino Security product site (www.tofinosecurity.com).

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Safety instructions

General safety instructions

You operate this device with electricity. Improper usage of the device entails the risk of physical injury or significant property damage. The proper and safe operation of this device depends on proper handling during transportation, proper storage and installation, and careful operation and maintenance procedures.

- ☐ Before connecting any cable, read this document, and the safety instructions and warnings.
- ☐ Operate the device with undamaged components exclusively.
- ☐ The device is free of any service components. In case of a damaged or malfunctioning device, turn off the supply voltage and return the device to Tofino Security for inspection.

⚠ WARNING

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.

Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Qualification requirements for personnel

- ☐ Only allow qualified personnel to work on the device.

Qualified personnel have the following characteristics:

- ▶ Qualified personnel are properly trained. Training as well as practical knowledge and experience make up their qualifications. This is the prerequisite for grounding and labeling circuits, devices, and systems in accordance with current standards in safety technology.
- ▶ Qualified personnel are aware of the dangers that exist in their work.
- ▶ Qualified personnel are familiar with appropriate measures against these hazards in order to reduce the risk for themselves and others.
- ▶ Qualified personnel receive training on a regular basis.

Certified usage

- ☐ Use the product only for the application cases described in the Tofino Security product information, including this manual.
- ☐ Operate the product only according to the technical specifications. See “Technical data” on page 41.
- ☐ Connect to the product only components suitable for the requirements of the specific application case.

National and international safety regulations

Verify that the electrical installation meets local or nationally applicable safety regulations.

Grounding the device

Grounding the device is by means of a separate ground connection on the device.

☐ Ground the device before connecting any other cables.

☐ Disconnect the grounding only after disconnecting all other cables.

The overall shield of a connected shielded twisted pair cable is connected to the grounding connector on the front panel as a conductor.

Supply voltage

The supply voltage is electrically isolated from the casing.

☐ Connect only a supply voltage that corresponds to the type plate of your device.

☐ **Every** time you connect the electrical conductors, make sure that the following requirements are met:

- The power supply conforms to overvoltage category I or II.
- The power supply has an easily accessible disconnecting device (for example a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- The electrical wires are voltage-free.
- The power supply is Class 2 compliant.
- The supply voltage inputs are designed for operation with safety extra-low voltage. Connect only SELV circuits with voltage restrictions in line with IEC/EN 60950-1 to the supply voltage connections.
- Supply with AC voltage:
  A fuse is located in the outer conductor of the power supply.
  The neutral conductor is on ground potential at both voltage inputs. Otherwise, a fuse is also located in the neutral conductor.
  Regarding the properties of this fuse:
  See “General technical data” on page 41.
- Supply with DC voltage:
  A fuse suitable for DC voltage is located in the plus conductor of the power supply.
  The minus conductor is on ground potential. Otherwise, a fuse is also located in the minus conductor.
  Regarding the properties of this fuse:
  See “General technical data” on page 41.
- The wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the supply voltage input.

- ▶ The cross-section of the protective conductor is the same size as or bigger than the cross-section of the power supply cables.
- ▶ The cables used are permitted for the temperature range of the application case.
- ▶ Relevant for North America:
  Exclusively use 60/75 °C (140/167 °F) or 75 °C (167 °F) copper (Cu) wire.

☐ Internal fuses are triggered only in the case of a detected error in the device. In case of damage or malfunction of the device, turn off the supply voltage and return the device to the plant for inspection.

Input/output interfaces

Every time you connect the electrical conductors, make sure that the following requirements are met:

- ▶ The electrical wires are voltage-free.
- ▶ The connected voltage is limited by a current limitation device or a fuse.
  Observe the electrical threshold values for the signal contact.
  See “General technical data” on page 41.
  Observe the electrical threshold values for the digital input.
  See “Digital input” on page 42.

Installation site requirements

☐ Verify that there is at least 4 in (10 cm) of space above and below the device.
☐ Verify that there is at least 0.8 in (2 cm) of space on the right and left sides of the device.
☐ Install the device in a fire enclosure according to EN 60950-1.

Device casing

Only technicians authorized by the manufacturer are permitted to open the casing.

☐ Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
☐ Keep the ventilation slits free to ensure good air circulation.
☐ Mount the device in the vertical position.
☐ At ambient air temperatures > 140 °F (+60 °C):
The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

LED or laser components

LED or LASER components according to IEC 60825-1 (2014):
CLASS 1 LASER PRODUCT
CLASS 1 LED PRODUCT

CE marking

The labeled devices comply with the regulations contained in the following European directive(s):

2014/30/EU (EMC)
Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility.

2011/65/EU (RoHS)
Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

In accordance with the above-named EU directive(s), the EU conformity declaration will be at the disposal of the relevant authorities at the following address:

Tofino Security, a division of Belden Inc.
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany

The device can be used in the industrial sector.

- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55032

You find more information on technical standards here:
“Technical data” on page 41

Warning! This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.

Note: The assembly guidelines provided in these instructions must be strictly adhered to in order to observe the EMC threshold values.

Relevant for use in North America

☐ Use this device solely in Class 2 Circuits.

- **Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)**
  The **relay connections** are to be installed and used within their Entity Parameters as per the following Control Drawing 000174247DNR.

  Avertissement - Risque d'explosion - Ne pas débrancher tant que le circuit est sous tension à moins que l'emplacement soit connu pour ne contenir aucune concentration de gaz inflammable.

  Avertissement - Risque d'explosion - La substitution de tout composant peut rendre ce matériel incompatible pour une utilisation en classe I, division 2.

V_{max}	I_{max}	C_i	L_i
30 V	90 mA	3 nF	1 µH

CONTROL DRAWING to EAGLEONE and TOFINOXE series devices for use in Hazardous Locations Class I Division 2, Groups A, B, C, D			HIRSCHMANN A BELDEN BRAND
Rev. 0	2014-12-01	Document No.: 000174247DNR	Page 1/2

SUITABLE FOR USE IN CLASS I DIVISION 2 GROUPS A, B ,C, D HAZARDOUS LOCATIONS, OR NON-HAZARDOUS LOCATIONS ONLY.

For use in HAZARDOUS LOCATIONS only allowed for model No´s. which are labelled accordingly.

Nonincendive field wiring circuits must be wired in accordance with the National Electrical Code (NEC), NFPA 70, article 501.

USB AND RELAY CONTACTS (FAULT): Install per Control Drawing 000174247DNR.

WARNING - EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I DIVISION 2.

WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS.

***) Notes:**

The nonincendive field wiring circuit concept allows interconnection of nonincendive field wiring apparatus and associated nonincendive field wiring apparatus using any of the wiring methods permitted for unclassified locations when certain parametric conditions are met.

Capacity: C_a $C_i + C_{Cable}$; Inductivity: L_a $L_i + L_{Cable}$

The maximum cable length has to be determined as follows:

(a) max. Cable Length < $(L_a - L_i)$ / Cable $_L$

("Cable $_L$" denotes the inductance per unit length of used cable) and

(b) max. Cable Length < max. Cable Length < $(Ca - C_i)$ / Cable $_C$

("Cable $_C$" denotes the capacitance per unit length of used cable).

The lower value of (a) and (b) is to apply.

Manufactured in 72654 Neckartenzlingen / Germany by Hirschmann Automation and Control GmbH.

DOM: ww/yy (Date of manufactur w - week, y - year. Refer to the device label).

CONTROL DRAWING to EAGLEONE and TOFINOXE series devices for use in Hazardous Locations Class I Division 2, Groups A, B, C, D			HIRSCHMANN A BELDEN BRAND
Rev. 0	2014-12-01	Document No.: 000174247DNR	Page 2/2

ATEX directive 2014/34/EU – specific regulations for safe operation

In Ex Zone 2, only the devices with a corresponding label may be operated.

The **devices** are to be installed and used according to the European Directive 2014/34/EU. Details see the next 2 pages.

Ordinary Location, Non-Hazardous Area,
Nonexplosive Atmosphere
Atex Zone 2
Explosive Atmosphere
THE Fault Relays are tested as Sealed Device according to ATEX EN 60079-15. Switching current max. 1 A, (resistive load)
Switching voltage max. 60 V DC or 30 V AC, SELV
FAULT contacts
USB pin 4
USB pin 1
The USB connector is for temporary connection only. Do not use, connect, or disconnect unless area is known to be non-hazardous. Connection or disconnection in an explosive atmosphere could result in an explosion.
Any EAGLEONE-0200xxx or TOFINOXE-200xxx-device
The earth conductor must be at least of the same wire size (mm² or AWG) as the supply conductors.
Temperature Code: T4
Ambient Temperature rating:
Ta: 0 °C to +60 °C for "S" types
Ta: –40 °C to +70 °C for "T" or "E" types
– refer to the type designation on the device
(item 18 of product code: "Temperature range")
EAGLE One
Status
RR
Power
ACA
LS/DA 1
2 VPN
PB
IP-Adresse
Aufkleber MAC-Adresse
USB
1
2
DI (+)
DI (-)
+24V (P1)
0V
FAULT
0V
+24V (P2)
V24
Use of EAGLEONE and TOFINOXE series devices according to the European directive 2014/34/EU
HIRSCHMANN
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For Use in explosive atmospheres according to the European directive 2014/34/EU:

Applied Standards: EN60079-0, 2012
EN60079-15, 2010

The Use in Hazardous Locations with explosive atmospheres is only allowed for EAGLEONE or TOFINOXE model No´s. which are labeled accordingly - including "8 II 3 G", "Ex nA IIC T4 Gc" "DEKRA 13ATEX0184X".

SPECIAL CONDITIONS FOR SAFE USE:

- **The modules shall be installed in a suitable enclosure providing a degree of protection of at least IP54 according to EN 60529, taking into account the enviromental conditions under which the equipment will be used.**
- **Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.**
- **When the temperature under rated conditions exceeds 70 °C at the cable or conduit entry point, or 80 °C at the branching point of the conductors, the temperature specification of the selected cable shall be in compliance with the actual measured temperature values.**

Manufactured in 72654 Neckartenzlingen / Germany by Hirschmann Automation and Control GmbH.
DOM: ww/yy (Date of manufactur w - week, y - year. Refer to the device label).

Use of EAGLEONE and TOFINOXE series devices according to the European directive 2014/34/EU	HIRSCHMANN A BELDEN BRAND

FCC note:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; (2) this device must accept any interference received, including interference that may cause undesired operation.
Appropriate testing has established that this device fulfills the requirements of a class A digital device in line with part 15 of the FCC regulations.
These requirements are designed to provide sufficient protection against interference when the device is being used in a business environment. The device creates and uses high frequencies and can also radiate these frequencies. If it is not installed and used in accordance with this operating manual, it can cause radio transmission interference. The use of this device in a residential area can also cause interference, and in this case the user is obliged to cover the costs of removing the interference.

Recycling note

After usage, this device must be disposed of properly as electronic waste, in accordance with the current disposal regulations of your county, state, and country.

About this manual

This manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device. The following manuals are available to registered users as PDF files from https://www.tofinosecurity.com/support/tofino-hirschmann/manuals:

- Hardware Installation Manual
- Tofino Configurator User Manual

The Tofino Configurator software coordinates configuration, management, and auditing of all Tofino Xenon Security Appliance devices from one workstation. The software provides you with the following capabilities:

- Intuitive Windows-based graphical user interface
- Transfer of the configuration data from the application directly to the Tofino Xenon Security Appliance devices in the field
- Simple verification of the configuration of Tofino Xenon Security Appliance devices over the network
- Predefined templates for more than 125 IT and industrial communication protocols
- Asset templates for quick and efficient creation of your plant's assets
- Flexible security controls to tailor project access to meet your needs

Key

The symbols used in this manual have the following meanings:

▶	Listing
☐	Work step
■	Subheading

1 Description

1.1 General description

The Tofino Industrial Security Solution is a distributed system that quickly and cost-effectively implements cyber security protection within your control network. This package for helping secure industrial control systems consists of three core components:

- Tofino Xenon Security Appliance (Tofino SA)
  Industrially hardened devices that are installed between control system zones or in front of individual and/or clusters of controllers, computers, and other ICS/SCADA equipment.
- Tofino Loadable Security Modules (LSMs)
  A variety of software plug-ins that let you customize the security features of each Tofino SA. These software modules help provide security services, such as Firewall and Event Logger.
- Tofino Configurator
  A Windows-based management system for the configuration of each Tofino SA.

This manual focuses on the installation and setup of the first of these three components: the Tofino Xenon Security Appliance.

You can use the Tofino SA devices everywhere that security-sensitive equipment or zones require a network connection. These devices can act as the link between control zones and networks that have different security needs and capabilities. For example, a Tofino SA can be placed between a primary control zone and a safety system zone, or between a PLC network and an HMI network. Tofino SA devices can also be used to help protect vulnerable devices, such as legacy controllers and computers running older operating systems, from cyber and network events.

For each Tofino SA, you can choose from a wide range of variants when ordering. These include:

- Loadable Security Modules (i.e., software modules)
- Types of network media (i.e., twisted pair versus fiber)
- Temperature range
- Certifications

The security functions are installed as Loadable Security Modules (LSMs). These LSMs can be pre-installed at the factory, or purchased and added later. The following LSMs are currently available:

- Tofino Firewall LSM (included by default in all options)
- Tofino Event Logger LSM (included by default in all options)
- Tofino NetConnect LSM
- Tofino Modbus TCP Enforcer LSM
- Tofino OPC Classic Enforcer LSM
- Tofino EtherNet/IP Enforcer LSM

Additional LSMs are being developed continuously. If you need an LSM that is not in this list, please contact your sales representative.

You administer the Tofino SA devices using the Tofino Configurator software. This software allows you to configure all of your Tofino SA devices from one workstation. You can quickly create a model of your entire control system by scanning IP ranges to discover Tofino SA devices already installed on your network (this requires the NetConnect LSM). Visual editing tools help you create, edit, and test your Tofino configuration.

Tofino SA devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and offer long-term reliability and flexibility.

This product provides you with a large range of functions and industrially focused features, which this and other manuals explain. These documents are available to registered users as PDF files from https://www.tofinosecurity.com/support/tofino-hirschmann/manuals.

1.2 Device name and product code

The device name corresponds to the product code. The product code is made up of characteristics with defined positions. The characteristic values stand for specific product properties.

Item	Product characteristic	Characteristic value	Description
1 ... 8	Device	TofinoXe	2 port router
9	–		
10 ... 11	Number: Fast Ethernet ports	02	2 × Fast Ethernet ports
12 ... 13	Number: Gigabit Ethernet ports	00	0 × Gigabit Ethernet ports

Table 1: Device name and product code

Item	Product characteristic	Characteristic value	Description	
14 ... 15	Ethernet port 1 NET 1	T1	1 × RJ45 socket for 10/100 Mbit/s Twisted pair connections	
		M2	1 × DSC multimode socket for 100 Mbit/s F/O connections	
16 ... 17	Ethernet port 2 NET 2	T1	1 × RJ45 socket for 10/100 Mbit/s Twisted pair connections	
		M2	1 × DSC multimode socket for 100 Mbit/s F/O connections	
		S2	1 × DSC singlemode socket for 100 Mbit/s F/O connections	
18	Temperature range	E	Extended with Conformal Coating	−40 °F ... +158 °F (−40 °C ... +70 °C)
		S	Standard	+32 °F ... +140 °F (0 °C ... +60 °C)
		T	Extended	−40 °F ... +158 °F (−40 °C ... +70 °C)
19 ... 20	Supply voltage	DD	2 voltage inputs for redundant power supply	
			Rated voltage range DC: 12 V DC ... 48 V DC	
			Rated voltage AC: 24 V AC	
21 ... 22	Certificates and declarations	**Note:** You will find detailed information on the certificates and declarations applying to your device in a separate overview. See table 3 on page 21.		
23 ... 26	Software packages	**Note:** You will find detailed information on the software packages applying to your device in a separate overview. See table 4 on page 22.		
27 ... 28	Customer-specific version	TA	Tofino standard	
29	Software configuration	T	Tofino standard configuration	
30 ... 34	Software version	02.0.	Software version 02.0	
		XX.X.	Current software version	
35 ... 36	Bug fix	01	Bugfix version 01	
		XX	Current bugfix version	

Table 1: Device name and product code

	Item	Product characteristic	Description
TofinoXe	1 ... 8	Device	2 port router
–	9	–	
02	10 ... 11	Number: Fast Ethernet ports	2 × Fast Ethernet ports
00	12 ... 13	Number: Gigabit Ethernet ports	0 × Gigabit Ethernet ports
T1	14 ... 15	Ethernet port 1 NET 1	1 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
T1	16 ... 17	Ethernet port 2 NET 2	1 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
E	18	Temperature range	Extended with Conformal Coating −40 °F ... +158 °F (−40 °C ... +70 °C)
DD	19 ... 20	Supply voltage	2 voltage inputs for redundant power supply Rated voltage range DC: 12 V DC ... 48 V DC Rated voltage AC: 24 V AC
Z9	21 ... 22	Certificates and declarations	Standard applications ▶ CE ▶ EN 60950-1 ▶ EN 61131-2 ▶ FCC
000F	23 ... 26	Preloaded Software Modules	▶ FW (Firewall including Event Logger) ▶ NC (NetConnect) ▶ MB (Modbus TCP Enforcer) ▶ OPC (OPC Classic Enforcer)
HH	27 ... 28	Customer-specific version	Tofino standard
E	29	Software configuration	Tofino standard configuration
XX.X.	30 ... 34	Software version	Current software version
XX	35 ... 36	Bug fix	Current bugfix version

Table 2: Sample product code (left column):

Application case	Certificates and declarations	Characteristic value														
		T9	TY	U9	UT	UY	UX	V9	VT	VU	VY	W9	WX	X9	Y9	Z9
Standard applications	CE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	EN 60950-1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	EN 61131-2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	FCC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	UL 508		X		X	X	X		X	X	X		X	X	X	
Oil and gas applications	ATEX Zone 2											X	X			
	ISA-12.12.01 – Class I, Div. 2						X						X	X		
Substation applications	IEC 61850-3							X	X	X	X					
	IEEE 1613							X	X	X	X					
Railway applications (trackside)	EN 50121-4	X	X		X				X							

Table 3: Assignment: application cases, certificates and declarations, characteristic values

Loadable Security Modules (LSMs)	Characteristic value															
	0001	0003	0005	0007	0009	000B	000D	000F	000H	000K	000N	000Q	000S	000V	000X	000Z
Firewall (FW)[a]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NetConnect (NC)		X		X		X		X		X		X		X		X
Modbus TCP Enforcer (MB)			X	X			X	X			X	X			X	X
OPC Classic Enforcer (OPC)					X	X	X	X					X	X	X	X
EtherNet/IP Enforcer (EIP)									X	X	X	X	X	X	X	X

Table 4: Combination options of the Tofino SA software modules

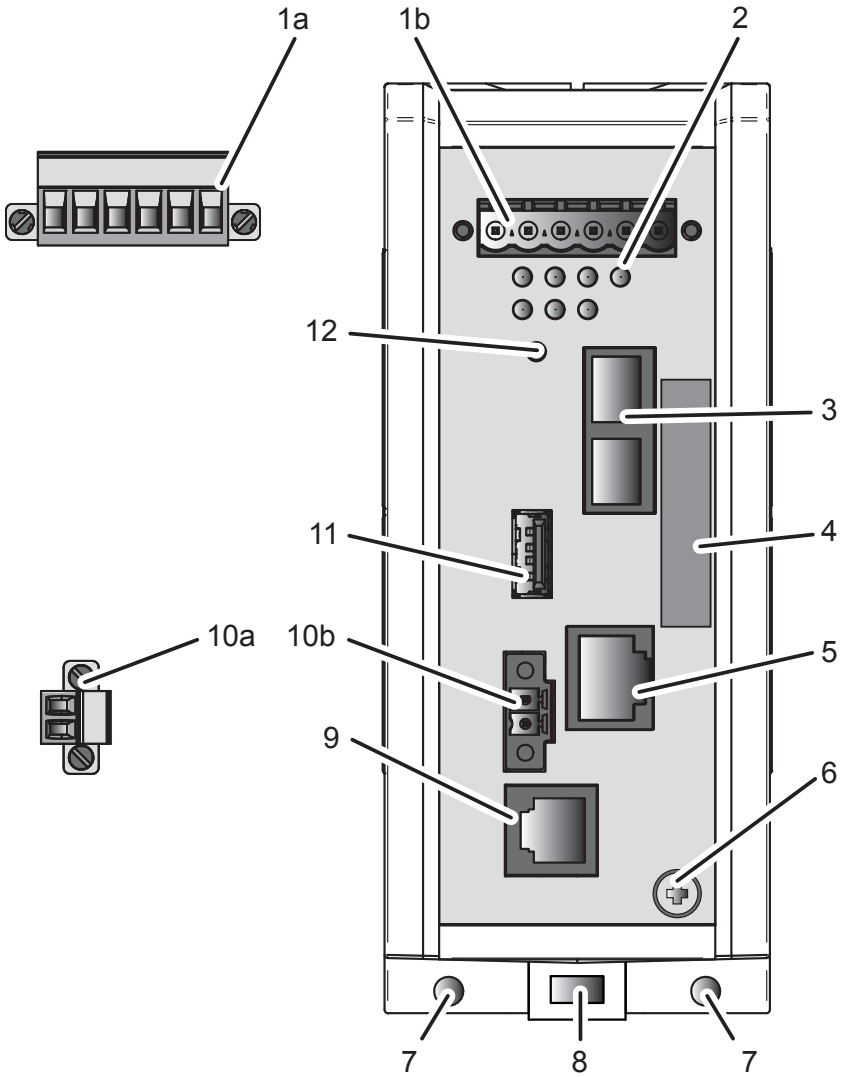
a. Includes Event Logger LSM

1.3 Combination options

Item	1 ... 8	9	10 ... 11	12 ... 13	14 ... 15	16 ... 17	18	19 ... 20	21 ... 22	23 ... 26	27 ... 28	29	30 ... 34	35 ... 36
Product characteristic	Device		Number: Fast Ethernet ports	Number: Gigabit Ethernet ports	Ethernet port 1	Ethernet port 2	Temperature range	Supply voltage	Certificates and declarations	Software packages	Customer-specific version	Software configuration	Software version	Bug fix
Attribute values	TofinoXe	–	02	00	T1; M2	T1; M2; S2	E; S; T	DD	T9; TY; U9; UY; UX; UT; V9; VY; VU; VT; W9; WX; X9; Y9; Z9	0001 0002 0003 0005 0007 0009 000B 000D 000F 000H 000K 000N 000Q 000S 000V 000X 000Z	TA	T	02.0.; XX.X.	01; XX

Table 5: Combination options of the Tofino SA device variants

1.4 Device view



1a	6-pin terminal block with screw lock for redundant power supply 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 connections
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 connections
		DSC singlemode socket for 100 Mbit/s F/O connections
6	Grounding screw	
7	Hole for mounting using a wall mounting plate	
8	Locking gate for removing the device	

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

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.....)

1.5 Power supply

A 6-pin, screwable terminal block is available for the redundant supply to the device.
Further information:
“Supply voltage” on page 6

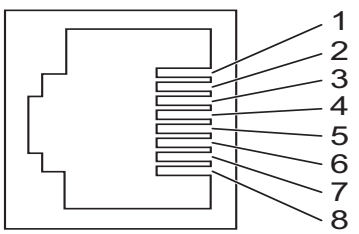
1.6 Ethernet ports

1.6.1 10/100 Mbit/s twisted pair port

The 10/100 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard.
This port supports:

- Autocrossing (if autonegotiation is activated)
- Autonegotiation
- Autopolarity
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode

Delivery state: Autonegotiation activated
The port casing is electrically connected to the front panel.
The pin assignment corresponds to MDI-X.



Pin	Function	
1	RD+	Receive path
2	RD−	Receive path
3	TD+	Transmission path
6	TD−	Transmission path
4,5,7,8	—	

Table 7: Pin assignment 10/100 Mbit/s twisted pair port, RJ45 socket, MDI-X mode

1.6.2 100 Mbit/s F/O port

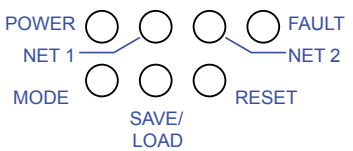
The 100 Mbit/s F/O port allows you to connect network components according to the IEEE 802.3 100BASE-FX standard.
This port supports:

- Full or half duplex mode

Default setting: Full duplex

1.7 Display elements

After the supply voltage is set up, the software starts and initializes itself. Afterwards, the device performs a self-test.



1.7.1 Device state

These LEDs provide information about conditions which affect the operation of the whole device.

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 voltage 1 **and** 2 is 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	Port is switched off
		yellow	flashing	Device is transmitting and/or receiving data
FAULT	System and USB save/load errors	red	none	The signal contact is closed, it is **not** reporting any detected errors.
			Very short flashing in cycles of 0.5 s	A detected USB load or save error occurred. See table 8 on page 29.
MODE	Network mode	green	none	The device is in Unconfigured mode.
			lights up	The device is in operational mode.
			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.

LED	Display	Color	Activity	Meaning
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		Flashing simultaneously	The reset of the device to the factory defaults is in progress.

1.8 Controls

The Tofino SA has a Save/Load/Reset (SLR) button (see table 6).

Save/Load/Reset button SLR

The SLR button has the following functions:

- Saving diagnostic files and log files on the USB storage device
- Loading configuration files from the USB storage device
- Factory resetting the device

☐ To perform the functions, press the SLR button. The number of button presses controls which function is carried out. Check your selection by looking at the LEDs.

Button presses	Chosen function	LED behavior
1	Saving diagnostic files and log files on the USB storage device	The SAVE/LOAD LED will illuminatein green. After a few seconds theMODE, SAVE/ LOAD, and RESET LEDswill flash in green in a left to rightsequence to indicate the USB Saveis in progress.

Button presses	Chosen function	LED behavior
2	Loading configuration files from the USB storage device	The SAVE/LOAD LED will illuminatein yellow. After a few seconds theMODE, SAVE/ LOAD, and RESET LEDswill flash in yellow in a right to leftsequence to indicate the USB Loadis in progress.
3	Factory resetting the device	The following LEDs flashsimultaneousl y: MODE, SAVE/ LOAD, RESET, FAULT.
4	Canceling prior button presses	—

1.9 Management interfaces

1.9.1 V.24 interface

The V.24 interface is **not** active in this version of the firmware.

1.9.2 USB interface

This interface offers you the ability to connect a USB storage device. This storage device is used for saving/loading the configuration and diagnostic functions, and for upgrading the software.

Note: The ACA22-USB storage device has been tested by Tofino Security and is therefore recommended. You find the order number for the ACA22-USB, which is available as accessory, under “Accessories” on page 47.

The USB interface has the following properties:

- Supports the USB master mode
- Supports USB 2.0 formatted as FAT or FAT32 (data rate max. 12 MBit/s)
- Connectors: type A
- Supplies current of max. 500 mA
- Voltage not potential-separated

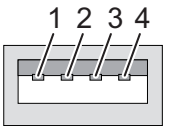
Figure	Pin	Function
	1	VCC (VBus)
	2	− Data
	3	+ Data
	4	Ground (GND)

Table 8: Pin assignment of the USB interface

1.10 Input/output interfaces

1.10.1 Signal contact (Digital output)

The signal contact is a potential-free relay contact.
The device allows you to perform remote diagnosis via the signal contact. In the process, the device signals events such as a line interruption. When an event occurs, the device opens the relay contact and interrupts the circuit.
Further information:
“Signal contact (optional)” on page 33

1.10.2 Digital input

Further information:
“Wiring the digital input (optional)” on page 34

2 Installation

Before installing and starting up the device, read the safety instructions.
See “Safety instructions” on page 5.

2.1 Overview

The devices have been developed for practical application in a harsh industrial environment.
On delivery, the device is ready for operation.

Perform the following steps to install and configure the device:
- Checking the package contents
- Installing and grounding the device
- Connecting the power supply and the signal contact lines
- Wiring the digital input (optional)
- Operating the device
- Connecting data cables

2.2 Checking the package contents

☐ Check whether the package includes all items named in the section “Scope of delivery” on page 47.
☐ Check the individual parts for transport damage.

2.3 Installing and grounding the device

⚠ WARNING

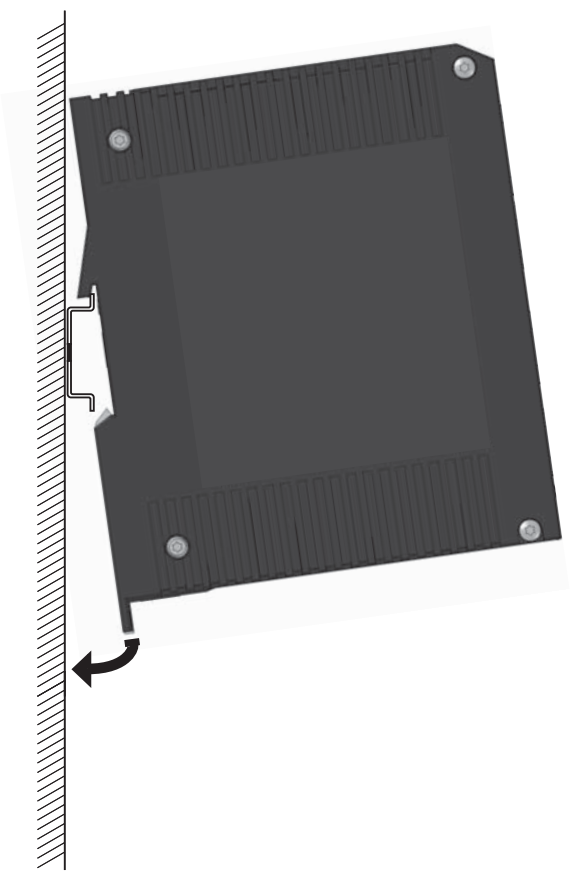
FIRE HAZARD

Install the device in a fire enclosure according to EN 60950-1.
Failure to follow this instruction can result in death, serious injury, or equipment damage.

2.3.1 Installing the device onto the DIN rail

☐ Verify that there is at least 4 in (10 cm) of space above and below the device.
☐ Verify that there is at least 0.8 in (2 cm) of space on the right and left sides of the device.

To mount the device onto a horizontally mounted 35 mm DIN rail according to DIN EN 60715, proceed as follows:
☐ Slide the upper snap-in guide of the device into the DIN rail.
☐ Pull down the locking gate using a screwdriver and press the lower part of the device against the DIN rail.
☐ Snap in the device by releasing the locking gate.



2.3.2 Mounting on a vertical flat surface

You have the option of attaching the device to a vertical flat surface. This requires a wall mounting plate, which you purchase as a separate accessory.
See “Accessories” on page 47.
The wall mounting plate comes without mounting hardware.
☐ Obtain mounting hardware which is suitable for your requirements.

The wall mounting plate is provided with a Mounting Note that takes you through the mounting procedure.
☐ Follow the Mounting Note provided with the accessory.

2.3.3 Grounding the device

⚠ WARNING

ELECTRIC SHOCK

Ground the device before connecting any other cables.
Failure to follow this instruction can result in death, serious injury, or equipment damage.

The device has a functional ground connection.
The device is grounded via the separate ground screw.
☐ Ground the device via the ground screw.

2.4 Connecting the terminal blocks

⚠ WARNING

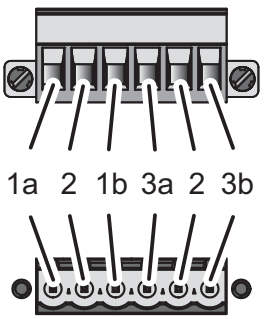
ELECTRIC SHOCK

Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.

Start connecting the electrical wires only if **all** the above safety requirements are fulfilled.
See “Supply voltage” on page 6.
See “Input/output interfaces” on page 7.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

2.4.1 Connecting the power supply and the signal contact lines



1	Supply voltage connection 1	
	1a	24 V
	1b	0 V
2	Connection for the signal contact	
3	Supply voltage connection 2	
	3a	0 V
	3b	24 V

Table 9: Pin assignment: 6 pin, screwable terminal block (on the top), connection to the device (at the bottom)

Supply voltage

The supply voltage can be connected redundantly. Both inputs are uncoupled. There is no distributed load. With redundant supply, the power supply unit with the higher output voltage supplies the device on its own. The supply voltage is electrically isolated from the housing.

Type of the voltages that can be connected	Specification of the supply voltage	Pin assignment on the device	
DC voltage	Rated voltage range DC: 12 V DC ... 48 V DC Voltage range DC incl. maximum tolerances: 9.6 V DC ... 60 V DC	24 V	Plus terminal of the supply voltage
		0 V	Minus terminal of the supply voltage
AC voltage	Rated voltage AC: 24 V AC Voltage range AC incl. maximum tolerances: 18 V ... 30 V	24 V	Outer conductor
		0 V	Neutral conductor

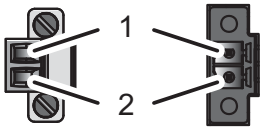
Table 10: Type and specification of the supply voltage, pin assignment on the device

- ☐ Remove the terminal connector from the device.
- ☐ Connect the wires according to the pin assignment on the device with the clamps.
- ☐ Fasten the wires connected by tightening the terminal screws.

Signal contact (optional)

- ☐ Connect the wires according to the pin assignment on the device with the clamps.
- ☐ Fasten the wires connected by tightening the terminal screws.

2.4.2 Wiring the digital input (optional)



Pin	Signal, terminal	Function
1	DI (+)	Signal input
2	DI (−)	Reference potential

Table 11: Pin assignment: 2 pin, screwable terminal block (on the left), connection to the device (to the right)

☐ Remove the terminal connector from the device.
☐ Connect the wires according to the pin assignment on the device with the clamps.
☐ Fasten the wires connected by tightening the terminal screws.

2.5 Operating the device

⚠ WARNING

ELECTRIC SHOCK

Connect only a supply voltage that corresponds to the type plate of your device.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

Note: The torque for tightening the working voltage terminal block on the device is 4.5 lb-in (0.51 Nm).
The torque for tightening the terminal block on the digital input of the device is 3 lb-in (0.34 Nm).

☐ Mount the terminal block for the supply voltage and the signal contact using screws.
☐ Enable the supply voltage.

2.6 Connecting data cables

Note the following general recommendations for data cable connections in environments with high electrical interference levels:

- ☐ Keep the length of the data cables as short as possible.
- ☐ Use optical data cables for the data transmission between the buildings.
- ☐ When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- ☐ Verify that power supply cables and data cables do not run parallel over longer distances. If reducing the inductive coupling is necessary, verify that the power supply cables and data cables cross at a 90° angle.
- ☐ Use SF/UTP cables as per ISO/IEC 11801:2002.

Note: Verify that you connect only optical ports with the same optical transmission properties with each other.

Further information:
“10/100 Mbit/s twisted pair port” on page 25
“100 Mbit/s F/O port” on page 26

- ☐ Connect the device via the NET 2 port to the internal network or the local computer that you want to help protect.
- ☐ Connect the device via the NET 1 port to the external network, such as the Internet. This network is used to set up the connections to the external device or external network.

3 Configuration

3.1 Making basic settings

You configure the device using the Tofino Configurator software supplied at no charge with every device purchased.
Using this software you can configure the Tofino SA in 2 ways:

- use an encrypted USB storage device
- discover and configure Tofino SA devices over the network (requires the NetConnect LSM to be loaded in the device)

Regardless of the configuration method used, an IP address is **not** required for setup. However, when using the network method, both network interfaces must be connected and the computer running the Tofino Configurator software must be able to communicate to an IP device on the opposite interface. For example, if the Tofino Configurator computer is on NET 1 then another device should be connected in some way on the NET 2 port and the two devices should be able to ping each other.

You will find further information on discovering, configuring, and managing the Tofino Xenon Security Appliance in the Tofino Configurator User Manual.

Default settings

- Optical 100 Mbit/s ports: 100 Mbit/s full duplex
  Twisted pair ports: autonegotiation
- Device mode:
  Unconfigured mode and passing all traffic

3.1.1 USB interface

The USB port has an interface for the local connection of a USB storage device. It is used for saving/loading the configuration, transferring event logs, and updating the firmware and licenses.

Note: The ACA22-USB storage device has been tested by Tofino Security and is therefore recommended. You find the order number for the ACA22-USB, which is available as accessory, under “Accessories” on page 47.

USB Save

Perform a USB Save on the Tofino SA to save event log and diagnostic information from the hardware to a USB storage device.

☐ Power on the Tofino SA for at least one minute.
☐ Insert the USB storage device into the USB port.

☐ Press the Save/Load/Reset button once.
The SAVE/LOAD LED will illuminate in green. After a few seconds the MODE, SAVE/LOAD, and RESET LEDs will flash in green in a left to right sequence to indicate the USB Save is in progress.
☐ When the flashing sequence stops, remove the USB storage device. If the save was successful the LEDs will revert to the state they were in prior to the save action.

USB Load

Perform a USB Load to transfer configuration files and firmware updates stored on a USB storage device to the Tofino SA.
☐ Power on the Tofino SA for at least one minute.
☐ Insert the USB storage device containing the prepared files into the USB port.
☐ Press the Save/Load/Reset button twice.
The SAVE/LOAD LED will illuminate in yellow. After a few seconds the MODE, SAVE/LOAD, and RESET LEDs will flash in yellow in a right to left sequence to indicate the USB Load is in progress.
☐ When the flashing sequence stops, remove the USB storage device. If the load was successful the FAULT LED will be off.

FAULT LED

The FAULT LED flashes during the USB save and load sequences to convey specific messages. See the following table to interpret this activity.

No. of flashes	During save sequence	During load sequence
1	---	The USB port is disabled. In the Tofino Configurator, check the Communications setting on the Tofino SA General page. The method of communication should be "USB Only" or "Both USB and Network".
2	No USB memory device is connected to the USB connection, or the file system of the memory device is not formatted as FAT or FAT32.	No USB memory device is connected to the USB connection, or the file system of the memory device is not formatted as FAT or FAT32.
3	The device was unable to create any diagnostic files. Please contact technical support.	The files on the USB memory device are invalid.
4	The device was unable to encrypt the diagnostic files. Please contact technical support.	The device was unable to decrypt the configuration files. The files were possibly damaged during the copying operation. Repeat the copying operation. If the condition persists, contact technical support.

Table 12: FAULT LED diagnostics for USB Save and Load

No. of flashes	During save sequence	During load sequence
5	The device was unable to copy the diagnostic files to the USB memory device. It is possible that the memory device is full.	The device was unable to load the files. It is possible that the files were damaged during the copying operation. Repeat the copying operation. If the condition persists, contact technical support.
6	The device was unable to deactivate the USB connection. Please contact technical support.	The device was unable to deactivate the USB connection. Please contact technical support.
7	The file system of the device does not have enough memory capacity to save the files temporarily before they are copied to the USB memory device. Please contact technical support.	---

Table 12: FAULT LED diagnostics for USB Save and Load

3.2 Operating Modes

This device works in one of 3 operating modes:

- Unconfigured mode
- Test mode
- Operational mode

Mode	Description	LED	Color	Activity
Unconfigured mode	This is the mode of the device on delivery. All security functionality is turned off and the device is listening for initialization commands. The device has been preconfigured so that all Ethernet traffic in both directions is permitted. This is so that the installation of the device will not interrupt or impact process operations.	MODE	---	None
Test Mode	In Test mode the device does not impact network traffic in any way, but generates alarm messages for any traffic that would have been blocked if the device was in Operational mode. This is used to test that the device is correctly configured before it is used to filter control system traffic.	MODE	Green	Flashing
Operational Mode	In Operational mode the device is fully operational, processes all traffic, and will block any messages not specifically permitted by firewall rules.	MODE	Green	Solid

Table 13: Operating modes

4 Maintenance and service

- When designing this device, Tofino Security largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications.
  See “Technical data” on page 41.
- Relays are subject to natural wear. This wear depends on the frequency of the switching operations. Check the resistance of the closed relay contacts and the switching function depending on the frequency of the switching operations.
- Tofino Security is continually working on improving and developing its software. Check regularly whether there is an updated version of the software that provides you with additional benefits. You find software information and downloads on the Tofino Security product pages (www.tofinosecurity.com/support).
- Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed.

5 Disassembly

⚠ WARNING

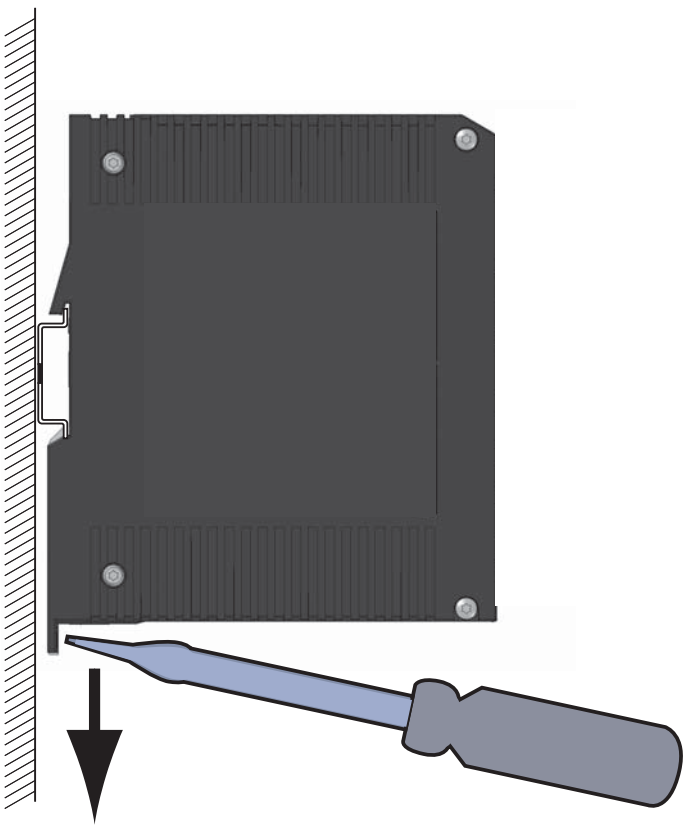
ELECTRIC SHOCK

Disconnect the grounding only after disconnecting all other cables.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

☐ Disconnect the data cables.
☐ Disable the supply voltage.
☐ Disconnect the terminal blocks.
☐ Disconnect the grounding.

To remove the device from the DIN rail, you proceed as follows:
☐ Insert a screwdriver horizontally below the housing into the locking gate.
☐ Pull the locking gate down without tilting the screwdriver.
☐ Lift the bottom of the device away from the DIN rail.



6 Technical data

General technical data

Dimensions W × H × D	See “Dimension drawings” on page 43.		
Weight	660 g		
Power supply	▶ 2 voltage inputs for redundant power supply ▶ Safety extra-low voltage (SELV), redundant inputs disconnected		
	Rated voltage AC:	24 V, Class 2	
	Voltage range AC incl. maximum tolerances:	18 V ... 30 V, Class 2	
	Rated voltage range DC:	12 V ... 48 V, Class 2	
	Voltage range DC incl. maximum tolerances:	9.6 V ... 60 V, Class 2	
	Connection type	6-pin terminal block with screw lock for redundant power supply and signal contact	
	Power loss buffer	> 10 ms at 20.4 V DC or AC > 2 ms at 10.2 V DC	
	Overload current protection at input	Non-replaceable fuse	
	Back-up fuse for each voltage input when supply is via 2 inputs	Nominal value at 48 V	1 A
		Nominal value at 24 V	1 A ... 2 A
		Nominal value at 12 V	1 A ... 2.5 A
		Characteristic:	slow blow
	Back-up fuse when using 1 voltage input[a]	Nominal value at 48 V	1 A ... 2 A
		Nominal value at 24 V	1 A ... 4 A
		Nominal value at 12 V	1 A ... 5 A
		Characteristic:	slow blow
	Peak inrush current	< 14 A	
Climatic conditions during operation	Ambient air temperature[b]	Devices with operating temperature characteristic value S (Standard): +32 °F ... +140 °F (0 °C ... +60 °C)	
		Devices with operating temperature characteristic value E and T (extended): −40 °F ... +158 °F (−40 °C ... +70 °C)	
	Maximum inner temperature of device (guideline)	Devices with operating temperature characteristic value S (Standard): 176 °F (80 °C)	
		Devices with operating temperature characteristic value E and T (extended): 194 °F (90 °C)	
	Humidity	10%...90% (non-condensing)	
	Air pressure	min. 795 hPa (+6562 ft; +2000 m) max. 1060 hPa (−1312 ft; −400 m)	

Climatic conditions during storage	Ambient air temperature[c]	–40 °F ... +185 °F (−40 °C ... +85 °C)
	Humidity	10%...90% (non-condensing)
	Air pressure	min. 700 hPa (+9842 ft; +3000 m) max. 1060 hPa (−1312 ft; −400 m)
Signal contact FAULT	Switching current	max. 1 A, SELV
	Switching voltage	max. 60 V DC, SELV
		Relevant for North America: max. 30 V DC, Class 2, resistive load
Pollution degree		2
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection	IP20

a. As an alternative to the back-up fuse is possible:
Supply voltage based on NEC Class 2 or EN 60950-1 Limited Power Source
b. Temperature of the ambient air at a distance of 2 in (5 cm) from the device
c. Temperature of the ambient air at a distance of 2 in (5 cm) from the device

Digital input

Maximum permitted input voltage range	−32 V DC … +32 V DC
Rated input voltage	+24 V DC
Input voltage, low level, status “0”	−0.3 V DC ... +5.0 V DC
Input voltage, high level, status “1”	+11 V DC … +30 V DC
Maximum input current at 24 V input voltage	15 mA
Input characteristic according to IEC 61131-2 (current-consuming)	Type 3
Connection type	2 pin, screwable terminal block for digital input
Tightening torque	3 lb-in (0.34 Nm)

Note: For the pin assignment see “Wiring the digital input (optional)” on page 34.

Dimension drawings

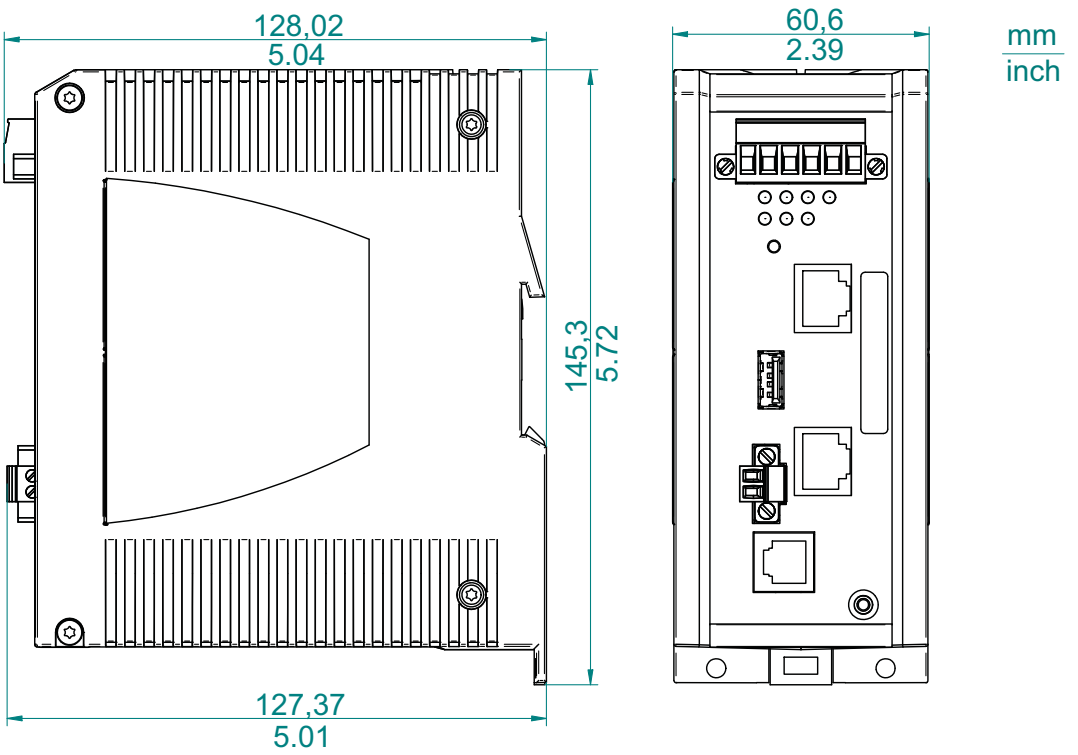


Figure 1: Dimensions

EMC and immunity

Note: You will find detailed information on the certificates and declarations applying to your device in a separate overview.
See table 3 on page 21.

Stability		Standard applications	Navy applications	Railway applications	Substation applications
IEC 60068-2-6, test Fc	Vibration	5 Hz ... 8.4 Hz with 0.14 in. (3.5 mm) amplitude	2 Hz ... 13.2 Hz with 0.04 in (1 mm) amplitude	—	2 Hz ... 9 Hz with 0.11 in (3 mm) amplitude
		—	—	—	—
		8.4 Hz ... 150 Hz with 1 g	13.2 Hz ... 100 Hz with 0.7 g	—	9 Hz ... 200 Hz with 1 g
		—	—	—	—
		—	—	—	200 Hz ... 500 Hz with 1.5 g
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms		—	0.53 oz (10 g) at 11 ms

EMC interference emission		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Radiated emission					
EN 55032		Class A	Class A	Class A	Class A
FCC 47 CFR Part 15		Class A	Class A	Class A	Class A
EN 61000-6-4		Fulfilled	Fulfilled	Fulfilled	Fulfilled
Conducted emission					
EN 55032	AC and DC supply connections	Class A	Class A	Class A	Class A
FCC 47 CFR Part 15	AC and DC supply connections	Class A	Class A	Class A	Class A

EMC interference emission		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
EN 61000-6-4	AC and DC supply connections	Fulfilled	Fulfilled	Fulfilled	Fulfilled
EN 55032	Telecommunication connections	Class A	Class A	Class A	Class A
EN 61000-6-4	Telecommunication connections	Fulfilled	Fulfilled	Fulfilled	Fulfilled

EMC interference immunity		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Electrostatic discharge					
EN 61000-4-2 IEEE C37.90.3	Contact discharge	±4 kV	±6 kV	±6 kV	±8 kV
EN 61000-4-2 IEEE C37.90.3	Air discharge	±8 kV	±8 kV	±8 kV	±15 kV
Electromagnetic field					
EN 61000-4-3	80 MHz ... 3000 MHz	10 V/m	10 V/m	20 V/m	10 V/m
IEEE 1613	80 MHz ... 1000 MHz	—	—	—	35 V/m
Fast transients (burst)					
EN 61000-4-4 IEEE C37.90.1	AC/DC supply connection	±2 kV	±2 kV	±2 kV	±4 kV
EN 61000-4-4 IEEE C37.90.1	Data line	±4 kV	±4 kV	±4 kV	±4 kV
Voltage surges - DC supply connection					
EN 61000-4-5	line/ground	±2 kV	±2 kV	±2 kV	±2 kV
IEEE 1613	line/ground	—	—	—	±5 kV
EN 61000-4-5	line/line	±1 kV	±1 kV	±1 kV	±1 kV
Voltage surges - data line					
EN 61000-4-5	line/ground	±1 kV	±1 kV	±2 kV	±4 kV
Conducted disturbances					
EN 61000-4-6	150 kHz ... 80 MHz	10 V	10 V	10 V	10 V

EMC interference immunity		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Damped oscillation - AC/DC supply connection					
EN 61000-4-12 IEEE C37.90.1	line/ground	—	—	—	2.5 kV
EN 61000-4-12 IEEE C37.90.1	line/line	—	—	—	1 kV
Damped oscillation – data line					
EN 61000-4-12 IEEE C37.90.1	line/ground	—	—	—	2.5 kV
EN 61000-4-12	line/line	—	—	—	1 kV
Pulse magnetic field					
EN 61000-4-9		—	—	300 A/m	300 A/m

Network range

Ports	Wave length	Fiber	System attenuation	Example for F/O cable length[a]	Fiber attenuation	BLP/Dispersion
MM	1300 nm	50/125 µm	0-8 dB	0-5 km	1.0 dB/km	800 MHz*km
MM	1300 nm	62.5/125 µm	0-11 dB	0-4 km	1.0 dB/km	500 MHz*km

Table 14: F/O port 100BASE-FX

a. Including 3 dB system reserve when compliance with the fiber data is observed.

MM = Multimode

10/100/1000 Mbit/s twisted pair port	
Length of a twisted pair segment	max. 328 ft (100 m) (for Cat5e cable)

Table 15: Network range: 10/100/1000 Mbit/s twisted pair port

Power consumption/power output

Device variant	Maximum power consumption	Power output
TofinoXe-0200T1T1.....	5 W	17 Btu (IT)/h
TofinoXe-0200T1M2..... TofinoXe-0200T1S2..... TofinoXe-0200M2T1.....	6 W	20 Btu (IT)/h
TofinoXe-0200M2M2.....	7 W	24 Btu (IT)/h

Scope of delivery

Number	Article
1 ×	Device
1 ×	6-pin terminal block with screw lock for redundant power supply and signal contact
1 ×	2 pin, screwable terminal block for digital input
1 ×	Installation user manual

Accessories

Note that products recommended as accessories may have different characteristics to those of the device, which may limit the application range of the overall system. For example, if you add an accessory with IP20 to a device with IP65, the degree of protection of the overall system is reduced to IP20.

Other accessories	Order number
AutoConfiguration Adapter ACA22-USB (EEC)	942 124-001
6-pin, screwable terminal block (50 pcs.)	943 845-013

Other accessories	Order number
Wall mounting plate for DIN rail mounting, width 2.36 in. (60 mm)	943 971-003
Rail Power Supply RPS 30	943 662-003
Rail Power Supply RPS 80 EEC	943 662-080
Rail Power Supply RPS 120 EEC (CC)	943 662-121
Tofino Configurator Software	942 016-118
Tofino Modbus TCP Enforcer LSM	942 140-001
Tofino OPC Classic Enforcer LSM	942 140-002
Tofino NetConnect LSM	942 140-004
Tofino EtherNet/IP Enforcer LSM	942 140-003

Underlying technical standards

Name	
ANSI/ISA 12.12.01	Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
CAN/CSA C22.2 No. 213	Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations.
EN 50121-4	Railway applications – EMC – Emission and immunity of the signaling and telecommunications apparatus (Rail Trackside)
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
EN 60079-0	Explosive atmospheres – Part 0: Equipment – General requirements
IEC/EN 60079-15	Explosive atmospheres – Part 15: Equipment protection by type of protection “n”
EN 60950-1	Information technology equipment – Safety – Part 1: General requirements
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emitted interference in industrial environments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
FCC 47 CFR Part 15	Code of Federal Regulations
IEC 60825-1	Laser product safety
IEC/EN 61850-3	Communication networks and systems for power utility automation - Part 3: General requirements.
IEEE 1613	IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations
UL 508	Safety for Industrial Control Equipment
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products

Table 16: List of the technical standards

The device generally fulfills the technical standards named in their current versions.
The device has an approval based on a specific standard only if the approval indicator appears on the device casing.

A Further Support

For technical support, licensing, manuals, and software downloads, please contact the Tofino supplier in your area or use our support portal: www.tofinosecurity.com/support.

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