



HIRSCHMANN

A **BELDEN** BRAND

User Manual

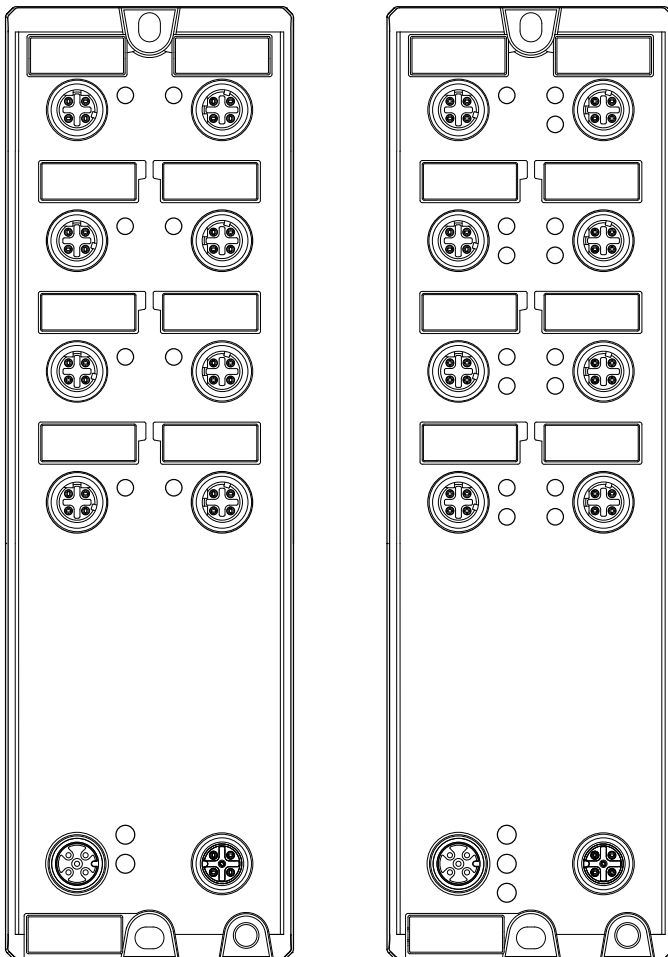
Installation

IP65/67/69K Switch

OCTOPUS 8TX-EEC

OCTOPUS 8TX PoE-EEC

OCTOPUS 8TX-EEC-M



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<https://www.doc.hirschmann.com>

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Important information

Note: Read these instructions carefully, and familiarize yourself with the device before trying to install, operate, or maintain it. The following notes may appear throughout this documentation or on the device. These notes warn of potential hazards or call attention to information that clarifies or simplifies a procedure.

■ Symbol explanation



This is a general warning symbol. This symbol alerts you to potential personal injury hazards. Observe all safety notes that follow this symbol to avoid possible injury or death.



If this symbol is displayed in addition to a safety instruction of the type “Danger” or “Warning”, it means that there is a danger of electric shock and failure to observe the instructions will inevitably result in injury.



This symbol indicates the danger of hot surfaces on the device. In connection with safety instructions, non-observance of the instructions will inevitably result in injuries.



DANGER

DANGER draws attention to an immediately dangerous situation, which will **inevitably** result in a serious or fatal accident if not observed.



WARNING

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



CAUTION

CAUTION indicates a possible danger which, if not avoided, **may** result in minor injuries.

NOTICE

NOTICE provides information about procedures that do not involve the risk of injury.

Safety instructions

WARNING

UNCONTROLLED MACHINE ACTIONS

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

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

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

■ **General safety instructions**

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

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

■ **Certified usage**

- Use the product only for the application cases described in the Hirschmann product information, including this manual.
- Operate the product only according to the technical specifications. [See “Technical data” on page 54.](#)
- Connect to the product only components suitable for the requirements of the specific application case.

Operational environment:

- ▶ On the inside of vehicles
- ▶ On the inside of buildings

■ Installation site requirements

- When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.
- Operate the device only at the specified ambient temperature (temperature of the ambient air at a distance of 5 cm (2 in) from the device) and at the specified relative humidity.
- Use the device in an environment with a maximum pollution degree that complies with the specifications in the technical data.

Note: Operation of the device in high humidity or condensing atmospheres is exclusively allowed when using recommended accessories with IP65/67/69K rating.

■ Strain relief

Note: If the strain relief is insufficient, there is a potential risk of torsion, contact problems and creeping interruptions.

- Relieve the connection points of cables and lines from mechanical stress.
- Design strain reliefs in such a way that they help prevent any mechanical damage to cables, wires or conductors caused by external influences or their own weight.
- To help prevent damage to device connections, connectors and cables, follow the instructions for proper installation in accordance with DIN VDE 0100-520:2013-06, sections 522.6, 522.7 and 522.13.

■ Device casing

- At ambient air temperatures $> +60\text{ °C}$ ($+140\text{ °F}$):
The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

■ Qualification requirements for personnel

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

■ **National and international safety regulations**

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

■ **Shielding ground**

The overall shield of a connected shielded twisted pair cable is connected to the ground connection on the metal housing as a conductor.

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

■ Requirements for connecting electrical wires

Before connecting the electrical wires, **always** verify that the requirements listed are complied with.

General requirements for connecting electrical wires

The following requirements apply without restrictions:

- ▶ The electrical wires are voltage-free.
- ▶ The cables used are permitted for the temperature range of the application case.
- ▶ Ground the device via the ground screw.
Disconnect the grounding only after disconnecting all other cables.
- ▶ For OCTOPUS 8TX-EEC and OCTOPUS 8TX PoE-EEC:
Exclusively use 60/75 °C (140/167 °F) or 75 °C (167 °F) copper (Cu) wire.
- ▶ For OCTOPUS 8TX-EEC-M:
Only use cables that are suitable for a temperature 20 °C (36 °F) higher than the maximum ambient air temperature at which the device is used. Only use copper wire.
- ▶ The power supply cable to be connected is suitable for ambient air temperature of at least 212 °F (100 °C).
- ▶ The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
- ▶ Relevant for North America:
Use a UL certified cable with a suitable evaluation to connect the devices (CYJV or PVVA).
- ▶ The external circuits intended to be connected to this device shall be separated from the mains supply or hazardous live voltage by reinforced or double insulation and meet the requirements of SELV/PELV (Class III) circuits according to UL/CSA/IEC 61010-1, UL/CSA/IEC 61010-2-201.

Requirements for connecting the supply voltage

The following requirements apply without restrictions:

All of the following requirements are complied with:

- ▶ The supply voltage corresponds to the voltage specified on the type plate of the device.
- ▶ The power supply conforms to overvoltage category I or II.
- ▶ The power supply has an easily accessible disconnecting device (for example a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- ▶ The power supply cable is suitable for the voltage, the current and the physical load.
Hirschmann recommends a conductor cross section of 0.5 mm² to 0.75 mm² (AWG20 up to AWG18).

The following requirements apply alternatively:

Relevant when the device is supplied via 1 voltage input:

- | | |
|---------------|---|
| Alternative 1 | The power supply complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or ES1 + PS2 according to IEC/EN 62368-1. |
| Alternative 2 | Relevant for North America:
The power supply complies with the requirements according to NEC Class 2. |

Requirements for connecting the supply voltage

- Alternative 3 **All** of the following requirements are complied with:
- ▶ The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
 - ▶ Install a fuse suitable for DC voltage in the plus conductor of the power supply.
Connect the minus conductor to the ground potential. If the minus conductor is not connected to the ground potential, also install an external fuse in the minus conductor.
Regarding the properties of this fuse:
[See “General technical data” on page 54.](#)

Relevant when the device is supplied via 2 voltage inputs:

- Alternative 1 The **total** power supply complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or IEC/EN 62368-1.
- Alternative 2 Relevant for North America:
The **total** voltage supply complies with the requirements as per NEC Class 2.
- Alternative 3 **All** of the following requirements are complied with:
- ▶ The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
 - ▶ In both voltage inputs, install a fuse suitable for DC voltage in the plus conductor of the power supply.
In both voltage inputs, connect the minus conductor to the ground potential. If the minus conductor is not connected to the ground potential, also install an external fuse in the minus conductor.
Regarding the properties of this fuse:
[See “General technical data” on page 54.](#)

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

This equipment is exclusively suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations.

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.



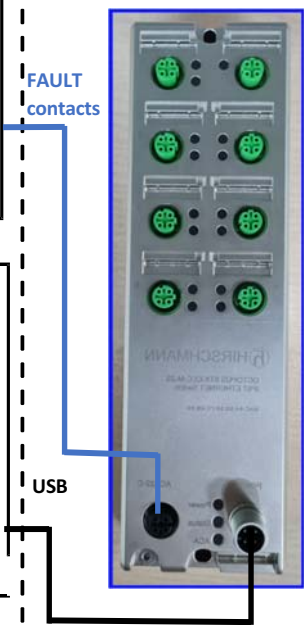

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF ANY COMPONENT MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

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

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

This device is an open-type device that is to be installed in an enclosure suitable for the environment.

Exclusively use the device for the application cases specified by the manufacturer. Failure to follow these instructions can impair device protection.

<div style="text-align: center;">  </div> <p style="text-align: center;">Ordinary Location, Non-Hazardous Area, non-explosive atmosphere</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Relay contacts: Equipment with non-incendive field wiring parameters. Polarity is not relevant. The relay terminals are dependent upon the following entity parameters:</p> <p>$V_{max} \leq 30V$ $I_{max} \leq 90mA$ $C_i \leq 2nF$ $L_i \leq 1\mu H$</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>The ACA22-M12-C (EEC) storage medium is mechanically secured to prevent disconnection.</p> <p>A USB cable for configuration the device may exclusively be used in non-hazardous locations.</p> <p>WARNING! Connection or disconnection in an explosive atmosphere could result in an explosion</p> </div>	<div style="border: 1px dashed black; padding: 10px;"> <div style="text-align: center;">  </div> <p style="text-align: center;">Explosive Atmosphere Class 1 Division 2 Group A, B, C, D Hazardous Location</p> <div style="text-align: center; margin-top: 20px;">  </div> </div>	
<p>For Use in Hazardous Locations Class I Division 2 Groups A, B, C, D: Only allowed for Octopus 8TX-EEC-M 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>		
<p>CONTROL DRAWING Octopus 8TX-EEC-M Series for Use in Hazardous Locations Class I Division 2, Groups A, B, C, D Locations</p>		
Rev.: 0	Doc.No.: 000247204DNR	 HIRSCHMANN A BELDEN BRAND
		Page 1 of 2

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

TABLE 1:

<u>Nonincendive Equipment</u>		<u>Associated Apparatus</u>
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
$C_i + C_{cable}$	\leq	C_a (or C_o)
$L_i + L_{cable}$	\leq	L_a (or L_o)

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

CONTROL DRAWING Octopus 8TX-EEC-M Series for Use
in Hazardous Locations Class I Division 2, Groups A, B, C, D Locations



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Doc.No.: 000247204DNR

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■ **E marking**

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

UN/ECE Regulation No. 10

Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility.

UN/ECE Regulation No. 118

Uniform technical prescriptions concerning the burning behaviour and/or the capability to repel fuel or lubricant of materials used in the construction of certain categories of motor vehicles.

The devices are suited for installation in vehicles according to the conditions of ECE Regulation No. 118.

Certified devices are marked with an E type approval indicator.

■ **CE marking**

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

▶ **2011/65/EU and 2015/863/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 of the Council on the harmonisation of the laws of the Member States relating 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:

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany
www.hirschmann.com

You find the EU conformity declaration as PDF file for downloading on the Internet at: <https://www.doc.hirschmann.com/certificates.html>

The device can be used in industrial environments.

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

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

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.

■ UKCA marking

The labeled devices comply with the following UK regulations:

- ▶ **S.I. 2012 No. 3032**
Restriction of the Use of Certain Hazardous Substances in Electrical and Electronical Equipment Regulations
- ▶ **S.I. 2016 No. 1091**
Electromagnetic Compatibility Regulations



The UKCA conformity declaration will be available to the relevant authorities at the following address:

Belden UK Ltd.
1 The Technology Centre, Station Road
Framlingham, IP13 9EZ, United Kingdom

You find the UKCA conformity declaration as PDF file for downloading on the Internet at: <https://www.doc.hirschmann.com/certificates.html>

The device can be used in industrial environments.

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

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

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.

■ **FCC note**

Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

OCTOPUS 8TX-EEC

U.S. Contact Information

Belden – St. Louis
1 N. Brentwood Blvd. 15th Floor
St. Louis, Missouri 63105, United States
Phone: 314.854.8000

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

■ **Recycling note**

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

About this Manual

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.

Documentation mentioned in the “User Manual Installation” that is not supplied with your device as a printout can be found as PDF files for downloading on the Internet at: <https://www.doc.hirschmann.com>

Key

The symbols used in this manual have the following meanings:

▶	Listing
□	Work step
■	Subheading

1 Description

1.1 General device description

The device is designed for the special requirements of industrial automation. The device meets the relevant industry standards, provides very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The device allows you to set up switched Industrial Ethernet networks according to standard IEEE 802.3.

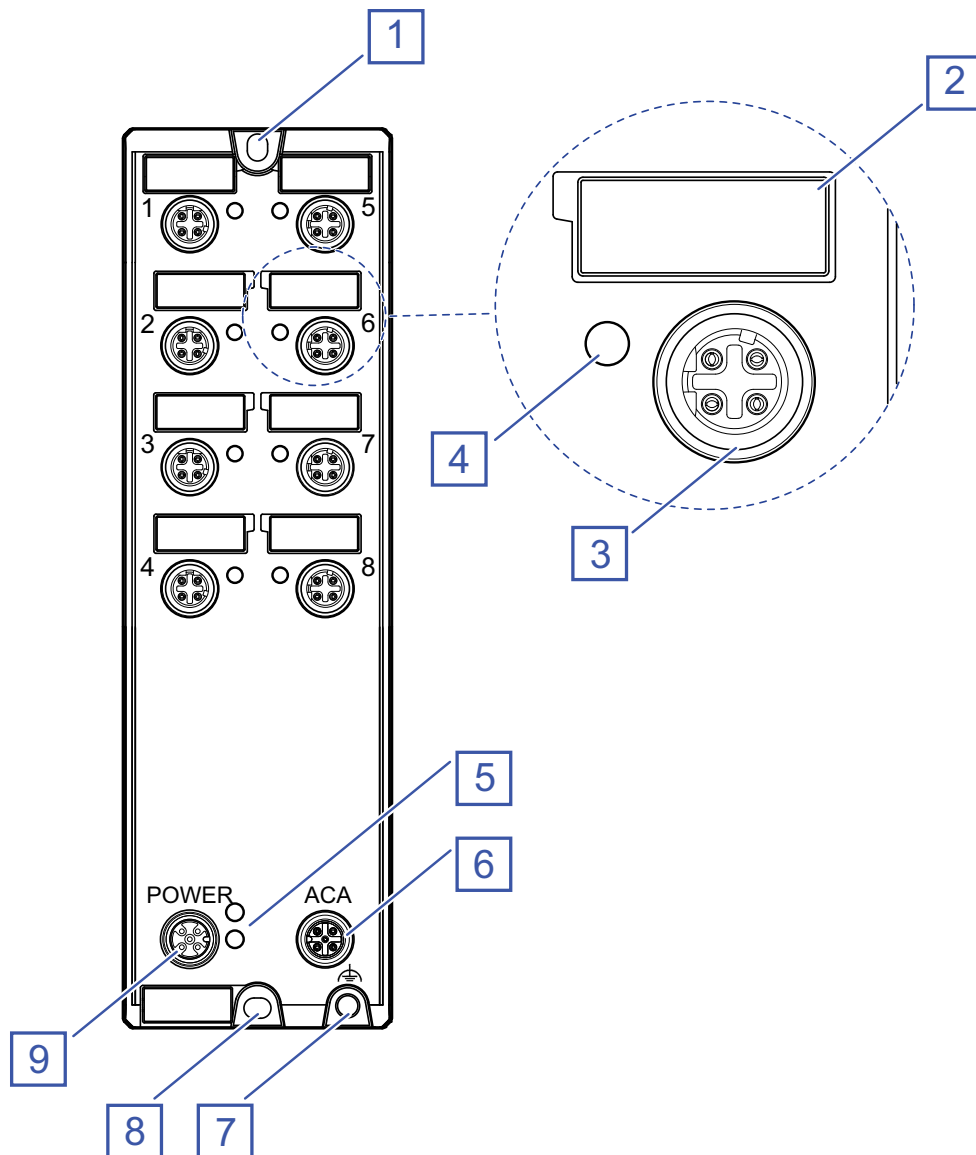
The device complies with the degrees of protection IP65/67/69K. To sustain the IP65/67/69K suitability for your device, exclusively use accessories with degree of protection IP65/67/69K. Seal all unused connections and ports with protection screws. To comply with IPX9K suitability, use metal protection screws and cover the rear side of the device.

The device works without a fan.

The voltage is supplied redundantly.

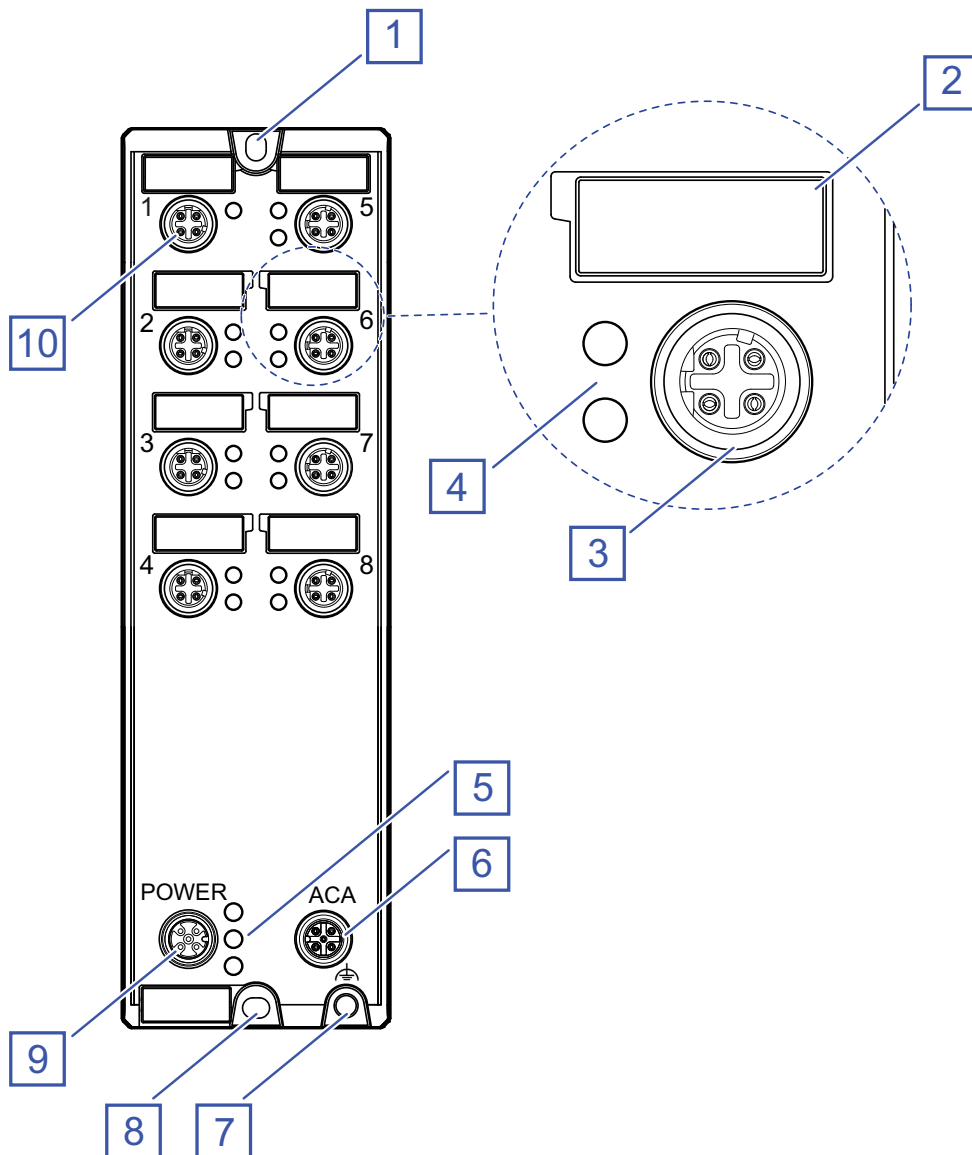
1.2 Device view

1.2.1 OCTOPUS 8TX-EEC



Item	Characteristic
1	Slot hole for mounting on a flat surface
2	8 × Indicator plate
3	8 × 4-pin, "D"-coded M12 socket for 10/100 Mbit/s twisted pair connections
4	8 × LED display elements for port status
5	LED display element for device status
6	M12 interface for the connection of ACA21-M12 (EEC) and ACA22-M12 (EEC)
7	Ground connection
8	Slot hole for mounting on a flat surface
9	Supply voltage connection

1.2.2 OCTOPUS 8TX PoE-EEC



Item	Characteristic
1	Slot hole for mounting on a flat surface
2	8 × Indicator plate
3	7 × 4-pin, "D"-coded M12 socket for 10/100 Mbit/s twisted pair connections with PoE support
4	15 × LED display elements for port status PoE status
5	LED display element for device status
6	M12 interface for the connection of ACA21-M12 (EEC) and ACA22-M12 (EEC)
7	Ground connection
8	Slot hole for mounting on a flat surface
9	Supply voltage connection
10	4-pin, "D"-coded M12 socket for 10/100 Mbit/s twisted pair connections without PoE support

The device supports Power over Ethernet Plus in accordance with IEEE 802.3at (PoE+) and enables you to supply current to terminal devices such as IP phones via the twisted-pair cable.

The Power over Ethernet Plus function is activated both globally and on the PoE-capable ports on delivery.

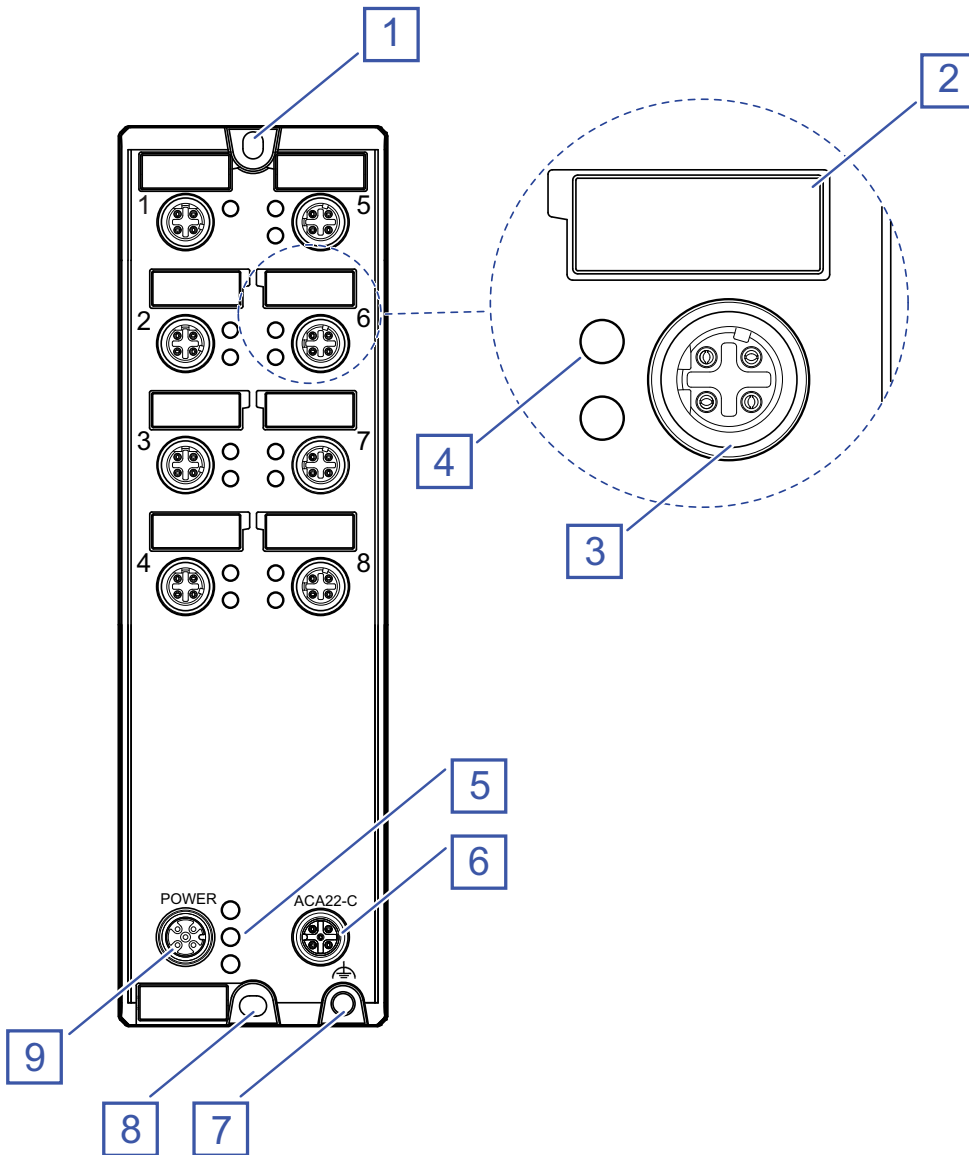
You will recognize the PoE-capable ports from the printed PoE logo.

The voltage is supplied through the wire pairs transmitting the signal (phantom voltage). The individual ports are not electrically insulated from each other.

In accordance with IEEE 802.3af and IEEE 802.3at:

- ▶ Endpoint PSE
- ▶ Alternative A

1.2.3 OCTOPUS 8TX-EEC-M



Item	Characteristic
1	Slot hole for mounting on a flat surface
2	8 × Indicator plate
3	8 × 4-pin, “D”-coded M12 socket for 10/100 Mbit/s twisted pair connections
4	8 × LED ^a Port status
5	LED display element for device status
6	M12 interface for the connection of ACA22-M12-C (EEC) or a USB configuration cable
7	Ground connection
8	Slot hole for mounting on a flat surface
9	Supply voltage connection and signal contact

a. In the present hardware version, the lower port LEDs of the M12 ports are without function. The port status is displayed via the upper port LED.

1.3 Power supply

The supply voltage is connected by means of a 5-pin, "A"-coded M12 connector (e. g. ELWIK A 5012 PG7).

You will find more information here:

["Connecting the power supply and the signal contact lines" on page 39](#)

1.4 Ethernet ports

You can connect terminal devices and other segments at the ports of the device via twisted pair cables.

You find information on the pin assignments for making patch cables here:

- ▶ ["Pin assignment OCTOPUS 8TX-EEC and OCTOPUS 8TX-EEC-M" on page 26](#)
- ▶ ["Pin assignment OCTOPUS 8TX PoE-EEC" on page 26](#)

1.4.1 10/100 Mbit/s twisted pair port

This port is a 4-pin, "D"-coded M12 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

Delivery state: Autonegotiation activated

The screw threads of the M12 ports are electrically connected to the device casing.

1.4.2 10/100 Mbit/s PoE port

The PoE ports support the connection and a remote power supply of (for example) IP phones (Voice-over-IP), webcams, sensors, print servers, and WLAN access points. With PoE, these end devices are powered via the twisted pair cable.

This port is a 4-pin, “D”-coded M12 socket.

The 10/100 Mbit/s PoE(+) port allows you to connect network components as a powered device (PD) according to standards IEEE 802.3 10BASE-T/100BASE-TX and IEEE 802.3af/at.

This port supports:

- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ Autocrossing
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- ▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- ▶ Power over Ethernet (PoE/PoE+)

Devices are supplied with PoE voltage (54 V DC SELV) using the internal power supply. PoE voltage via twisted pair cables is supplied using the wire pairs transmitting the signal (phantom supply).

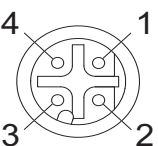
Delivery state: Autonegotiation activated

The screw threads of the M12 ports are electrically connected to the device casing.

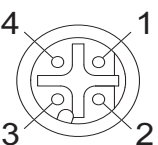
The PoE voltage is uncoupled from the power supply.

The maximum PoE output of the device is 35 W.

1.4.3 Pin assignment OCTOPUS 8TX-EEC and OCTOPUS 8TX-EEC-M

Figure	Pin	Function	
	1	TD+	Transmit Data+
	2	RD+	Receive Data+
	3	TD-	Transmit Data-
	4	RD-	Receive Data-
Housing: shield			

1.4.4 Pin assignment OCTOPUS 8TX PoE-EEC

Figure	Pin	Function	PoE voltage input
	1	TD+	Transmit Data + V+
	2	RD+	Receive Data + V-
	3	TD-	Transmit Data- V+
	4	RD-	Receive Data- V-
Casing: shield			

1.5 Display elements

After the supply voltage is set up, the software starts and initializes itself. During this process, various LEDs light up.

1.5.1 Device status

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

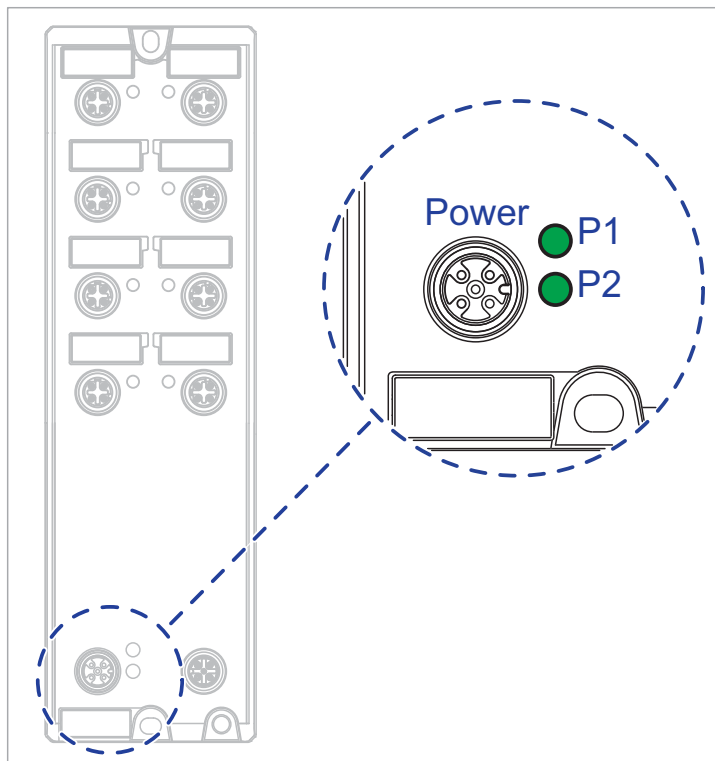


Figure 1: Display elements device status OCTOPUS 8TX-EEC

LED	Display	Color	Activity	Meaning
P1	Supply voltage 1	green	lights up	Supply voltage is on
			none	Supply voltage is too low
P2	Supply voltage 2	green	lights up	Supply voltage is on
			none	Supply voltage is too low

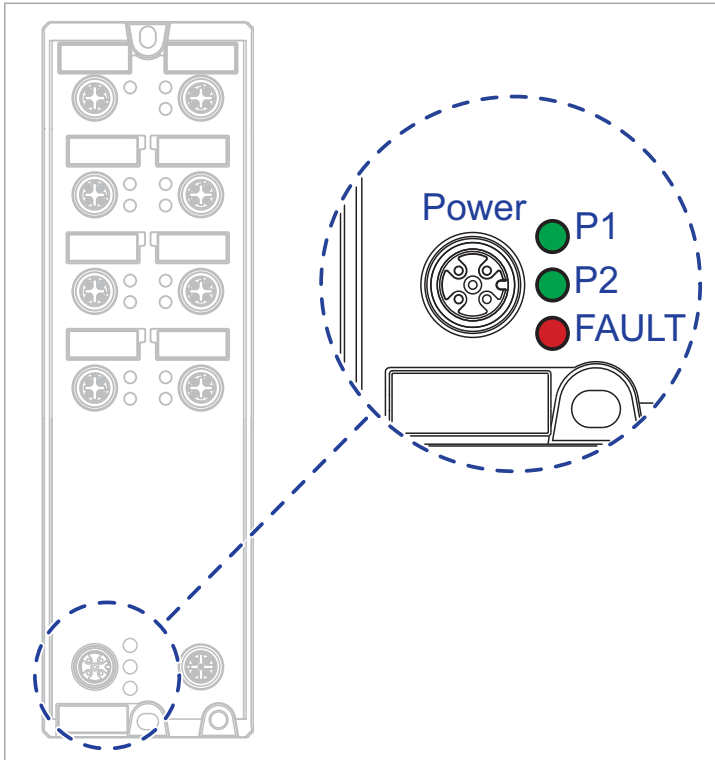


Figure 2: Display elements device status OCTOPUS 8TX PoE-EEC

LED	Display	Color	Activity	Meaning
P1	Supply voltage 1	green	lights up	Supply voltage is on
			none	Supply voltage is too low
P2	Supply voltage 2	green	lights up	Supply voltage is on
			none	Supply voltage is too low
FAULT	PoE status	red	lights up	The combined power output on the PoE ports exceeds the maximum total power output.
			none	The total PoE output is sufficient.

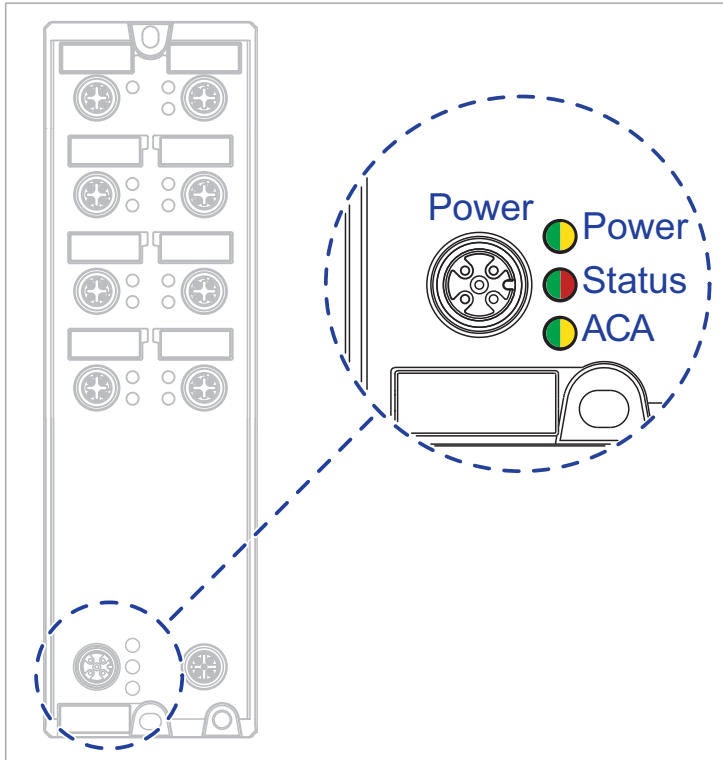


Figure 3: Display elements device status OCTOPUS 8TX-EEC-M

LED	Display	Color	Activity	Meaning
Power	Supply voltage	—	none	Supply voltages 1 and 2 are too low.
		yellow	lights up	Supply voltage 1 or 2 is on
			flashes 4 times a period	Software update is running. Maintain the power supply.
Status	Device Status	green	lights up	Supply voltage 1 and 2 is on
		—	none	Device starts Device is not ready for operation
		green	lights up	Device is ready for operation. Characteristics can be configured
ACA	Storage medium ACA22-M12-C (EEC)	red	lights up	Device is not ready for operation
			flashes 1 time a period	The boot parameters used when the device has been started differ from the boot parameters saved. Start the device again.
			flashes 4 times a period	Device has detected a multiple IP address
		red/ green	flashing alternately	Device is in the recovery mode.
ACA	Storage medium ACA22-M12-C (EEC)	—	none	No ACA connected
		green	lights up	ACA is plugged
			flashes 3 × a period	Device writes to/reads from the storage medium
	yellow	lights up	ACA is not ready for operation	

1.5.2 Port Status

These LEDs provide port-related information.

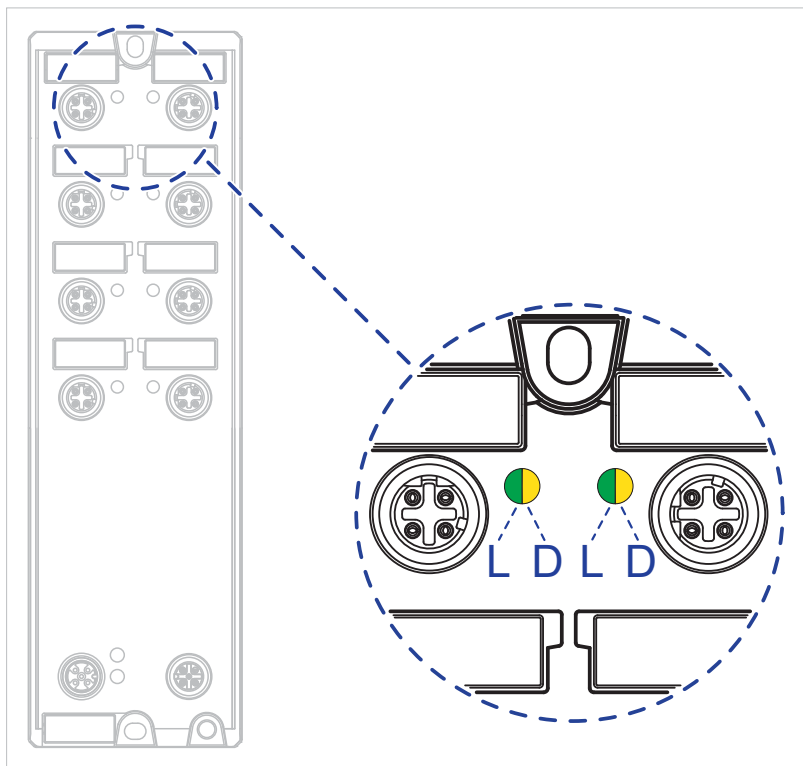


Figure 4: Display elements port status OCTOPUS 8TX-EEC

LED	Display	Color	Activity	Meaning
L/D	Link state/ data traffic	—	none	Device detects an invalid or missing link
		green	lights up	Device detects a valid link
		yellow	flashing	Device is transmitting and/or receiving data
		green/ yellow	flashing alternately	Update of the configuration via the M12 interface

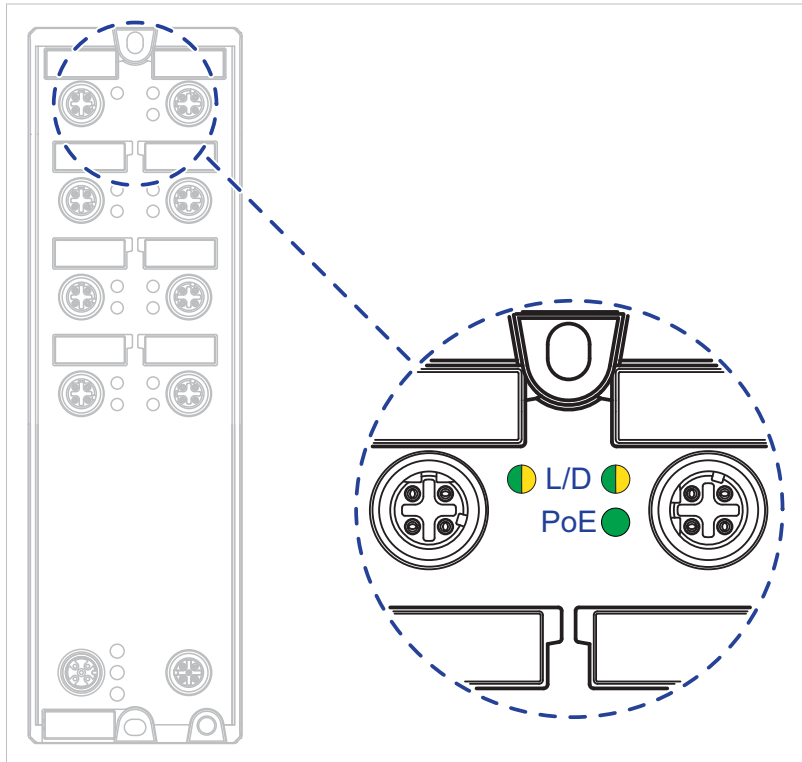


Figure 5: Display elements port status OCTOPUS 8TX PoE-EEC

LED	Display	Color	Activity	Meaning
L/D	Link state/ data traffic	—	none	Device detects an invalid or missing link
		green	lights up	Device detects a valid link
		yellow	flashing	Device is transmitting and/or receiving data
		green/ yellow	flashing alternately	Update of the configuration via the M12 interface
PoE		—	none	No powered device connected
		green	lights up	Powered device is supplied with power
			flashes 1 × a period	no power supply of the Powered Device - due to the device configuration the power output required by the Powered Device cannot be provided on this port
			flashes 3 × a period	No power supply to the powered device, as PoE is deactivated in the device management

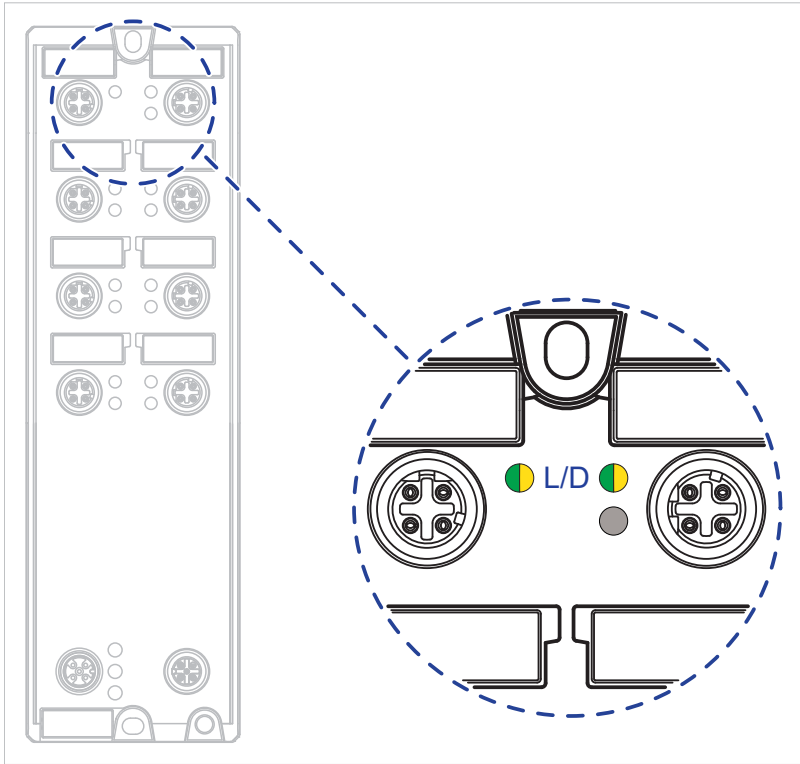


Figure 6: Display elements port status OCTOPUS 8TX-EEC-M

LED ^a	Display	Color	Activity	Meaning
L/D	Link state/ data traffic	—	none	Device detects an invalid or missing link
		green	lights up	Device detects a valid link
			flashes 1 × a period	Port is switched to stand-by
			flashes 3 × a period	Port is switched off
		yellow	flashing	Device is transmitting and/or receiving data

- a. In the present hardware version, the lower port LEDs of the M12 ports are without function. The port status is displayed via the upper port LED.

1.6 Management interfaces

1.6.1 ACA-M12 interface

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC
- ▶ OCTOPUS 8TX PoE-EEC

This interface is a 5-pin, “A”-coded M12 socket with shielding.

This interface allows you to connect the ACA21-M12 (EEC) or ACA22-M12 (EEC) storage medium.

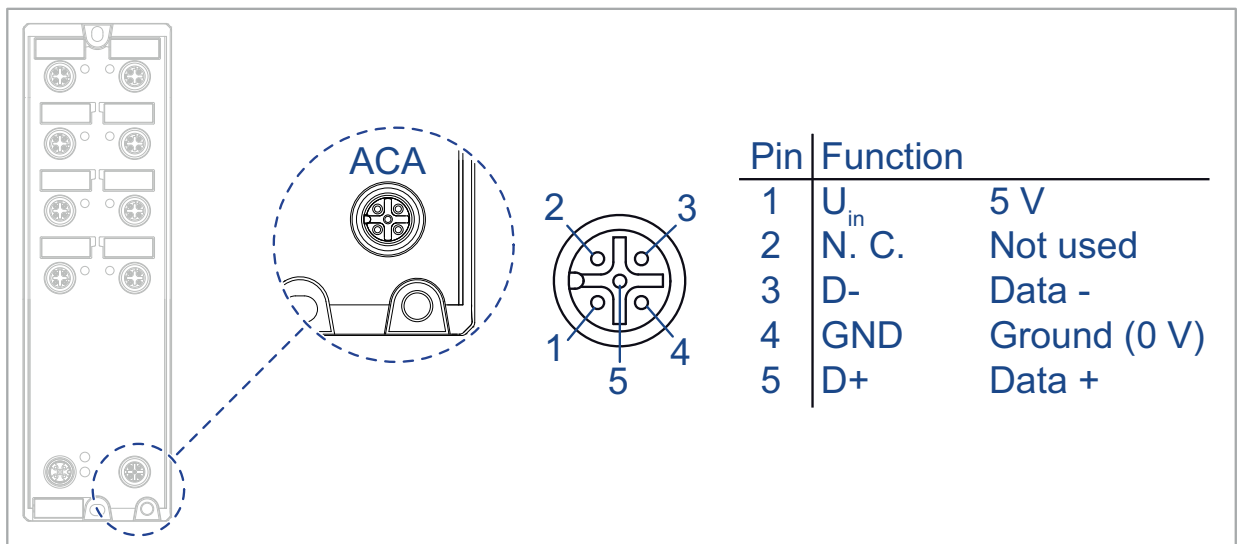


Figure 7: ACA M12 interface

Note: The USB connector is for temporary connection only.

1.6.2 ACA22-C interface

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC-M

This interface is a 5-pin, “A”-coded M12 socket with shielding. This interface is **NOT** electrically isolated from the power supply input.

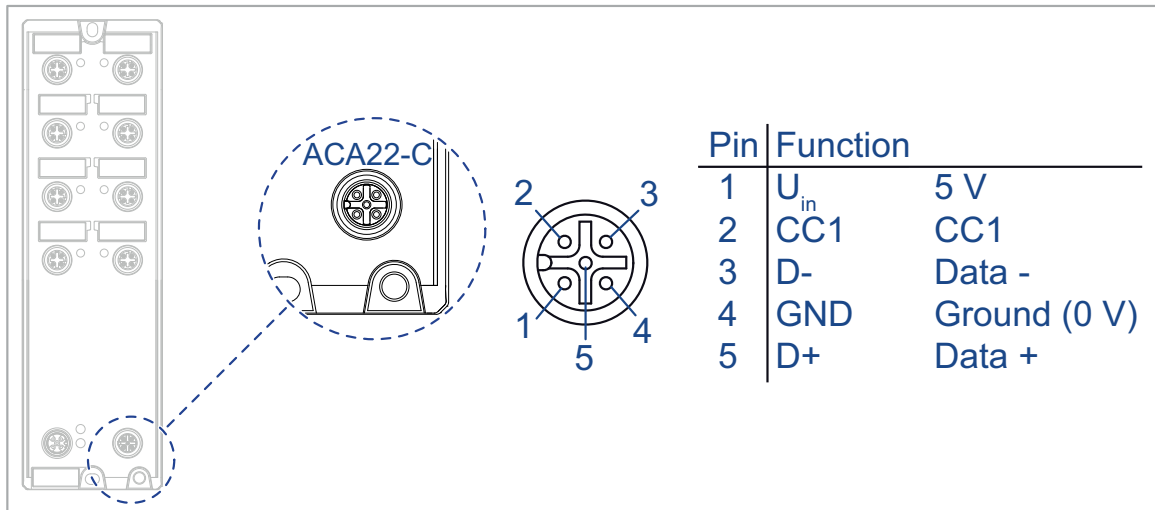


Figure 8: ACA22-C interface: Position on the device and pin assignment

The interface was designed for the use with the external storage medium AutoConfiguration Adapter ACA22-M12-C (EEC). Additionally, the interface allows you to connect your device temporarily via terminal emulation or network to an external device using an adapter cable. The adapter cable is available as an accessory (see on page 62 “Accessories”).

The interface allows you to configure, manage and check your device.

The interface has the following properties:

- ▶ Supports the USB Host mode and USB Device mode
- ▶ Supports USB 2.0 (data rate max. 480 Mbit/s)
- ▶ Supplies current of max. 500 mA
- ▶ Voltage NOT potential-separated
- ▶ Supported file system: FAT32

■ Configuration via ACA22-M12-C (EEC)

You have the option to connect the storage medium AutoConfiguration Adapter ACA22-M12-C (EEC). It is used for saving/loading the configuration data and diagnostic information, and for loading the software. You find detailed information on the configuration via ACA22-M12-C (EEC) in the software user documentation. You find the software user documentation as PDF files on the Internet at <https://www.doc.hirschmann.com>.

Note: The ACA22-M12-C (EEC) storage medium can remain permanently connected to the device.

■ Configuration, management and checking via adapter cable

You have the option to configure, manage and check your device via the interface using an adapter cable. You find detailed information in the software user documentation. You find the software user documentation as PDF files on the Internet at <https://www.doc.hirschmann.com>. The adapter cable is available as an accessory (see on page 62 “Accessories”).

Note: The interface is NOT electrically isolated from the power supply input. For this reason, exclusively connect adapter cables temporarily. Adapter cables may exclusively be used to configure, manage and check your device

1.6.3 Signal contact

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC-M

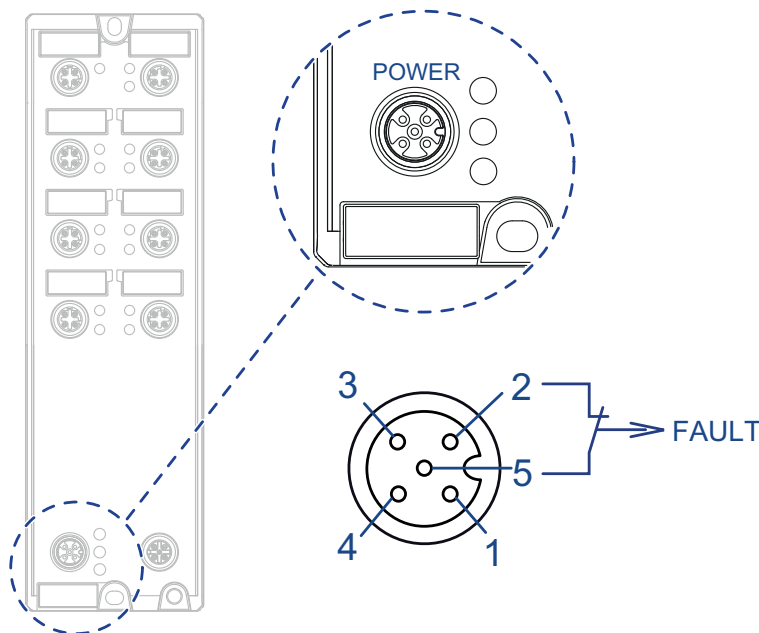


Figure 9: Signal contact OCTOPUS 8TX-EEC-M

The signal contact is a potential-free relay contact. The signal contact is open when the device is not connected to a power supply.

The signal contact allows you to control external devices or monitor device functions.

In the configuration, you specify how the device uses the signal contact.

You will find detailed information on possible applications and the configuration of the signal contact in the software user documentation. You will find the software user documentation as PDF files on the Internet at <https://www.doc.hirschmann.com>

2 Installation

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

On delivery, the device is ready for operation.

Perform the following steps to install and configure the device:

- ▶ [Checking the package contents](#)
- ▶ [Installing and grounding the device](#)
- ▶ [Connecting the power supply and the signal contact lines](#)
- ▶ [Operating the device](#)
- ▶ [Connecting data cables](#)
- ▶ [Configuration \(optional\)](#)

2.1 Checking the package contents

- Check whether the package includes all items named in the section [“Scope of delivery” on page 62](#).
- Check the individual parts for transport damage.

2.2 Installing and grounding the device

2.2.1 Mounting on a flat surface

Requirements:

- Select the installation site so that the climatic threshold values listed in the technical data are observed.
[See “Technical data” on page 54](#).
- To protect the exposed uninstalled contacts of the components from dirt, connect the individual system components in a dry and clean working area.
- To sustain the IP65/67 suitability for your device, seal all unused connections and ports with the provided plastic protection screws. See [“Scope of delivery” on page 62](#). See [“Accessories” on page 62](#) in case of an additional demand.
- To sustain the IP69K suitability for your device, seal all unused connections and ports with metal protection screws. See [“Accessories” on page 62](#) in case of additional demand.

- To sustain the IP65/67/69K suitability for your device, exclusively connect components with degree of protection IP65/67/69K.
- To sustain the IPX9K suitability for your device, cover the rear side of the device.

Note: The torque for tightening the protection screws on the device is 5.3 lb-in (0.6 Nm).

Perform the following work steps:

- Prepare the drill holes at the installation point.
[See “Dimension drawings” on page 57.](#)
- Mount the device on a level surface with two M4 screws.

2.2.2 Grounding the device

Requirements:

- Use a suitable wire diameter for the functional grounding. Hirschmann recommends a wire diameter of 0.5 mm² (AWG20).
- Use toothed washers to ensure good electrical conductivity at the connection.
- Ground the device via an M4 screw.
- Note the maximum screw-in depth of 0.295 in (7.5 mm) for OCTOPUS 8TX PoE-EEC and OCTOPUS 8TX-EEC-M devices.

Note: The grounding screw is not included in the scope of delivery.

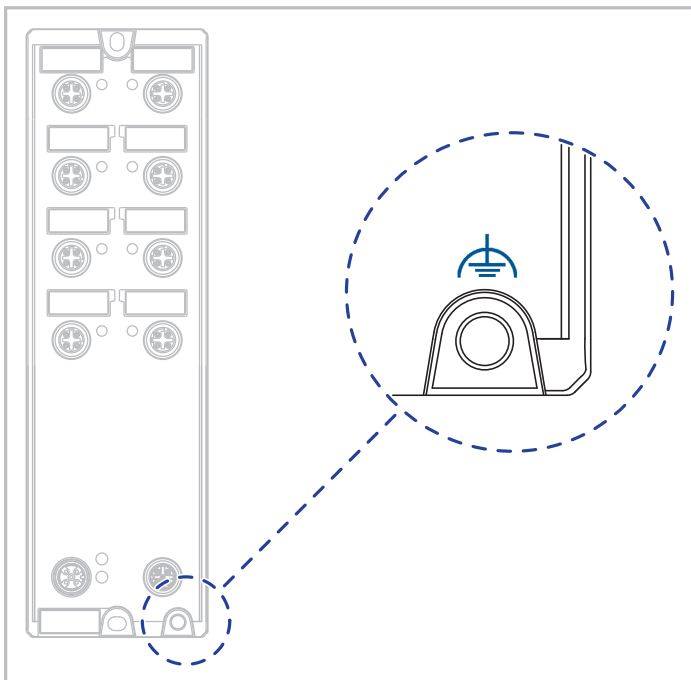


Figure 10: Functional ground on the device

Perform the following work steps:

- Grounding the device is by means of a separate ground connection on the device.
For the position of the ground connection on the device see [figure 10](#).
- Ground the device before connecting any other cables.
- Disconnect the grounding only after disconnecting all other cables.

2.3 Connecting the power supply and the signal contact lines

Requirements:

- ▶ The power supply cable is suitable for the voltage, the current and the physical load. Hirschmann recommends a conductor cross section of 0.5 mm² to 0.75 mm² (AWG20 up to AWG18).
- ▶ The permitted cable diameter for connector ELWIK A 5012 PG7 is 4 mm (0.15 in) to 6 mm (0.23 in). To ensure the watertightness of the OCTOPUS 8TX-EEC device, only use voltage supply cables with a diameter within the specified range.
- ▶ Make sure that the disconnecting device is easily accessible for disconnecting the device from the mains voltage.

Note: The supply voltage can be connected redundantly. Both plus connections are uncoupled. There is no distributed load. With redundant supply, the power supply unit with the higher output voltage supplies the device on its own. The supply voltage is electrically isolated from the housing. PoE devices have no PoE buffering.

Perform the following work steps:

- Mount the connector for the supply voltage.

2.3.1 Connecting the signal contact (optional)

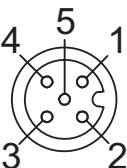
This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC-M


Perform the following work steps:

- Connect the wires for the supply voltage and the signal contact according to the pin assignment with a suitable socket.


2.3.2 Pin assignment OCTOPUS 8TX-EEC

M12 5-pin ("A"- Pin coded)	Pin	Function
	1	Power supply (1): + 12/24/36 V DC (1)
	2	Not used
	3	0 V
	4	Power supply (2): + 12/24/36 V DC (2)
	5	Not used

2.3.3 Pin assignment OCTOPUS 8TX PoE-EEC

M12 5-pin ("A"- Pin coded)	Pin	Function
	1	Power supply (1): +24 V DC (1)
	2	Not used
	3	0 V
	4	Power supply (2): +24 V DC (2)
	5	Not used

2.3.4 Pin assignment OCTOPUS 8TX-EEC-M

M12 5-pin ("A"- Pin coded)	Pin	Function
	1	Power supply (1): + 24/36 V DC (1)
	2	Signal contact
	3	0 V
	4	Power supply (2): + 24/36 V DC (2)
	5	Signal contact

2.4 Operating the device

When you connect the supply voltage, you start up the device.

2.5 Connecting data cables

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

- Keep the length of the data cables as short as possible.
- Use optical data cables for the data transmission between the buildings.
- When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- Verify that power supply cables and data cables do not run parallel over longer distances. To reduce inductive coupling, verify that the power supply cables and data cables cross at a 90 ° angle.
- Use shielded data cables for gigabit transmission via copper cables, for example SF/UTP cables according to ISO/IEC 11801. To meet EN 50121-4 and marine application requirements, use shielded data cables at all transmission rates.
- Connect the data cables according to your requirements.
[See “Ethernet ports” on page 25.](#)
- Seal all unused connections and ports with the provided plastic protection screws. See [“Scope of delivery” on page 62](#). See [“Accessories” on page 62](#) in case of an additional demand.

Note: The torque for tightening the protection screws on the device is 5.3 lb-in (0.6 Nm).

Perform the following work steps:

- Connect the data cables according to your requirements.
- Make sure the cable shielding is connected to the M12 plug thread.

2.6 Configuration (optional)

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC
- ▶ OCTOPUS 8TX PoE-EEC

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

You have the option to change the settings according to your requirements using the ACA M12 interface.

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

[See table 1 on page 46.](#)

Requirements:

▶ **Switch Programming Tool**

You can download the software for free on the Internet from the Hirschmann product pages:

www.hirschmann.com/en/QR/Switch-Programing-Tool

▶ **M12 USB Adapter**

You can connect the storage medium ACA21-M12 (EEC) or ACA22-M12 (EEC) to your PC using the M12 USB Adapter.

The M12 USB Adapter is available as an accessory.

[See “Accessories” on page 62.](#)

▶ **ACA21-M12 (EEC) or ACA22-M12 (EEC)**

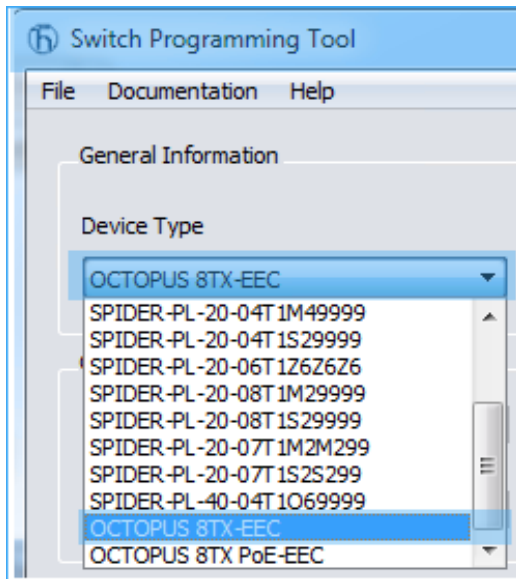
You have the option to transfer configuration data to your device or read out the configuration using a storage medium.

The storage medium is available as an accessory.

[See “Accessories” on page 62.](#)

Perform the following work steps:

- Connect the storage medium to the device.
- Start the Switch Programming Tool.
- Select your device variant from the drop-down list “Device Type”.



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

Switch Programming Tool
File Documentation Help

General Information

Device Type: **OCTOPUS 8TX PoE-EEC**

Serial Number: **942151001**

Contact Location: **Configure**

Global Parameters

Power Supply 1 Alarm: **Enable**

Power Supply 2 Alarm: **Enable**

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**

MDI State: **MDIX**

Flow Control: **Off**

Broadcast Mode: **Off**

Broadcast Threshold (%): **100**

Multicast Mode: **Off**

Multicast Threshold (%): **100**

Jumbo Frames: **Off**

Port Priority: **0**

Energy Efficient Ethernet: **Off**

PoE State: **On**

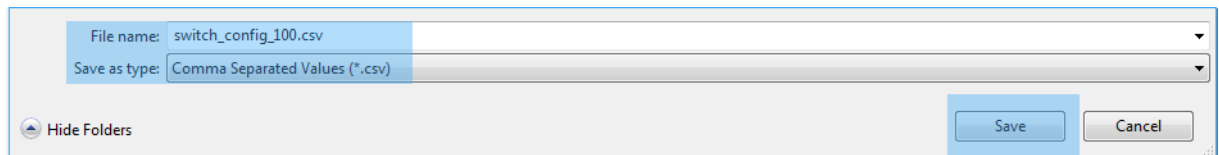
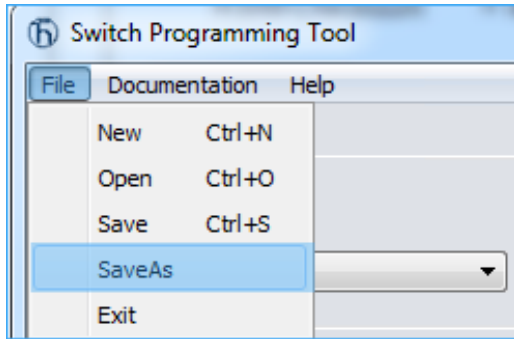
PoE Priority: **Low**

PoE Classes: **0,1,2,3,4**

Active/Configured Port Settings

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

Save the configuration file to the storage medium.



- Disconnect the M12 USB Adapter from your PC.
- Disconnect the storage medium from the M12 USB Adapter.
- ▶ 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 device reads the csv file on the storage medium and adopts the settings. During this time, the LEDs “L/D” flash alternately in **yellow/green**.

	Parameter	Values	Default values	Comment
global	Aging time	Aging time in s	300 s	Value range 0 ... 1048575
	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 table 2 on page 47.		
QoS Trust Mode	untrusted, trustDot1p, trustIpDscp	trustDot1p	This also includes VLAN 0 mode for Profinet applications.	
per port	Flow control	enabled / disabled	disabled	
	Port admin state	enabled / disabled	enabled	
	Jumbo frames	enabled / disabled	disabled	Globally enabled if at least one port is enabled
	Broadcast storm protection	enabled / disabled	disabled	Ingress rate limiter
	Broadcast storm threshold	0% ... 100%	100%	
	Multicast storm protection	enabled / disabled	disabled	Ingress rate limiter
	Multicast storm threshold	0% ... 100%	100%	
	Link alarm	enabled / disabled	disabled	
per TP port	Autonegotiation	enabled / disabled	enabled	
	Speed	100 Mbit/s, 10 Mbit/s	100 Mbit/s	Only if autonegotiation is disabled
	Duplex mode	FDX / HDX	FDX	Only if autonegotiation is disabled
	Autocrossing	enabled / disabled	enabled	Only if autonegotiation is disabled
	MDI state	MDI, MDI-X	MDI-X	Only if autonegotiation and autocrossing is disabled

Table 1: Configuration parameters

	Parameter	Values	Default values	Comment
per PoE port	PoE enable	enabled / disabled	enabled	
	PoE priority	low, high, critical	low	critical is highest
	(PoE allowed classes)	class 0, 1, 2, 3, 4	class 0, 1, 2, 3, 4	all combinations configurable

Table 1: 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 2: DSCP mapping table

2.6.1 Configuration readout

Perform the following steps to start up the device:

- Connect the storage medium to your PC using the M12 USB Adapter.
 - Create a text file in the root directory of the storage medium.
 - Rename the text file to “**ShowRunningConfiguration.txt**”.
 - Disconnect the storage medium from the M12 USB Adapter.
 - 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 “**Running_Config.txt**”.

3 Making basic settings

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC-M

Note: 2 or more devices configured with the same IP address can cause unpredictable operation of your network.

Install and maintain a process that assigns a unique IP address to every device in the network.

The IP parameters must be entered when the device is installed for the first time. The device provides the following options for configuring IP addresses:

- ▶ Input via the HiView or Industrial HiVision application. You find further information about the applications HiView or Industrial HiVision on the Internet at the Hirschmann product pages:

HiView

<http://www.hirschmann.com/en/QR/INET-HiView>

Industrial HiVision

<http://www.hirschmann.com/en/QR/INET-Industrial-HiVision>

- ▶ Configuration via BOOTP
- ▶ Configuration via DHCP (Option 82)
- ▶ AutoConfiguration AdapterACA22-M12-C (EEC)
- ▶ Configuration via ACA22-C interface

■ **Default settings**

- ▶ IP address: The device looks for the IP address using DHCP
- ▶ Management password:
 - user, password: public (read only)
 - admin, password: private (read/write)
- ▶ Ethernet ports: link status is not evaluated (signal contact)
- ▶ RSTP (Rapid Spanning Tree) activated

3.1 First login (Password change)

To help prevent undesired access to the device, it is imperative that you change the default password during initial setup.

Perform the following steps:

- Open the Graphical User Interface, the Command Line Interface, or HiView the first time you log on to the device.
- Log on to the device with the default password “private”. The device prompts you to type in a new password.
- Type in your new password.
To help increase security, choose a password that contains at least 8 characters which includes upper-case characters, lower-case characters, numerical digits, and special characters.
- When you log on to the device with the Command Line Interface, then the device prompts you to confirm your new password.
- Log on to the device again with your new password.

Note: If you lost your password, then use the System Monitor to reset the password.

For further information see:

<https://hirschmann-support.belden.com/en/kb/required-password-change-new-procedure-for-first-time-login>

4 Monitoring the ambient air temperature

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

See [“General technical data” on page 54](#).

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

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC-M

The temperature displayed in the CLI (Command Line Interface) and the GUI (Graphical User Interface) is the internal temperature of the device. It is higher than the ambient air temperature. The maximum internal temperature of the device named in the technical data is a guideline that indicates to you that the maximum ambient air temperature has possibly been exceeded.

5 Maintenance and service

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

Note: You find information on settling complaints on the Internet at <http://www.beldensolutions.com/en/Service/Repairs/index.phtml>.

6 Disassembly

Perform the following work steps:

- Disable the supply voltage.
- Disconnect the data cables.
- Disconnect the grounding.
- Unmount the device.

7 Technical data

7.1 General technical data

Dimensions W × D × H	OCTOPUS 8TX-EEC	2.40 in × 1.22 in × 7.91 in (61 mm × 31 mm × 201 mm)
	OCTOPUS 8TX PoE-EEC	2.40 in × 1.81 in × 7.91 in (61 mm × 46 mm × 201 mm)
	OCTOPUS 8TX-EEC-M	2.40 in × 1.81 in × 7.91 in (61 mm × 46 mm × 201 mm)
Weight	OCTOPUS 8TX-EEC	1.1 lb (0.5 kg)
	OCTOPUS 8TX PoE-EEC	2 lb (0.9 kg)
	OCTOPUS 8TX-EEC-M	2 lb (0.9 kg)
Power supply OCTOPUS 8TX-EEC	Safety extra-low voltage (SELV)	
	Relevant for North America: NEC Class 2 power source max. 2 A.	
	Rated voltage	12/24/36 V DC
	Voltage range incl. maximum tolerances	9.6 V DC ... 45 V DC
	Rated voltage for rail applications according to EN 50155	24/36 V DC
	Voltage range including maximum tolerances for rail applications according to EN 50155 (permanent)	16.8 V DC ... 45 V DC
	Voltage range including maximum tolerances for rail applications according to EN 50155 (0.6 × U _N for 0.1 s; 1.4 × U _N for 1 s)	14.4 V DC ... 50.4 V DC
	Connection type	5-pin, "A"-coded M12 connector
	Power loss buffer	>10 ms
	Back-up fuse for each voltage input when supplied via 1 input	Nominal rating: 1 A ... 4 A Characteristic: slow blow
	Back-up fuse for each voltage input when supply is via 2 inputs	Nominal rating: 1 A ... 2 A Characteristic: slow blow
Peak inrush current	<1.4 A (1ms)	
Current integral I ² t	0.15 A ² s	

Power supply OCTOPUS 8TX PoE-EEC	Safety extra-low voltage (SELV)		
	Relevant for North America: NEC Class 2 power source max. 2 A.		
	Rated voltage	24 V DC	
	Voltage range incl. maximum tolerances	16.8 V DC ... 32 V DC	
	Rated voltage for rail applications according to EN 50155	24 V DC	
	Voltage range including maximum tolerances for rail applications according to EN 50155 (permanent)	16.8 V DC ... 30 V DC	
	Voltage range including maximum tolerances for rail applications according to EN 50155 (0.6 × U _N for 0.1 s; 1.4 × U _N for 1 s)	14.4 V DC ... 33.6 V DC	
	Connection type	5-pin, "A"-coded M12 connector	
	Power loss buffer	>10 ms during data transmission; no power loss buffer for PoE	
	Back-up fuse for each voltage input when supplied via 1 input	Nominal rating: 3.5 A ... 4 A Characteristic: slow blow	
	Back-up fuse for each voltage input when supply is via 2 inputs	Nominal rating: 3.5 A ... 4 A Characteristic: slow blow	
	Peak inrush current	<5 A (1 ms)	
	Current integral I ² t	0,22 A ² s	
	Power supply OCTOPUS 8TX-EEC-M	Safety extra-low voltage (SELV)	
		Rated voltage	24/36 V DC
Voltage range incl. maximum tolerances		16.8 V DC ... 45 V DC	
Rated voltage for rail applications according to EN 50155		24/36 V DC	
Voltage range including maximum tolerances for rail applications according to EN 50155 (permanent)		16.8 V DC ... 45 V DC	
Voltage range including maximum tolerances for rail applications according to EN 50155 (0.6 × U _N for 0.1 s; 1.4 × U _N for 1 s)		14.4 V DC ... 50.4 V DC	
Connection type		5-pin, "A"-coded M12 connector	
Power loss buffer		>10 ms	
Back-up fuse for each voltage input when supplied via 1 input		Nominal rating: 2 A ... 10 A Characteristic: slow blow	
Back-up fuse for each voltage input when supply is via 2 inputs		Nominal rating: 2 A ... 10 A Characteristic: slow blow	
Peak inrush current		1.2 A	
Current integral I ² t		<0,1 A ² s	

Signal contact "FAULT" See "Signal contact" on page 61.	Switching current	max. 1 A	
	Switching voltage	max. 60 V DC or max. 30 V AC SELV according to IEC 60950-1 or ES1 according to IEC/ EN 62368-1	
Climatic conditions during operation	Ambient air temperature ^a	up to 2000 m ASL (-40 °C ... +70 °C (-40 °F ... +158 °F))	
		6562 ft ASL ... (-40 °C ... 13123 ft ASL +65 °C (-40 °F 2000 m ASL ... +149 °F) 4000 m ASL)	
		Humidity	5 % ... 100 % (also in condensing atmospheres)
		Air pressure	Without derating
	With derating		min. 540 hPa (+4000 m ASL; +13123 ft ASL) max. 1060 hPa (-400 m ASL; - 1312 ft ASL)
	Climatic conditions during storage	Ambient air temperature ^a	-40 °C ... +85 °C (-40 °F ... +185 °F) up to 3 months
-40 °C ... +70 °C (-40 °F ... +158 °F) up to 1 year			
-40 °C ... +50 °C (-40 °F ... +122 °F) up to 2 years			
0 °C ... +30 °C (+32 °F ... +86 °F) up to 10 years			
Humidity		5 % ... 100 % (also in condensing atmospheres)	
Air pressure		min. 700 hPa (+3000 m ASL; +9842 ft ASL) max. 1060 hPa (-400 m ASL; - 1312 ft ASL)	
Protection classes	Degree of protection	IP65/67/69K	
Pollution degree		4	

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

7.2 Dimension drawings

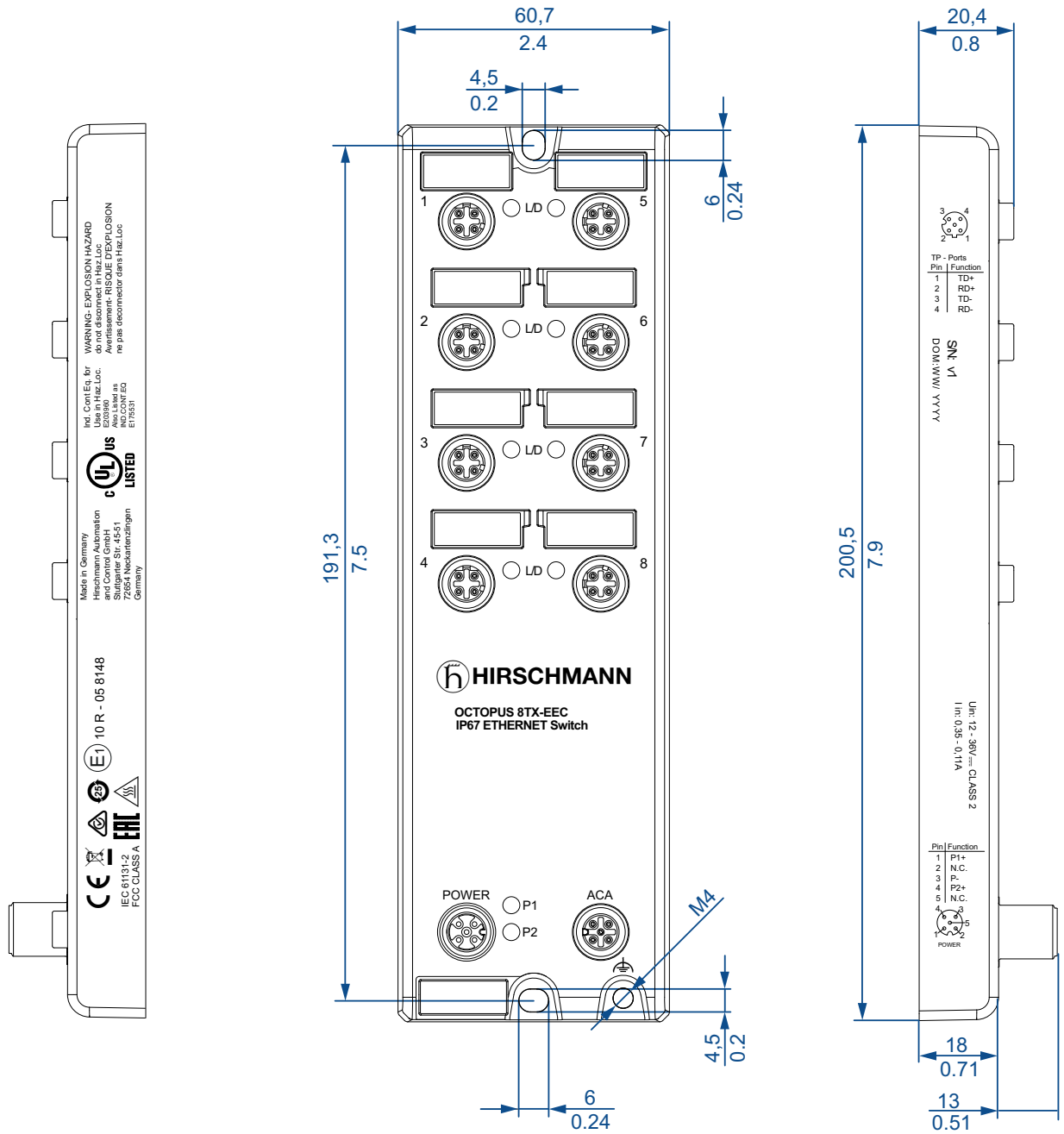


Figure 11: OCTOPUS 8TX-EEC

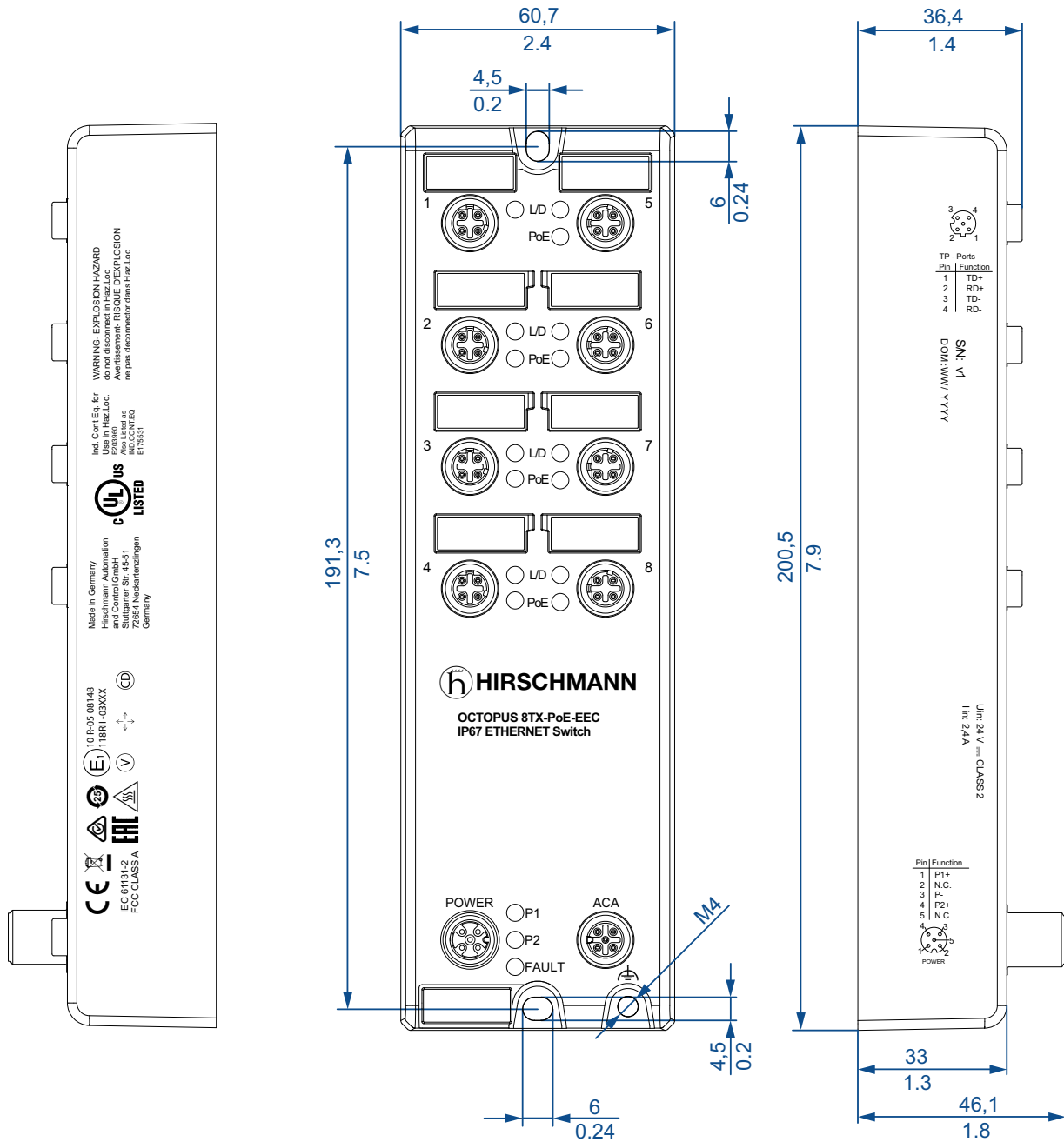


Figure 12: OCTOPUS 8TX PoE-EEC

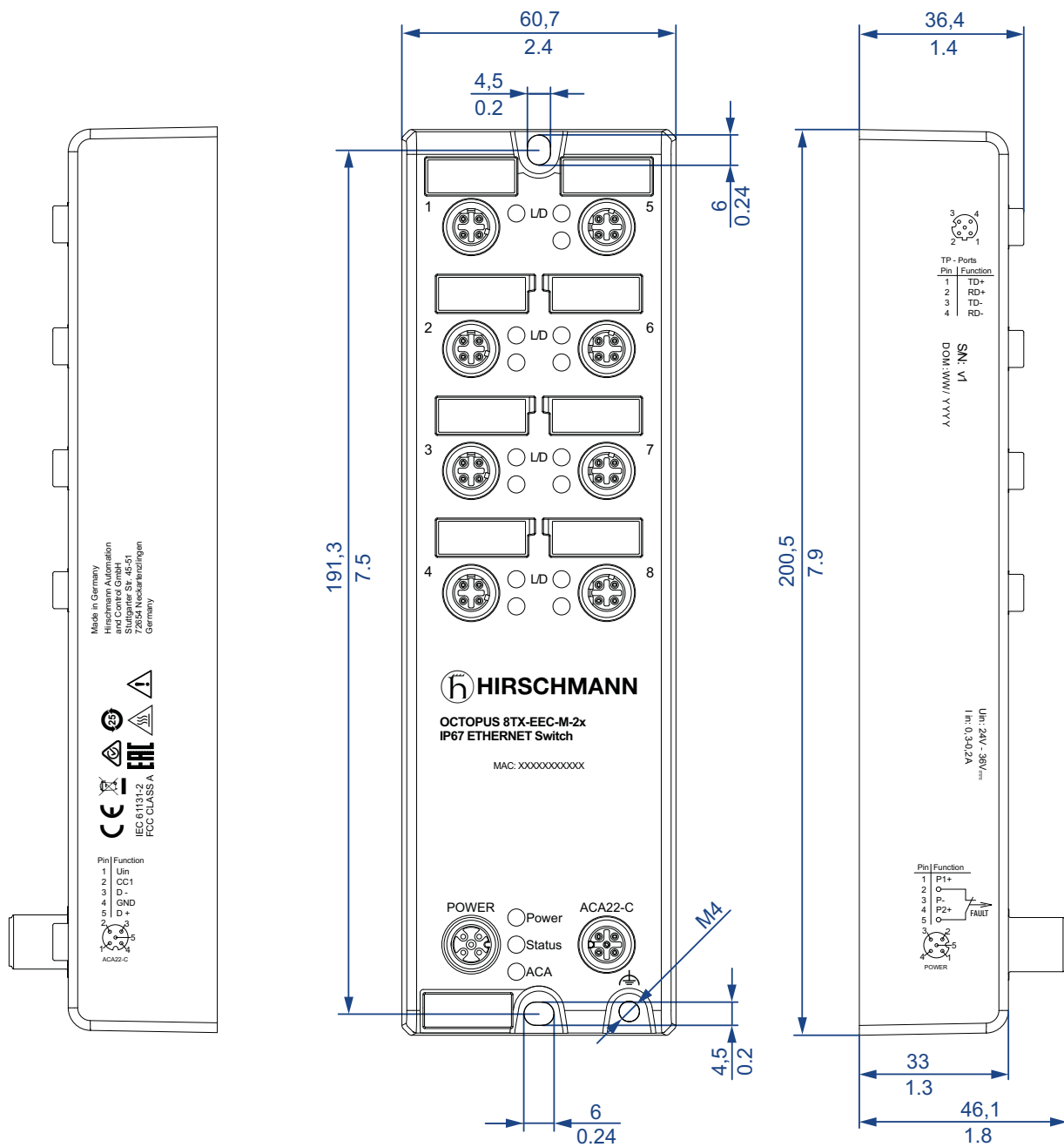


Figure 13: OCTOPUS 8TX-EEC-M

7.3 EMC and immunity

EMC interference emission		
Radiated emission		
EN 55032		Class A
FCC 47 CFR Part 15		Class A
EN 61000-6-4		Fulfilled
Conducted emission		
EN 55032	Supply connection	Class A
FCC 47 CFR Part 15	Supply connection	Class A
EN 61000-6-4	Supply connection	Fulfilled
EN 55032	Telecommunication connections	Class A
EN 61000-6-4	Telecommunication connections	Fulfilled
EMC interference immunity		
Electrostatic discharge		
EN 61000-4-2	Contact discharge	±6 kV
IEEE C37.90.3		
EN 61000-4-2	Air discharge	±8 kV
IEEE C37.90.3		
Electromagnetic field		
EN 61000-4-3		max. 20 V/m
Fast transients (burst)		
EN 61000-4-4	Supply connection	±2 kV
EN 61000-4-4	Data line	±4 kV
Voltage surges - DC supply connection		
EN 61000-4-5	line/ground	±2 kV
EN 61000-4-5	line/line	±1 kV
Voltage surges - data line		
EN 61000-4-5	line/ground	±2 kV
Conducted disturbances		
EN 61000-4-6	150 kHz ... 80 MHz	10 V
Immunity		
IEC 60068-2-6, test Fc	Vibration	5 Hz ... 8.4 Hz with 3.5 mm (0.14 in) amplitude 8.4 Hz ... 150 Hz with 1 g
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms

7.4 Network range

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

Table 3: Network range: 10/100/1000 Mbit/s twisted pair port

7.5 Power consumption/power output

Name	Maximum power consumption	power output
OCTOPUS 8TX-EEC	4.2 W	14.3 Btu (IT)/h
OCTOPUS 8TX PoE-EEC	44 W	47.8 Btu (IT)/h
OCTOPUS 8TX-EEC-M	6 W	20.0 Btu (IT)/h

7.6 Signal contact

This applies to the following device variants only:

- ▶ OCTOPUS 8TX-EEC-M

Signal contact	
Connection type	5-pin, "A"-coded M12 plug
	Tightening torque 0.51 Nm (4.5 lb-in)
Nominal value	$I_{\max} = 1 \text{ A}$ at $U_{\max} = 30 \text{ V AC}$ (resistive load) $I_{\max} = 1 \text{ A}$ at $U_{\max} = 60 \text{ V DC}$ (resistive load)
	according to the UL Standards:
	$I_{\max} = 0.5 \text{ A}$ at $U_{\max} = 30 \text{ V AC}$ (resistive load) $I_{\max} = 1 \text{ A}$ at $U_{\max} = 30 \text{ V DC}$ (resistive load) $I_{\max} = 0,3 \text{ A}$ at $U_{\max} = 60 \text{ V DC}$ (resistive load)

Table 4: Signal contact: OCTOPUS 8TX-EEC-M

8 Scope of delivery, order numbers and accessories

■ Scope of delivery

Note: The connector ELWIK A 5012 PG7 (933 175-100) supports a temperature range from -25 °C to +70 °C (-13 °F to +158 °F). It may thus limit the application range of the overall system.

You can obtain special sockets for the total temperature range and with the degree of protection IP65/67 and on request.

Device	Scope of delivery
OCTOPUS 8TX-EEC	▶ Device
OCTOPUS 8TX PoE-EEC	▶ 1 × Transport protection cap for supply voltage connection
OCTOPUS 8TX-EEC-M	▶ 7 × Protection screws for M12 socket, plastic
	▶ 15 × Indicator plates
	▶ ELWIK A 5012 PG7 connector (5-pin M12 socket for power supply)
	▶ Safety and general information sheet

■ Order number

Device	Order number
OCTOPUS 8TX-EEC	942 150-001
OCTOPUS 8TX PoE-EEC	942 151-001
OCTOPUS 8TX-EEC-M-2S	942 301-001
OCTOPUS 8TX-EEC-M-2A	942 301-002

■ Accessories

Note that products recommended as accessories may have different characteristics to those of the device, which may limit the application range of the overall system. For example, if you add an accessory with IP20 to a device with IP67, the IP of the overall system is reduced to IP20.

Note: To sustain the IP65/67/69K suitability for your device, exclusively use accessories with degree of protection IP65/67/69K. Seal all unused connections and ports with protection screws. To comply with IPX9K suitability, use metal protection screws and cover the rear side of the device.

Name	Order number
AutoConfiguration Adapter ACA21-M12 (EEC)	943 913-003
AutoConfiguration Adapter ACA22-M12 (EEC)	942 125-001
AutoConfiguration Adapter ACA22-M12-C (EEC)	942 306-001
M12 connector, 4-pin, "D"-coded	934 445-001

Name	Order number
M12-USB adapter cable (for connecting the ACA with a computer)	942 199-001
Adapter cable M12 5-pin male to USB (for configuration of OCTOPUS 8TX-EEC-M devices)	942 309-001
Protection screw for M12 socket, plastic, IP65/67 (25 pieces)	942 057-002
Protection screw for M12 socket, metal, IP65/67/69K (25 pieces)	942 057-001
Connector ELWIK A 5012 PG7 (5-pin M12 socket for voltage supply)	933 175-100
Transition M12 "D"-coded to RJ45	934 498-001
Connection cable with M12 connectors, 4-pin, "D"-coded	
Length 2 m	934 578-001
Length 5 m	934 578-002
Length 10 m	934 578-003
Network management software Industrial HiVision	943 156-xxx
OPC Server software HiOPC	943 055-001

9 Underlying technical standards

Name	
FCC 47 CFR Part 15	Code of Federal Regulations
UL/IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use
UL/IEC 61010-2-201	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-201: Particular requirements for control equipment.
CAN/CSA 22.2 No. 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use
CAN/CSA 22.2 No. 61010-2-201	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-201: Particular requirements for control equipment.
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.
DNV-CG-0339	Environmental test specification for electrical, electronic and programmable equipment and systems.
RCM	Australian Regulatory Compliance Mark (RCM) Australian Radiocommunications Standard 2008, Radiocommunications Act 1992
UN/ECE Regulation No. 10, Amendment No. 05, suppl. 01	E type approval for use in vehicles (EMC)
UN/ECE Regulation No. 118, Amendment No. 03, suppl. 01	E type approval for use in vehicles (burning behaviour)
EN 45545-2	Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behavior of materials and components.
EN 50121-4	Railway applications – EMC – Emission and immunity of the signaling and telecommunications apparatus (Rail Trackside)
EN 50155	Railway applications – Electronic equipment used on rolling stock
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
IEC 60950-1	Information technology equipment – Safety – Part 1: General requirements
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
IEEE 802.1D	Switching, GARP, GMRP, Spanning Tree
IEEE 802.1D	Media access control (MAC) bridges (includes IEEE 802.1p Priority and Dynamic Multicast Filtering, GARP, GMRP)
IEEE 802.1Q	Virtual LANs (VLANs, MRP, Spanning Tree)
IEEE 802.1Q	Virtual Bridged Local Area Networks (VLAN Tagging, GVRP)
IEEE 802.3	Ethernet

The device has an approval based on a specific standard exclusively if the approval indicator appears on the device casing.

The device generally fulfills the technical standards named in their current versions.

A Further support

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Source Link: <http://asf.atmel.com/docs/latest/download.html>

Component Name: BSD-style license

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Version: R0.09

Source Link: <http://elm-chan.org/fsw/ff/archives.html>

Component Name: ARM Cortex Microcontroller Software Interface Standard (CMSIS)

License: ARM CMSIS License

Version: 3.00

Source Link: <http://packs.download.atmel.com/>

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FAT file system (FatFs)

FatFs - FAT file system module R0.09
(C)ChaN, 2011

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7.3 This Licence shall immediately terminate and shall be unavailable to you if you or any party affiliated to you asserts any patents against ARM, ARM affiliates, third parties who have a valid licence from ARM for the ARM Deliverables, or any customers or distributors of any of them based upon a claim that your (or your affiliate) patent is Necessary to implement the CMSIS Specification or DSP Library Specification. In this Licence; (i) "affiliate" means any entity controlling, controlled by or under common control with a party (in fact or in law, via voting securities, management control or otherwise) and "affiliated" shall be construed accordingly; (ii) "assert" means to allege infringement in legal or administrative proceedings, or proceedings before any other competent trade, arbitral or international authority; (iii) "Necessary" means with respect to any claims of any patent, those claims which, without the appropriate permission of the patent owner, will be infringed when implementing the CMSIS Specification or DSP Library Specification because no alternative, commercially reasonable, noninfringing way of implementing the CMSIS Specification or DSP Library Specification is known.

7.4 Upon termination of this Licence, you shall stop using the ARM Deliverables and destroy all copies of the ARM Deliverables in your possession. The provisions of clauses 5, 6, 7, and 8 shall survive termination of this Licence.

8. GENERAL.

This Licence is governed by English Law. Except where ARM agrees otherwise in a written contract signed by you and ARM, this is the only agreement between you and ARM relating to the ARM Deliverables and it may only be modified by written agreement between you and ARM. Except as expressly agreed in writing, this Licence may not be modified by purchase orders, advertising or other representation by any person. If any clause or sentence in this Licence is held by a court of law to be illegal or unenforceable the remaining provisions of this Licence shall not be affected thereby. The failure by ARM to enforce any of the provisions of this Licence, unless waived in writing, shall not constitute a waiver of ARM's rights to enforce such provision or any other provision of this Licence in the future. This Licence may not be assigned without the prior written consent of ARM.

ARM contract reference LEC-PRE-00489-V6.0

06 December, 2010



HIRSCHMANN

A **BELDEN** BRAND