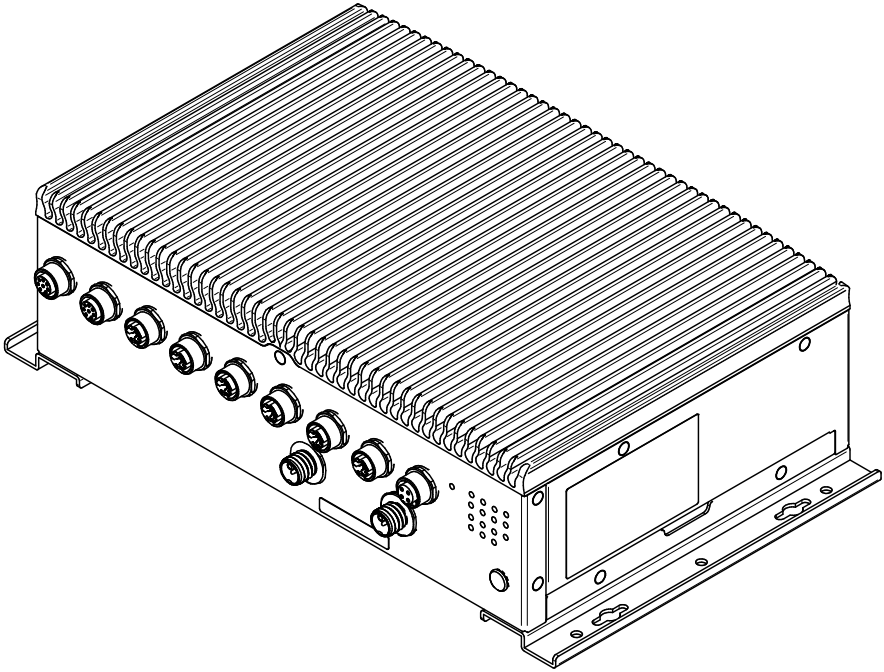
HIRSCHMANN
A BELDEN BRAND

User Manual

Installation
Industrial Ethernet Security Router
EAGLE40-6M



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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 “Installation” user manual 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*

Important information

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.

Warning symbols

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.

Symboles d'avertissement

Il s'agit d'un symbole d'avertissement général. Ce symbole vous avertit des risques potentiels de blessures. Respectez les consignes accompagnant ce symbole afin d'éviter toute blessure ou accident mortel.

La présence de ce symbole sur une étiquette "Danger" ou "Avertissement" signale un risque d'électrocution qui provoquera des blessures physiques en cas de non-respect des consignes de sécurité.

Ce symbole indique le risque de surfaces chaudes sur l'équipement. En relation avec les consignes de sécurité, le non-respect des instructions entraînera inévitablement des blessures.

⚠ DANGER

DANGER indique une situation immédiatement dangereuse qui, si elle n'est pas évitée, entraînera la mort ou des blessures graves.

⚠ AVERTISSEMENT

AVERTISSEMENT indique une situation potentiellement dangereuse et susceptible d'entraîner la mort ou des blessures graves.

⚠ ATTENTION

ATTENTION indique une situation potentiellement dangereuse et susceptible d'entraîner des blessures d'ampleur mineure à modérée.

AVIS

AVIS indique des pratiques n’entraînant pas de risques corporels.

Contents

1. Safety instructions

⚠ WARNING	
	**UNCONTROLLED MACHINE ACTIONS** **Failure to follow these instructions can result in death, serious injury, or equipment damage.** 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.

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.

- Verify that the electrical installation meets local or nationally applicable safety regulations.
- 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.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

1.1. 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.

1.2. Intended use

- Use the product only for the application cases described in the Hirschmann Automation and Control GmbH product information, including this manual.
- Operate the product only according to the technical specifications.

  See *General data* on page 46
- Connect to the product only components suitable for the requirements of the specific application case.

1.3. Installation site requirements

⚠ WARNING
	**FIRE HAZARD** **Failure to follow these instructions can result in death, serious injury, or equipment damage.** If you connect the device to a power supply that does **NOT** meet the requirements for Limited Power Source, NEC Class 2 or PS2 according to IEC/EN 62368-1 and is **NOT** limited to 100 W output power, the device must be installed in either a switch cabinet or other fire enclosure. The fire enclosure can be made of metal or plastic with fire-protection properties of at least V-1 according to IEC 60695-11-10. Bottom openings of the fire enclosure must **NOT** exceed 2 mm in diameter.

- Install this device only in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.
- When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.
- Use the device in an environment with a maximum pollution degree that complies with the specifications in the technical data.

See *General data* on page 46

1.4. 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.
- At ambient air temperatures > +60 °C (+140 °F), the surfaces of the device housing may become hot. Avoid touching the device while it is operating.

1.5. 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.

1.6. Electrical connections

1.6.1. Grounding the device

Grounding the device is by means of a separate ground connection on the device.

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

1.6.2. Shielding ground

The overall shield of connectable twisted pair cables is connected to the ground connection of the device casing as a conductor.

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

1.6.3. General requirements for connecting electrical wires

Before connecting the electrical wires, **ALWAYS** verify that the requirements listed are complied with. The following requirements apply without restriction:

- The electrical wires are voltage-free.
- The device is grounded via the designated ground connection(s).
- The cross-section of the ground conductor is the same size or larger than the cross-section of the power supply cables.
- The connected voltage source is limited by a current limitation device or a fuse.
- The device is only switched on after installation.
- The ground connection is disconnected only after all other cables have been disconnected.
- The cables used are permitted for the temperature range of the application case.

  ⚠ Only use power supply 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.

1.6.4. General requirements for connecting the supply voltage

⚠ WARNING

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

The power is supplied by a secondary circuit which is separate from the MAINS CIRCUITS. It is achieved by a UL R/C transformer, in which the primary windings are separated from the secondary windings by the REINFORCED or DOUBLE INSULATION. The MAIN voltage corresponds to OVERVOLTAGE CATEGORY II (up to 300 V).

The product is an open type device, and must be installed in a cabinet or enclosure.

If the equipment is used in a manner not specified by Hirschmann, the protection provided by the equipment may be impaired.

⚠ AVERTISSEMENT

RISQUE D'INCENDIE
Le non-respect de ces instructions peut entraîner la mort, des blessures graves ou des dommages matériels.

L'alimentation est fournie par un circuit secondaire séparé des CIRCUITS PRINCIPAUX. Elle est assurée par un transformateur UL R/C, dans lequel les enroulements primaires sont séparés des enroulements secondaires par l'SOLATION RENFORCÉE ou DOUBLE. La tension PRINCIPALE correspond à la CATÉGORIE DE SURTENSION II (jusqu'à 300 V).

Le produit est un dispositif de type ouvert qui doi doit étre installé dans une armoire de commande ou un boîtier.

Si l'équipement est utilisé d'une maniére non spécifiée par Hirschmann, la protection fournie par l'equipement peut étre compromise,

Before connecting the supply voltage, **ALWAYS** verify that the requirements listed are complied with. The following requirements apply without restrictions:

- The supply voltage corresponds to the voltage specified on the type plate of the device.
- The power supply cable is suitable for the required voltage, current, and physical load.
- The cross-section of the ground conductor is the same size as or larger than the cross-section of the power supply cables.
- The power supply conforms to overvoltage category II.
- The power supply has an easily accessible disconnecting device (for example a swich or a plug). This disconnecting device is clearly labelled and identifyable, so that in case of an emergency it is clear which power supply the disconnecting device belongs to.
- The power supply is potential-free.
- The supply voltage is only connected to the device casing using protective elements.
- The power supply complies with the requirements for safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
- The conductor cross-section of the power supply cable is at least 0.75 mm² (18 AWG) on the supply voltage input of the device.

DC voltage power supply:

- The device is rated for DC voltage.
- A back-up fuse suitable for DC voltage is installed in **EVERY** plus conductor of the power supply.
- **EVERY** minus conductor is on ground potential. Otherwise, an additional back-up fuse is installed in **EVERY** minus conductor. Regarding the properties of this back-up fuse: *General data* on page 46

1.6.5. Specific requirements for connecting the supply voltage

Before connecting the supply voltage, **ALWAYS** verify that the requirements listed are complied with. The following requirements apply without restrictions:

1.7. Recycling note

The symbol of a crossed-out wheeled bin shown on the device indicates that the device **MUST NOT** be disposed of with household waste at the end of its service life.

After its service life, the used device must be disposed of properly as electronic waste in accordance with the locally applicable disposal regulations.

End users are responsible for deleting personal data from the used device prior to disposal.

End users are obliged to separate used batteries and accumulators that are not enclosed by the used device from the used device in a non-destructive manner before disposing of the used device. The used batteries and accumulators must be handed in for separate collection. This does not apply if the used device is handed in for reuse.

2. Approvals

2.1. 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 available to the relevant authorities at the following address:

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

The device can be used in industrial environments

- Interference immunity: EN 61000-6-2
- Emitted Interference: EN 61000-6-4
- Safety: IEC/EN 62368-1

For more information on technical data, see *General data* on page 46.

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.

2.2. FCC note

Supplier's Declaration of Conformity

47 CFR § 2.1077 Compliance Information

EAGLE40-6M

U.S. Contact Information

Belden Inc. – 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.

3. Description

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

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.

Key features of EAGLE40-6M:

- A fanless industrial grade security appliance
- Flexible LAN: 6 × 2.5 Gbit/s with M12 ports X-coded
- Supports wall mount kit

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

The device works without a fan.

Type of the device mounting:

- Mounting on a wall

The device provides you with a large range of functions, which the manuals for the operating software inform you about. You can download these manuals as PDF files from the Internet at: *https://www.doc.hirschmann.com*

3.1. Device name and product code

The device name corresponds to the product code. The product code is made up of characteristics with defined positions. The characteristic values stand for specific product properties.

You have numerous options of combining the device characteristics. You can determine the possible combinations using the configurator which is available in the Belden Online Catalog, *https://catalog.belden.com* on the web page of the device.

Table 1. Device name and product code

Item	Characteristic	Characteristic value	Description
1 ... 7	Device	EAGLE-40	Security Router and Firewall
8	(hyphen)	-	
9... 10	Number: (Gigabit Ethernet ports)	06	6 × 1000 Mbit/s ports
11... 13	Configuration of the uplink ports	6T6	6 × Twisted pair M12, X-Coded
14	Temperature range	E	-40 °C ... +75 °C (-40 °F ... +167 °F)
15... 16	Supply voltage	EE	2 × Voltage input Rated voltage range 24V DC ... 110 V DC
17	Certificates and declarations part 1	E	CE, FCC, EN 50121-4, EN 50155, EN 61131, UL 62368-1,
18	Certificates and declarations part 2	9	No additional approval
19... 20	Type	HS	Hirschmann Standard
21	Software Configuration	R	Router Mode
22	Intrusion Detection System (IDS)	A	Not applicable
23... 24	Security Modules	NF	No additional modules, firewall only
		UN	Unified Protection Suite (All Enforcers)
25... 29	Software Version	XX.X	Latest Software Version

3.2. Device views

3.2.1. Front view

Figure 1. Front view of device Eagle40-6M

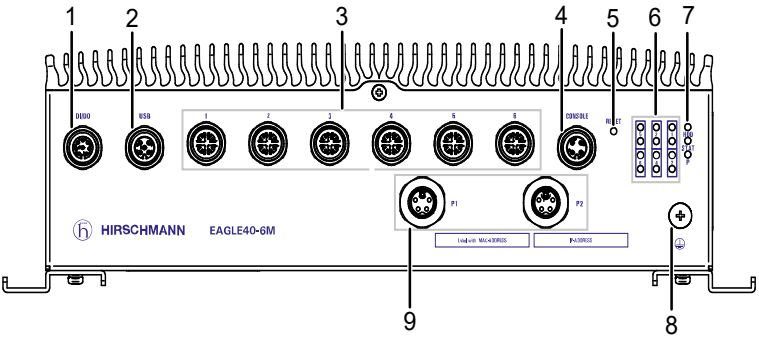


Table 2. Description of device elements: Front view of device Eagle40-6M

1	8-pin, “A”-coded M12 socket for the digital input
2	5-pin, “A”-coded M12 socket USB interface (5 V, 0.0535 A)
3	6 × 8-pin, “X”-coded M12 10/100/1000/2500 Mbit/s twisted pair port
4	4-pin, “A”-coded M12 console port
5	Reset button
6	LED display element for device status
7	LED display element for port status
8	Ground screw
9	2 × 5-pin, “K”-coded M12 socket with screw lock for redundant power supply

3.2.2. View from below

Figure 2. Bottom view of device Eagle40-6M

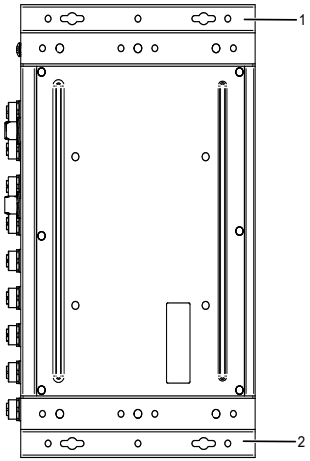


Table 3. Description of device elements: Bottom view of device Eagle40-6M

1	Wall mounting bracket
2	Wall mounting bracket

3.3. Power supply

The following options for power supply are available:

3.3.1. Supply voltage range 24 V DC ... 110 V DC

The device comes with the following supply voltage connection:

24 V DC ... 110 V DC with 5-pin “K”-coded M12 plug

The supply voltage can be connected redundantly.

A 5-pin, “K”-coded M12 plug is available for the redundant supply of the device.

You will find information on connecting the supply voltage here:

Connecting the supply voltage on page 38

3.4. Ethernet ports

You can connect end devices and other segments to the device ports using twisted pair cables.

3.4.1. Twisted pair port 10/100/1000/2500 Mbit/s

This port is an 8-pin, “X”-coded M12 socket.

For information about the position on the device, see chapter *Device views* on page 25.

The 10/100/1000/2500 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 10BASE-TX/100BASE-TX/1000BASE-T and IEEE 802.3bz 2.5GBASE-T standards.

This port supports:

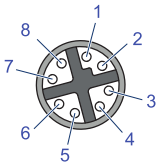
- Autonegotiation
- Autopolarity
- Autocrossing
- 10/100/1000/2500 Mbit/s full duplex mode
- The pin assignment corresponds to MDI-X.

Delivery state:

- Autonegotiation activated

The port casing is electrically connected to the front panel.

Table 4. Pin assignment

8-pin M12 socket, “X”-coded	Pin	10/100 Mbit/s	1000/2500 Mbit/s
	1	RX+	BI_DB+
	2	RX-	BI_DB-
	3	TX+	BI_DA+
	4	TX-	BI_DA-
	5	–	BI_DC+
	6	–	BI_DC-
	7	–	BI_DD-
	8	–	BI_DD+

3.5. Display elements

3.5.1. Device status

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

Figure 3. LED display elements for device status

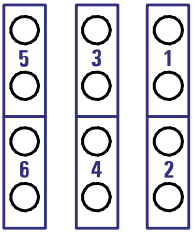
Table 5. LED: Color, activity and meaning

LED	Display	Color	Activity/Status	Meaning
P (Power)	Supply voltage	-	None	Supply voltage is too low
		Green	Lights up	Supply voltage is on
STAT	Device status	-	None	Device is powered off
		Green	Lights up	Device is not reporting any device status alarms
		Red	Lights up	Device is reporting a device status alarms
HDD	Hard disk activity	none	None	No data access activity
		Yellow	Flashing	Data access activity

3.5.2. Port status

These LEDs display port-related information.

Figure 4. Port status: Location of the port display elements on the device



LED	Display	Color	Activity	Meaning
1 … 6	Link status (LED top)	-	None	No link is established
		Yellow	Lights up	Link has been established
			Flashing	The connection is active
	Speed (LED bottom)	-	None	Operating as a 10 Mbit/s connection
		Green	Lights up	Operating as a 1000/2500 Mbit/s connection
		Yellow	Lights up	Operating as a 100 Mbit/s connection

3.6. Input/output interfaces

The following input/output interface is available:

3.6.1. Digital input

For information about the position on the device, see chapter *Device views* on page 25.

Table 6. Pin assignment

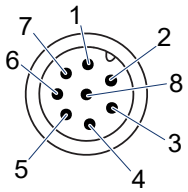
Digital input 8-pin, “A”-coded M12 socket (male)	Pin	Function
	1	DI port 1
	2	DI port 2
	3	DI ground
	4	DI comm
	5	CO port 1
	6	DO port 2

Table 6. Pin assignment (continued)

Digital input 8-pin, “A”-coded M12 socket (male)	Pin	Function
	7	DO ground
	8	DO ground

The digital input allows you to capture and forward signals from digital sensors. In the configuration, you specify how the device uses the digital input.

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

4. Installation

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

On delivery, the device is ready for operation.

To install the device, perform the following work steps:

4.1. Checking the package contents

- Check whether the package includes all items named in the section *Scope of delivery* on page 53.
- Check the individual parts for transport damage.

4.2. Mounting the device

⚠ CAUTION	
	**BURN HAZARD** **Failure to follow these instructions can result in injury or equipment damage.** The surfaces of the device casing may become hot. Avoid touching the device while it is operating. If ambient temperatures are ≥45 °C (≥113 °F), exclusively install the device in “restricted access locations” according to EN 62368-1.

- When selecting the installation location, verify that you observe the climatic threshold values of the device specified in the technical data. Take measures to prevent ambient conditions such as heat from affecting the device.
- Verify that there is at least 10 cm (4 in) of space around the device.
- Remove the provided transport protection caps and the transport protection screws from the device.

You have the following option(s) for mounting your device:

- *Mounting on a wall* on page 34

4.2.1. Mounting on a wall

⚠ WARNING

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

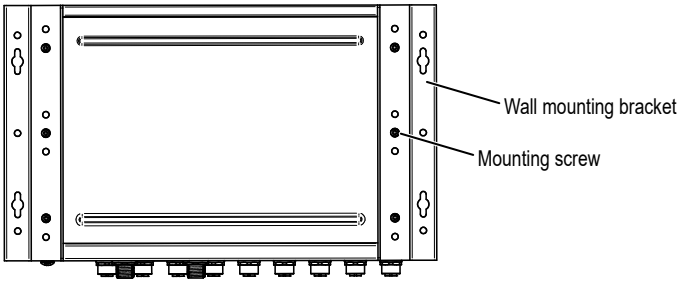
Install the device in a fire enclosure according to IEC/EN 62368-1 if you install the device vertically.

Install the device in line with the criteria listed in *Mounting the device* on page 33

Proceed as follows:

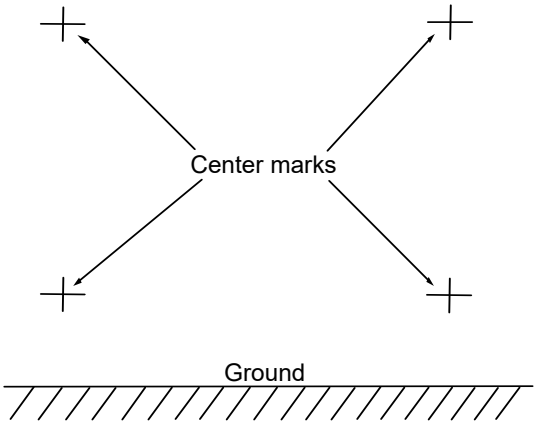
1. Flip over the device.
2. Fix both wall mounting brackets onto the bottom with 6 mounting screws.

Figure 5. Mounting on a wall: Fixing wall mounting bracket to the device.



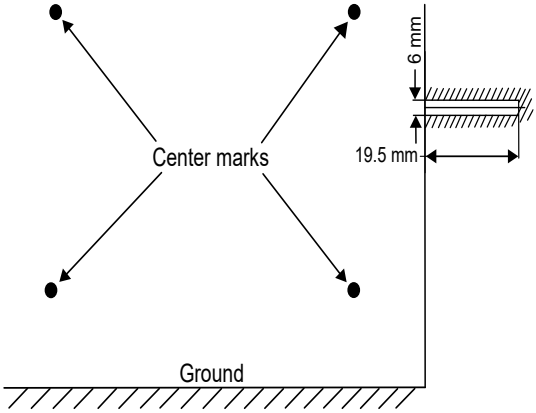
3. Center mark 4 drilling holes at a proper location on the wall. Confirm that the distance between the holes on the wall is equivalent to the distance between the holes on the mounting bracket.

Figure 6. Mounting on a wall: Center marking holes on the wall.



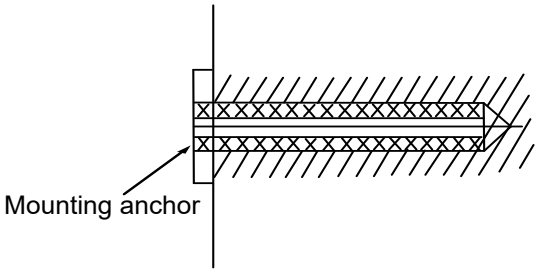
4. Drill 4 holes at the center marks about 6 mm in diameter and 19.5 mm in depth. This is approximately the same size as the wall anchors of the device.

Figure 7. Mounting on a wall: Drilling holes on the wall.



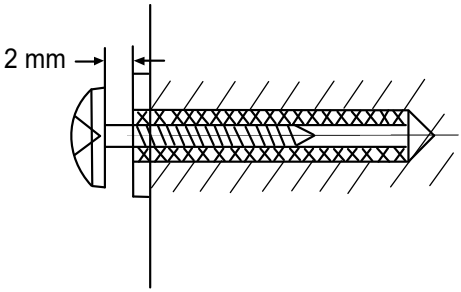
5. Insert 4 wall anchors and tap them into the holes.

Figure 8. Mounting on a wall: Wall anchors.



6. Insert 4 mounting screws into the wall anchors with 2 mm length left remaining.

Figure 9. Mounting on a wall: Wall mounting screw.



7. Align the 4 mounting screw holes on the device mounting with the 4 long mounting screws installed on the wall.
8. Engage the 4 screws in the bracket holes.
9. Push the device downwards to lock the screws into position.

Note: Make sure that you keep enough room for the airflow ventilation of the device intake (side panel) and exhaust (rear panel) openings by removing any obstructions or through proper cable management.

4.3. Grounding the device

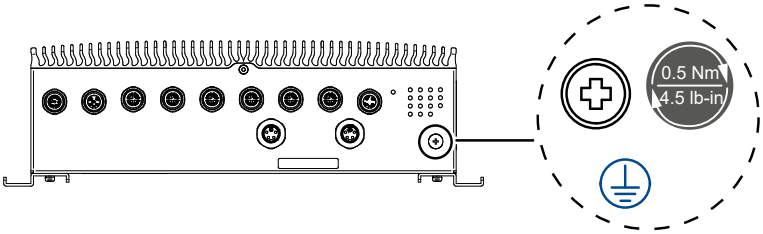
⚠ CAUTION

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

Ground the device before connecting any other cables.

All device variants have a protective ground connection.

Figure 10. Location of the ground connection on the device; tightening torque.



Perform the following work steps:

- Ground the device via the ground screw with a tightening torque of 0.5 Nm (4.5 lb-in).

The cross-section of the ground conductor must be the same size as or bigger than the cross-section of the power supply cables.

4.4. Connecting the digital input

Table 7. Digital input: pin assignment

Pin	Signal, terminal	Function
1	DI (+)	Signal input
2	DI (−)	Reference potential

Table 8. DI Ports

DI Ports	
Maximum permitted input voltage range	-32 V DC ... +32 V DC
Nominal input voltage	+24 V DC
Input voltage, low level, status "0"	-0.3 V DC ... +11 V DC
Input voltage, high level, status "1"	+11 V DC ... +30 V DC
Maximum input current at nominal input voltage	30 mA
Permitted closed-circuit current for 2-wire sensors	30 mA
Input characteristic according to IEC 61131-2 (current-consuming)	Typ 2

Table 9. DO Ports

DO Ports	
Input voltage	-32 V DC ... +32 V DC
Input current	200 mA

4.5. Connecting the supply voltage

The supply voltage is exclusively connected to the device casing through protective elements.

⚠ WARNING

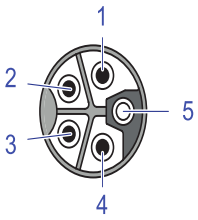
ELECTRIC SHOCK
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Connect only a supply voltage that corresponds to the type plate of your device.

4.5.1. Supply voltage range 24 V DC ... 110 V DC

The device comes with 24 V DC ... 110 V DC supply voltage connection.

Table 10. 5-pin M12 connector, “K”-coded

Graphic	Pin	Function	
	1	P1+	Plus terminal
	2	Do not use	
	3	P1-	Minus terminal
	4	Do not use	
	5	FE	Functional ground connection

To connect the supply voltage, perform the following work steps:

- Mount the power supply cable to the power supply connector of the device. You find the prescribed tightening torque in chapter *Supply voltage range 24 V DC ... 110 V DC* on page 46.
- Enable the supply voltage.

Note: For use cases according to EN 50155, exclusively use external front end power supply units of type PC150/110V/54V, or else the suitability of the device for this use case is void.

4.6. Operating the device

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

⚠ WARNING

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

Connect only a supply voltage that corresponds to the type plate of your device.

Note: Observe the instructions in chapter
General requirements for connecting electrical wires on page 16.

4.7. 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 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 ducts.
- Verify that power supply cables and data cables do not run parallel over longer distances. If reducing the inductive coupling is necessary, verify that the power supply cables and data cables cross at a 90° angle.
- Use shielded data cables for gigabit transmission via copper cables. Only use shielded data cables to meet EMC requirements according to EN 50121-4 and marine applications.
  See *Electromagnetic compatibility (EMC)* on page 49.
- Connect the data cables according to your requirements.
  See *Ethernet ports* on page 27.
- Use CAT5e cable or higher for twisted pair connections up to 1 Gbit/s.
- Use CAT6a cable or higher for twisted pair connections up to 2.5 Gbit/s.
- Seal all unused connections and ports with protection screws.

Perform the following work steps:

- Connect the data cables.

5. Basic settings

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

Perform the following work step:

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 M12 console interface
- Entry via the HiDiscovery protocol in the applications HiDiscovery or Industrial HiVision
- AutoConfiguration Adapter

You will find more information in the “Basic Configuration User Manual”.

5.1. Default settings

- M12 console port data rate: 115200 Baud
- Twisted pair ports: Autonegotiation

5.2. First login (Password change)

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

During the first login to the new device, after a factory reset, and after you run the command clear config, you bring the device to an operational state. To do this, you need to change the default password of the default administrator account. Until then, the device only has limited availability to the network:

- Hirschmann recommends setting a password that is different from the default password.

Perform the following work 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 user name "admin" and the default password “private". On successful login, 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, the device prompts you to confirm your new password.

  The device displays an error when the new password entered and the password confirmed do not match.
- Log on to the device again with your new password.

Note: If you lost your password, 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*.

6. Monitoring ambient conditions

6.1. Monitoring the ambient air temperature

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

See *Climatic conditions during operation* on page 48.

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.

The temperature displayed in the CLI (Command Line Interface) and the GUI (Graphical User Interface) is the internal temperature of the device. It is up to +20 °C (+68 °F) higher than the ambient temperature. This depends on the configuration of your device. possibly been exceeded.

7. 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 (*https://www.belden.com*).
- Depending on the pollution degree in the operating environment, check regularly that the ventilation slots in the device are not obstructed.

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

8. Disassembly

8.1. Removing the device

⚠ WARNING	
	**ELECTRIC SHOCK** **Failure to follow these instructions can result in death, serious injury, or equipment damage.** Disconnect the grounding only after disconnecting all other cables.

Perform the following work steps:

- Disconnect the data cables.
- Disable the supply voltage.
- Disconnect the supply voltage.
- Remove terminal blocks and power supply cables from the device.
- Disconnect the grounding.
- To detach the device from wall mounting brackets, pull the device upwards, and dis-engage the device from the 4 mounting screws.

9. Technical data

9.1. General data

Table 11. General data

EAGLE40-6M	
Dimensions W × H × D	*Dimension drawings* on page 47
Weight	4.2 kg (9.25 lb)
Mounting	*Mounting on a wall* on page 34
Pollution degree	3
Degree of protection	IP40 (Certified by Antek Certifications Inc.)

9.2. Supply voltage

9.2.1. Supply voltage range 24 V DC ... 110 V DC

Table 12. Supply voltage

Supply voltage		
Rated voltage	24 V DC ... 110 V DC	
Voltage range including maximum tolerances	20 V DC ... 138 V DC (Not certified by UL)	
Connection type	5-pin, “K”-coded M12 plug	
	Tightening torque	0.6 Nm (5.3 lb-in)
	Wire cross-section	1.5 mm² (16 AWG)[1]
Power loss buffer	>16 ms at 48 V DC	
Overload current protection on the device	Non-replaceable fuse	
Back-up fuse for each voltage input	Nominal rating:	max. 20 A
	Characteristic:	slow blow
Peak inrush current	8 A	
Connection for functional ground	*Grounding the device* on page 37	
Current integral I^2t	<1.5 A^2s	

1. When using the supplied plug.

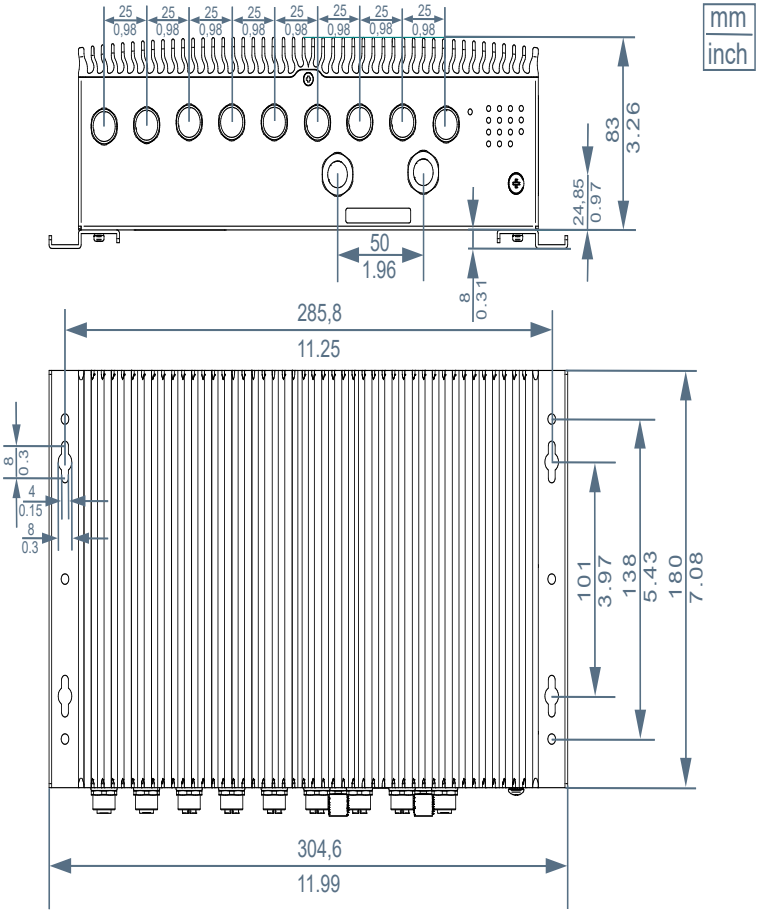
9.3. Power consumption/power output

Table 13. Power consumption/power output

Device name	Total power consumption	Total Power output
Eagle40-6M	25 W	85 Btu (IT)/h

9.4. Dimension drawings

9.4.1. Dimension drawings



9.5. Climatic conditions during operation

Table 14. Climatic conditions during operation

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	-40 °C ... -75 °C (-40 °F ... -103 °F)
Humidity	5 % ... 95 % (non-condensing)
Air pressure	min. 600 hPa (+4000 m ASL; +13123 ft ASL) max. 1060 hPa (-400 m ASL; -1312 ft ASL)

9.6. Climatic conditions during storage

Table 15. Climatic conditions during storage

Climatic conditions during storage		
Ambient temperature	-40 °C ... +85 °C (-40 °F ... +185 °F)	up to 3 months
	-40 °C ... +70 °C (-40 °F ... +158 °F)	up to 1 years
	-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 % ... 95 % (non-condensing)	
Air pressure	min. 600 hPa (+4000 m ASL; +13123 ft ASL) max. 1060 hPa (-400 m ASL; -1312 ft ASL)	

9.7. Immunity

Table 16. Immunity: Standard applications

EN 61131-2, CE, FCC – applies to all devices

Applicable standard		
IEC 60068-2-6, test Fc	Vibration	2 Hz ... 13.2 Hz with 1 mm (0.04 in) amplitude

Table 16. Immunity: Standard applications

EN 61131-2, CE, FCC – applies to all devices

(continued)

Applicable standard		
IEC 60068-2-64, test Fc	Vibration	13.2 Hz ... 100 Hz with 0.7 g (0.247 oz)
IEC 60068-2-27, test Ea	Shock	–

9.8. Electromagnetic compatibility (EMC)

Note: Use shielded data cables for gigabit transmission via copper cables. Use shielded data cables for all transmission rates to meet the requirements according to EN 50121-4 and marine applications.

9.8.1. EMC interference emission

Table 17. EMC interference emission: Standard applications

EN 61131-2, CE, FCC – applies to all devices

Applicable standard	
FCC 47 CFR Part 15	Class A
EN 55032	Class A

Table 18. EMC interference emission: Railway applications (trackside)

According to EN 50121-4

Applicable standard	
FCC 47 CFR Part 15	Class A
EN 61000-6-4	Fulfilled
EN 50155	Fulfilled

9.8.2. EMC interference immunity

Table 19. EMC interference immunity: Standard applications

EN 61131-2, CE, FCC – applies to all devices

Applicable standard		
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	max. 10 V/m
EN 61000-4-3	1.4 GHz ... 6.0 GHz	3 V/m
Fast transients (burst)		
EN 61000-4-4	Power supply connection	±2 kV
EN 61000-4-4	Data line	±1 kV
Voltage surges - power supply connection		
EN 61000-4-5	line/ground	±2 kV
EN 61000-4-5	line/line	±0.5 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

Table 20. EMC interference immunity: Railway applications (trackside)

According to EN 50121-4

Applicable standard		
Electrostatic discharge		
EN 61000-4-2	Contact discharge	±6 kV
EN 61000-4-2	Air discharge	±8 kV
Electromagnetic field		
EN 61000-4-3	80 MHz ... 1000 MHz	max. 20 V/m
EN 61000-4-3	1.4 GHz ... 6.0 GHz	10 V/m
Fast transients (burst)		

Table 20. EMC interference immunity: Railway applications (trackside)

According to EN 50121-4

(continued)

Applicable standard		
EN 61000-4-4	Power supply connection	±2 kV
EN 61000-4-4	Data line	±2 kV
Voltage surges - power 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

Table 21. EMC interference immunity: Railway applications (on vehicles)

According to EN 50155

Applicable standard		
Electrostatic discharge		
EN 61000-4-2	Contact discharge	±6 kV
EN 61000-4-2	Air discharge	±8 kV
Electromagnetic field		
EN 61000-4-3	80 MHz ... 1000 MHz	max. 20 V/m
EN 61000-4-3	1.4 GHz ... 6.0 GHz	10 V/m
Fast transients (burst)		
EN 61000-4-4	Power supply connection	±2 kV
EN 61000-4-4	Data line	±2 kV
Voltage surges - power 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

9.9. Network range

Note: The cable lengths specified for the transceivers apply for the respective fiber data (fiber attenuation and Bandwidth Length Product BLP/ Dispersion).

9.9.1. Twisted pair port 10/100/1000/2500 Mbit/s

Table 22. Network range: 10/100/1000/2500 Mbit/s twisted pair port

10/100/1000/2500 Mbit/s twisted pair port	
Length of a twisted pair segment	max. 100 m (328 ft) (for Cat6a cable)

10. Scope of delivery

Table 23. Scope of delivery

Amount	Article
1 ×	Device
1 ×	Safety and general information sheet
1 ×	Open Source Information
1 ×	5-pin “K”-coded M12-Power connector for power supply

11. Order numbers

11.1. Device variants

Device	Order number
EAGLE40-6TX-EECC-HV (EAGLE40-066T6EEEE9HSSR**ANF**XX.X.XX No additional modules, firewall only	942300301
EAGLE40-6TX-EECC-HV-UN (EAGLE40-066T6EEEE9HSSR**AUN**XX.X.XX Unified Protection Suite (All enforcers: DNP3 + Modbus + OPC)	942300302

11.2. Accessories

You find more information on available accessories in the Belden Online Catalog at *https://catalog.belden.com*.

Note: Some products recommended as accessories do not support the entire temperature range specified for the device and can thus restrict the possible range of usage for the overall system.

Table 24. General accessories

Article	Order number
Field attachable connector for the power supply, M12, “K”-coded, for crimp connections with wire cross-section 1.5 mm² (16 AWG)	934935002
Network management software Industrial HiVision	943156xxx
Protection screw for M12 socket, metal, IP65/67/69K (25 pieces)	942057001
Protection screw for M12 socket, plastic, IP65/67 (25 pieces)	942057002
Terminal cable	943902001
AutoConfiguration Adapter ACA22-M12-USB (EEC), cordless	942306001

12. Underlying technical standards

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.

If your device has a shipping approval according to DNV, you find the approval mark printed on the device label. You will find out whether your device has other shipping approvals on the Hirschmann website at: *https://www.belden.com* in the product information.

Table 25. List of the technical standards

EN 45545-2	Railway applications – Fire protection in railway rolling stock – Part 2: Requirements regarding the reaction to fire of materials and components
EN 50155	Railway applications – Electronic equipment on rail vehicles
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
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
EN 62368-1	Information technology equipment – Safety – Part 1: General requirements
FCC 47 CFR Part 15	Code of Federal Regulations
IEEE 802.3	Ethernet

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:
https://www.belden.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.

Customer Innovation Center

The Customer Innovation Center is ahead of its competitors on three counts with its complete range of innovative services:

- Consulting incorporates comprehensive technical advice, from system evaluation through network planning to project planning.
- Training offers you an introduction to the basics, product briefing and user training with certification.

  You find the training courses on technology and products currently available at:
  https://www.belden.com/solutions/customer-innovation-center
- Support ranges from the first installation through the standby service to maintenance concepts.

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https://www.belden.com/solutions/customer-innovation-center


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