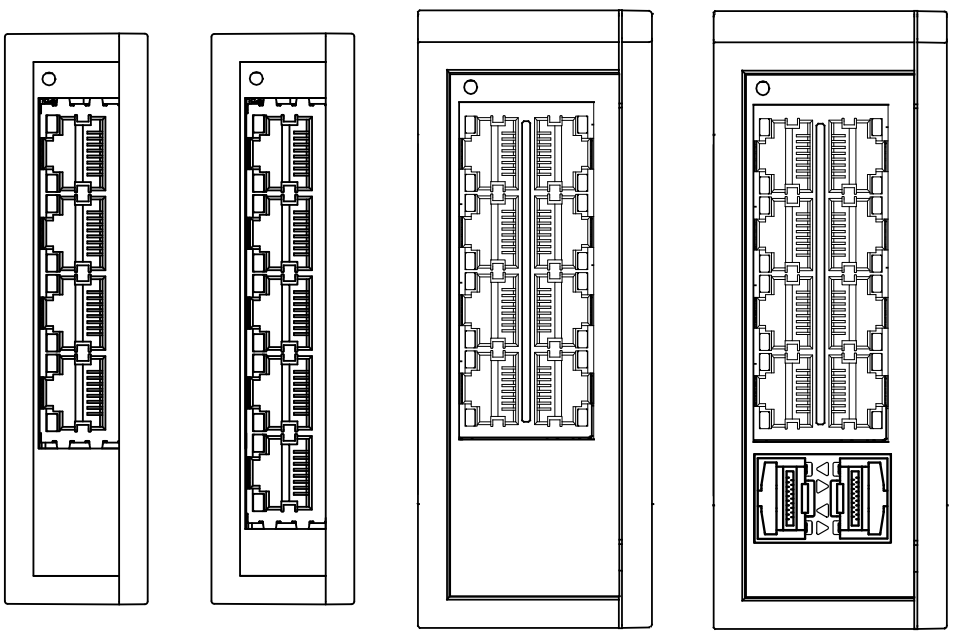
HIRSCHMANN
A BELDEN BRAND

User Manual

Installation
Lite Managed Switch
GECKO



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https://www.doc.hirschmann.com

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Contents

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
NOTE 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 32.
- ☐ Connect to the product only components suitable for the requirements of the specific application case.

Installation site requirements

- ☐ Only operate the device in switch cabinets which comply with a fire enclosure specification.
- ☐ When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.

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

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

- ☐ Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- ☐ Keep the ventilation slits free to ensure good air circulation.
- ☐ Mount the device in the vertical position.

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.

Grounding the device

The device is grounded by a 3-pin terminal block.

- ☐ Ground the device before connecting any other cables.
- ☐ Disconnect the grounding only after disconnecting all other cables.

Requirements for connecting electrical wires

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

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. ▶ The voltage connected complies with the requirements for a safety extra-low voltage (SELV) as per IEC 60950-1 or ES1 as per IEC/EN 62368-1. ▶ Relevant for North America:  The power supply cables are suitable for ambient air temperatures of at least +75 °C (167 °F). The wires of the power supply cables are made of copper.

Table 1: Requirements for connecting electrical wires

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 wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the supply voltage input. ▶ The cross-section of the ground conductor is the same size as or bigger than the cross-section of the power supply cables.	
The following requirements apply alternatively:	
Alternative 1	The power supply complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or 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.
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. ▶ A back-up fuse suitable for DC voltage is located in the plus conductor of the power supply. The minus conductor is on ground potential. Otherwise, a back-up fuse is also located in the minus conductor. Regarding the properties of this back-up fuse: See “Technical data” on page 32.

Table 2: Requirements for connecting the supply voltage

LED or laser components

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

CE marking

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

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

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

The product can be used in the industrial sector.
- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55032

You find more information on technical standards here:
“Underlying technical standards” on page 48

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

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

FCC note

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

GECKO

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 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.

You have the option to connect end devices or other segments to the ports of the device via twisted pair cables.

The device is mounted by latching in place on a DIN rail.

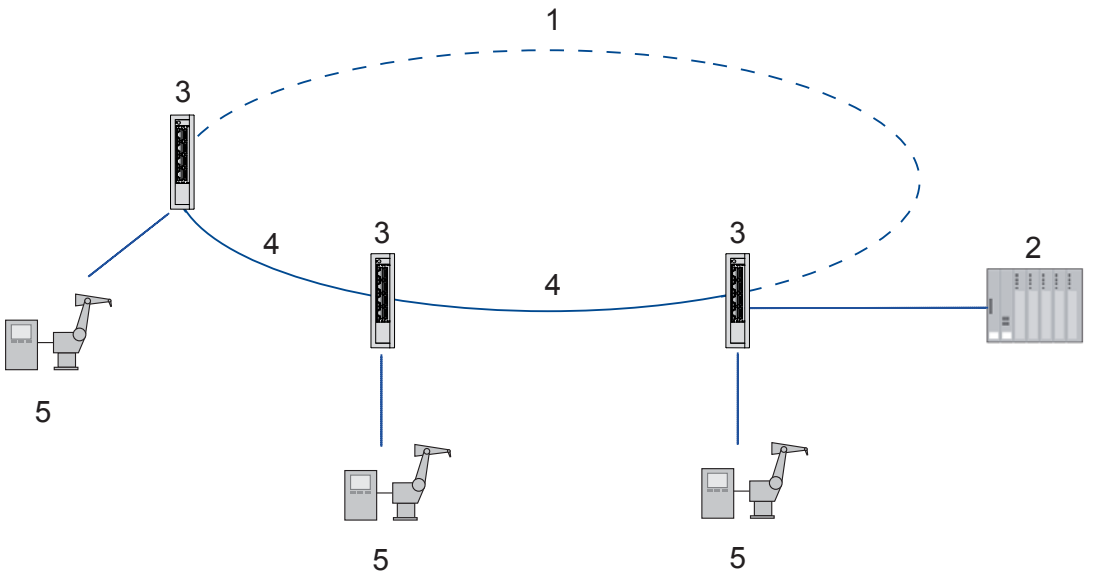
The device works without a fan.

There are convenient options for managing the device. Manage your devices via:

- Web browser
- Network management software (for example Industrial HiVision)
  The Network Management Software Industrial HiVision provides you with options for smooth configuration and monitoring. You find further information on the Internet at the Hirschmann product pages:
  http://www.hirschmann.com/en/QR/INET-Industrial-HiVision

The Hirschmann network components help you ensure continuous communication across all levels of the company.

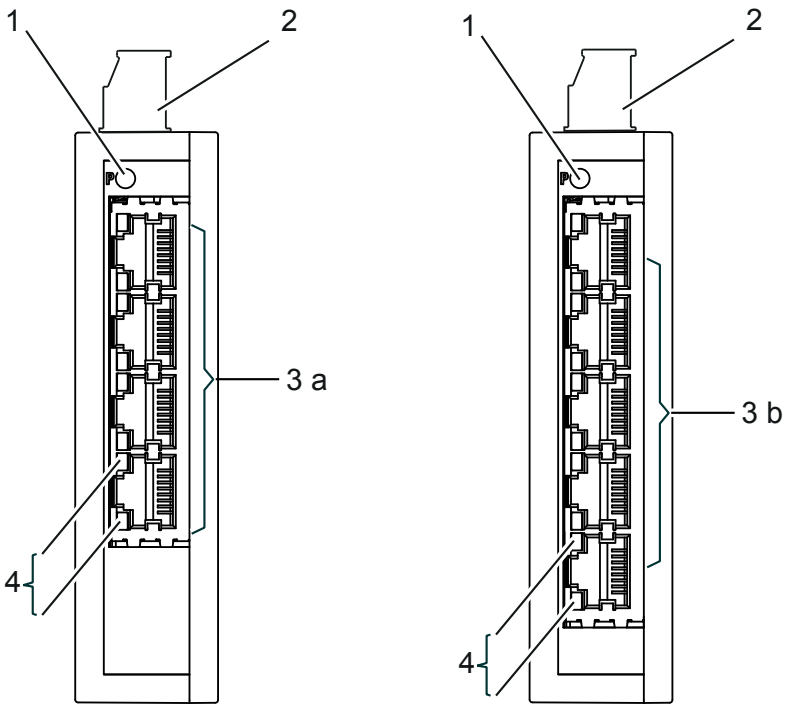
Example Application



1	Redundant data link Redundancy procedure: Rapid Spanning Tree Protocol
2	Control
3	Lite Managed Switch GECKO
4	Data link
5	Production cell

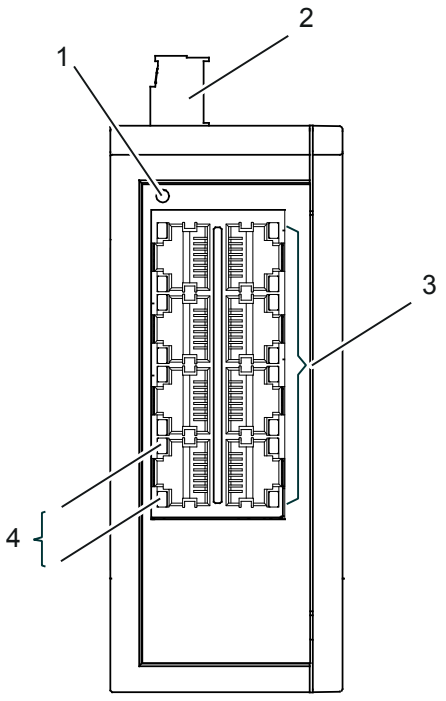
1.2 Device view

1.2.1 GECKO 4TX / GECKO 5TX



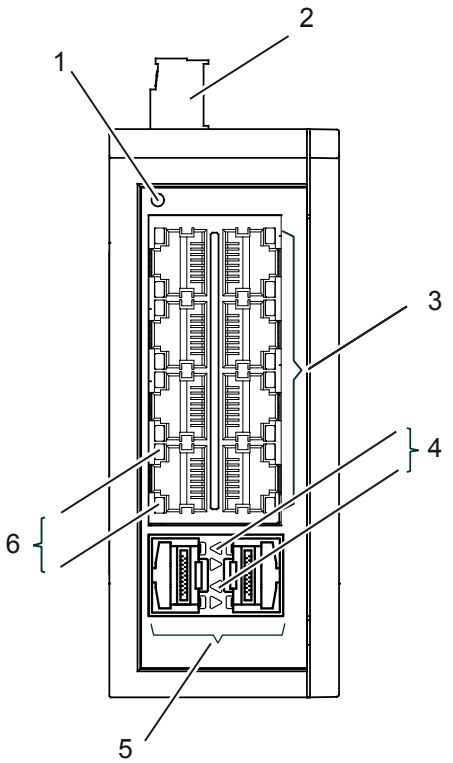
1	LED display element	Device Status
2	3-pin terminal block for the supply voltage and the grounding	
3 a	Ports 1 ... 4	10/100 Mbit/s twisted pair ports
3 b	Ports 1 ... 5	10/100 Mbit/s twisted pair ports
4	LED display elements	Port status

1.2.2 GECKO 8TX



1	LED display element	Device Status
2	3-pin terminal block for the supply voltage and the grounding	
3	Ports 1 ... 8	10/100 Mbit/s twisted pair ports
4	LED display elements	Port status

1.2.3 GECKO 8TX/2SFP



1	LED display element	Device Status
2	3-pin terminal block for the supply voltage and the grounding	
3	Ports 1 ... 8	10/100 Mbit/s twisted pair ports
4	LED display elements SFP slot for 100/1000 Mbit/s F/O connections	Port status
5	Ports 9 ... 10	SFP slot for 100/1000 Mbit/s F/O connections
6	LED display elements 10/100 Mbit/s twisted pair ports	Port status

1.3 Power supply

A 3-pin, pluggable terminal block is available for the power supply to the device.
Further information:
“Wiring the terminal block for the supply voltage and the grounding” on page 25

1.4 Ethernet ports

1.4.1 10/100 Mbit/s twisted pair port

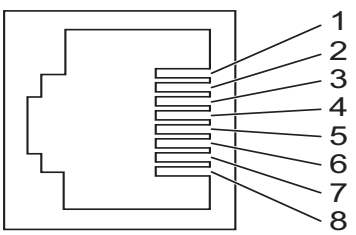
This port is an RJ45 socket.

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
- 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 pin assignment corresponds to MDI-X.



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

Table 3: Pin assignment 10/100 Mbit/s twisted pair port, RJ45 socket, MDI-X mode

1.4.2 100/1000 Mbit/s F/O port

This port is an SFP slot.
The 100/1000 Mbit/s F/O port allows you to connect network components according to standard IEEE 802.3 100BASE-FX/1000BASE-SX/1000BASE-LX.
This port supports:
- 100 Mbit/s, full duplex
- 1000 Mbit/s full duplex

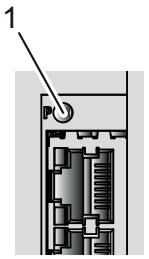
Delivery state:
- 100 Mbit/s full duplex when using a Fast Ethernet SFP transceiver
- 1000 Mbit/s full duplex when using a Gigabit Ethernet SFP transceiver

1.5 Display elements

After the supply voltage is set up, the Software starts and initializes the device. Afterwards, the device performs a self-test. During this process, various LEDs light up.

1.5.1 Device state

This LED provides information about conditions that affect the operation of the whole device.



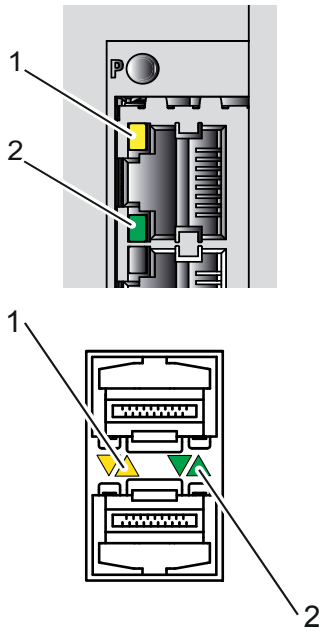
1	LED display element for device status

Activity of the green LED in time sequence after switching on the device	Meaning
LED lights up after approximately 1-2 seconds	Supply voltage is on
LED starts flashing after approximately 20-30 seconds	Software services are being initialized
LED stops flashing and lights up	Device has received IP address[a] WEB server active Device is ready for operation

a. For “Profinet Enabled” device variants the assignment of the IP address happens via the configuration tool “Proneta” from Siemens. Only when the IP address has been assigned with the configuration tool “Proneta”, the LED stops flashing and lights up.

1.5.2 Port status

These LEDs display port-related information.



LED	Display	Color	Activity	Meaning
1	Data rate	yellow	lights up	100 Mbit/s connection
			none	10 Mbit/s connection
2	Link status data	green	lights up	Device detects a valid link
			flashing	Device is transmitting and/or receiving data
			none	Device detects an invalid or missing link

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 the device onto the DIN rail
- Installing an SFP transceiver (optional)
- Wiring the terminal block for the supply voltage and the grounding
- Operating the device
- Connecting data cables

2.1 Checking the package contents

☐ Check whether the package includes all items named in the section “Scope of delivery” on page 43.
☐ Check the individual parts for transport damage.

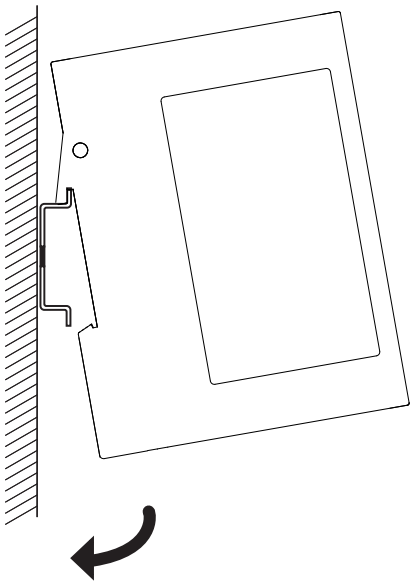
2.2 Installing the device onto the DIN rail

Note: To help avoid damaging the device through electrostatic charging, discharge electrostatic charges from the cover panels and the chassis, e.g. by touching a ground contact or a metal surface.

Prerequisite:
☐ When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.

To prepare the mounting, proceed as follows:
☐ Remove the terminal connector from the device.

To mount the device onto a horizontally mounted 35 mm DIN rail according to DIN EN 60715, proceed as follows:
☐ Slide the upper snap-in guide of the device into the DIN rail.
☐ Slide the bottom part of the device onto the DIN rail.



2.3 Installing an SFP transceiver (optional)

Prerequisites:
Exclusively use Hirschmann SFP transceivers.
See “Accessories” on page 45.

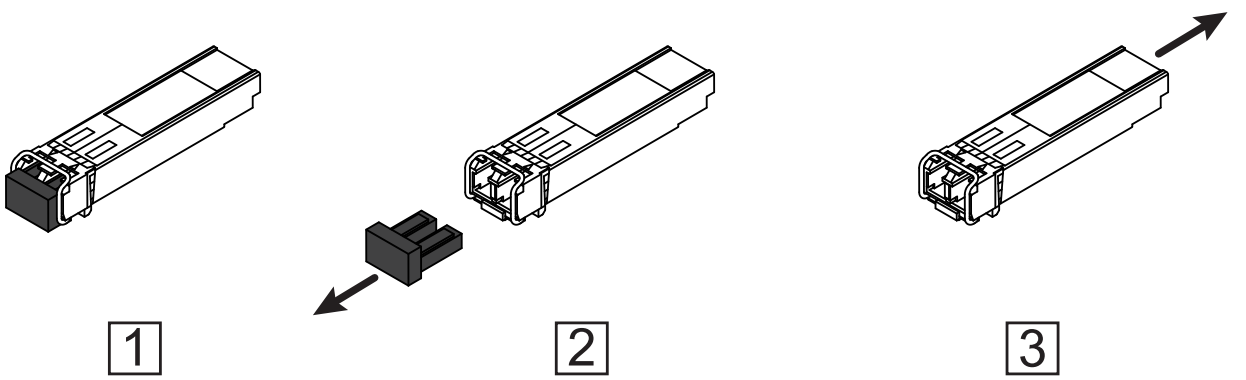


Figure 1: Installing SFP transceivers: Installation sequence

Perform the following work steps:
- ☐ Take the SFP transceiver out of the transport packaging (1).
- ☐ Remove the protection cap from the SFP transceiver (2).
- ☐ Push the SFP transceiver with the lock closed into the slot until it latches in (3).

2.4 Wiring the terminal block for the supply voltage and the grounding

⚠ CAUTION

RISK OF BURNING

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

Start connecting the electrical wires only if **all** the above safety requirements are fulfilled.
See “Requirements for connecting electrical wires” on page 10.
See “Requirements for connecting the supply voltage” on page 10.

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

Note: Ground the device before connecting any other cables.

Note: The shielding ground of the connectable twisted pair cables is connected to the ground connection as a conductor.

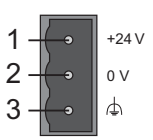
Figure	Pin assignment on the device	Specification of the supply voltage
	1 +24 V 2 0 V 3 Ground connection	Rated voltage range 12 V DC ... 24 V DC Voltage range incl. maximum tolerances 9.6 V DC ... 32 V DC

Table 4: 3-pin terminal block pin assignment

The supply voltage is electrically isolated from the casing.

To ground the device and connected the line for the supply voltage, you proceed as follows:
☐ Connect the wires according to the pin assignment on the device with the clamps.
☐ Fasten the wires in the terminal block by tightening the terminal screws.

Note: Relevant for North America:
The torque for tightening the supply voltage terminal block on the device is 0.51 Nm (4.5 lb-in).

2.5 Operating the device

⚠ WARNING

ELECTRIC SHOCK

Exclusively connect a supply voltage that corresponds to the type plate of your device.

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

☐ Mount the terminal block for the supply voltage and the ground by plugging them in.
☐ Enable the supply voltage.

2.6 Connecting data cables

Note the following general recommendations for data cable connections in environments with high electrical interference levels:
☐ Keep the length of the data cables as short as possible.
☐ Use optical data cables for the data transmission between the buildings.
☐ When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
☐ Verify that power supply cables and data cables do not run parallel over longer distances. 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. Exclusively use shielded data cables to meet EMC requirements according to EN 50121-4 and marine applications.
☐ Connect the data cables according to your requirements.
See “Ethernet ports” on page 20.

3 Configuration

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.

Default settings

- IP address: The device looks for the IP address using DHCP
- All ports: autonegotiation
- Rapid Spanning Tree Protocol activated

Configuration of the IP parameters

The device provides the following options for configuring the IP parameters:

- Configuration via DHCP (state on delivery)
- Entry with the aid of the HiDiscovery logs on the applications HiDiscovery or Industrial HiVision
- Configuration via BOOTP

Further information on the basic settings of the device can be found in the “Configuration” user manual.

First log in (password change)

Perform the following steps:

- ☐ Open the Graphical User Interface or the Command Line Interface 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.
  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 you new password.
- ☐ Log on to the device again with your new password.

4 Monitoring the ambient air temperature

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

See “General technical data” on page 32.

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.

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.
- 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

6.1 Removing an SFP transceiver (optional)

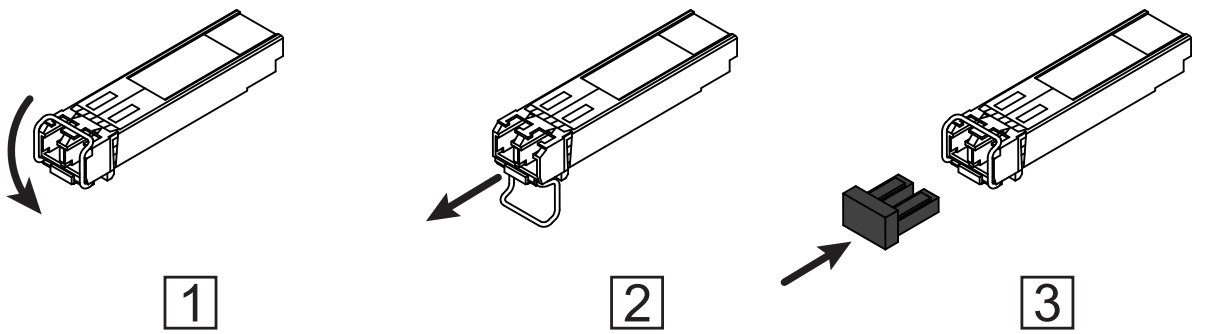


Figure 2: De-installing SFP transceivers: De-installation sequence

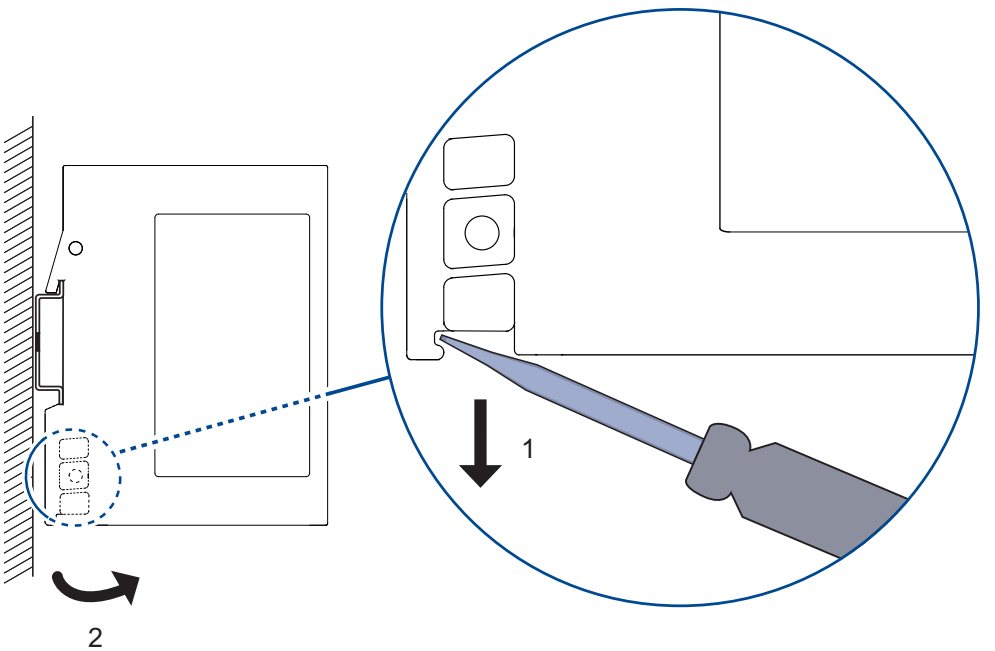
Perform the following work steps:

☐ Open the locking mechanism of the SFP transceiver (1).
☐ Pull the SFP transceiver out of the slot via the open locking mechanism (2).
☐ Close the SFP transceiver with the protection cap (3).

6.2 Removing the device

To prepare the deinstallation, perform the following work steps:
☐ Disconnect the data cables.
☐ Disable the supply voltage.
☐ Remove the terminal connector from the device.
☐ Disconnect the grounding.

To remove the device from the DIN rail, perform the following work steps:
☐ Insert a screwdriver below the housing into the indentation of the lock.
☐ Use the screwdriver to pull the lock downwards.
☐ Lift the bottom of the device away from the DIN rail.



7 Technical data

7.1 General technical data

7.1.1 GECKO 4TX / GECKO 5TX

Dimensions W × H × D	See “GECKO 4TX / GECKO 5TX” on page 34.	
Weight	GECKO 4TX	103 g (3.63 oz)
	GECKO 5TX	110 g (3.87 oz)
Power supply	Safety extra-low voltage (SELV) Relevant for North America: Class 2	
	Rated voltage range	12 V DC ... 24 V DC
	Voltage range incl. maximum tolerances	9.6 V DC ... 32 V DC
	Connection type	3-pin terminal block for the supply voltage and the grounding
	Power loss buffer	>10 ms at 20.4 V DC > 0.75 ms at 10.2 V DC
	Overload current protection on the device	Non-replaceable fuse
	Back-up fuse	Nominal value at 24 V: 1 A ... 2 A
		Nominal value at 12 V: 1 A ... 2.5 A
		Characteristic: slow blow
	Peak inrush current	<14 A
Climatic conditions during operation	Minimum clearance around the device	Top and bottom device side: 10 cm (3.94 in) Left and right device side: 2 cm (0.79 in)
	Ambient air temperature[ab]	0 °C ... +60 °C (+32 °F ... +140 °F)
	Humidity	5 % ... 95 % (non-condensing)
	Air pressure	min. 795 hPa (+2000 m ASL; +6562 ft ASL)
Climatic conditions during storage	Ambient air temperature[c]	-40 °C ... +85 °C (-40 °F ... +185 °F)
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure	min. 795 hPa (+2000 m ASL; +6562 ft ASL)
Pollution degree		2
Protection classes	Degree of protection	IP30

a. Temperature of the ambient air at a distance of 5 cm (2 in) from the device
b. under UL conditions: 0 °C ... +50 °C (+32 °F ... +122 °F). UL evaluation was done up to +50 °C (+122 °F), not to the maximum temperature of +60 °C (+140 °F).
c. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

7.1.2 GECKO 8TX / GECKO 8TX/2SFP

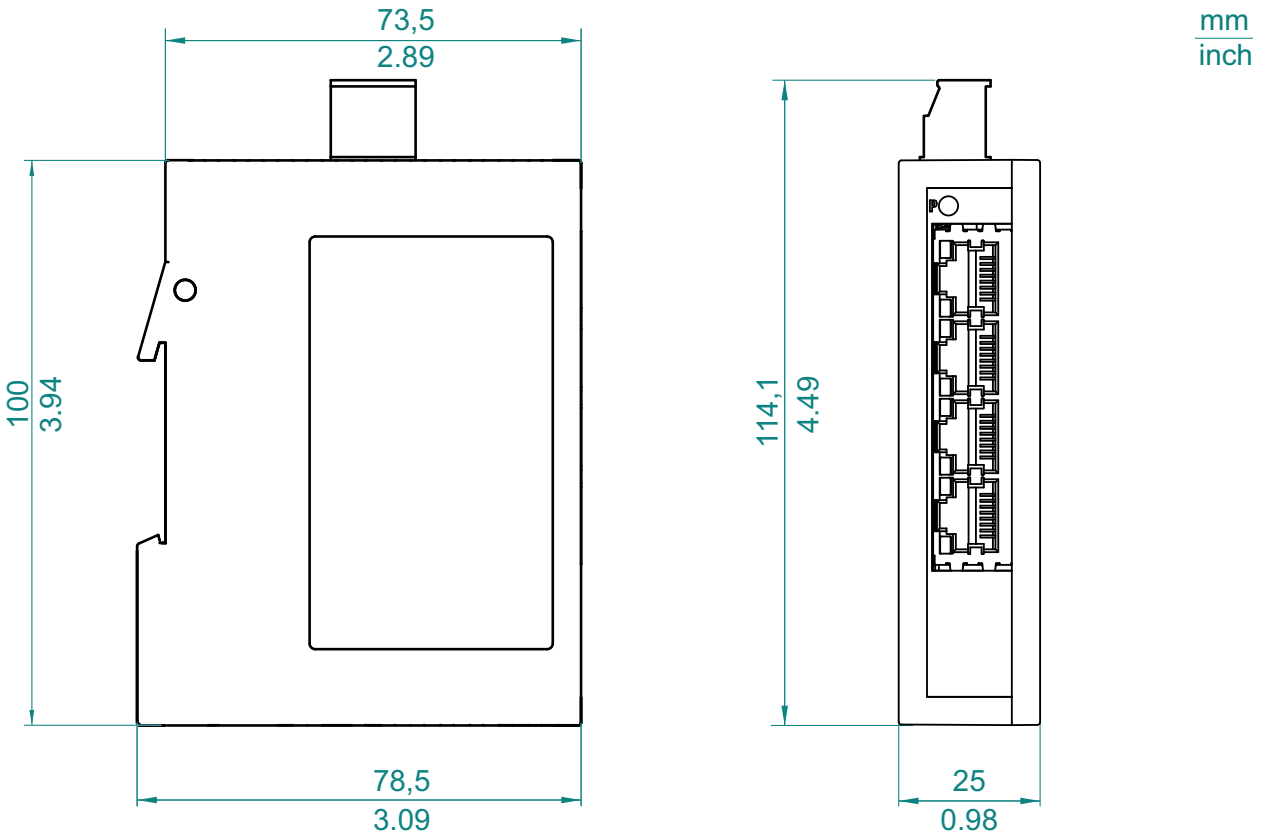
Dimensions W × H × D	See “GECKO 8TX” on page 35. See “GECKO 8TX/2SFP” on page 35.		
Weight	GECKO 8TX	223 g (7.85 oz)	
	GECKO 8TX/2SFP	223 g (7.85 oz)	
Power supply	Safety extra-low voltage (SELV) Relevant for North America: Class 2		
	Rated voltage range	12 V DC ... 24 V DC	
	Voltage range incl. maximum tolerances	9.6 V DC ... 32 V DC	
	Connection type	3-pin terminal block for the supply voltage and the grounding	
	Power loss buffer	>10 ms at 20.4 V DC > 0.75 ms at 10.2 V DC	
	Overload current protection on the device	Non-replaceable fuse	
	Back-up fuse	Nominal value at 24 V	1 A ... 2 A
		Nominal value at 12 V	1 A ... 2.5 A
		Characteristic:	slow blow
	Peak inrush current	<14 A	
Climatic conditions during operation	Minimum clearance around the device	Top and bottom device side: 10 cm (3.94 in) Left and right device side: 2 cm (0.79 in)	
		Derating[a]: 5 K without SFP usage at the following clearance: Top and bottom device side: 10 cm (3.94 in) Left and right device side: 0 cm (0 in) 10 K with SFP usage at the following clearance: Top and bottom device side: 10 cm (3.94 in) Left and right device side: 0 cm (0 in)	
	Ambient air temperature[b]	-40 °C ... +60 °C (-40 °F ... +140 °F)	
	Humidity	5 % ... 95 % (non-condensing)	
	Air pressure	min. 700 hPa (+3000 m ASL; +9842 ft ASL)	
Climatic conditions during storage	Ambient air temperature[c]	-40 °C ... +85 °C (-40 °F ... +185 °F)	
	Humidity	10 % ... 95 % (non-condensing)	
	Air pressure	min. 700 hPa (+3000 m ASL; +9842 ft ASL)	
Pollution degree		2	
Protection classes	Degree of protection	IP30	

a. Reduction of the maximum permitted ambient air temperature under specific conditions
b. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

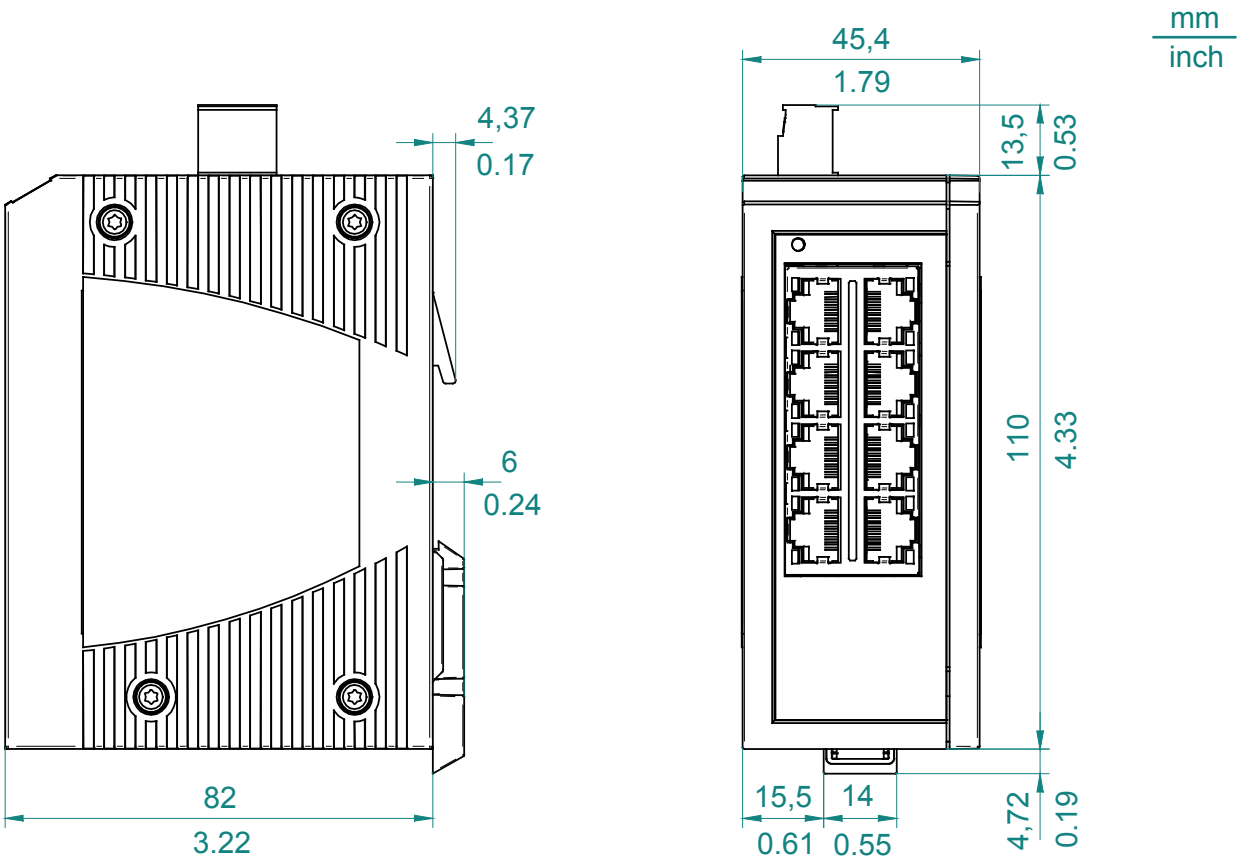
c. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

7.2 Dimension drawings

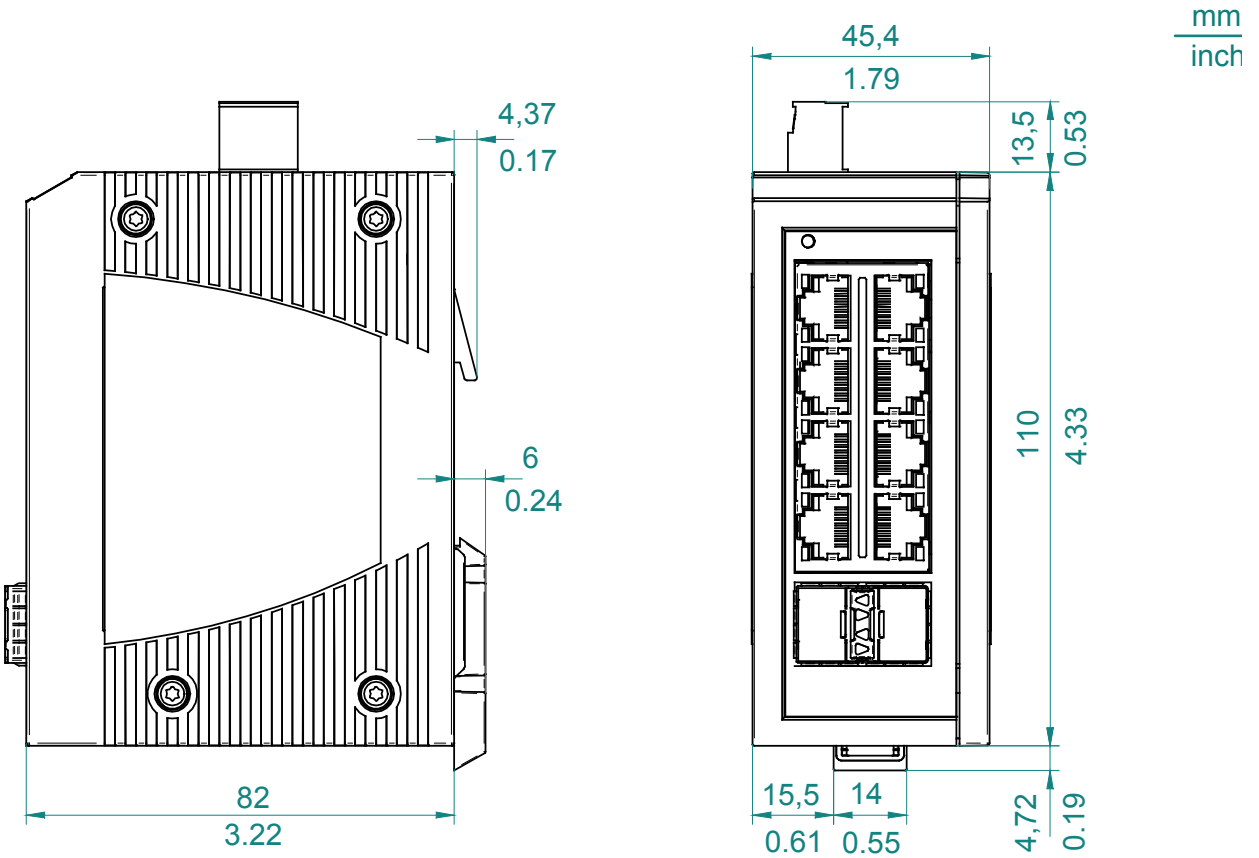
7.2.1 GECKO 4TX / GECKO 5TX



7.2.2 GECKO 8TX



7.2.3 GECKO 8TX/2SFP



7.3 EMC and immunity

7.3.1 GECKO 4TX / GECKO 5TX

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	DC supply connection	Class A
FCC 47 CFR Part 15	DC supply connection	Class A
EN 61000-6-4	DC 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	±4 kV
EN 61000-4-2	Air discharge	±8 kV
Electromagnetic field		
EN 61000-4-3	80 MHz ... 3000 MHz	10 V/m
Fast transients (burst)		
EN 61000-4-4	DC 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	±1 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

7.3.2 GECKO 8TX / GECKO 8TX/2SFP

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	DC supply connection	Class A
FCC 47 CFR Part 15	DC supply connection	Class A
EN 61000-6-4	DC 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	±4 kV
EN 61000-4-2	Air discharge	±8 kV
Electromagnetic field		
EN 61000-4-3	80 MHz ... 1000 MHz	10 V/m
	1400 MHz ... 6000 MHz	3 V/m
Fast transients (burst)		
EN 61000-4-4	DC supply connection	±2 kV
EN 61000-4-4	Data line	±2 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	±1 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 ... 200 Hz with 1 g
		—
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms

7.4 Network range

7.4.1 10/100/1000 Mbit/s twisted pair port

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

Table 5: Network range: 10/100/1000 Mbit/s twisted pair port

7.4.2 Fast Ethernet SFP transceiver

Product code M-FAST-SFP-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP/Dispersion
-MM/LC...	MM	1310 nm	50/125 µm	0 dB ... 8 dB	0 km ... 5 km (0 mi ... 3.11 mi)	1.0 dB/km	800 MHz×km
-MM/LC...	MM	1310 nm	62.5/125 µm	0 dB ... 11 dB	0 km ... 4 km (0 mi ... 2.49 mi)	1.0 dB/km	500 MHz×km
-SM/LC...	SM	1310 nm	9/125 µm		0 km ... 25 km (0 mi ... 15.53 mi)	0.4 dB/km	3.5 ps/(nm×km)
-SM+/LC...	SM	1310 nm	9/125 µm	10 dB ... 29 dB	25 km ... 65 km (15.53 mi ... 40.39 mi)	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	SM	1550 nm	9/125 µm	10 dB ... 29 dB	47 km ... 104 km (29.20 mi ... 64.62 mi)	0.25 dB/km	19 ps/(nm×km)
-LH/LC...	SM	1550 nm	9/125 µm	10 dB ... 29 dB	55 km ... 140 km (14.29 mi ... 86.99 mi)	0.18 dB/km[c]	18 ps/(nm×km)

Table 6: Fiber port 100BASE-FX (SFP fiber optic Fast Ethernet Transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.
c. With ultra-low-loss optical fiber.

7.4.3 Gigabit Ethernet SFP transceiver

Product code M-SFP-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP[c]/Dispersion
-SX/LC...	MM	850 nm	50/125 µm	0 dB ... 7.5 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	3.0 dB/km	400 MHz×km
-SX/LC...	MM	850 nm	62.5/125 µm	0 dB ... 7.5 dB	0 km ... 0.275 km (0 mi ... 0.17 mi)	3.2 dB/km	200 MHz×km
-MX/LC...	MM	1310 nm	50/125 µm	0 dB ... 12 dB	0 mi ... 0.93 mi (0 km ... 1.5 km)	1.0 dB/km	800 MHz×km
-MX/LC...	MM	1310 nm	62,5/125 µm	0 dB ... 12 dB	0 km ... 0,50 km	1,0 dB/km	500 MHz×km
-LX/LC...	MM	1310 nm[d]	50/125 µm	0 dB ... 10.5 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	1.0 dB/km	800 MHz×km
-LX/LC...	MM	1310 nm[e]	62.5/125 µm	0 dB ... 10.5 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	1.0 dB/km	500 MHz×km
-LX/LC...	SM	1310 nm	9/125 µm	0 dB ... 10.5 dB	0 km ... 20 km (0 mi ... 12.43 mi)[f]	0.4 dB/km	3.5 ps/(nm×km)
-LX+/LC...	SM	1310 nm	9/125 µm	5 dB ... 20 dB	14 km ... 42 km (8.70 mi ... 26.10 mi)	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	LH	1550 nm	9/125 µm	5 dB ... 22 dB	23 km ... 80 km (14.29 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH	1550 nm	9/125 µm	15 dB ... 30 dB	71 km ... 108 km (44.12 mi ... 67.11 mi)	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH	1550 nm	9/125 µm	15 dB ... 30 dB	71 km ... 128 km (44.12 mi ... 79.54 mi)	0.21 dB/ km (typically)	19 ps/(nm×km)

Table 7: F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

Product code M-SFP-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP[c]/Dispersion
-LH+/LC...	LH	1550 nm	9/125 µm	13 dB ... 32 dB	38.52 mi ... 72.07 mi (62 km ... 116 km)	0.25 dB/km	19 ps/(nm×km)
-LH+/LC...	LH	1550 nm	9/125 µm	13 dB ... 32 dB	38.52 mi ... 85.75 mi (62 km ... 138 km)	0.21 dB/ km (typically)	19 ps/(nm×km)

Table 7: F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.
c. Using the bandwidth-length product is inappropriate for expansion calculations.
d. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).
e. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).
f. Including 2.5 dB system reserve when compliance with the fiber data is observed.

7.4.4 Bidirectional Gigabit Ethernet SFP transceiver

Product code M-SFP-BIDI...	Mode[a]	Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	Dispersion
Type A LX/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0 dB ... 11 dB	0 km ... 20 km (0 mi ... 12.43 mi)	0.4 dB/km	3.5 ps/(nm×km)
Type B LX/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0 dB ... 11 dB	0 km ... 20 km (0 mi ... 12.43 mi)	0.25 dB/km	19 ps/(nm×km)
Type A LH/LC EEC	LH	1490 nm	1590 nm	9/125 µm	5 dB ... 24 dB	23 km ... 80 km (14.29 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)
Type B LH/LC EEC	LH	1590 nm	1490 nm	9/125 µm	5 dB ... 24 dB	23 km ... 80 km (14.29 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)

Table 8: F/O port (bidirectional Gigabit Ethernet SFP transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul

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

Product code SFP-GIG-B...	Mode[a]	Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	Dispersion
SFP-GIG-BA LX/ LC EEC	SM	1310 nm	1550 nm	9/125 µm	0 dB ... 15 dB	0 mi ... 12.43 mi (0 km ... 20 km)	0.4 dB/km	3.5 ps/(nm×km)
SFP-GIG-BB LX/ LC EEC	SM	1550 nm	1310 nm	9/125 µm	0 dB ... 15 dB	0 mi ... 12.43 mi (0 km ... 20 km)	0.25 dB/km	19 ps/(nm×km)
SFP-GIG-BA LX+/ LC EEC	SM	1310 nm	1550 nm	9/125 µm	3 dB ... 20 dB	7.45 mi ... 24.86 mi (12 km ... 40 km)	0.4 dB/km	3.5 ps/(nm×km)
SFP-GIG-BB LX+/ LC EEC	SM	1550 nm	1310 nm	9/125 µm	3 dB ... 20 dB	7.45 mi ... 24.86 mi (12 km ... 40 km)	0.25 dB/km	19 ps/(nm×km)
SFP-GIG-BA LH/ LC EEC	SM	1490 nm	1550 nm	9/125 µm	4 dB ... 24 dB	11.80 mi ... 49.71 mi (19 km ... 80 km)	0.25 dB/km	19 ps/(nm×km)
SFP-GIG-BB LH/ LC EEC	SM	1550 nm	1490 nm	9/125 µm	4 dB ... 24 dB	11.80 mi ... 49.71 mi (19 km ... 80 km)	0.25 dB/km	19 ps/(nm×km)

Table 9: F/O port (bidirectional Gigabit Ethernet SFP transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.

7.5 Power consumption/power output

Maximum power consumption	Power output
GECKO 4TX 2.35 W	8.0 Btu (IT)/h
GECKO 5TX 1.8 W	6.1 Btu (IT)/h
GECKO 8TX 3.9 W	13.3 Btu (IT)/h
GECKO 8TX/2SFP 5.3 W	18.1 Btu (IT)/h

8 Scope of delivery

Amount	Article
1 ×	Device
1 ×	3-pin terminal block for the supply voltage and the grounding
1 ×	Safety and general information sheet

9 Order numbers

Device	Order number
GECKO 4TX	942 104-003
GECKO 4TX-PN	942 104-301
GECKO 4TX-EIP	942 104-401
GECKO 5TX	942 104-002
GECKO 5TX-PN	942 104-302
GECKO 5TX-EIP	942 104-402
GECKO 8TX	942 291-001
GECKO 8TX/2SFP	942 291-002
GECKO 8TX-PN	942 291-301
GECKO 8TX/2SFP-PN	942 291-302
GECKO 8TX-EIP	942 291-401
GECKO 8TX/2SFP-EIP	942 291-402

10 Accessories

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

10.1 Fast Ethernet SFP transceiver

Fast Ethernet SFP transceiver	Order number
M-FAST SFP-TX/RJ45	942 098-001
M-FAST SFP-TX/RJ45 EEC	942 098-002
The following operating conditions apply to twisted pair transceivers: ▶ Longer RSTP switching times and link loss detection times compared to twisted pair ports provided by the device directly. ▶ It is currently not possible to set autocrossing manually.	
M-FAST SFP-MM/LC	943 865-001
M-FAST SFP-MM/LC EEC	943 945-001
M-FAST SFP-SM/LC	943 866-001
M-FAST SFP-SM/LC EEC	943 946-001
M-FAST SFP-SM+/LC	943 867-001
M-FAST SFP-SM+/LC EEC	943 947-001
M-FAST SFP-LH/LC	943 868-001
M-FAST SFP-LH/LC EEC	943 948-001
SFP-FAST-MM/LC[a]	942 194-001
SFP-FAST-MM/LC EEC[a]	942 194-002
SFP-FAST-SM/LC[a]	942 195-001
SFP-FAST-SM/LC EEC[a]	942 195-002

Table 10: Accessory: Fast Ethernet SFP transceiver

a. You will find further information on certifications on the Internet on the Hirschmann product pages (www.hirschmann.com).

10.2 Gigabit Ethernet SFP transceiver

Gigabit Ethernet SFP transceiver	Order number
M-SFP-TX/RJ45	943 977-001

Table 11: Accessory: Gigabit Ethernet SFP transceiver

Gigabit Ethernet SFP transceiver	Order number
M-SFP-TX/RJ45 EEC	942 161-001
The following operating conditions apply to twisted pair transceivers: ▶ Longer RSTP switching times and link loss detection times compared to twisted pair ports provided by the device directly. ▶ Cannot be used with Fast Ethernet ports. ▶ Exclusively supports the autonegotiation mode including autocrossing.	
M-SFP-SX/LC	943 014-001
M-SFP-SX/LC EEC	943 896-001
M-SFP-MX/LC EEC	942 108-001
M-SFP-LX/LC	943 015-001
M-SFP-LX/LC EEC	943 897-001
M-SFP-LX+/LC	942 023-001
M-SFP-LX+/ LC EEC	942 024-001
M-SFP-LH/LC	943 042-001
M-SFP-LH/LC EEC	943 898-001
M-SFP-LH+/LC	943 049-001
M-SFP-LH+/LC EEC	942 119-001
SFP-GIG-LX/LC[a]	942 196-001
SFP-GIG-LX/LC EEC[a]	942 196-002

Table 11: Accessory: Gigabit Ethernet SFP transceiver

a. You will find further information on certifications on the Internet on the Hirschmann product pages (www.hirschmann.com).

10.3 Bidirectional Gigabit Ethernet SFP transceiver

Bidirectional Gigabit Ethernet SFP transceiver	Order number
M-SFP-BIDI Type A LX/LC EEC	943 974-001
M-SFP-BIDI Type B LX/LC EEC	943 974-002
M-SFP-BIDI Type A LH/LC EEC	943 975-001
M-SFP-BIDI Type B LH/LC EEC	943 975-002
M-SFP-BIDI Bundle LX/LC EEC (Type A + B)	943 974-101
M-SFP-BIDI Bundle LH/LC EEC (Type A + B)	943 975-101

Table 12: Accessory: Bidirectional Gigabit Ethernet SFP transceiver

Bidirectional Gigabit Ethernet SFP Transceivers[a]	Order number
SFP-GIG-BA LX/LC EEC	942 207-001
SFP-GIG-BB LX/LC EEC	942 207-002
SFP-GIG-BA LX+/LC EEC	942 208-001
SFP-GIG-BB LX+/LC EEC	942 208-002
SFP-GIG-BA LH/LC EEC	942 209-001
SFP-GIG-BB LH/LC EEC	942 209-002

Table 13: Accessories: Bidirectional Gigabit Ethernet SFP transceivers

a. You find further information on certifications on the Internet on the Hirschmann product pages (www.hirschmann.com).

10.4 Other accessories

Other accessories	Order number
Network management software Industrial HiVision	943 156-xxx
Rail Power Supply RPS 15	943 662-015
Rail Power Supply RPS 30	943 662-003
Rail Power Supply RPS 80 EEC	943 662-080
Rail Power Supply RPS 120 EEC (CC)	943 662-121

11 Underlying technical standards

11.1 GECKO 4TX / GECKO 5TX

Designation	
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
EN 55011	Industrial, scientific and medical equipment – Radio disturbance – Limits and methods of measurement
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
IEC 60825-1	Laser product safety
EN 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions
EN 61000-3-3	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker.
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emitted interference in industrial environments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
FCC 47 CFR Part 15	Code of Federal Regulations
IEC/EN 61850-3	Communication networks and systems for power utility automation - Part 3: General requirements.
IEEE 802.3	Ethernet
IEEE 802.1D	MAC Bridges (switching function)
IEEE 802.1AB	Station and Media Access Control Connectivity Discovery
UL 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment

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

11.2 GECKO 8TX / GECKO 8TX/2SFP

Designation	
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
EN 55011	Industrial, scientific and medical equipment – Radio disturbance – Limits and methods of measurement
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
IEC 60825-1	Laser product safety
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emitted interference in industrial environments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
FCC 47 CFR Part 15	Code of Federal Regulations
IEEE 802.3	Ethernet
IEEE 802.1D	MAC Bridges (switching function)
IEEE 802.1AB	Station and Media Access Control Connectivity Discovery
UL 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment

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

A Further support

Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at http://www.hirschmann.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at https://hirschmann-support.belden.com.

This site also includes a free of charge knowledge base and a software download section.

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