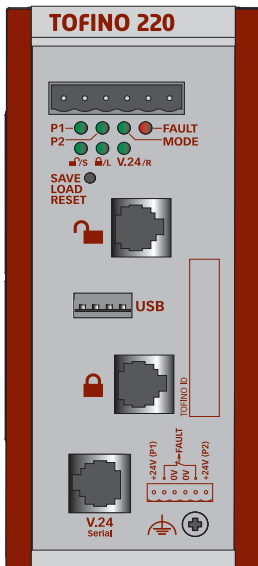
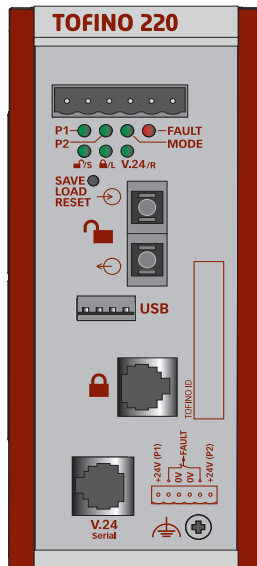


# Hardware Installation Guide

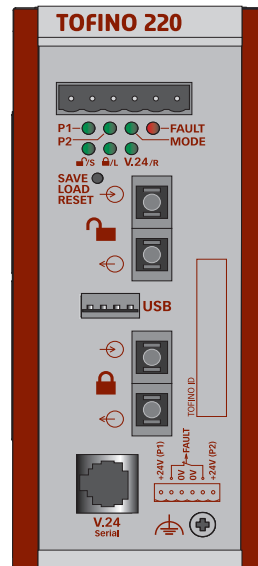
Tofino™ Argon 220 Security Appliance  
Release 04 04/2010



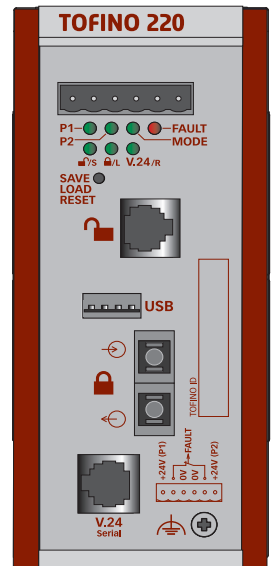
Tofino Argon 220 SA TX/TX



Tofino Argon 220 SA MM/TX



Tofino Argon 220 SA MM/MM



Tofino Argon 220 SA TX/MM



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# Safety instructions

This documentation contains instructions which must be observed to ensure your own personal safety and to avoid damage to devices and machinery.

## ■ Certified usage

Please observe the following: The device may only be employed for the purposes described in the catalog and technical description, and only in conjunction with external devices and components recommended or approved by the manufacturer. The product can only be operated correctly and safely if it is transported, stored, installed and assembled properly and correctly. Furthermore, it must be operated and serviced carefully.

## ■ Supply voltage

For safety reasons the devices have been designed to operate at low voltages. Thus, they may only be connected to the supply voltage connections and to the signal contact with SELV circuits with the voltage restrictions in accordance with IEC/EN 60950-1.

The supply voltage is electrically isolated from the housing.

Use only undamaged parts.

Relevant for North America: For use in Class 2 circuits.

The device may only be connected to a supply voltage of class 2 that fulfills the requirements of the National Electrical Code, Table 11(b). If the voltage is being supplied redundantly (two different voltage sources), the combined supply voltages must fulfill the requirements of the National Electrical Code, Table 11(b).

Relevant for North America: For use in Class 2 circuits.

Only use copper wire/conductors of class 1, 60/75°C or 75°C.

## ■ Shielding ground

The shielding ground of the connectable twisted pairs lines is connected to the front panel as a conductor.

Beware of possible short circuits when connecting a cable section with conductive shielding braiding.

## ■ Housing

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

The lower panel of the device is grounded by means of the DIN rail and optionally by means of the separate ground screw.

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

- The ventilation slots must not be covered so as to ensure free air circulation.
- The clearance to the ventilation slots of the housing must be at least 10 cm (3.94 in).



### **Warning!**

Never insert sharp objects (small screwdrivers, wires, etc.) into the inside of the product. There is the risk of an electric shock.

- The device must be installed in the vertical position ([see fig. 3](#)).
- If installed in a living area or office environment, the device must be operated exclusively in switch cabinets with fire protection characteristics according to EN 60950-1.

## ■ **Environment**

The device may only be operated at the specified maximum ambient temperature (temperature of the surrounding air at a distance of up to 5 cm (1.97 in) to the device) and relative air humidity (non-condensing).

- Install the device in a location where the climatic threshold values specified in the technical data are adhered to.
- Only to be used in an environment with a pollution degree specified in the technical data.

## ■ **Qualification requirements for personnel**

Qualified personnel as understood in this manual and the warning signs, are persons who are familiar with the setup, assembly, startup, and operation of this product and are appropriately qualified for their job. This includes, for example, those persons who have been:

- ▶ trained or directed or authorized to switch on and off, to ground and to label power circuits and devices or systems in accordance with current safety engineering standards;
- ▶ trained or directed in the care and use of appropriate safety equipment in accordance with the current standards of safety engineering;
- ▶ trained in providing first aid.

## ■ **General safety instructions**

Electricity is used to operate this equipment. Comply with every detail of the safety requirements specified in the operating instructions regarding the voltages to apply ([see page 4](#)).

Non-observance of these safety instructions can therefore cause material damage and/or serious injuries.

- Only appropriately qualified personnel should work on this device or in its vicinity. These personnel must be thoroughly familiar with all the warnings and maintenance procedures in accordance with this operating manual.

- The proper and safe operation of this device depends on proper handling during transport, proper storage and assembly, and conscientious operation and maintenance procedures.
- Never start operation with damaged components.
- Only use the devices in accordance with this manual. In particular, observe all warnings and safety-related information.
- Any work that may be required on the electrical installation may only be carried out by personnel trained for this purpose.

**Note:** LED or LASER components in compliance with IEC 60825-1 (2001):

CLASS 1 LASER PRODUCT  
CLASS 1 LED PRODUCT

### ■ **National and international safety regulations**

- Make sure that the electrical installation meets local or nationally applicable safety regulations.

### ■ **Note on the CE marking**

The devices comply with the regulations contained in the following European directives:

2004/108/EG

Directive of the European Parliament and the Council for standardizing the regulations of member states on electromagnetic compatibility.

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

Hirschmann Automation and Control GmbH  
Stuttgarter Str. 45-51  
72654 Neckartenzlingen  
Germany  
Tel.: +49 1805 141538

The product can be used in living areas (living area, place of business, small business) and in industrial areas.

- ▶ Interference immunity: EN 61000-6-2:2005
- ▶ Emitted interference: EN 55022:2006 Class A



### **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.

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

#### ■ **FCC note:**

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 radiate same, and 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 living 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 product must be disposed of properly as electronic waste, in accordance with the current disposal regulations of your county, state and country.

## **Legend**

The symbols used in this manual have the following meanings:

	Listing
	Work step
	Subheading

# 1 Device description

## 1.1 General device description

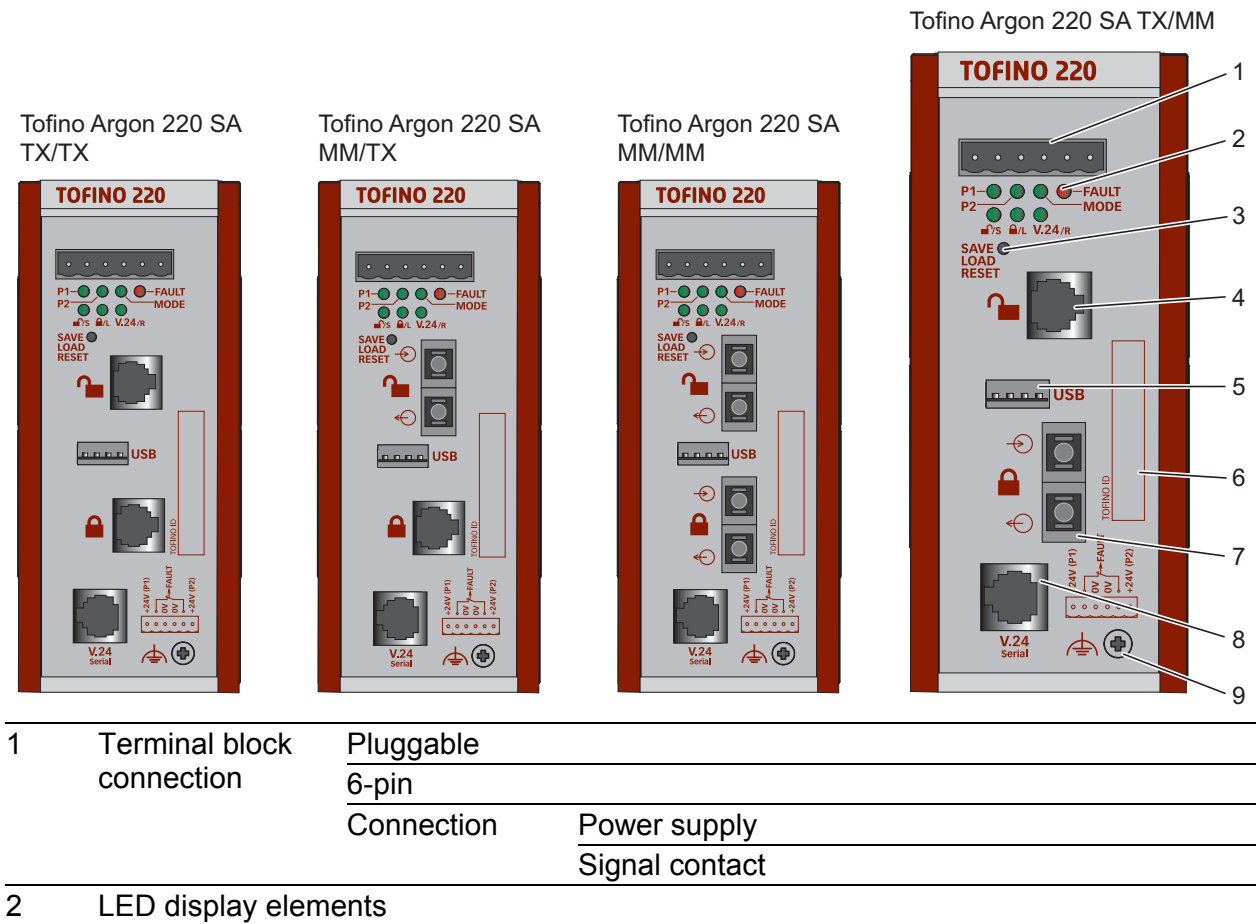
The Industrial ETHERNET Security Appliance Tofino Argon 220 ensures the authentication, security and confidentiality of communication within production networks, but also beyond company boundaries.

The devices have the following interfaces:

- ▶ 1 untrusted port
- ▶ 1 trusted port
- ▶ 1 V.24 input
- ▶ 1 USB interface

You can choose from several device variants:



- ▶ Tofino Argon 220 SA TX/TX
- ▶ Tofino Argon 220 SA TX/MM
- ▶ Tofino Argon 220 SA MM/TX
- ▶ Tofino Argon 220 SA MM/MM



1	Terminal block connection	Pluggable 6-pin Connection	Power supply Signal contact
2	LED display elements		

Table 1: Overview: interfaces, display elements and operating elements



3	Button	Save/Load/Reset			
4	Port 1 Untrusted 	Either TX or MM, depending on device variant	Twisted pair (TX ports)	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
				Connection type	RJ45
				Supports	<ul style="list-style-type: none"> <li>▶ Autonegotiation</li> <li>▶ Autopolarity</li> <li>▶ Autocrossing</li> <li>▶ Full or half duplex mode</li> </ul>
			Fiber optic (MM ports)	Type of fiber	Multimode
				Standard	ISO/IEC 8802-03 100BASE-FX
				Connection type	DSC
				Supports	Full or half duplex mode
5	USB interface	USB storage device			
6	Device ID				
7	Port 2 Trusted 	Either TX or MM, depending on device variant	Twisted pair (TX ports)	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
				Connection type	RJ45
				Supports	<ul style="list-style-type: none"> <li>▶ Autonegotiation</li> <li>▶ Autopolarity</li> <li>▶ Autocrossing</li> <li>▶ Full or half duplex mode</li> </ul>
			Fiber optic (MM ports)	Type of fiber	Multimode
				Standard	ISO/IEC 8802-03 100BASE-FX
				Connection type	DSC
				Supports	Full or half duplex mode
8	V.24 interface	The V.24 interface is not active in this version of firmware.			
9	Grounding screw				

*Table 1: Overview: interfaces, display elements and operating elements*

You can use the devices everywhere that security-sensitive network equipment or zones require a connection out in a harsh environment. The Tofino Argon 220 devices are the link between the “secure” network and the “unsecured outside world”. In their function as a link, the devices protect the security-sensitive systems from undesired data traffic from the outside world.

Typical uses are:

- ▶ Protecting individual production cells in a flat company network
- ▶ Protecting individual production cells in a routed company network
- ▶ Connecting a production cell with the office network via a public network
- ▶ Providing protected remote service access
- ▶ Segmenting control networks into security zones
- ▶ Creating encrypted 'tunnels' between remote sites and central facilities
- ▶ Securing connections to partner networks
- ▶ Protecting wireless networks
- ▶ Separating Safety Integrated Systems

The devices support the following security functions:

- ▶ Stateful Firewall (FW)
- ▶ Virtual Private Network (VPN)
- ▶ Denial of Service Traffic Limiter
- ▶ Device Detection and Identification (Secure Asset Management)
- ▶ Security Alarm and Event Logging

All security functions are installed as separately purchased Loadable Security Modules (LSM). These can be added or removed at any time.

Name	Order number
Tofino Argon Firewall LSM	LSM-FW-100
Tofino Argon Secure Asset Management LSM	LSM-SAM-100
Tofino Argon Modbus TCP Enforcer LSM	LSM-MBT-100
Tofino Argon VPN Server LSM	LSM-VPNS-100
Tofino Argon VPN Client LSM	LSM-VPNC-100
Tofino Argon Event Logger LSM	LSM-LOG-100
Tofino Argon VPN PC Client License	LSM-VPNL-100

The devices support the following network modes:

- ▶ Passive Mode
- ▶ Test Mode
- ▶ Operational Mode

The Tofino Argon 220 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 also long-term reliability and flexibility.

The devices work without a fan.

The voltage is supplied redundantly.

Mount the devices by

- ▶ simply snapping them onto a DIN rail

Among others, the devices have the following important features:

Management	▶ Tofino Central Management Platform (CMP) Protocol ▶ Syslog	
Redundant power supply	Safety extra-low voltage (SELV), redundant inputs disconnected.	
	Relevant for North America: NEC Class 2 power source max. 5A.	
	Operating voltage	Rated voltage range DC 12 to 48 V DC
		Rated voltage range AC 24 V AC
Operating temperature	Surrounding air	0 °C to +60 °C
Housing	Mounting	35 mm DIN rail (DIN EN 60175)
	Protection class	IP 20
USB storage device	▶ Saving diagnostic files and log files to USB storage device ▶ Loading configuration files from USB storage device	
Certifications / declarations	▶ German Lloyd ▶ cUL 508 / CSA C22.2 No.142	

*Table 2: Important features*

## 1.2 Description of the device variants

You can choose from several device variants:

- ▶ Tofino Argon 220 SA TX/TX
- ▶ Tofino Argon 220 SA TX/MM
- ▶ Tofino Argon 220 SA MM/TX
- ▶ Tofino Argon 220 SA MM/MM

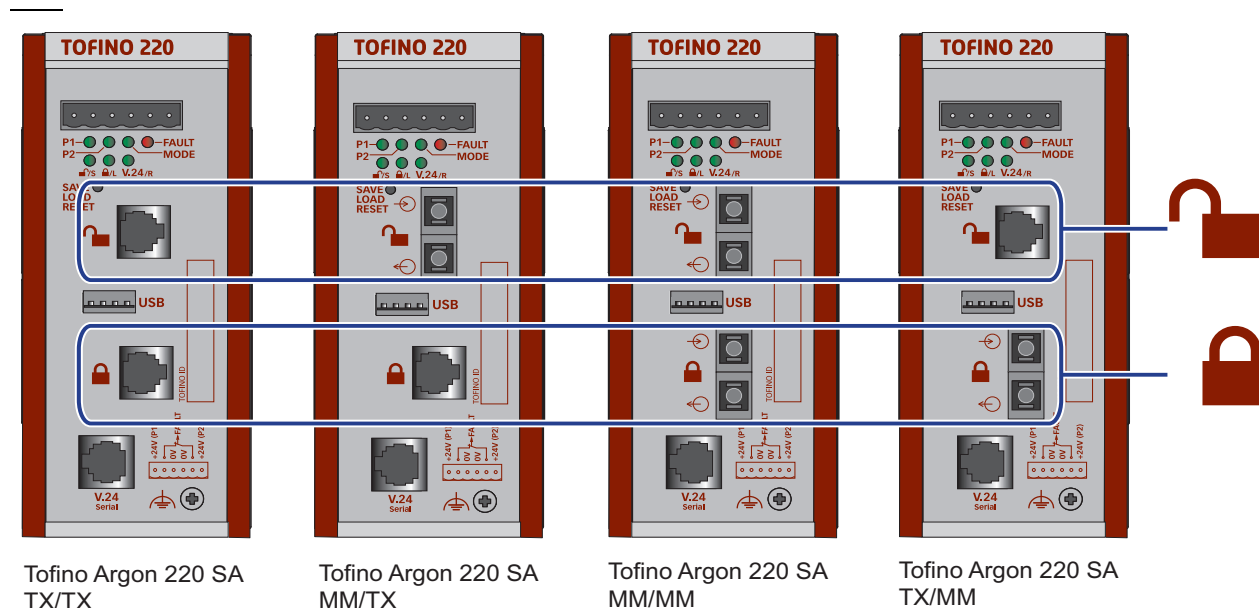
The abbreviations in the device names denote the ports of the device. The first abbreviation stands for interface 1 (untrusted port), the second stands for interface 2 (trusted port).

- ▶ For VPN deployment the “untrusted” interface of the Tofino Argon 220 Security Appliance must be used as the encrypted (i.e. external-facing) connection to the network.
- ▶ For all other applications, using the untrusted port as the external-facing connection is optional, but highly recommended to simplify the rule configuration.

The following table shows the meaning of the abbreviations in the device names.

Abbreviation	Meaning	
TX	Media type	Twisted pair
	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
	Connection type	RJ45
	Supports	<ul style="list-style-type: none"> <li>▶ Autonegotiation</li> <li>▶ Autopolarity</li> <li>▶ Autocrossing</li> <li>▶ Full or half duplex mode</li> </ul>
MM	Media type	Fiber optic cable
	Standard	ISO/IEC 8802-03 100BASE-FX
	Connection type	DSC
	Type of fiber	Multimode
	Supports	Full or half duplex mode

Table 3: Naming



Device variant	Port 1 Untrusted		Port 2 Trusted	
	TX	MM	TX	MM
Tofino Argon 220 SA TX/TX	X	—	X	—
Tofino Argon 220 SA TX/MM	X	—	—	X
Tofino Argon 220 SA MM/TX	—	X	X	—
Tofino Argon 220 SA MM/MM	—	X	—	X

Table 4: Device variants: Trusted and untrusted ports

## 2 Assembly and start-up

The devices have been developed for practical application in a harsh industrial environment. The installation process is correspondingly simple.

On delivery, the device is ready for operation. The following procedure has been proven to be successful for the assembly of the device:

- ▶ Unpacking and checking
- ▶ Connect the terminal block for voltage supply and signal contact and connect the supply voltage
- ▶ Install the terminal block, start-up procedure
- ▶ Install the device on the DIN rail, grounding
- ▶ Connect the data lines

### 2.1 Installing the device

Before installing and starting up the device, note the safety instructions (see [page 4](#) onwards).

#### 2.1.1 Unpacking and checking

- Check whether the contents of the package are complete ([see page 27](#) “Scope of delivery”).
- Check the individual parts for transport damage.

#### 2.1.2 Terminal block for supply voltage and signal contact

The supply voltage and the signal contact are connected via a 6-pin terminal block with a snap lock.

##### ■ 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 supplies the device only with the higher output voltage. The supply voltage is electrically isolated from the housing.

You can choose between DC or AC voltage when connecting the supply voltage. You use the +24 V and 0 V pins to connect the AC voltage ([fig. 1](#) and [fig. 2](#)).

**Note:** With non-redundant supply of the main voltage, the device reports a loss of power. You can avert this message by supplying the voltage over the two inputs.



## Warning

For safety reasons the devices have been designed to operate at low voltages. Thus, they may only be connected to the supply voltage connections and to the signal contact with SELV circuits with the voltage restrictions in accordance with IEC/EN 60950-1.

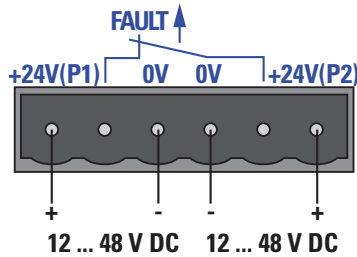


Figure 1: Pin assignment of the 6-pin terminal block, DC connection

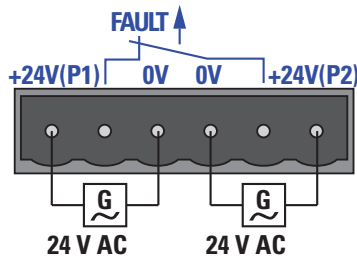


Figure 2: Pin assignment of the 6-pin terminal block, AC connection

## ■ Signal contacts

A break in contact is used to report the following via the potential-free signal contact (relay contact, closed circuit):

- ▶ a continuous malfunction in the device (internal supply voltage)

### 2.1.3 Connecting the terminal block, start-up procedure

- Pull the terminal block off the device and connect the voltage supply lines and the signal lines.

#### ■ Startup procedure

- Mount the terminal block for the voltage supply and signal contact on the front of the device using the snap lock. Make sure that the snap lock snaps into place.

Connecting the voltage supply via the terminal block starts the operation of the device.

## 2.1.4 Installing the device on the DIN rail, grounding

- Mount the device on a 35 mm DIN rail in accordance with DIN EN 60175.
- Attach the upper snap-in guide of the device into the DIN rail and press it down against the DIN rail until it snaps into place.

**Note:** The shielding ground of the industrial connectable twisted pair lines is connected to the lower panel as a conductor.

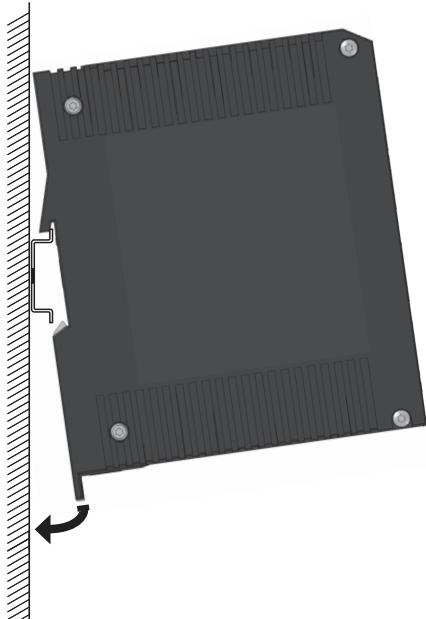


Figure 3: Mounting on the DIN rail

### ■ Grounding

The lower panel of the device housing is grounded by means of the DIN rail and optionally by means of the separate ground screw (see table 1).

## 2.1.5 Connecting the data lines

### ■ 10/100 Mbit/stwisted pair connection

These connections are RJ45 sockets.

10/100 Mbit/s TP ports enable the connection of terminal devices or independent network segments according to the IEEE 802.3 10BASE-T/100BASE-TX standard.

These ports support:

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

State on delivery: autonegotiation activated.

The socket housing is electrically connected to the bottom panel.

Figure	Pin	Function
	1+2	One line pair
	3+6	One line pair
	4,5,7,8	Not used

Table 5: Pin assignment of a TP/TX interface in MDI-X mode, RJ45 socket

## ■ 100 Mbit/s F/O connection

These connections are DSC connectors.

100 MBit/s F/O ports enable the connection of terminal devices or independent network segments in compliance with the IEEE 802.3 100BASE-FX standard.

These ports support:

- ▶ Full or half duplex mode

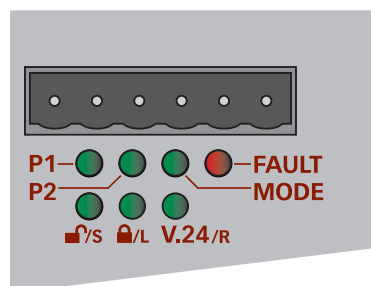
State on delivery: full duplex FDX

### 2.1.6 Connection to the network

- Connect the device to the local network or the local computer that you want to protect (🔒).
- Connect the socket for the connection to the external (non-secure) network (🔓), e.g. the Internet. (This network is used to set up the connections to the remote device or the remote network.)

## 2.2 Display elements







After the operating voltage is applied, the software starts and initializes itself. Afterwards, the device performs a self-test. During these actions, the MODE and FAULT LEDs are on solid. The process takes around 40 seconds.





## ■ Device state

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



LED	Display	Color	Activity	Meaning
P1	Supply voltage 1	Green	Lights up	The supply voltage is on.
			None	The supply voltage is too low.
P2	Supply voltage 2	Green	Lights up	The supply voltage is on.
			None	The supply voltage is too low.
LED	Display	Color	Activity	Meaning
FAULT	Signal contact Errors	Red	None	Signal contact is closed, it is not reporting an error.
			Lights up	The signal contact is on immediately after power is applied and will remain on until the operating system initialization is complete. After the power up initialization is complete, this LED indicates hardware or firmware failure.
			Long flashing	The device operating system did not start.
			Short flashing	The LSM service did not start.
			Very short flashing in cycles of 0.5 s	A USB load or save error occurred.
LED	Display	Color	Activity	Meaning
MODE	Network mode	Green	None	The device is in passive or decommissioned mode.
			Lights up	The device is in operational mode.
			Long flashing	The device is in test mode.
LED	Display	Color	Activity	Meaning
	Preparation Saving process	Yellow	Lights up	The saving of the device diagnostic or log files to the USB storage device is about to begin.
 	Execution Saving process	Yellow	Flashing alternately in right to left sequence	The saving of the device diagnostic or log files to the USB storage device is in progress.
V.24/R				
LED	Display	Color	Activity	Meaning
	Preparation Loading process	Yellow	Lights up	The load of the configuration files from the USB storage device is about to begin.
 	Execution Loading process	Yellow	Flashing alternately in left to right sequence	The load of the configuration files from the USB storage device is in progress.
V.24/R				
LED	Display	Color	Activity	Meaning
V.24/R	Preparation Reset process	Yellow	Lights up	The reset of the device to the factory defaults is about to begin.
All except P1 P2	Execution Reset process	Yellow	Flashing alternately	The reset of the device to the factory defaults is in progress.

## ■ Port state

LED	Display	Color	Activity	Meaning
	Link status Port 1		None	No valid connection
	Link status Port 1	Green	Lights up	Valid connection
	data Port 1	Yellow	Flashing	Data traffic
	Link status Port 2		None	No valid connection
	Link status Port 2	Green	Lights up	Valid connection
	data Port 2	Yellow	Flashing	Data traffic
V.24/R	Link status V.24		None	No valid connection
	Link status V.24	Green	Lights up	Valid connection
	Data V.24	Yellow	Flashing	Data traffic



## 2.3 Controls

The Tofino Argon 220 has a Save/Load/Reset (SLR) button ([see table 1](#)).

### ■ Save/Load/Reset button SLR

The SLR button has the following functions:

- ▶ Saving diagnostic files and log files to USB storage device
  - ▶ Loading configuration files from 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	Glowing LED
1	Saving diagnostic files and log files to USB storage device	
2	Loading configuration files from USB storage device	
3	Factory resetting the device	V.24/R
4	Canceling prior button presses	—

**Note:** There is a short delay after the button is pressed and before the function is carried out. This is to allow the function to be cancelled.

## 2.4 Basic set-up

You may configure the device remotely via the Tofino Central Management Platform (CMP). Alternatively, you may use a USB storage device containing specially encrypted configuration files.

You do not need an IP address for initial set up and for most configuration or security options.

You will find further information in the “Tofino CMP User’s Guide” on the CD-ROM.

### 2.4.1 Default settings

IP address	—
	<b>Note:</b> You do not need an IP address for initial set up and for most configuration or security options.
Network mode	Passive Mode
Signal contact	The device evaluates the link status.
Ports	Twisted pair (TX ports)      Autonegotiation
	Fiber optic cable (MM ports)      Full duplex mode

### 2.4.2 USB interface

The USB socket has an interface for the local connection of a USB saving device. It is used for saving/loading the configuration and for updating the software.

Contact number	Signal name
1	VCC
2	- Data
3	+ Data
4	Ground

No. of Flashes of the FAULT LED	During the USB Load Sequence	During the USB Save Sequence
1	The USB ports are disabled. At the Tofino CMP console, check the General / Communications settings for the particular device. Confirm the USB Load Config setting is “Enabled” and apply the configuration	
2	No USB storage device in the USB port, or the USB storage device is not formatted with the standard FAT16 or FAT32 format.	No USB storage device in the USB port, or the USB storage device is not formatted with the standard FAT16 or FAT32 format.
3	The files on the USB storage device are not valid.	The device was unable to create the diagnostics files. Contact technical support
4	The device was unable to decrypt the configuration files. The files may have been corrupted during the transfer process onto the USB storage device. Please try transferring them again. If this second transfer attempt is unsuccessful, then please contact technical support.	The device was unable to encrypt the diagnostic files. Contact technical support.
5	The device was unable to load the files. The files may have been corrupted during the transfer process onto the USB storage device. Please try transferring them again. If this second transfer attempt is unsuccessful, then please contact technical support.	The device was unable to copy the encrypted diagnostics files to the USB storage device. The USB storage device may be full.
6	The device was unable to shut down the USB port. Contact technical support.	The device was unable to shut down the USB port. Contact technical support.
7		The file system on the device has no space to temporarily store the files before it copies them to the USB storage device. Contact technical support.



Table 6: FAULT LED diagnostics for USB Load and Save

## ■ USB Save



To save event log and diagnostic information from the device to a USB storage device, proceed as follows:

- Press the SLR button 1 time.

The LED  glows.

**Note:** Each button press will illuminate an  ,  LED to yellow, working from left to right (see page 18 “Save/Load/Reset button SLR”).

The USB Save begins after 5 seconds.

The LEDs V.24/R,  and  flash in sequence of left to right indicating a USB Save is in progress.

If the USB Save function fails, the FAULT LED will flash. The number of flashes will indicate the specific step at which the failure occurred (see table 6).

After the USB Save (or Fault) has completed, all LEDs will return to their previous state.

## ■ **USB Load**



To load a configuration to the device from a USB storage device, proceed as follows:

- Press the SLR button 2 times.

The LED  glows.

**Note:** Each button press will illuminate a ,  LED to yellow, working from left to right (see page 18 “Save/Load/Reset button SLR”).

The USB Save begins after 5 seconds.

The LEDs ,  and V.24/R flash in sequence of right to left indicating a USB Load is in progress.

If the USB Load function fails, the FAULT LED will flash. The number of flashes will indicate the specific step at which the failure occurred (see table 6).

After the USB Load (or Fault) has completed, all LEDs will return to their previous state.

### **2.4.3 V.24 interface**

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

## **2.5 Configuration**

You configure the device using the Tofino Central Management Platform (CMP).

You will find further information in the “Tofino CMP User’s Guide” on the CD-ROM.

## 2.6 Network modes

The device can operate in one of 4 modes:

Mode	Description	LED	Color	Activity
Decommissioned	<p>This is the mode of the device on delivery. All security functionality is turned off and the device is listening for initialization commands.</p> <p>The device has been preconfigured so that all IP traffic in both directions is possible. This is so that the installation of the device will not interrupt or impact process operations.</p>	MODE		None
Passive Mode	<p>A device in Passive mode has been installed and communicated to at least once by a CMP, but has not been requested to process traffic.</p> <p>It listens for commands so Loadable Security Modules (LSMs) can be installed and configured, but does not impact the network traffic in any way.</p>	MODE		None
Test Mode	<p>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.</p> <p>This is used to test if the device is correctly configured before it is used to filter control system traffic.</p>	MODE	Green	Flashing
Operational Mode	<p>In Operational mode the device is fully operational, processes all traffic and will block any messages not specifically permitted by firewall rules or VPN settings.</p>	MODE	Green	Glowing

Table 7: Network modes

## 2.7 Disassembly

### ■ Disassembling the device

- In order to remove the device from the DIN rail, move the screwdriver horizontally under the chassis in the locking gate, pull this down - without tilting the screwdriver - and fold the device up.

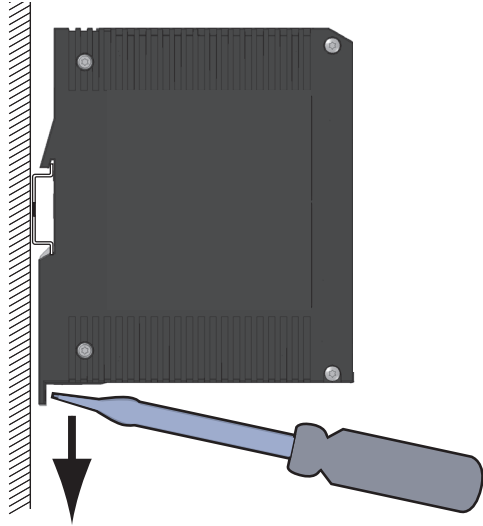


Figure 4: Disassembly

### 3 Technical data

#### ■ General technical data

Dimensions W × H × D	Tofino Argon 220 SA TX/TX	60 mm × 145 mm × 123 mm	
	Tofino Argon 220 SA TX/MM		
	Tofino Argon 220 SA MM/TX		
	Tofino Argon 220 SA MM/MM		
Weight	Tofino Argon 220 SA TX/TX	615 g	
	Tofino Argon 220 SA TX/MM		
	Tofino Argon 220 SA MM/TX		
	Tofino Argon 220 SA MM/MM		
Power supply	Redundant power supply		
	Safety extra-low voltage (SELV), redundant inputs disconnected.		
	Relevant for North America: NEC Class 2 power source max. 5A.		
	Operating voltage	Rated voltage range DC	
		12 to 48 V DC	
		Max. voltage range DC	
min. 9.6 to max. 60 V DC			
	Rated voltage range AC		
	24 V AC		
	Max. voltage range AC		
	min. 18 to max. 30 V AC		
Overload current protection at input	Non-replaceable fuse		
Insulation voltage between operating voltage connections and housing	800 V DC		
	Protective elements limit the insulation voltage to 90 V DC (1mA)		
“FAULT” signal contact	Switching current	max. 1 A, SELV	
	Switching voltage	max. 60 V DC or max. 30 V AC, SELV Relevant for North America: NEC Class 2	
Environment	Storage temperature (ambient air)	-40 °C to +70 °C	
	Humidity	10% to 95% (non-condensing)	
	Air pressure	Up to 2000 m (795 hPa), higher altitudes on request	
Operating temperature	Surrounding air	0 °C to +60 °C	
Protection classes	Laser protection	Class 1 according to EN 60825-1 (2001)	
	Protection class	IP 20	
Mounting	35 mm DIN rail (DIN EN 60175)		



## ■ EMC and immunity

<b>EMC interference immunity</b>		
EN 61000-4-2	Electrostatic discharge Contact discharge Air discharge	4 kV 8 kV
EN 61000-4-3	Electromagnetic field 80 - 2,700 MHz	10 V/m
EN 61000-4-4	Fast transients (burst) - Power line - Data line	2 kV 1 kV
EN 61000-4-5	Voltage surges - Power line, line/line - Power line, line/earth - Data line	0.5 kV 1 kV 1 kV
EN 61000-4-6	Line-conducted interference voltages 150 kHz - 80 MHz	10 V
EN 61000-4-9	Impulse-shaped magnetic fields	-
<b>EMC emitted interference</b>		
EN 55022	Class A	Yes
FCC 47 CFR Part 15	Class A	Yes
Germanischer Lloyd	Classification and Construction Guidelines VI-7-3 Part 1	-
<b>Stability</b>		
Vibration	IEC 60068-2-6 Test FC test level according to IEC 61131-2	Yes
	Germanischer Lloyd Guidelines for the Performance of Type Tests Part 1	-
	IEC 870-2-2 table 3 normal, requirements according to EN61850-3	-
	EN 61373, Category 1, Class A (broadband noise), requirements according to EN 50155	-
Shock	IEC 60068-2-27 Test Ea test level according to IEC 61131-2	Yes
	IEC 870-2-2 table 3 normal, requirements according to EN61850-3	-
	EN 61373, Category 1, Class A requirements according to EN 50155	-

## ■ Network range

### TP port

Length of a twisted pair segment      max. 100 m

Table 8: TP port 10BASE-T / 100BASE-TX

Ports	Wave length	Fiber	System at- tenuation	Expansion	Fiber data
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 9: LWL port 100BASE-FX

MM = Multimode

## ■ Power consumption/power output

Device variant	Power con- sumption at 24 V DC	Power output at 24 V DC	Power con- sumption at 24 V AC	Power output at 24 V AC
...TX/TX	6.9 W	23.5 Btu (IT)/h	7.2 W	24.6 Btu (IT)/h
...TX/MM ...MM/TX	8.1 W	27.6 Btu (IT)/h	8.1 W	27.6 Btu (IT)/h
...MM/MM	9.5 W	32.4 Btu (IT)/h	9.6 W	32.8 Btu (IT)/h

## ■ Order numbers

Device	Order number
Tofino Argon 220 SA TX/TX	FA-TSA-220-TX/TX
Tofino Argon 220 SA TX/MM	FA-TSA-220-TX/MM
Tofino Argon 220 SA MM/TX	FA-TSA-220-MM/TX
Tofino Argon 220 SA MM/MM	FA-TSA-220-MM/MM

## ■ Interfaces



1	Port 1 Untrusted 	Either TX or MM, depending on device variant	Twisted pair (TX ports)	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
				Connection type	RJ45
			Fiber optic cable (MM ports)	Type of fiber	Multimode
				Standard	ISO/IEC 8802-03 100BASE-FX
			Connection type	DSC	
2	Port 2 Trusted 	Either TX or MM, depending on device variant	Twisted pair (TX ports)	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
				Connection type	RJ45
			Fiber optic cable (MM ports)	Type of fiber	Multimode
				Standard	ISO/IEC 8802-03 100BASE-FX
			Connection type	DSC	
3	V.24 interface	The V.24 interface is not active in this version of firmware.			
4	USB interface	USB storage device			

Table 10: Overview: interfaces

## ■ Scope of delivery

Tofino Argon 220 device		
Terminal block	6-pin	
	Connection	Power supply Signal contact
CD ROM with user manual		
Installation user manual		

## ■ Accessories

**Note:** Please note that products recommended as accessories may have characteristics that do not fully comply with those of the corresponding product. This may limit their possible usage in the overall system.

Name	Order number
Tofino Argon Central Management Platform	FA-CMP-100
Tofino Argon Firewall LSM	LSM-FW-100
Tofino Argon Secure Asset Management LSM	LSM-SAM-100
Tofino Argon Modbus TCP Enforcer LSM	LSM-MBT-100
Tofino Argon VPN Server LSM	LSM-VPNS-100
Tofino Argon VPN Client LSM	LSM-VPNC-100
Tofino Argon Event Logger LSM	LSM-LOG-100
Tofino Argon VPN PC Client Lizenze	LSM-VPNL-100

## ■ Underlying norms and standards

Name	
EN 61000-6-2:2005	Generic norm – immunity in industrial environments
EN 55022:2006 + A1:2007	IT equipment – radio interference characteristics
IEC/EN 60950-1:2006	Safety for the installation of IT equipment
EN 61131-2:2003	Programmable logic controllers
EN 50121-4:2000	Railway applications - EMC - emitted interference and interference immunity for signal and telecommunication systems
FCC 47 CFR Part 15:2009	Code of Federal Regulations
German Lloyd	Classification and Construction Guidelines VI-7-3 Part 1 Ed.2003
cUL 508:1998	Safety for Industrial Control Equipment
EN 60079-15	Electrical equipment for explosive gas atmospheres – part 15: Construction, testing and marking of protection type "n" electrical apparatus.
EN 50155	Declaration (Railways)
IEC/EN 61850-3	Communications networks and systems in stations
IEEE 1613	Standard Environment and Testing Requirements for Communication Networking Devices in Electric Power Substations

*Table 11: List of norms and standards. Certified devices are marked with a certification indicator.*

## ■ Certifications

The following table shows the status of the certification of the devices.

Standard	
cUL 508 / CSA C22.2 No.142	Yes
Germanischer Lloyd	Yes

*Table 12: Certifications - for the current status, visit [www.hirschmann-ac.com](http://www.hirschmann-ac.com)*



# A Technical Support

Please contact the local representative in your region.

Or

E-Mail: [support@tofinosecurity.com](mailto:support@tofinosecurity.com)

Web: [www.tofinosecurity.com](http://www.tofinosecurity.com)

