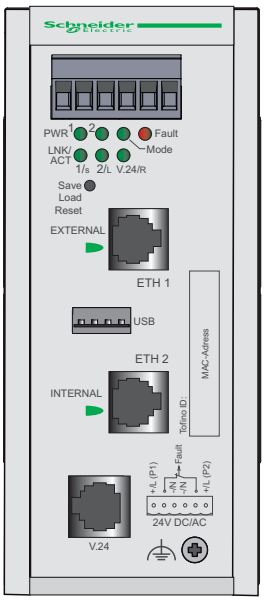
ConneXium

TCSEFEA Tofino Firewall
Installation Manual



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Contents

About this Manual

Validity Note

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, please follow the relevant instructions.

Failure to use Schneider Electric software or approved software with our hardware products may result in improper operating results.

Failure to observe this product related warning can result in injury or equipment damage.

User Comments

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Related Documents

Title	Reference Number
ConneXium TCSEFEA Tofino Firewall Operation User Manual	S1B76071
ConneXium TCSEFEA Tofino Firewall Installation User Manual	S1B69349

The “Operation” user manual document contains the information you require to put the device into operation and configure it using the ConneXium Tofino Configurator software. The “Operation” user manual takes you step by step from the first startup operation through to the basic settings for operation in your environment.

The “Installation” user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.

Key

The symbols used in this manual have the following meanings:

▶	Listing
☐	Work step
■	Subheading

Safety instructions

■ Important Information

Notice: Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

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

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

PLEASE NOTE: Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.
No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

Usage

The device may only be employed for the purposes described in the catalog, technical description, and manuals.

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.

- ☐ Relevant for North America:
  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, 140/167 °F (60/75 °C) or 167 °F (75 °C).

Shielding ground

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

Housing

DANGER

HAZARD OF ELECTRIC SHOCK

Never insert sharp objects (small screwdrivers, wires, etc.) into the inside of the product.

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

CAUTION

EQUIPMENT OVERHEATING

When installing the device, make sure any ventilation slots remain free. Maintain a clearance of at least 10 cm (3.94 in).

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

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

The device housing is grounded by means of the separate ground screw. (see fig. 1).

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

☐ The device must be installed in the vertical position (see fig. 3).

☐ Install the device in a fire protected enclosure according to EN 60950-1.

Environment

The device may only be operated at the specified surrounding air temperature (temperature of the surrounding air at a distance of up to 5 cm (1.97 in) from the device) and relative air humidity specified in the technical data.

☐ Install the device in a location where the climatic threshold values specified in the technical data will be observed.

☐ Use the device only in an environment within the pollution degree specified in the technical data.

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 6).

☐ Only appropriately qualified personnel should work on this device or in its vicinity. These personnel must be thoroughly familiar with the hazard messages 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 the hazard messages 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.

National and international safety regulations

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

CE marking

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

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.

2004/108/EC (EMC)
Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility.

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:

Schneider Electric
35 rue Joseph Monier
CS30323
92506 Rueil-Malmaison-France

The product can be used in the industrial sector.

- Interference immunity: EN 61000-6-2:2005
- Emitted interference: EN 55022:2010

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 high frequencies, 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.

1 Device description

1.1 General device description

The Tofino Firewall TCSEFEA helps provide for the security of communication within production networks.

The device has the following interfaces:

- 1 EXTERNAL port
- 1 INTERNAL port
- 1 V.24 input
- 1 USB interface

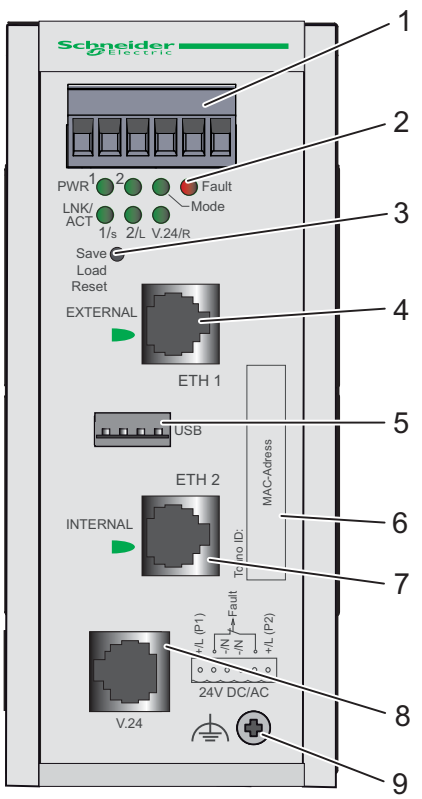


Figure 1: Overview of interfaces and display and operating elements in the TCSEFEA
1 - Plug-on terminal block, 6-pin
2 - LED display elements
3 - Save/Load/Reset button
4 - Port 1 (EXTERNAL): TX (RJ45 connection)
5 - USB connection

6 - ConneXium Tofino ID / MAC address field
7 - Port 2 (INTERNAL): TX (RJ45 connection)
8 - V.24 access to external modem
The V.24 interface is not active for this firmware version.
9 - Ground screw

The device supports the following network modes:
- Unconfigured Mode
- Test Mode
- Operational Mode

The Tofino Firewall TCSEFEA is used everywhere that security-sensitive network cells require a connection from the internal network into an external network. The Tofino Firewall TCSEFEA is the link between the internal network and the external network from which unauthorized accesses are to be expected. In its function as a link, the Tofino Firewall TCSEFEA helps protect the internal network from undesired data traffic along the connection to the external network.

Typical uses are:

- Helping protect individual production cells in a flat company network.
- Helping protect individual production cells in a routed company network.
- Helping provide protected service access.
- Dividing control networks into security areas.
- Helping secure the connection for partner networks.
- Helping protect wireless networks.
- Separating integrated security systems.

The device is designed for the special requirements of industrial automation. It meets the relevant industry standards, provides high operational reliability, even under extreme conditions, and also long-term reliability and flexibility. The device operates without a fan and has a redundant voltage supply. The device is very quickly mounted by snapping it onto a DIN rail.

The device supports the following security functions:
- Stateful Firewall (FW)
- Denial of Service Traffic Limiter
- Security Alarm and Event Logging
- Modbus TCP Enforcer

The device has the following features, among others:

Management	ConneXium Tofino Configurator and 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)
	Degree of protection	IP 20
USB storage device	▶ Saving diagnostic files and log files on the USB storage device ▶ Loading configuration files from the USB storage device	

Table 1: Features

2 Assembly and start-up

2.1 Safety instructions

Staff qualification requirements

Only appropriately qualified staff should work on or near this equipment. Such staff must be thoroughly acquainted with all the hazard messages and maintenance measures contained in these operating instructions. The proper and safe operation of this equipment assumes proper transport, appropriate storage and assembly, and careful operation and maintenance.

Qualified staff are persons familiar with setting up, assembling, installation, starting up, and operating this product, and who have appropriate qualifications to cover their activities, such as:

- knowledge of how to switch circuits and equipment/systems on and off, ground them, and identify them in accordance with current safety standards
- training or instruction in accordance with current safety standards of using and maintaining appropriate safety equipment
- first aid training

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.

2.2 Installing the device

Before installing and starting up the device, note the safety instructions (see page 5 onwards).

2.2.1 Overview of installation

Two or more devices configured with the same IP address can cause unpredictable operation of your network.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Establish and maintain a process for assigning unique IP addresses to all devices on the network.

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

The devices have been developed for practical application in a harsh industrial environment.

On delivery, the device is ready for operation.
The following steps should be performed to install and configure a ConneXiumTofino Firewall product:

- 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

2.2.2 Unpacking and checking

☐ Check that the contents of the package are complete (see page 27 “Scope of delivery”).
☐ Check the individual parts for transport damage.

2.2.3 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

DANGER

HAZARD OF ELECTRIC SHOCK OR BURN

When the module is operated with direct plug-in power units, use only:
– SELV supply units that comply with IEC 60950/EN 60950 and
– (in USA and Canada) Class 2 power units that comply with applicable national or regional electrical codes

Connect the ground wire to the PE terminal (where applicable) before you establish any further connections. When you remove connections, disconnect the ground wire last.

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

Redundant power supplies can be used. 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.

For the supply voltage, you can connect either AC or DC voltage (see fig. 2).

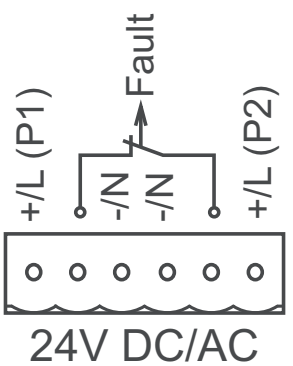


Figure 2: Pin assignment of the 6-pin terminal block

Signal contacts

The potential-free signal contact (relay contact, closed circuit) reports a physical link interruption on one or both network connections.

2.2.4 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 by snapping the lock into place.

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

2.2.5 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 the device down against the DIN rail until it snaps into place.

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

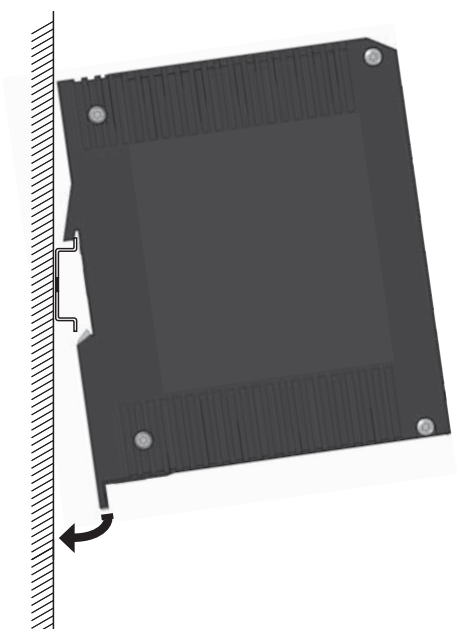


Figure 3: Mounting on the DIN rail

Grounding

The device housing is grounded by means of the separate ground screw. (see fig. 1).

2.2.6 Connecting the data lines

10/100 Mbit/s twisted 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

Delivery state: autonegotiation activated
The socket housing is electrically connected to the front panel.

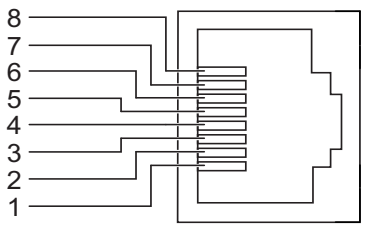
Figure	Pin	Function
	1+2	One line pair: receiver path
	3+6	One line pair: sender path
	4,5,7,8	Not used

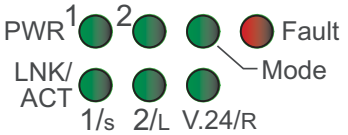
Table 2: Pin assignment of a TP/TX interface in MDI-X mode, RJ45 socket

2.2.7 Connection to the network

☐ Connect the device via the INTERNAL port to the internal network or the local computer that you want to help protect.
☐ Connect the device via the EXTERNAL port to the external network, e.g. the Internet. This network is used to set up the connections to the external device or external network.

2.3 Display elements

After the operating voltage is applied, the software starts and initializes itself. Afterwards, the device performs a self-test.
During these actions, PWR 1 will be on in green color if power 1 is supplied and PWR 2 will be on in green color if power 2 is supplied. After the self-test has finished, refer to the Device State table (see on page 18 “Device state”) which outlines device conditions in detail.



Device state

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

LED	Display	Color	Activity	Meaning
PWR 1	Supply voltage 1	Green	Light on	The supply voltage is on.
			None	The supply voltage is too low.
PWR 2	Supply voltage 2	Green	Light on	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 a detected error.
			Light on	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 that a hardware or firmware element is inoperable.
			Long flashing	The device operating system did not start.
			Very short flashing in cycles of 0.5 s	A detected USB load or save error occurred (see table 3).
LED	**Display**	**Color**	**Activity**	**Meaning**
MODE	Network mode	Green	None	The device is in unconfigured mode and is either not configured or has been reset to factory defaults (state on delivery).
			Light on	The device is in operational mode.
			Long flashing	The device is in test mode.
LED	**Display**	**Color**	**Activity**	**Meaning**
1/S	Preparation Saving process	Yellow	Light on	The device initiates the saving of diagnostic files or log files on the USB device.
1/S 2/L V.24/R	Execution Saving process	Yellow	Flashing alternately in right to left sequence	The device saves the diagnostic files or log files on the USB device.
LED	**Display**	**Color**	**Activity**	**Meaning**
2/L	Preparation Loading process	Yellow	Light on	The device initiates the loading of configuration files from the USB device.
1/S 2/L V.24/R	Execution Loading process	Yellow	Flashing alternately in left to right sequence	The device loads the configuration files from the USB device.
LED	**Display**	**Color**	**Activity**	**Meaning**
V.24/R	Preparation Reset process	Yellow	Light on	The reset of the device to the factory defaults is about to begin.
All except PWR 1 PWR 2	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
1/S	Link status Port 1		None	No valid connection
	Link status Port 1	Green	Light on	Valid connection
	data Port 1	Yellow	Flashing	Data traffic
2/L	Link status Port 2		None	No valid connection
	Link status Port 2	Green	Light on	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	Light on	Valid connection
	Data V.24	Yellow	Flashing	Data traffic

2.4 Controls

The TCSEFEA has a Save/Load/Reset (SLR) button (see fig. 1).

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	Glowing LED
1	Saving diagnostic files and log files on the USB storage device	1/S
2	Loading configuration files from the USB storage device	1/S and 2/L
3	Factory resetting the device	1/S, 2/L and 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.

2.5 Basic set-up

Use the Tofino Configurator software to create the configuration data that is saved in encrypted form on a USB memory device.
You do not require an IP address to install the device.
You will find further information in the ConneXium TCSEFEA “Operation” user manual.

2.5.1 Default settings

IP address	— **Note:** You do not require an IP address to install the device.	
Network mode	Unconfigured mode	
Signal contact	The device evaluates the link status.	
Ports	Twisted pair (TX ports)	Autonegotiation

2.5.2 USB interface

The USB socket has an interface for the local connection of a Memory Backup Adapter. 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

Note: The following version 2.0 USB storage devices are known to work: Kingston Data Traveler, SanDisk Cruzer, Sony Microvault, Lexar, and Schneider TCSEAM0100.

Number of flashes of FAULT LED	During the USB loading operation	During the USB saving operation
2	No USB memory device is connected to the USB connection, or the file system of the memory device is not formatted as FAT16 or FAT32.	No USB memory device is connected to the USB connection, or the file system of the memory device is not formatted as FAT16 or FAT32.
3	The files on the USB memory device are invalid.	The device was unable to create any diagnostic files. Please contact your technical support.
4	The device was unable to encrypt the configuration files. It is possible that the files were damaged during the copying operation. Repeat the copying operation. If the condition persists, please contact your technical support.	The device was unable to encrypt the diagnostic files. Please contact your technical support.
5	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, please contact your technical support.	The device was unable to copy the encrypted diagnostic files to the USB memory device. It is possible that the memory device is full.
6	The device was unable to deactivate the USB connection. Please contact your technical support.	The device was unable to deactivate the USB connection. Please contact your 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 your technical support.

Table 3: Diagnostics of the FAULT LED for USB saving and loading operations

Saving data on a USB device

If you want to save diagnostic files and log files of the device on a USB memory device, you proceed as follows:

☐ Press the SLR button once.

The LED 1/S lights up.

Note: Depending on how often you press the SLR button, you call up a different function. You can see which function is called from the 1/S, 2/L or V.24/R LED that is lit up (see page 19 “Save/Load/Reset button SLR”).

The saving operation starts after 5 seconds.

When the device is executing the saving operation, the V.24/R, 2/L and 1/S LEDs flash alternately from right to left.

If the device does not execute the saving operation the LED FAULT

flashes. The frequency with which it flashes depends on the cause of the detected error (see table 3).

After the saving operation is completed or terminated, the LEDs return to their previous state.

Loading data from a USB device

If you want to load configuration files from a USB memory device, you proceed as follows:

☐ Press the SLR button twice.

The LEDs 1/S and 2/L light up.

Note: Depending on how often you press the SLR button, you call up a different function. You can see which function is called from the 1/S, 2/L or V.24/R LED that is lit up (see page 19 “Save/Load/Reset button SLR”).

The loading operation starts after 5 seconds.

When the device is executing the loading operation, the 1/S, 2/L and V.24/R LEDs flash alternately from left to right.

If the device does not execute the loading operation the LED FAULT flashes. The frequency with which it flashes depends on the cause of the detected error (see table 3).

After the loading operation is completed or terminated, the LEDs return to their previous state.

2.5.3 V.24 interface

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

2.6 Configuration

Configure the device using the Schneider Electric ConneXium Tofino Configurator.
You will find further information in the ConneXium TCSEFEA “Operation” user manual.

2.7 Network modes

The device can be in one of 3 network modes:

Mode	Description	LED	Color	Activity
Unconfigured mode (state on delivery)	After a factory reset or before the initial software initialization, the device is in unconfigured mode. The device does not affect the data traffic in any way and is ready to be configured. After loading a configuration, the device switches to test mode or operational mode as selected in the configuration.	MODE	–	None
Test mode	The test mode is used to check whether the device is configured correctly before the system data traffic filter is used. The device does not affect the data traffic in any way. However, it outputs alarm messages if data is transferred that would be blocked in operational mode.	MODE	Green	Flashes
Operational mode	In operational mode, the device is fully operational. The device processes the data traffic and blocks the messages that are not permitted by the firewall settings.	MODE	Green	Light on

Table 4: Network modes

2.8 Maintenance

Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed. Operate this device according to the specifications (see “Technical data”).

2.9 Disassembly

Removing the device from the DIN rail

☐ In order to remove the device from the DIN rail, insert the screwdriver horizontally under the chassis in the locking slide, pull this down – without tilting the screwdriver – and lift the device upwards.

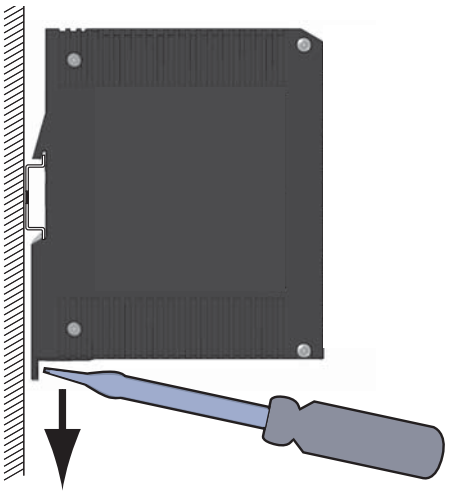


Figure 4: Removing the device from the DIN rail

3 Technical data

General technical data

Dimensions W × H × D		60 mm × 145 mm × 123 mm 2.36 in. × 5.71 in. × 4.84 in.
Weight		615 g 21.69 oz
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
Back-up fuse		Nominal rating: 3.15 A for each voltage input
		Characteristic: slow blow
Insulation voltage between operating voltage connections and housing		800 V DC Protective elements limit the insulation voltage to 90 V DC (1 mA)
"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 °F ... +158 °F (−40 °C ... +70 °C)
	Humidity	10% ... 95% (non-condensing)
	Air pressure	Up to 2000 m (795 hPa), higher altitudes on request
Operating temperature	Surrounding air	+32 °F ... +140 °F (0 °C ... +60 °C)
Protection classes	Laser protection	Class 1 according to IEC 60825-1 (2007)
	Degree of protection	IP 20
Mounting	35 mm DIN rail (DIN EN 60175)	

EMC and immunity

EMC interference immunity		
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/ground - 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	-
EMC emitted interference		
EN 55022	Class A	Yes
FCC 47 CFR Part 15	Class A	Yes
Germanischer Lloyd	Classification and Construction Guidelines VI - Part 7 - Section 3 Chapter 2 Test Requirements	Yes
Stability		
Vibration	IEC 60068-2-6 Test FC test level according to IEC 61131-2	Yes
	Germanischer Lloyd Classification and Construction Guidelines VI - Part 7 - Section 3 Chapter 2 Test Requirements	Yes
	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 5: TP port 10BASE-T / 100BASE-TX

Power consumption/power output

Device variant	Power consumption at 24 V DC	Power output at 24 V DC	Power consumption 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

Interfaces

1	Port 1 EXTERNAL	TX	Twisted pair (TX ports)	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
				Connection type	RJ45
2	Port 2 INTERNAL	TX	Twisted pair (TX ports)	Standard	ISO/IEC 8802-03 10BASE-T/ 100BASE-TX
				Connection type	RJ45
3	V.24 interface	The V.24 interface is not active in this version of firmware.			
4	USB interface	USB storage device			

Table 6: Overview: interfaces

Scope of delivery

TCSEFEA device		
Terminal block	6-pin	
	Connection	Power supply
		Signal contact
CD ROM with Installation manual		

Order numbers/product description

Product code	Product code	Description
Version with 2 ports	TCSEFEA23F3F20	2 managed 10/100 TX
Accessories	see note below	Version 2.0 USB storage device

Note: The following version 2.0 USB storage devices are known to work: Kingston Data Traveler, SanDisk Cruzer, Sony Microvault, Lexar, and Schneider TCSEAM0100.

Underlying norms and standards

Name	
EN 61000-6-2	Generic norm – immunity in industrial environments
EN 55022	IT equipment – radio interference characteristics
EN 60950-1	Safety for the installation of IT equipment
EN 61131-2	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	Code of Federal Regulations
German Lloyd	Classification and Construction Guidelines VI-7-3 Part 1 Ed.2003
UL 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 substations
IEEE 1613	Standard Environment and Testing Requirements for Communication Networking Devices in Electric Power Substations

Table 7: List of norms and standards

The device has a certification based on a specific standard only if the certification indicator appears on the housing.