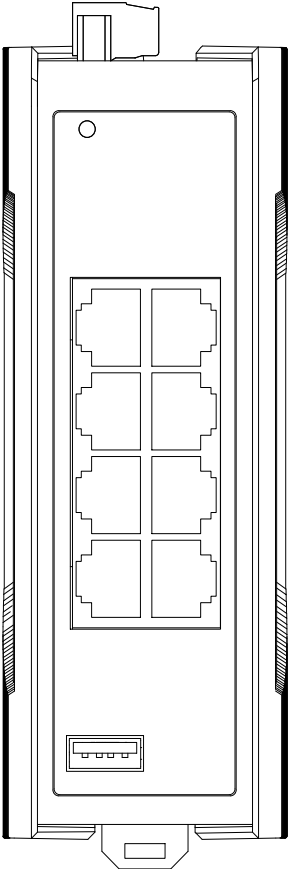
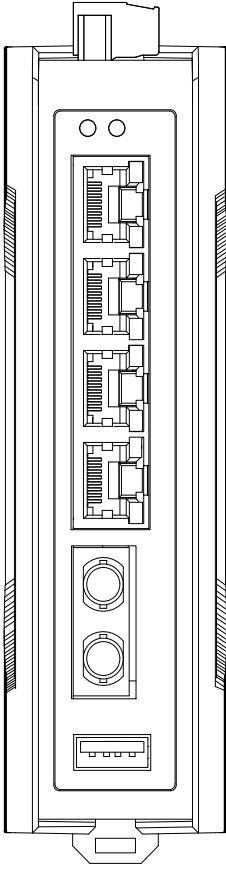


ConneXium

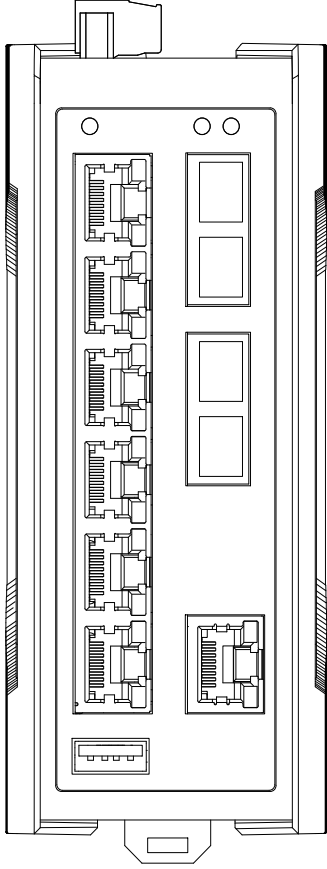
TCSESPU Switch Installation Manual



TCSESPU083FN0



TCSESPU053F1CU0
TCSESPU053F1CS0



TCSESPU093F2CU0
TCSESPU093F2CS0

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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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 help ensure compliance with documented system data, only the manufacturer must perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

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

Failure to observe this information can result in injury or equipment damage.

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About this Manual

Validity Note

The technical characteristics of the devices described in this document also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page www.schneider-electric.com .
2	In the Search box type the reference of a product or the name of a product range. <input type="checkbox"/> Do not include blank spaces in the reference or product range. <input type="checkbox"/> To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the Product Datasheets search results and click on the reference that interests you. If you entered the name of a product range, go to the Product Ranges search results and click on the product range that interests you.
4	If more than one reference appears in the Products search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click Download XXX product datasheet.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

Related Documents

Title	Reference Number
ConneXium TCSESPU Switch Installation Manual	QGH59560

You can download these technical publications and other technical information from our website at <http://www.schneider-electric.com/ww/en/download>.

The Installation 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.**

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE: Electrical equipment must 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. A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

■ **Before you begin**

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

 **WARNING**

UNGUARDED EQUIPMENT

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

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

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

Note: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

■ **Start-up and test**

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.



CAUTION

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

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

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to help prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

■ **Operation and adjustments**

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- ▶ Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- ▶ It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- ▶ Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to help prevent unauthorized changes in operating characteristics.

■ **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 ["Supply voltage" on page 11](#)).

- 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.

■ **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

■ **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.

- 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 pair cables is connected to the ground connection as a conductor.

■ Housing



DANGER

HAZARD OF ELECTRIC SHOCKS

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.



WARNING

FIRE HAZARD

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

Failure to follow these instructions can 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 3.94 in (10 cm).

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 is grounded via the separate ground screw.

See [“Grounding” on page 24](#).


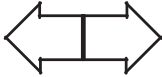
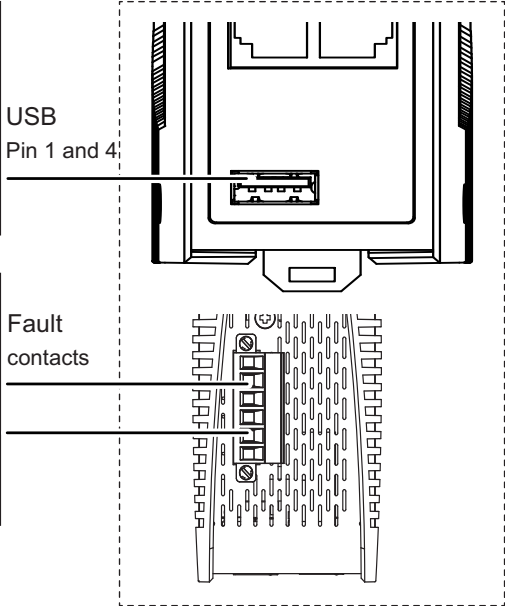

- Verify that the electrical installation meets locally or nationally applicable safety regulations.
- Mount the device per instructions on page [23](#).

■ **Environment**

Operate the device at the specified ambient temperature (temperature of the ambient air at a distance of 2 inches (5 cm) from the device) and at the specified relative humidity exclusively.

- 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.

■ **Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)**

	<p>Ordinary Location, Non-Hazardous Area, Non-Explosive Atmosphere</p>		<p>Explosive Atmosphere Class I Division 2, Groups A, B, C, D Hazardous Location</p>
<p>USB connection: Equipment with non-incendive field wiring parameters. USB entity parameters: $V_{OC} = 5.5V$ $I_{SC} = 1.25A$ $C_a = 10\mu F$ $L_a = 10\mu H$</p>			
<p>Relay contacts: Equipment with non-incendive field wiring parameters. The relay terminals are dependent upon the following entity parameters: $V_{max} = 30V$ $I_{max} = 90mA$ $C_i = 2nF$ $L_i = 1\mu H$</p>			
<p>For Use in Hazardous Locations Class I Division 2 Groups A, B, C, D: Only allowed for TCSESPU model No's. which are individually labelled "FOR USE IN HAZARDOUS LOCATIONS"</p> <p>Nonincendive field wiring circuits must be wired in accordance with the National Electrical Code (NEC), NFPA 70 , article 501. CEC, Appendix J, Annex J 18</p> <p>The earth conductor must be at least the same wire size (mm² or AWG) as the supply conductors.</p> <p>WARNING – EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR HAZARDOUS LOCATIONS OR EXPLOSIVE ATMOSPHERES.</p> <p>WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.</p>			
Control Drawing TCSESPU Series for Use in Hazardous Locations Class I Division 2, Groups A, B, C, D			
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Capacitance and inductance of the field wiring from the nonincendive circuit to the associated apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, C_{cable} , plus nonincendive equipment capacitance, C_i , must be less than the marked capacitance, C_a (or C_o), shown on any associated apparatus used.

The same applies for inductance (L_{cable} , L_i and L_a or L_o , respectively).

Where the cable capacitance and inductance per foot are not known, the following values shall be used:

$$C_{\text{cable}} = 60 \text{ pF/ft.}, L_{\text{cable}} = 0.2 \text{ }\mu\text{H/ft.}$$

Table1:

Nonincendive Equipment		Associated Apparatus
V_{max} (or U_i)	\geq	V_{oc} or V_t (or U_o)
I_{max} (or I_i)	\geq	I_{sc} or I_t (or I_o)
P_{max} (or P_i)	\geq	P_o
$C_i + C_{\text{cable}}$	\leq	C_a (or C_o)
$L_i + L_{\text{cable}}$	\leq	L_a (or L_o)

Suitability for installation in particular applications is at the discretion of the Authority Having Jurisdiction (AHJ).

■ **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.

2014/30/EU (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 Systems USA, Inc.
38 Neponset Avenue
Foxboro, Massachusetts 02035-2037
United States of America

The product can be used in the industrial sector.

- ▶ Interference immunity: EN 61000-6-2:2005
- ▶ Emitted interference: EN 55032

■ **LED or laser components**

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

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT

■ **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.

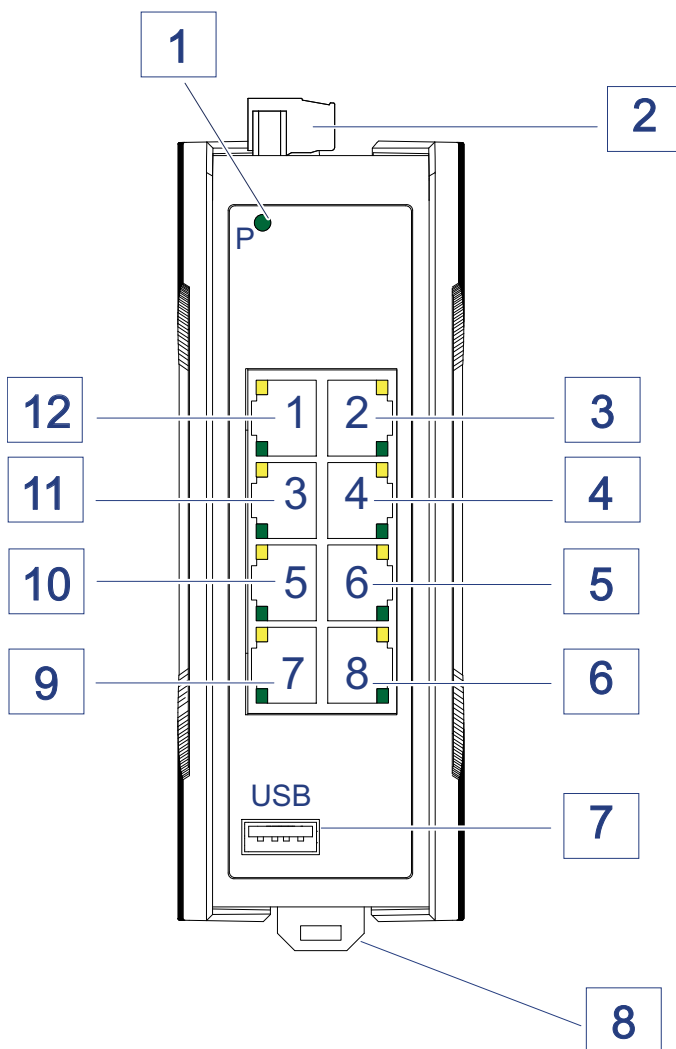
■ **Recycling note**

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

1 Description

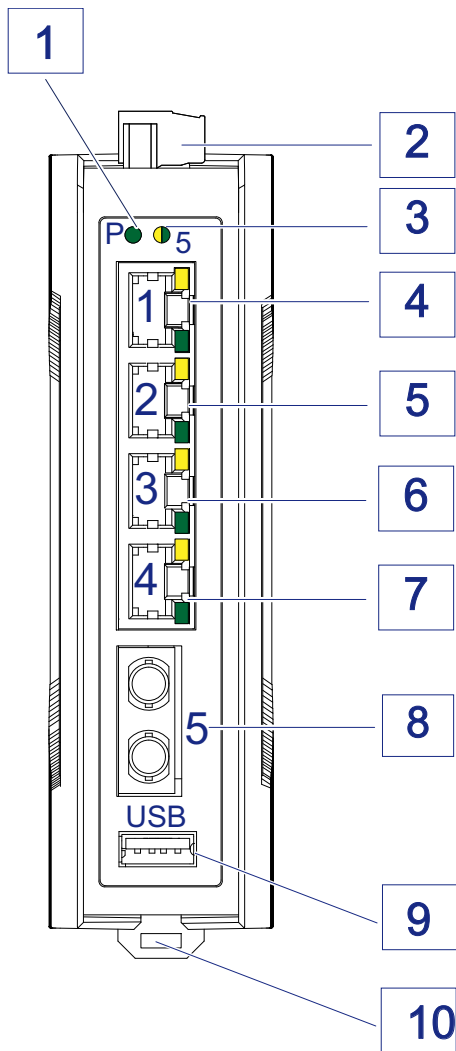
1.1 General device description

The TCSESPU 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.



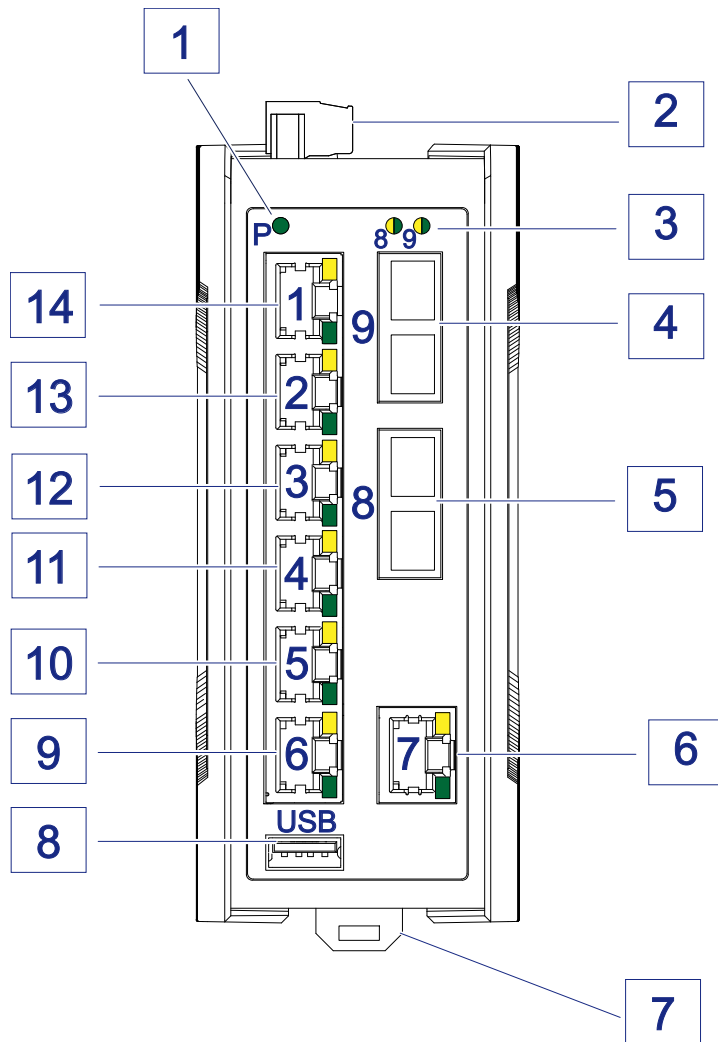
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3 ... 6	4 × RJ45 socket for 10/100 Mbit/s twisted pair connections
7	USB interface
8	Rail lock gate for DIN rail mounting
9 ... 12	4 × RJ45 socket for 10/100 Mbit/s twisted pair connections

Table 1: Front view: TCSESPU083FN0



1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3	LED display elements for port status
4 ... 7	4 × RJ45 socket for 10/100 Mbit/s twisted pair connections
8	for the device variant TCSESPU053F1CU0 DSC multimode socket for 100 Mbit/s F/O connections
	for the device variant TCSESPU053F1CS0 DSC singlemode socket for 100 Mbit/s F/O connections
9	USB interface
10	Rail lock gate for DIN rail mounting

Table 2: Front view: TCSESPU053F1CU0 / TCSESPU053F1CS0



1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3	LED display elements for port status
4 ... 5	for the device variant TCSESPU093F2CU0 DSC multimode socket for 100 Mbit/s F/O connections for the device variant TCSESPU093F2CS0 DSC singlemode socket for 100 Mbit/s F/O connections
6	RJ45 socket for 10/100 Mbit/s twisted pair connections
7	Rail lock gate for DIN rail mounting
8	USB interface
9 ... 14	6 × RJ45 socket for 10/100 Mbit/s twisted pair connections

Table 3: Front view: TCSESPU093F2CU0 / TCSESPU093F2CS0

2 Assembly and start-up

2.1 Installing the device

WARNING

FIRE HAZARD

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

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

Before installing and starting up the device, note the safety instructions (see [“Safety instructions”](#)).

2.1.1 Overview of installation

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 ConneXium TCSESPU 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

2.1.2 Unpacking and checking

- Check that the contents of the package are complete.
[See “Scope of delivery” on page 45.](#)
- Check the individual parts for transport damage.

2.1.3 Terminal block for supply voltage and signal contact

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

■ 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.

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 for the signal contact on the device is 3 lb-in (0.34 Nm).

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.

Note: With non-redundant supply voltage, the device reports inoperable supply voltage. You can help prevent this message by applying the supply voltage via both inputs, or by changing the configuration.

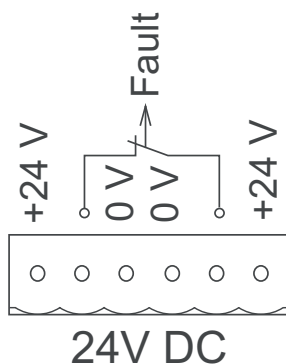


Figure 1: Pin assignment of the 6-pin terminal block

■ Signal contact

The potential-free signal contact (relay contact, closed circuit) reports through a break in contact:

- ▶ At least one power supply is inoperable.
- ▶ The device is not operational.
- ▶ Loss of connection to at least one port.

The link state can be masked for each port using the configuration. In the state of delivery, link monitoring is inactive.

2.1.4 Connecting the terminal block, start-up procedure

■ Connecting the terminal block

For the supply voltage to be connected, perform the following steps:

- Remove the power connector from the device.
- Connect the wires according to the pin assignment on the device with the clamps.

■ Startup procedure

By connecting the supply voltage via the terminal block, you start the operation of the device.

2.1.5 Installing the device on the DIN rail, grounding

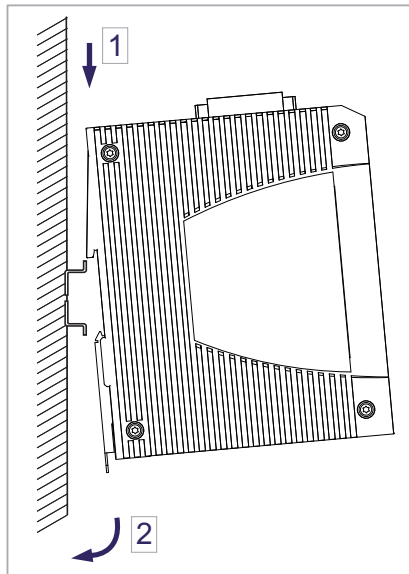
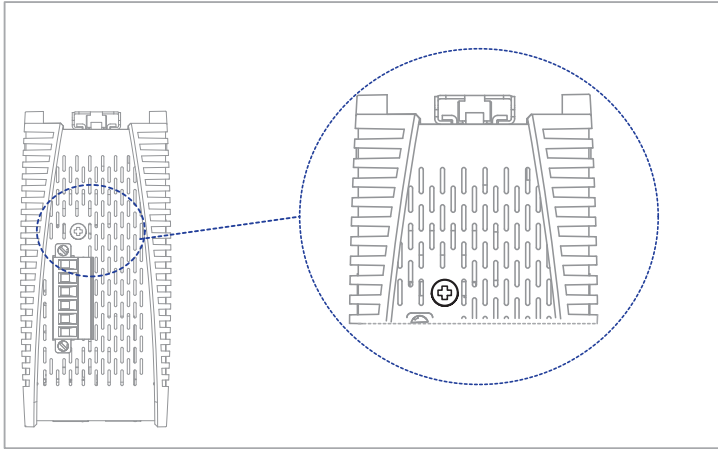


Figure 2: Mounting the device on the DIN rail

- Mount the device in a vertical position on a 35 mm DIN rail in accordance with DIN EN 60715.
- Slide the upper snap-in guide of the device into the DIN rail.
- Use a screwdriver to pull the rail lock gate downwards.
- Snap in the device by releasing the rail lock slide.

■ Grounding

Use a wire diameter for the ground conductor that is no smaller than the diameter of the supply voltage connection, however of at least 0.5 mm² (AWG20).



- Ground the device via the ground screw.
The grounding screw is located on the topside as shown in the illustration.

2.2 Connecting the data lines

You can connect end devices and other segments to the device ports using twisted pair cables or optical fibers (F/O).

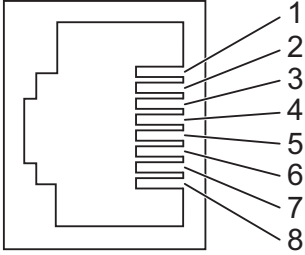
■ 10/100 Mbit/s twisted pair port

This port is an RJ45 socket.

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:

- ▶ 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

RJ45	Pin	10/100 Mbit/s
	MDI mode	
	1	TX+
	2	TX-
	3	RX+
	4	—
	5	—
	6	RX-
	7	—
	8	—
	MDI-X mode	
	1	RX+
	2	RX-
	3	TX+
	4	—
	5	—
	6	TX-
7	—	
8	—	

■ 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:

- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode

State on delivery:

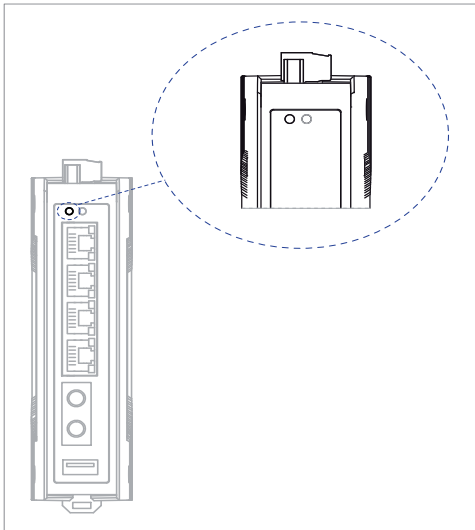
- ▶ 100 Mbit/s, full duplex

3 Display elements

After the supply voltage is switched on, the device performs a self-test. During this process, various LEDs light up.

3.1 Device state

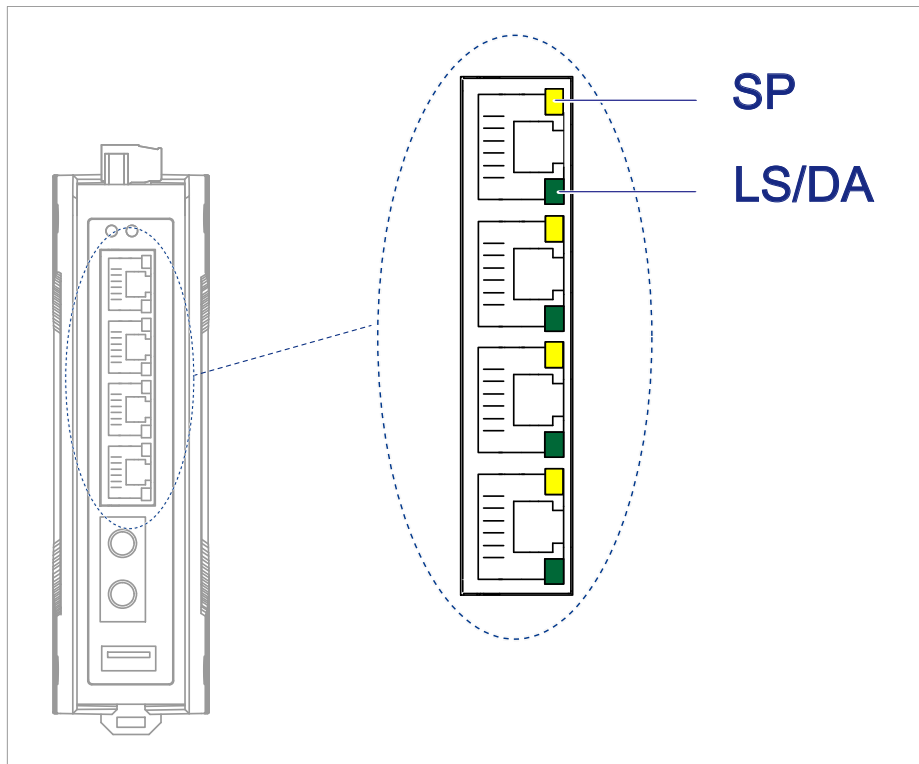
These LEDs provide information about conditions which affect the operation of the whole device.



LED	Display	Color	Activity	Meaning
P	Supply voltage	—	None	Supply voltage is too low
		Yellow	Lights up	Device variants with redundant power supply: Supply voltage 1 or 2 is on
		Green	Lights up	Device variants with redundant power supply: Supply voltages 1 and 2 are on

3.2 Port status

These LEDs provide port-related information.



SP (data rate)	Color	Activity	Meaning
	—	None	Device detects an invalid or missing link
	Yellow	Flashes 1 time a period	10 Mbit/s connection
	Yellow	Flashing 2 times a period	100 Mbit/s connection
LS/DA (link status/data)	Color	Activity	Meaning
	—	None	Device detects an invalid or missing link
	Green	Lights up	Device detects a valid link
	Green	flashing	Device is transmitting and/or receiving data
	Yellow/ Green	Flashing alternately	Updating configuration using the USB interface

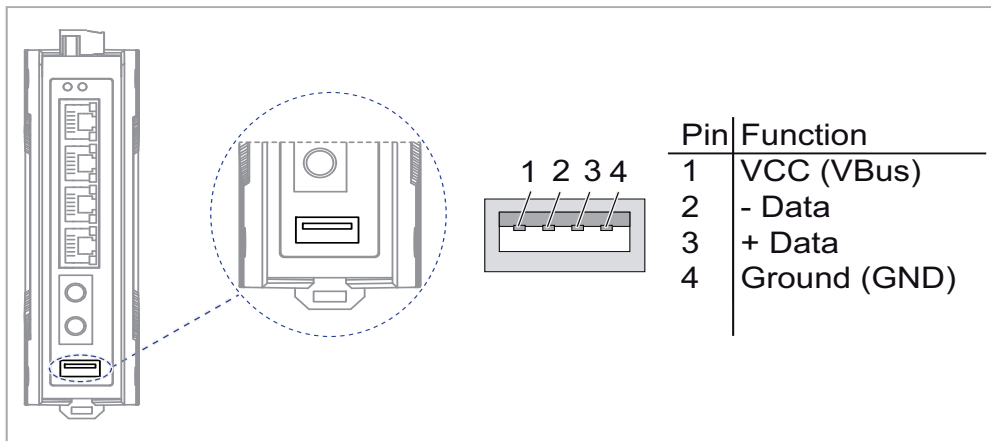
4 Configuration interface

4.1 USB interface

The USB interface allows you to connect a storage medium. This is for transferring configuration data.

The USB interface has the following properties:

- ▶ Connectors: type A
- ▶ Supports the USB master mode
- ▶ Supports USB 2.0
- ▶ Supplies current of max. 500 mA
- ▶ Voltage not potential-separated



5 Configuration (optional)

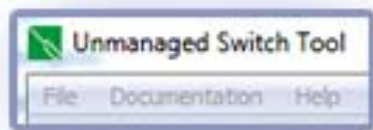
The device is immediately ready for operation with its default settings, from the factory.

The device allows you to change the settings according to your requirements using the USB interface.

You can find the configuration parameters described in a separate overview.

[See table 5 on page 33.](#)

- Connect a storage medium to your PC.
- Start the Unmanaged Switch Tool.



- Select your device variant from the drop-down list "Device Type".



- Modify the parameters in the highlighted areas according to your requirements.

Unmanaged Switch Tool
File Documentation Help

General Information
Device Type: TCSESRU083FNO
Contact:
Location:

Global Parameters
Power Supply 1 Alarm: Enable
Power Supply 2 Alarm: Enable

Port Parameters
Aging Time (s): 300
QoS Trust Mode: trustDotIp

Port Parameters
Port State: On
Link Alarm: Off
Auto Negotiation: On
Speed: -
Duplex Mode: FDX
Auto Crossing: On
MDIX State: MDIX

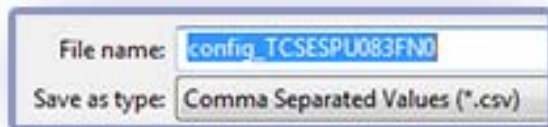
Port Parameters
Flow Control: Off
Broadcast Mode: Off
Broadcast Threshold (%): 100
Multicast Mode: Off
Multicast Threshold (%): 100

Port Parameters
Jumbo Frames: Off
Port Priority: 0
Energy Efficient Ethernet: Off
PoE State: Off
PoE Priority: Low
PoE Classes: -

Active/Configured Port Settings

Port	Port State	Link Alarm	Auto Negotiation	Speed	Duplex Mode	Auto Crossing	MDIX State	Flow Control	Broadcast Mode	Broadcast Threshold	Multicast Mode	Multicast Threshold	Jumbo Frames	CoS Trust Mode	Port Priority	Energy Efficient Ethernet
Port 1	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 2	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 3	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 4	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 5	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 6	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 7	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off
Port 8	On	Off	On	-	FDX	On	MDIX	Off	Off	100	Off	100	Off	trustDotIp	0	Off

Save the configuration file to the storage medium.



- Disconnect the storage medium from your PC.
- ▶ Transfer the configuration data to your device by following these steps:
 - Verify that the device is switched off.
 - Connect the storage medium to the device.
 - Switch on the device.
- ▶ The ConneXium TCSESPU reads the csv file on the storage medium and adopts the settings. During this time, the LED “**LS/DA**” flashes alternately in **yellow/green**.

	Parameter	Values	Default values	Comment	
global	PSU alarm	PSU 1/2 enabled / disabled	PSU 1 / 2 enabled		
	Aging time	Aging time in s	300 s		
	QoS 802.1p mapping	VLAN Priority 0 ... 7 Traffic Class 0 ... 3	VLAN Priority	Traffic Class	
			0	1	
			1	0	
			2	0	
3			1		
4	2				
5	2				
6	3				
7	3				
	QoS DSCP mapping	DSCP value 0 ... 63 Traffic Class 0 ... 3	See "DSCP mapping table" on page 33.		
per port	Flow control	enabled / disabled	disabled		
	Port admin state	enabled / disabled	enabled		
	Jumbo frames	enabled / disabled	disabled	Only on GE ports	
	Broadcast storm protection	enabled / disabled	disabled	Ingress filtering	
	Broadcast storm threshold	0% ... 100%	100%		
	Multicast storm protection	enabled / disabled	disabled	Ingress filtering	
	Multicast storm threshold	0% ... 100%	100%		
	QoS Trust Mode	untrusted, trustDot1p, trustIpDscp	trustDot1	This also includes VLAN 0 mode for Profinet applications.	
	Port based priority	0 .. 7	0		
Link alarm	enabled / disabled	disabled			

Table 4: Configuration parameters

	Parameter	Values	Default values	Comment
per TP port	Autonegotiation	enabled / disabled	enabled	
	Speed	100 Mbit/s, 10 Mbit/s	100 Mbit/s	Only if autonegotiation is disabled, no forced mode 1000 Mbit/s
	Duplex mode	FDX / HDX	FDX	Only if autonegotiation is disabled
	Autocrossing	enabled / disabled	enabled	Only if autonegotiation is disabled
	MDI state	MDI-X	MDI-X	Only if autonegotiation is disabled
	EEE	enabled / disabled	disabled	Only for GE ports
per Fiber port	Duplex mode	FDX / HDX	FDX	

Table 4: Configuration parameters

d2/d1	0	1	2	3	4	5	6
0:	1	0	0	1	2	3	3
1:	1	0	0	1	2	3	3
2:	1	0	0	2	2	3	3
3:	1	0	0	2	2	3	3
4:	1	0	1	2	2	3	
5:	1	0	1	2	2	3	
6:	1	0	1	2	2	3	
7:	1	0	1	2	2	3	
8:	0	0	1	2	3	3	
9:	0	0	1	2	3	3	

Table 5: DSCP mapping table

5.1 Configuration readout

You can read out the configuration using a storage medium.

Proceed as follows:

- Create a text file in the root directory of the storage medium.
 - Rename the text file to “**ShowRunningConfiguration.txt**”.
 - Connect the storage medium to the device.
 - Restart the device by disconnecting the power supply for a moment.
-
- ▶ When the text file “**ShowRunningConfiguration.txt**” in the root directory of the device is found, the device creates a file with the current configuration.
 - ▶ You will find this file in the root directory of the storage medium under the name “**RunningConfig.txt**”.

6 Monitoring the ambient air temperature

Operate the device below the specified maximum ambient air temperature exclusively.

See [“General technical data” on page 38](#).

The ambient air temperature is the temperature of the air at a distance of 2 in (5 cm) from the device. It depends on the installation conditions of the device, e.g. the distance from other devices or other objects, and the output of neighboring devices.

7 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 [“General technical data” on page 38](#).

8 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.

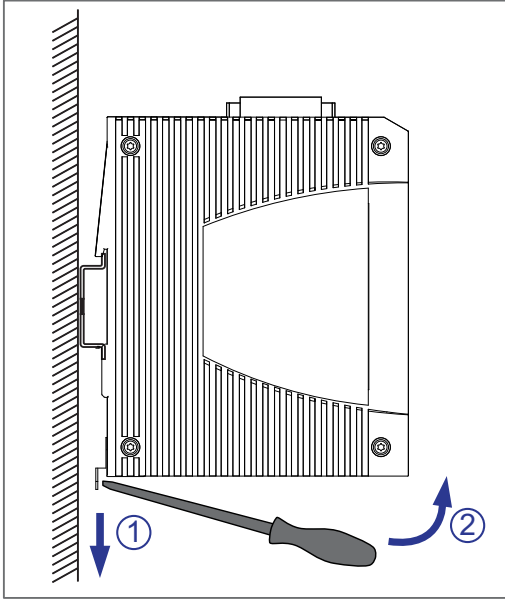


Figure 3: Removing the device from the DIN rail

9 Technical data

■ General technical data

Dimensions W × H × D	TCSESPU083FN0	See "Dimension drawings" on page 39.
	TCSESPU053F1CU0	
	TCSESPU053F1CS0	
	TCSESPU093F2CU0	
	TCSESPU093F2CS0	
Weight	TCSESPU083FN0	15.52 oz (440 g)
	TCSESPU053F1CU0	13.83 oz (430 g)
	TCSESPU053F1CS0	
	TCSESPU093F2CU0	17.99 oz (510 g)
	TCSESPU093F2CS0	
Power supply	Nominal voltage DC	12 V ... 24 V
	Voltage range DC incl. maximum tolerances	9.6 V ... 32 V
	Connection type	6-pin terminal block for the supply voltage
	Power failure bypass	> 10 ms
	Back-up fuse	≤ 4 A, slow blow
"FAULT" signal contact	Switching current	max. 1 A, SELV
	Switching voltage	max. 60 V DC or max. 30 V AC, SELV
Climatic conditions during operation	Ambient air temperature ^a	-40 °F ... +158 °F (-40 °C ... +70 °C)
	Humidity	10 % ... 95 %
	Air pressure	minimum 700 hPa (+9842 ft; +3000 m)
Climatic conditions during storage	Ambient air temperature ^a	-40 °F ... +185 °F (-40 °C ... +85 °C)
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure	minimum 700 hPa (+9842 ft; +3000 m)
Pollution degree		2
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection	IP40

a. Temperature of the ambient air at a distance of 2 in (5 cm) from the device

■ Dimension drawings

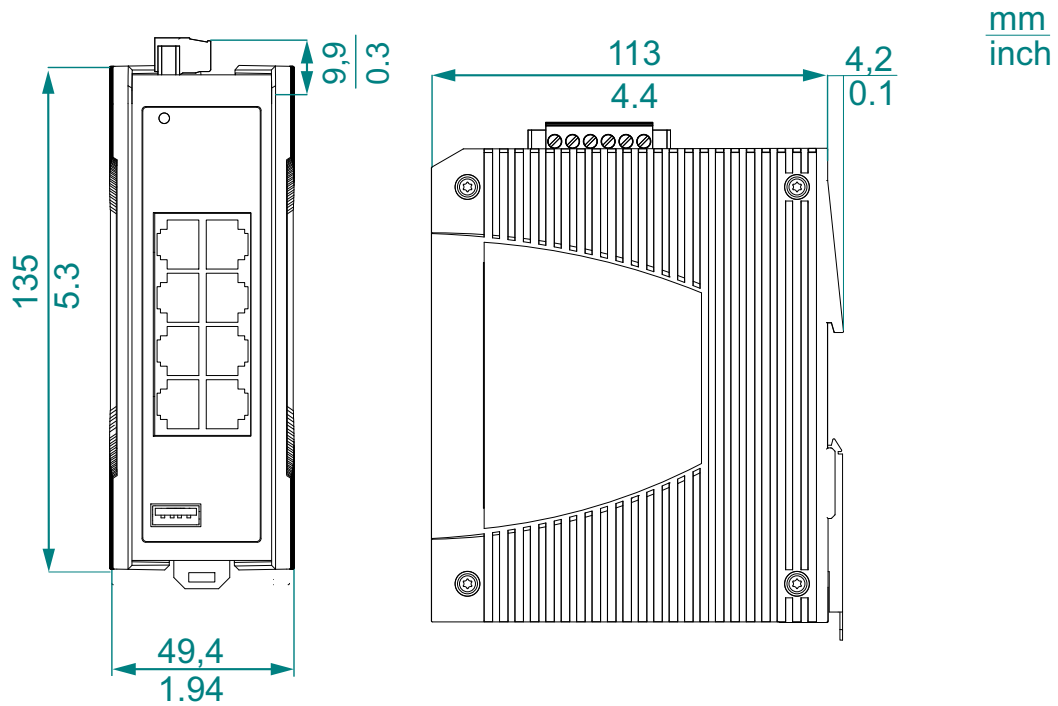


Figure 4: Device variant: TCSESPU083FN0

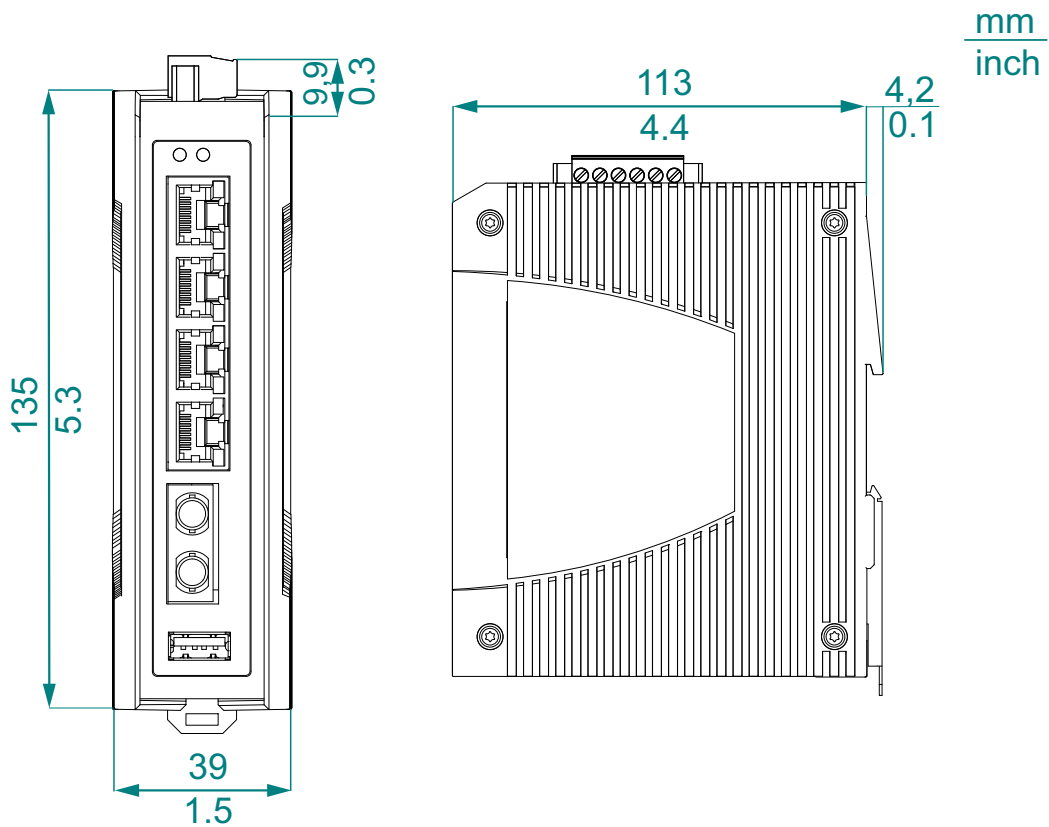


Figure 5: Device variants: TCSESPU053F1CU0 / TCSESPU053F1CS0

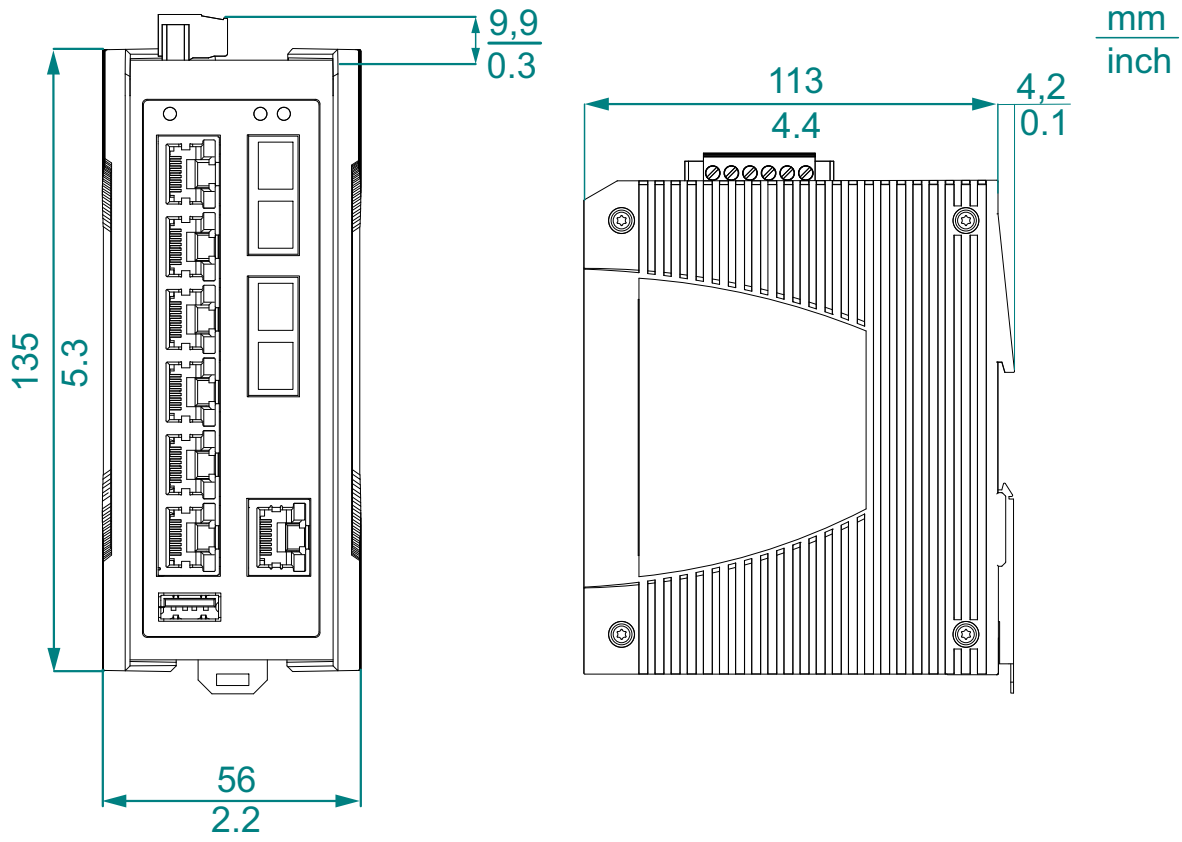


Figure 6: Device variants: TCSESPU093F2CU0 / TCSESPU093F2CS0

■ EMC

EMC interference emission		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Radiated emission					
EN 55032		Class A	Class A	Class A	Class A
DNV GL Guidelines		—	EMC 1	—	—
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	Supply connection	Class A	Class A	Class A	Class A
DNV GL Guidelines	Supply connection	—	EMC 1	—	—
FCC 47 CFR Part 15	Supply connection	Class A	Class A	Class A	Class A
EN 61000-6-4	Supply connection	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		10 V/m	10 V/m	20 V/m	10 V/m
IEEE 1613		—	—	—	35 V/m
Fast transients (burst)					

EMC interference immunity		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
EN 61000-4-4 IEEE C37.90.1	Supply connection	± 2 kV	± 2 kV	± 2 kV	± 4 kV
EN 61000-4-4 IEEE C37.90.1	Data line	± 4 kV	± 4 kV	± 2 kV	± 4 kV
Voltage surges - DC supply connection					
EN 61000-4-5 IEEE 1613	line/ground	± 2 kV	± 2 kV	± 2 kV	± 2 kV
EN 61000-4-5	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	± 2 kV
Conducted disturbances					
EN 61000-4-6	150 kHz ... 80 MHz	10 V	10 V	10 V	10 V
Damped vibration – 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 fields					
EN 61000-4-9		—	—	300 A/m	—

Stability		Standard applications	Navy applications	Railway applications (trackside)	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 0.12 in (3 mm) amplitude
		8.4 Hz ... 150 Hz with 1 g	13.2 Hz ... 200 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	—	—	10 g at 11 ms

■ Network range

TP port

Length of a twisted pair segment max. 100 m

Table 6: TP port 10BASE-T / 100BASE-TX

Ports	Wave length	Fiber	System attenuation	Example for F/O line length	Fiber attenuation	BLP/ dispersion
SM	1300 nm	9/125 μ m	0-16 dB	0-30 km	0.4 dB/km	3.5 ps/(nm \times km)
MM	1300 nm	50/125 μ m	0-8 dB	0-5 km	1.0 dB/km	800 MHz \times km
MM	1300 nm	50/125 μ m	0-11 dB	0-4 km	1.0 dB/km	500 MHz \times km

Table 7: F/O port 100BASE-FX

■ Power consumption/power output

Device name	Maximum power consumption	Maximum power output
TCSESPU083FN0	2.6 W	8.8 Btu (IT)/h
TCSESPU053F1CU0	4.3 W	14.7 Btu (IT)/h
TCSESPU053F1CS0		
TCSESPU093F2CU0	6.9 W	23.7 Btu (IT)/h
TCSESPU093F2CS0		

■ Interfaces

TCSESPU083FN0	8 \times 10/100 Mbit/s twisted pair with RJ45 sockets, 6-pin terminal block for supply voltage and signal contact, USB interface for configuration
TCSESPU053F1CU0 TCSESPU053F1CS0	4 \times 10/100 Mbit/s twisted pair with RJ45 sockets, 1 \times 100 Mbit/s F/O with DSC sockets, 6-pin terminal block for supply voltage and signal contact, USB interface for configuration
TCSESPU093F2CU0 TCSESPU093F2CS0	7 \times 10/100 Mbit/s twisted pair with RJ45 sockets, 2 \times 100 Mbit/s F/O with DSC sockets, 6-pin terminal block for supply voltage and signal contact, USB interface for configuration

■ Scope of delivery

Number	Scope of delivery
1 ×	Device
1 ×	6-pin, pluggable terminal block for power supply and signal contact
1 ×	Read Me document with attached licence activation key

■ Product/product code/product description

Product	Part Number	Product description
TCSESPU	TCSESPU083FN0	8 × 10/100 TX
	TCSESPU053F1CU0	4 × 10/100 TX, 1 × 100 FX
	TCSESPU053F1CS0	
	TCSESPU093F2CU0	7 × 10/100 TX, 2 × 100 FX
	TCSESPU093F2CS0	

■ Underlying norms and standards

Standard	
ISA-12.12.01	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
DNVGL-CG-0339	Environmental test specification for electrical, electronic and programmable equipment and systems.
UL/IEC 61010-1, UL/IEC 61010-2-201	Safety for Control Equipment
RCM	Australian Regulatory Compliance Mark (RCM) Australian Radiocommunications Standard 2008, Radiocommunications Act 1992

Table 8: List of norms and standards

The device has an approval based on a specific standard or de facto standard only if the approval indicator appears on the housing.