Legal Information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠️ **DANGER**
Indicates that death or severe personal injury *will* result if proper precautions are not taken.

⚠️ **WARNING**
Indicates that death or severe personal injury *may* result if proper precautions are not taken.

⚠️ **CAUTION**
With a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

**CAUTION**
Without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

**NOTICE**
Indicates that an unintended result or situation can occur if the relevant information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.
Qualified Personal

The product/system described in this documentation may be operated only by personal qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

![WARNING]

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problem. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by R are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.
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1 Introduction

1.1 Introduction to the Bus Analyzer Agent XM400

Purpose of the Operating Instructions (compact)
These operating instruction (compact) contain information with you will be able to install and connect up a device of the Bus Analyzer product line.

Validity of the Operating Instructions (compact)
These Operating Instructions (compact) are valid for the product group Bus Analyzer product line.

Names of the devices in these operating instructions

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
<th>Terms used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product line</td>
<td>For all devices and variants of all product groups within the Bus Analyzer product line, the term Bus Analyzer is used</td>
<td>Bus Analyzer</td>
</tr>
<tr>
<td>Product group</td>
<td>For all devices and variants of a product group, only the product group is used.</td>
<td>Agent XM400</td>
</tr>
<tr>
<td>Device</td>
<td>For a device, only the device name is used.</td>
<td>Bus Analyzer Agent XM400</td>
</tr>
<tr>
<td>Variant</td>
<td>For a variant of the device, the device name has the appropriate variant added to it in brackets (with TAP)</td>
<td>(-)</td>
</tr>
<tr>
<td>All variants of a device</td>
<td>For all variants of the device, the device name has (all) added to it.</td>
<td>(-)</td>
</tr>
</tbody>
</table>

Where can I find more detailed information on the product?
A CD is supplied with the Bus Analyzer on which you will find a detailed description of the products in PDF format in the relevant subfolder.
## 1.2 Produktgruppe Bus Analyzer

<table>
<thead>
<tr>
<th>Product line</th>
<th>Product group</th>
<th>Device Bus Analyzer</th>
<th>(Variant)</th>
<th>[Order number]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Analyzer</td>
<td>Agent XM400</td>
<td>Bus Analyzer Agent XM400</td>
<td>(-)</td>
<td>9AE4140-2AA00</td>
</tr>
</tbody>
</table>

## 1.3 Type designations

**Structure of the type designation**

The type designation of the Bus Analyzer:

9AE4140-2AA00
2 Safety notes

2.1 Important notes on using the Bus Analyzer product family

Safety notices on the use of the devices

The following safety notices must be adhered to when setting up and operating the device and during all associated work such as installation, connecting up, replacing devices or opening the device.

General information

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety extra low voltage</strong></td>
</tr>
</tbody>
</table>

The equipment is designed for operation with Safety Extra-Low Voltage (SELV) by a Limited Power Source (LPS). (This does not apply to 100 V … 240 V devices.)

This means that only SELV / LPS (Limited Power Source) complying with IEC 60950-1 / EN60950-1 / VDE 0805-1 must be connected to the power supply terminals. The power supply unit for the equipment power supply must comply with NEC Class 2, as described by the National Electrical Code ® (ANSI / NFPA 70).

There is an additional requirement if devices are operated with a redundant power supply:

If the equipment is connected to a redundant power supply (two separate power supplies), both must meet these requirements.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening the device</strong></td>
</tr>
</tbody>
</table>

DO NOT OPEN WHEN ENERGIZED

General notices regarding use in hazardous areas

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk of explosion when connecting or disconnecting the device</strong></td>
</tr>
</tbody>
</table>

EXPLOSION HAZARD

DO NOT CONNECT OR DISCONNECT EQUIPMENT WHEN A FLAMMABLE OR COMBUSTIBLE ATMOSPHERE IS PRESENT
WARNING
Replacing components
EXPLOSION HAZARD
SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I; DIVISION OR ZONE.

WARNING
Requirements for the cabinet/enclosure
When used in hazardous environments corresponding to Class I, Division 2 or Class I, Zone 2, the device must be installed in a cabinet or a suitable enclosure.

Security-message
Note
For the automation and drives product portfolio, Siemens provides IT security mechanism to support secure operation of the plant/machine. Our products are continuously being further developed also taking into account the aspect of IT security. We therefore recommended that you regularly check for updates of our products and that you only use the latest versions. You will find information in:
Industrial Security (http://www.siemens.com/industrialsecurity)

Here, you can register for a product-specific newsletter.

For the secure operation of a plant/machine, it is also necessary to integrate the automation components in a full IT security concept for the entire plant/machine that represents the state of the art IT technology. You will find information on this in:
Siemens Industry online support (http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo2&aktprim=99&lang=de)

Products from other manufacturers that are being used must also be taken into account.
**Notices for use in hazardous areas according to ATEX**

<table>
<thead>
<tr>
<th>WARNING</th>
<th>Requirements for the cabinet/enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To comply with EU Directive 94/9 (ATEX95), this enclosure must meet the requirements of at least IP54 in compliance with EN 60529.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
<th>Suitable cables for temperatures in excess of 70 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In the cable or conduit entry point exceeds 70°C or the branching point of conductors exceeds 80°C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 50°C, only use cables with admitted maximum operating temperature of at least 80°C.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
<th>Protection against transient voltage surges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provisions shall be made to prevent the rated voltage from being exceeded by transient voltage surges of more than 40%. This criterion is fulfilled, if supplies are derived from SELV (Safety Extra-Low Voltage) only.</td>
</tr>
</tbody>
</table>
2.2 Important notes on using the device in hazardous areas

**WARNING**

WARNING – EXPLOSION HAZARD –

DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS

**WARNING**

Restricted area of application

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

**WARNING**

Restricted area of application

This equipment is suitable for use in Class I, Zone 2, Group IIC or non-hazardous locations only.
3 Description

3.1 Unpacking and checking

Unpacking, Checking

1. Make sure that the package is complete.
2. Check all the parts for transport damage.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use any parts that show evidence of damage.</td>
</tr>
<tr>
<td>If you use damaged parts, there is no guarantee that the device will function according to the specification.</td>
</tr>
<tr>
<td>If you use damaged parts, this can lead to the following problems:</td>
</tr>
<tr>
<td>- Injury to person</td>
</tr>
<tr>
<td>- Loss of the approvals</td>
</tr>
<tr>
<td>- Violation of the EMC regulations</td>
</tr>
<tr>
<td>- Damage to the device and other components</td>
</tr>
</tbody>
</table>

Use only undamaged parts.

3.2 Bus Analyzer components of the product

Note
When shipped, the slots for the media modules have a dummy cover fitted.

<table>
<thead>
<tr>
<th>Device: Bus Analyzer</th>
<th>Variant</th>
<th>Plug-in terminal block</th>
<th>Device</th>
<th>BAK</th>
<th>Product CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent XM400</td>
<td>(-)</td>
<td>2-pin</td>
<td>2-pin</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
4 Devicedescription

4.1 Bus Analyzer Agent device view

Possible attachments

The Bus Analyzer Agent XM400 has 9 Ethernet ports.

- 9 electrical Ethernet RJ45 jacks (with securing collar) for connection of end devices or other network segments
- 4 Slots for SFP Transceiver
- 1 USB Master connector
- 1 plug-in terminal block 2-pin for connecting the power supply and the digital in/Outputs
- 1 plug-in terminal block 2-pin for connecting the digital in/Outputs
- Function Extender Interface, on the right side of the device

Bild 1 Bus Analyzer Agent XM400
4.2 Real Time Ethernet Ports TAP A, TAP B

The Bus Analyzer Agent XM400 contains 2 TAPs (Test Access Points) for Fast Ethernet recording. The RJ45 sockets T1/T2 and T3/T4 are internally connected to a TAP each.

The Ethernet frames are forwarded from one TAP port to the other without delay. This also works if the Bus Analyzer Agent M400 is powered off. It is not possible for the Bus Analyzer Agent M400 to send packets out of the TAP ports. Connect networks to be analyzed here. Link speed is 100 Mbit/s.

TAP A is activated if a cable is plugged to T1 or T2.
TAP B is activated if a cable is plugged to T3 or T4.

The TAP ports have no connection to the basic device SCALANCE XM400. The Ports T1 to T4 are only controlled by the Bus Analyzer Agent XM400.
4.3 Ethernet Ports Network P1 (C1) to P4 (C4)

These 4 ports are built as COMBO ports. With these ports the Bus Analyzer Agent XM400 can be active connected to a Ethernet network. With these ports the Bus Analyzer Agent XM400 can send and receive data.

The ports P1 (1) to P4 (C4) have no connection to the basic device SCALANCE XM400. The Ports P1 (1) to P4 (C4) are only controlled by the Bus Analyzer Agent XM400.

4.3.1 Combo Ports

Characteristics

Combo ports ist he name fort wo communication ports. A combo port has the two following jacks:

- A fixed RJ-45 port
- An SFP transceiver slot that can be equipped individually

Of these two ports, only one can ever be active. Using the mode, you can decide how the ports are prioritized.

The por name is the same on both jacks of the combo port, for example “P3C”. For each combo port there is an LED. The LED for the combo ports can be identified by a vertical line and the word “COMBO”. The labeling of the combo port LEDs does not differ from that of the other LEDs, e.g. “P3”.

Setting the mode

The following modes can be configured for a combo port:

Mode 1: **auto**

The SFP transceiver port has priority. As soon as an SFP tranceiver is plugged in, an existing connection on the fixed RJ-45 port is terminated. If no SFP transceiver is plugged in, a connection can be established via the fixed RJ-45 port.

Mode 2: **rj45**

The fixed RJ-45 port is independent of the SFP Traceiver port.
Mode 3: sfp

The SFP transceiver port is independent of the fixed RJ-45 port.

The factory setting for the combo port is mode 1 : auto.
You configure the mode with Web Based Management or the Command Line interface.

4.4 Control Port M1

M1: RJ45 Ethernet Port
connect the Bany Agent to a PC via this port.

4.5 USB Host

The hardware contains one USB host port. Mass storage devices can be connected here.
The standards USB 1.1 und USB 2.0 are supported.
The USB interface provide a power supply for connected devices with max. 500mA.
4.6 Digital I/O

The hardware has 1 connector which can be used as a digital input or a digital output. The signals are galvanic isolated by opto couplers.

DI/DO: digital input or output
SGND: signal ground

Input:

log. 0: no input signal or 0V
log. 1: 24V, max. 50mA

Output:

The output can drive 50mA maximum.
log. 0: internal 10k resistor to ground
log. 1: output pulled to ground by photo transistor
4.7 Description of the LEDs

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L</strong></td>
<td>Lights up green when the power supply is connected.</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td>Fault</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>USB active</td>
</tr>
<tr>
<td><strong>M1</strong></td>
<td>Control Port connection Bus Analyzer Agent XM400 with BANY Scope</td>
</tr>
<tr>
<td></td>
<td>Link yellow / Traffic green</td>
</tr>
<tr>
<td><strong>P1 (C1) to P4 (C4)</strong></td>
<td>Ethernet ports Link yellow / Traffic green</td>
</tr>
<tr>
<td><strong>T1 to T4</strong></td>
<td>TAP ports Link yellow / Traffic green</td>
</tr>
</tbody>
</table>

4.8 Button

There is a reset button below the USB port.
After a reset, the box is reset and switches to startup mode.
While the startup LED is flashing, the box cannot be accessed from the Web interface or via BANY Scope.

4.9 Function Extender Interface

The Function extender interface is located on the right side of the device. Via this interface the SCALANCE XM400 basic device can mirror his Ethernet ports tot the Bus Analyzer Agent XM400. There are 4 Session's available. Over each Session can 1 port from the XM400 mirrored tot the Bus Analyzer Agent XM400.

This interface allows only data traffic from the XM400 to the Bus Analyzer Agent XM400.

This interface is fully controlled from the SCALANCE XM400.
5 Device Variants

5.1 Bus Analyzer Agent Operation Mode Stand Alone

In the operation mode Stand Alone is the Function Extender interface not active.
5.2 Bus Analyzer Agent XM400 Operation Mode Function Extender

In the operation mode Function Extender the Bus Analyzer must be plugged with the FC Interface on to the basic device SCALANCE XM400.

The power supply is staken over from the SCALANCE XM400 aus.

<table>
<thead>
<tr>
<th>WARNUNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
</tr>
</tbody>
</table>

The Power Supply will be taken over from the basic device SCALANCE XM400 via the FC interface connector.

It is not allowed to connect the Power Supply from the Bus Analyzer Agent on the terminals L+ and M.

The Bus Analyzer will automatically switched into the Function Extender Mode.
The Bus Analyzer is Hot Pluggable. The Bus Analyzer can be plugged on or during operation of the XM400 at any time.
In the operation mode Function Extender the following funktionen are disabled:

- The Ports P1 to P4
- The Ports C1 to C4
- The Ports T1 to T4
6 Assembling

6.1 Installation

**WARNING**
Suitable installation location at temperatures above 50°C

If a device is operated in an ambient temperature of more than 50°C, the temperature of the device housing may be higher than 70°C.

**WARNING**
Use of approved components

- Use only approved components, for example supporting brackets, SFPs, 19-inch-racks
- Create any supports you require according the dimension drawing

**WARNING**
Suitable cables for temperatures in excess of 70 °C

In the cable or conduit entry point exceeds 70°C or the branching point of conductors exceeds 80°C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 50°C, only use cables with admitted maximum operating temperature of at least 80°C.

**CAUTION**
Provide suitable shade to protect the Bus Analyser against direct sunlight. This avoids unnecessary warming of the Bus Analyzer and prevents premature aging of the Bus Analyser and cabling.

**NOTICE**
When installing and operating the device, keep to the installation instructions and safety-related notices as described in this document and in the manual SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks.
6.2 Installation options

Installing the Bus Analyzer

The Bus Analyzer can be installed in various ways:

- Installation on a 35 mm DIN rail
- Installation on a SIMATIC S7-300 standard rail
- Wall mounting

For the possible types of installation, refer to the section „General Installation“ in this document.

6.3 General installation

6.3.1 Installation on a DIN rail

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the Bus Analyzer is liable to be subjected to serve vibration (&gt; 10 g), use an S7-300 standard rail for installation. The DIN rail does not provide adequate support if vibration exceeds 10 g.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>When used in shipbuilding, installation on a 35 mm DIN rail is not permitted.</td>
</tr>
</tbody>
</table>

In ships, the 35 mm DIN rail does not provide adequate support.

Valid only for the appropriately marked devices in the various product groups. This is indicated by a note in the installation options table. Refer to the relevant table in the section Technical specification (subsection, construction, installation and environment).
Installation

Install the Bus Analyzer on a 35 mm DIN rail complying with DIN EN 50022.

1. Hang the Bus Analyzer on the DIN rail and then push it in against the rail until it clips into place.
2. Fit the connectors for the power supply.
3. Fit the connectors for the digital In/Outputs.
4. Insert the terminal blocks into the sockets on the Bus Analyzer.

Removing

To remove an Bus Analyzer from the DIN rail:

1. Disconnect all cables from the Bus Analyzer
2. Release the lower part of the switch away from the DIN rail.
6.3.2 Installation on a standard rail S7 – 300 rail

Installation on a SIMATIC S7-300 standard rail

To install the device on an S7-300 standard rail, follow the steps below:

1. Place the second housing guide of the device on the top edge of the standard rail.
2. Screw the device to the lower part of standard rail with supplied screw.
3. Fit the connectors for the power supply, see the section “Power supply”.
4. Fit the connectors for the digital In/Output, see section “digital In/Output”.
5. Insert the terminal blocks into the sockets on the device.

Uninstalling

To remove the device from a standard rail, follow the steps below:

1. First disconnect all connected cables.
2. Loosen the screws on the underside of the standard rail and lift the device away from the standard rail.
6.3.3 Installing on a standard S7-1500 rail

Installing on a S7 – 1500 standard rail.

To install the device on an S7-300 standard rail, follow the steps below:

1. Place the second housing guide of the device on the top edge of the standard rail.
2. Screw the device to the lower part of standard rail with supplied screw.
3. Fit the connectors for the power supply, see the section “Power supply”.
4. Fit the connectors for the digital In/Output, see section “digital In/Output”.
5. Insert the terminal blocks into the sockets on the device.

Uninstalling

To remove the device from a standard rail, follow the steps below:

1. First disconnect all connected cables.
2. Loosen the screws on the underside of the standard rail and lift the device away from the standard rail.
Fitting an extender

Position

The following figures shows the elements required to connect two devices.

1 Locking mechanism (on the rear of the device)
2 Centering pin
3 Multiple connector for connection to the expansion interface
4 Expansion interface with cover

Via the expansion interface, the basic device supplies the extenders with power and manages the ports of the extenders.

Types of installation

You have the following options when connecting devices:

You can connect the device and mount them together on a DIN or S7 standard rail.
You can mount a device on a DIN or S7 standard rail and expand it later.

Note
For mounting on a rail as well as for removing from the rail, plan enough space between the device, see section „Extender dimension drawing“.
Fitting and removing an extender

**Fitting an extender**

To fit an extender, follow the steps below:

1. Remove the cover of the expansion interface on the basic device.
2. Fit the two devices together so that the two centering pins are accommodated by the opposing openings.
3. Press the device together until they are flush.

The centering pin click audibly into place. The locking device is automatically passed up briefly as this happened.

**Removing an extender**

To remove an extender, follow the steps below:

1. Release the locking device using a screwdriver. The two devices are separated from each other.
2. Pull the two devices apart in a straight line until the two centering pins are completely out of openings.
Exchanging extenders – with change of medium

Exchange Extender

If you replace an electrical extender with an optical extender (or vice versa), this can lead to malfunctions.

The IE switch therefore reacts as follows:
The extender is disabled.
The red fault LED “F” lights up.
The event is shown in the log table in WBM.

Enabling the extender

To activate the replacement extender, restart the IE switch:
The extender is active.
The red fault LED “F” goes off.
6.4 Generell notes for SFP tranceivers

**WARNING**
Use only approved SFP tranceivers

If you use SFP tranceivers that have not been approved by Siemens AG, there is no guarantee that the device will function according to its specification.

If you use unapproved SFP tranceivers, this can lead to the following problems:
- Damage to the device
- Loss of the approvals
- Violation of EMC regulations
- Use only approved SFP tranceiver

**Note**

Plugging and pulling during operation

The tranceivers can be plugged and pulled during operation.

**Documentation for SFP tranceivers**

You will find detailed information on installation in the compact operating instruction „SFP tranceivers SFP/SFP+“. You will find the compact operating instruction „SFP tranceivers SFP/SFP+“ as follows:

On the data medium that ships with some products, under the file name “BAK_SFP-SFP_76.pdf”

Product CD / product DVD
SIMATIC NET Manual Collection

On the internet under the following entry ID:

59604783 (http://support.automation.siemens.com/WW/view/de/59604783)
7 Connecting

7.1 Notes on commissioning

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commissioning devices with redundancy mechanisms.</td>
</tr>
<tr>
<td>If you use redundancy mechanisms, open the redundant path before you insert a new or replacement device in an operational network. A bad configuration or attachment of the Ethernet cables to incorrectly configured ports causes overload in the network and a breakdown in communication.</td>
</tr>
</tbody>
</table>

7.2 Power supply - general

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger to life: 1000 … 240 V power supply possible.</td>
</tr>
<tr>
<td>Please note that the device may have a 100 to 240 V or a 24 V power supply,</td>
</tr>
<tr>
<td>You can recognize the type of power supply on the type plate, a warning on the device and the labeling of the connector to the power supply.</td>
</tr>
<tr>
<td>The device are also listed in a table for 100 to 240 V voltage and a table for 24 V safety extra-low voltage (SELV).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coding of the terminal blocks.</td>
</tr>
<tr>
<td>The 100 to 240 V and 24 V terminal blocks are coded for installation.</td>
</tr>
</tbody>
</table>
7.3 Power supply

7.3.1 Connecting the power supply

24 V safety extra-low voltage (SELV)

⚠️ **WARNING**

- The Bus Analyzer is designed for operation with Safety Extra Low Voltage (SELV). This means that only SELV complying with IEC 60950-1 / EN60950-1 / VDE0805 can be connected to the power supply terminals.
- The power supply unit for the Bus Analyzer power supply must meet NEC Class 2 as described by the National Electrical Code ® (ANSI/NFPA 70).
- The power of all connected power supply units must total the equivalent of a power source with limited power (LPS limited power source).
- If the device is connected to a redundant power supply (two separate power supplies), both power supplies must meet these requirements.
- The digital In/Outputs can be subjected to a maximum load of 100 mA (safety extra-low voltage (SELV), DC 24 V).
- Never operate the device with AC voltage or DC voltage higher than 32 V DC.

⚠️ **CAUTION**

If the Bus Analyzer are supplied over long 24 V power supply lines or networks, measures are necessary to prevent interference by strong electromagnetic pulses on the supply lines. These can result, for example, due to lightning or switching of large inductive loads.

One of the tests used to attest the immunity of devices of the Bus Analyzer electromagnetic interference is the “surge immunity test” according to EN61000-4-5. This test requires overvoltage protection for the power supply lines. A suitable device is, for example, the Dehn Blitzductor VT AD 24V Art-Nr. 918 402 or comparable protective element.

Vendor: DEHN+SÖHNE GmbH+Co.KG, Postfach 1640, D-92306 Neumark, Germany.
Connecting to the supply voltage (SELV)

The power supply is connected using a 2-pin plug-in terminal block. The power supply is connected over a high resistance with the enclosure to allow an undergrounded set up. The two power inputs are non-floating.

There is no data buffer. In case of a data buffering a buffered power supply must be used.

Terminal block assignment (2-pin)

Pinout of the safety extra-low voltage (SELV)

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Assignment (24 VDC)</th>
<th>Labeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Ground power supply</td>
<td></td>
</tr>
<tr>
<td>L+</td>
<td>Power, 24 V DC</td>
<td></td>
</tr>
</tbody>
</table>

To wire up the power connector, use a copper cable of category 18 - 12 AWG or cable with a cross-section of 0.75 to 2.5 mm².

7.3.2 24 VDC – Bus Analyzer in Operation Mode Stand Alone

24 V safety extra-low voltage overview

<table>
<thead>
<tr>
<th>Product group</th>
<th>Device: (Variant)</th>
<th>Safety extra-low voltage (SELV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Analyzer</td>
<td>Agent XM400 (-)</td>
<td>24 V DC</td>
</tr>
</tbody>
</table>

7.3.3 24 VDC – Bus Analyzer in Operation Mode Function Extender

In case, the Bus Analyzer Agent XM400 is plugged together with the XM400, the XM400 will supply the Bus Analyzer Agent XM400 after a small automatic handshake. The power supply pins L1 and M will be deactivated.

The control of the power supply from XM400 is fully kept from the SCALANCE XM400.
7.4 Digital In/Outputs

The digital Inputs and Outputs are floating switches by breaking the contact.

7.4.1 Connecting the digital In/Outputs

The digital In/Outputs contacts are connected to a 2-pin plug-in terminal block. The digital In/Outputs can be subjected to a maximum load of 100 mA (safety extra low voltage SRLV 12 V DC / 24 VDC).

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Assignment (24 VDC)</th>
<th>Labeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI/DO</td>
<td>In/Output 24 V DC</td>
<td></td>
</tr>
<tr>
<td>SGND</td>
<td>Ground for In/Output</td>
<td></td>
</tr>
</tbody>
</table>

7.5 Connecting functional ground

Installation on a DIN rail

The device is grounded over the DIN rail.

S7 standard rail

The device is grounded over ist rear panel and the neck of the screw.
8 Technical data

Note

Validity of the technical specifications

All the technical specifications described in this section that is not assigned to a specific device variant, version or a media module, apply to all devices variants/versions of the product group.

8.1 Construction, installation and environmental conditions

Construction

<table>
<thead>
<tr>
<th>Bus Analyzer Agent XM400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension (W x H x D)</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Degree of protection</td>
</tr>
</tbody>
</table>

Installation options

<table>
<thead>
<tr>
<th>Installation options</th>
</tr>
</thead>
<tbody>
<tr>
<td>• DIN rail</td>
</tr>
<tr>
<td>• S7-300 standard rail</td>
</tr>
<tr>
<td>• S7-1500 standard rail</td>
</tr>
</tbody>
</table>

Note: When used in shipbuilding, installation on a 35 mm DIN rail is not permitted. In ship, the 35 mm DIN rail does not provide adequate support.
<table>
<thead>
<tr>
<th>Storage/transport temperature</th>
<th>Operating temperature</th>
<th>Max. relative humidity in operation at 25°C</th>
<th>Max. ambient temperature at operating altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40°C … +70°C</td>
<td>Horizontal installation: -40°C … +70°C</td>
<td>&lt; 95 % (no condensation)</td>
<td>Horizontal installation: Max. 65°C as of 2000m Max. 60°C as of 3000m</td>
</tr>
<tr>
<td></td>
<td>Vertical installation: -40°C … +50 °C</td>
<td></td>
<td>Vertical installation: Max. 45°C as of 2000m Max. 40°C as of 3000m</td>
</tr>
</tbody>
</table>

The permitted operating temperature depends on how the mounting device was installed. The installation is horizontal if the device labeling is from left to right. With a vertical installation, the device labeling is rotated through 90°. 
8.2 Connectors and electrical data

Connection for end devices or network components

<table>
<thead>
<tr>
<th>Max. number.</th>
<th>9 Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical (via Twisted Pair)</td>
<td>9 x RJ45-jacks with MDI-X-assignment 10/100/1000 Mbit/s (half-/full duplex)</td>
</tr>
<tr>
<td>1 USB</td>
<td>USB 1.1 and USB 2.0, max. 500 mA</td>
</tr>
</tbody>
</table>

Electrical data: Power supply

<table>
<thead>
<tr>
<th>Device version (power supply)</th>
<th>Redundant power supply unit</th>
<th>Redundant power supply possible</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC</td>
<td>No</td>
<td>No</td>
<td>24 V DC (18 ... 32 VDC)</td>
</tr>
</tbody>
</table>

Electrical data: Current consumption and power loss

<table>
<thead>
<tr>
<th>Device version (power supply)</th>
<th>Current consumption</th>
<th>Effective power loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC</td>
<td>0.6 A</td>
<td>15 W</td>
</tr>
</tbody>
</table>

Electrical Data: Overcurrent protection

<table>
<thead>
<tr>
<th>Device version (power supply)</th>
<th>Overcurrent protection of the power supply Non-replaceable fuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC</td>
<td>2 A / 32 V</td>
</tr>
</tbody>
</table>

Electrical data: Digital In/Output

<table>
<thead>
<tr>
<th>Device version (power supply)</th>
<th>Voltage via digital In/Output</th>
<th>Switching capacity (resistive load)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC</td>
<td>24 VDC</td>
<td>50 mA</td>
</tr>
</tbody>
</table>

Plug-in terminal block for connectors of the power supply and signaling contact

<table>
<thead>
<tr>
<th>Device version (power supply)</th>
<th>Spannungsversorgung</th>
<th>Digital Ein/Ausgänge</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC 24 V ohne TAP</td>
<td>1 x 2-pin</td>
<td>1 x 2-pin</td>
</tr>
</tbody>
</table>
### 8.3 Cable lengths

Permitted cable lengths (copper cable – Fast Ethernet)

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Accessory (Plug, Outlet, TP Cord)</th>
<th>Permitted cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE TP Torsion Cable</td>
<td>with IE FC Outlet RJ45, +10m TP Cord, wit IE FC RJ45 Plug 180</td>
<td>0 … 45 m + 10 m TP Cord</td>
</tr>
<tr>
<td>IE FC TP Marine Cable</td>
<td>with IE FC Outlet RJ45, +10m TP Cord, wit IE FC RJ45 Plug 180</td>
<td>0 … 55 m + 10 m TP Cord</td>
</tr>
<tr>
<td>IE FC TP Trailing Cable</td>
<td>with IE FC Outlet RJ45, +10m TP Cord, wit IE FC RJ45 Plug 180</td>
<td>0 … 85 m + 10 m TP Cord</td>
</tr>
<tr>
<td>IE FC TP Flexible Cable</td>
<td>with IE FC Outlet RJ45, +10m TP Cord, wit IE FC RJ45 Plug 180</td>
<td>0 … 100 m + 10 m TP Cord</td>
</tr>
</tbody>
</table>

Permitted cable lengths (copper cable – Gigabit Ethernet)

<table>
<thead>
<tr>
<th>Leitungstyp</th>
<th>Accessory (Plug, Outlet, TP Cord)</th>
<th>Permitted cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE FC Standard Cable, 4 x 2, AWG24</td>
<td>with IE FC RJ45 Plug 180, 4 x 2</td>
<td>0 … 90 m</td>
</tr>
<tr>
<td>IE FC Flexible Cable, 4 x 2, AWG24</td>
<td>with IE FC Outlet RJ45, +10m TP Cord</td>
<td>0 … 90 m + 10 m TP Cord</td>
</tr>
<tr>
<td>IE FC Standard Cable, 4 x 2, AWG22</td>
<td>with IE FC Outlet RJ45, +10m TP Cord</td>
<td>0 … 90 m + 10 m TP Cord</td>
</tr>
<tr>
<td>IE FC Flexible Cable, 4 x 2, AWG22</td>
<td>with IE FC Outlet RJ45, +10m TP Cord</td>
<td>0 … 90 m + 10 m TP Cord</td>
</tr>
</tbody>
</table>
8.4 Other properties

Mean Time between failure (MTBF)

<table>
<thead>
<tr>
<th>MTBF</th>
<th>&lt; 40 years</th>
</tr>
</thead>
</table>

MTBF < 40 years
9 Dimension drawings
10 Approvals

10.1 Bus Analyzer Agent X200 approvals, certificates

Not

The specified approvals only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

EC directives

SIMATIC NET products meet the requirement and aims of the following EC directives.

EMC directive (electromagnetic compatibility)

The SIMATIC NET product meets the requirement of the EC Directive: 2004/108/EG „electromagnetic compatibility“

The product is designed for use in the following areas:

<table>
<thead>
<tr>
<th>Area of application</th>
<th>Emission</th>
<th>Immunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial area</td>
<td>EN 61000-6-4: 2011</td>
<td>EN 61000-6-2: 2005</td>
</tr>
</tbody>
</table>

⚠️ WARNING

Personal injury and damage to property occur.

The installation of expansions that are not approved for SIMATIC NET products or their target systems may violate the requirements and regulations for safety and electromagnetic compatibility.

Only use expansions that are approved for the system.
-Keep to the installation guidelines
The product meets the requirements if you adhere to the installation and safety instructions contained in this documentation and in the following documentation when installing and operating the product.

-You can always find the latest documentation on the Internet!
The current description of the currently available products can always be found on the Internet under specified entry IDs/Internet pages:
SIMATIC NET Industrial Twisted Pair and Fiber Optic Networks Manual 8763736
EMC Installation Guideline, Planning Guide 28518276

-Working on the product
To protect the product from electrostatic discharge, personnel must first discharge any electrostatic charge from their body before touching the product.

Note
Note for the manufacturers of machines
This product is not a machine in the sense of the EC Machinery Directive. There is therefore no declaration of conformity relating to the EC Machinery Directive 2006/42/EEC for this product.

Machinery directive
The product is a component in compliance with the EC 2006/42/EG. According to the machinery directive, we are obliged to point out that the product described is intended solely for installation in a machine. Before the final product can be put into operation, it must be tested to ensure that it confirms with the directive 2006/42/EEC.

Note
Note for the manufacturers of machines
This product is not a machine in the sense of the EC Machinery Directive. There is therefore no declaration of conformity relating to the EC Machinery Directive 2006/42/EEC for this product.

Note for manufacturers of machines
This product is not a machine in the sense of the EC Machinery Directive. There is therefore no declaration of conformity relating to the EC Machinery Directive 89/392/EEC for this product.
Explosion protection directive (ATEX)

The SIMATIC NET products meets the requirements of the EC directive 94/9/EC “Equipment and Protective Devices for Use in Potentially Explosive Atmospheres”.

![WARNING]

When using (installing) SIMATIC NET products in hazardous area zone 2, make absolutely sure that the associated conditions are adhered to:

- Approval of SIMATIC/SIMATIC NET Products for Direct Installation in Ex-Zone 2

You will find this on the Internet on the pages of Siemens Industry Automation Customer Support under the following entry ID:

33118441 ([http://support.automation.siemens.com/WW/view/de/33118441](http://support.automation.siemens.com/WW/view/de/33118441))

“Entry list“ tab > entry type „Certificates“

ATEX Code:

II 3 G Ex nA II T4 KEMA 07 ATEX 0145X

The product meets the requirements of the standards

EN 60079-15: 2005 (Electrical apparatus for potentially explosive atmospheres; Type of protection „n“)

Und EN 60079-0: 2006

FM approval

The product meets the requirements of the standards

Factory Mutual Approval Standard Class Number 3611

FM Hazardous (Classified) Location Electrical Equipment:

Non Incentive / Class I / Division 2 / Group A, B, C, D / T4 und

Non Incentive / Class I / Zone 2 / Group IIC / T4

Notice for Australia

The product meets the requirements of the AS/NZS 2064 standard (Class A).
cULus Approval for Information Technology Equipment

  cULus Listed 60E9 I. T. E.
  Underwriters Laboratories Inc. complying with
  • UL 60950-1 (Information Technology Equipment)
  • CSA C22.2 No. 60950-1-03

  cULus Approval Hazardous Location
  
  cULus Listed 21BP I. T. E. FOR HAZ. LOC.
  Underwriters Laboratories Inc. complying with
  • UL 60950-1 (Information Technology Equipment)
  • CSA C22.2 No. 60950-1-03
  • UL 1604 und UL 2279
  or ANSIISA 12.12.01
  Approved for use in
  Cl. 1, Div. 2, GP. A, B, C, D, T4
  Cl. 1, Zone 2, GP. IIC T4

10.2 Bus Analyzer Conformity certificates

Declaration of Conformity

You will find the EC Declaration of Conformity for these products on the Internet at the following address:
http://support.automation.siemens.com/WW/view/de/33118441
(http://support.automation.siemens.com/WW/view/de/33118441)

  - Entry list
  - Entry type „Certificates“
  - Certificate type „Declaration of Conformity“

Example German: „EG-Konformitätserklärung SCALANCE X310“. Example English: „Declaration of Conformity SCALANCE X310“.
10.3 FDA and IEC approvals Bus Analyzer

The following devices meet the FDA and IEC requirements listed below:

<table>
<thead>
<tr>
<th>Product line</th>
<th>Product group</th>
<th>Device: Agent X200</th>
<th>(Variant)</th>
<th>Fullfills FDA and IEC requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Analyzer</td>
<td>Agent XM400</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note:
In the modular devices, the marking is provided by the modules and the SFP tranceivers.

![FDA and IEC approvals](image)

Figure FDA and IEC approvals
10.4 Overview of Bus Analyzer approvals

Overview of the approvals

<table>
<thead>
<tr>
<th>Device: Bus Analyzer</th>
<th>(Variant)</th>
<th>c-UL-us</th>
<th>c-UL-us for Hazardous Location</th>
<th>FM (1)</th>
<th>C-TICK</th>
<th>CE</th>
<th>ATEX95 Zone 2 (1)</th>
<th>E1</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL 60950 1</td>
<td>UL 1604 and UL2279 or ANSI/ISA 12.12.01</td>
<td>FM3611 Cl. 1, Div. 2 GP, A, B, C, D, T.. Cl. 1, Zone 2, GP, IIC, T.. Cl. 1, Zone 2, GP, IIC, T..</td>
<td>AS/NZS 2064 (Class A)</td>
<td>EN 6100-6-4 Class A, EN 61000-6-2</td>
<td>EN 60079-15 : 2005, EN 60079-0 : 2006 II 3 G Ex nA II T.. KEMAX 07 ATEX 0145X</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) For temperature information “T..” or the maximum ambient temperature “Ta:..”), refer to the type plate.

Note
Shipbuilding approval

No applications for shipbuilding approvals will be made for the Bus Analyzer

10.5 Mechanical stability (in operation) Bus Analyzer

<table>
<thead>
<tr>
<th>Device: Bus Analyzer</th>
<th>(Variant)</th>
<th>IEC 60068-2-6 vibration</th>
<th>IEC 60068-2-27 shock</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>5 – 9 Hz: 3.5mm 9 – 150 Hz: 1g 1 octace/min, 20 Sweeps</td>
<td>15 g, 11 ms duration 6 shocks per axis</td>
</tr>
<tr>
<td>(-)</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>