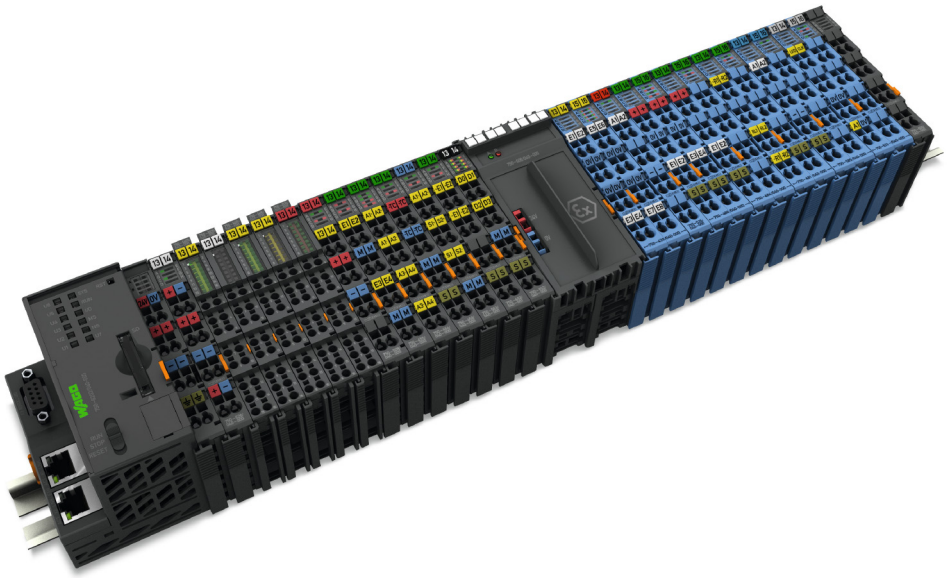
WAGO I/O System 750 XTR

Decentralized Automation Technology

750-xxx/040-xxx



System manual | Version 2.0.2

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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

WAGO is a registered trademark of WAGO Verwaltungsgesellschaft mbH.

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1 Provisions

1.1 Validity of this Documentation

This document applies to the I/O system:

WAGO I/O System 750 XTR (Series 750 XTR).

The complete operating instructions for the I/O system consists of several, applicable documents. The I/O system must only be installed and operated in accordance with the complete operating instructions. Knowledge of all applicable documents is required for proper use. Please find all documents and information on the product detail pages.

Please find all documents and information at:

www.wago.com/all_750XTR

Applicable documents

Product manuals of used products

1.2 Intended Use

The I/O system is used to receive digital and analog signals from sensors and to control actuators. Higher-level controllers can be communicated with through fieldbus interfaces. The signals can be (pre-)processed with the controllers.

The products are open type devices and are designed for installation in an additional enclosure. In order to use them, it is connect to take protective measures suitable for the specific application.

- The products are intended for installation in automation technology systems.
- The products are designed for use in dry indoor rooms.
- Operation of the products in industrial areas is permitted.
- The products meet the EMC requirements for the residential, office and commercial area as well as small business, if the products used complie with the required emissions of interference (emission limits).
- Operation of the products in other application areas is only permitted when corresponding approvals and labeling are present.

Improper Use

Improper use of the products is not permitted. Specifically, improper use occurs in the following cases:

- Non-observance of the intended use
- Use without protective measures in an environment in which moisture, salt water, salt spray mist, dust, corrosive fumes, gases, direct sunlight or ionizing radiation can occur
- Use of the products in areas with special risk that require continuous fault-free operation and in which failure or operation of the product can result in an imminent risk to life, limb or health or cause serious damage to property or the environment (such as the operation of nuclear power plants, weapon systems , aircraft and motor vehicles)

Warranty and Liability

The provisions of the latest WAGO General Terms and Conditions of Deliveries and Services (GTC) apply as well as the Software License Terms for Standard Software (SW-License) applicable to software products und software embedded in WAGO hardware products, both available at: **www.wago.com**.

In particular, the warranty is void if:
- The products are used improperly.
- The deficiency (hardware and software configurations) is due to special instructions.
- Modifications to the hardware or software have been made by the user or third parties that are not described in this documentation and that has contributed to the fault.

Individual agreements always have priority.

Obligations of Installers/Operators

The installers and operators bear responsibility for the safety of an installation or a system assembled with the products. The installer/operator is responsible for proper construction and safety of the installation. All laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation, and the instructions in the the products' Instructions for Use, must be complied with. In addition, the installment requirements for licensing must be observed. In the event of non-compliance, the products may not be operated within the scope of the approval.

1.3 Typographical Conventions

Number Notation

100	Decimals: Normal notation
0x64	Hexadecimals: C-notation
'100'	Binary: In single quotation marks
'0110.0100'	Nibbles separated by a period

Text Formatting

italic	Names of paths or files
bold	Menu items, entry or selection fields, emphasis
`Code`	Sections of program code
>	Selection of a menu point from a menu
"Value"	Value entries
[F5]	Identification of buttons or keys

Cross References / Links

	Cross references/links to a topic in a document
	Cross references / links to a separate document
	Cross references / links to a website
	Cross references / links to an email address

Sequence of Action

✓ This symbol identifies a precondition.

1. Action step
2. Action step

   ⇨ This symbol identifies an intermediate result.

⇨ This symbol identifies the result of an action.

- Individual action step

Lists

- Lists, first level
  – Lists, second level

Figures

Figures in this documentation are for better understanding and may differ from the actual product design.

Warning Messages

⚠ DANGER

Type and source of hazard

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

- Action step to reduce risk

⚠ WARNING

Type and source of hazard

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

- Action step to reduce risk

⚠ CAUTION

Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

- Action step to reduce risk

NOTICE

Type and source of malfunction (property damage only)

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

- Action step to reduce risk

Information Notices

Note

Information

Indicates information, clarifications, recommendations, referrals, etc.

1.4 Legal Information

Intellectual property

The intellectual property of this document belongs to WAGO GmbH & Co. KG. The reproduction and distribution of its content (in whole or in part) is prohibited, unless otherwise provided by statutory provisions, written agreements or this document. In case of doubt, the written consent of WAGO GmbH & Co. KG must be obtained in advance.

Third-party products are always mentioned without any reference to patent rights. WAGO GmbH & Co. KG, or the manufacturer of third-party products, retains all rights regarding patent, utility model or design registration.

Third-party trademarks are referred to in the product documentation. The "®" and "™" symbols are omitted hereinafter. The trademarks are listed in the Appendix: **Protected Rights [▶ 62]**.

Subject to Change

The instructions, guidelines, standards, etc., in this manual correspond to state of the art at the time the documentation was created and are not subject to updating service. The installer and operator bear sole responsibility to ensure they are complied with in their currently applicable form. WAGO GmbH & Co. KG retains the right to carry out technical changes and improvements of the products and the data, specifications and illustrations of this manual. All claims for change or improvement of products that have already been delivered – excepting change or improvement performed under guarantee agreement – are excluded.

Licenses

The products may contain open-source software. The requisite license information is saved in the products. This information is also available under: **www.wago.com**.

2 Safety



This section presents hazards that could occur if the products are used. Builders and operators must take all hazards into account when analyzing the risk of their installed systems.
Measures to reduce the risk of hazards that are foreseeable from the manufacturer's point of view (i.e., without knowledge of the specific system built) are explained in the respective sections of this documentation (e.g., in "Planning").
Builders and operators must implement explained risk reduction measures and also take their own measures depending on the residual risk.

2.1 General Safety Regulations

- This documentation is part of the Products. Retain the documentation for the entire service life of the Products. Pass on the documentation to any subsequent user of the Products. In addition, ensure that any supplement to this documentation is included, if necessary.
- The Products must only be installed and put into operation by qualified electrical specialists per EN 50110-1/-2 and IEC 60364.
- Comply with the laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation.

2.2 Electrical Safety

- Disconnect all power supplies from the product before performing any installation, repair or maintenance.
- Make sure the products do not carry any voltage before starting work.

Power Supply

- For non-hazardous active voltage per EN/UL/IEC 61010-1, SELV/PELV power supplies shall be used.
- When configuring the system, make sure that the maximum total current of the field supply of the node is not exceeded. Where needed, include an additional supply module.
- When configuring the system, make sure that the maximum total current of the system supply of the node is not exceeded. Where needed, include an additional supply module.
- Pay attention to the permissible voltage and frequency ranges of the products when using different supplies.
- Plan for voltage buffering if the requirement for voltage buffering according to EN 61131-2 is to be met.
- Take suitable measures to protect against overload (e.g., a supply module with fuse or an external fuse).
- In mixed operation, always separate the areas in the XTR version and the areas with the standard version with the separate potential supply modules for the field supply and separate power supply units of the respective version in different potential groups. Do not mix the versions within a potential group.

Grounding/Protection/Fuses

- Establish sufficient grounding. Make sure there is a flawless electrical connection between the DIN-rail and frame / additional enclosure.
- Connect the DIN-rail to protective earth (PE) when using hazardous active voltages.
- In systems operated within the scope of UL, only use UL-approved fuses.

Cables

- To minimize interference (e.g., by electromagnetic interference), maintain a spatial separation between control, signal and data lines and the power supply lines.
- SELV/PELV circuits must be safely disconnected from circuits with hazardous active voltage or all connecting cables must be designed for the maximum current load.
- Always design the connection cables for the maximum anticipated current load.
- High currents and the inherent heat generated by the product can cause additional heat generation at the clamping point up to 25 K above the expected ambient temperature. Plan for a correspondingly higher temperature range for the connecting cables, or reduce inherent heat by selecting larger conductor cross-sections.
- Only one conductor may be connected to each connection point (e.g., CAGE CLAMP® connection).

Protection

- When working on the system (e.g., during maintenance), protect the facility part in question from accidental or unauthorized restart.

2.3 Mechanical Safety

- Before start-up, check the product for any damage that may have occurred during shipping. Do not put the product into operation if there is any mechanical damage.
- Do not open the product housing.
- Do not touch the power jumper contacts.
- Avoid conductive contamination.

2.4 Thermal Safety

- The surface of the housing heats up during operation. Under special conditions (e.g., in the event of a fault or increased surrounding air temperature), touching the product may cause burns. Allow the product to cool down before touching it.
- The temperature inside the additional enclosure must not exceed the ambient temperature permitted for the mounted products.

2.5 Indirect Safety

- Do not use any contact spray for cleaning.
- Clean product housings and soiled contacts with propanol.
- The products are not resistant to materials having seeping and insulating properties such as aerosols, silicones and triglycerides (found in some hand creams). If these substances occur in the environment of the products, install the products in an additional housing that is also resistant to these substances.
- Replace any defective or damaged devices.
- Do not place products on the data or power jumper contacts.

- Observe possible different technical specifications for mounting that does not correspond to the nominal mounting position.
- If product fails, communication to downstream products may be interrupted.
- Products from the WAGO I/O System 750/753 can be operated in combination with those of the WAGO I/O System 750 XTR. For combined operation, take the specifications for the ambient conditions for both I/O Systems into account.
- Operate ETHERNET and PROFINET interfaces in separate networks.
- Only use accessories authorized by WAGO.

3 System Features

3.1 Component Structure

3.1.1 Component Designs

Head Stations

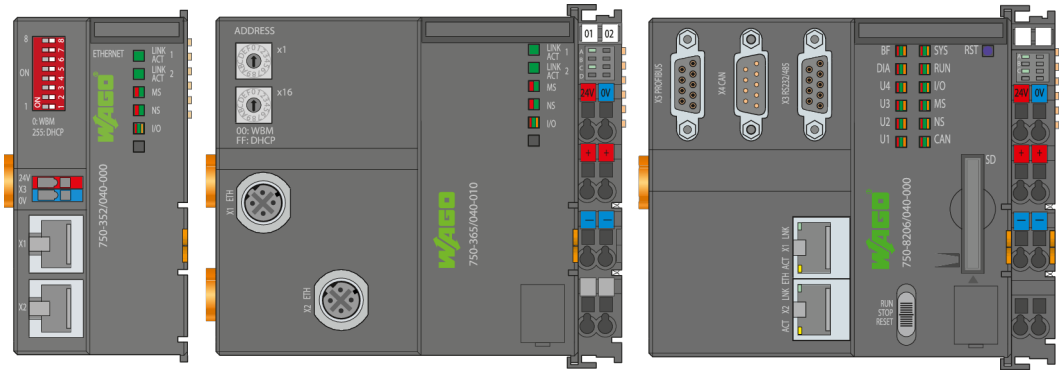


Figure 1: Example Head Station Housings

The housings of head stations (fieldbus couplers or controllers) may differ, for instance in terms of:

- The connection level
- The operator control elements and indicators
- The number of locking and release elements
- The specific fieldbus interfaces
- Further communication interfaces

I/O Modules

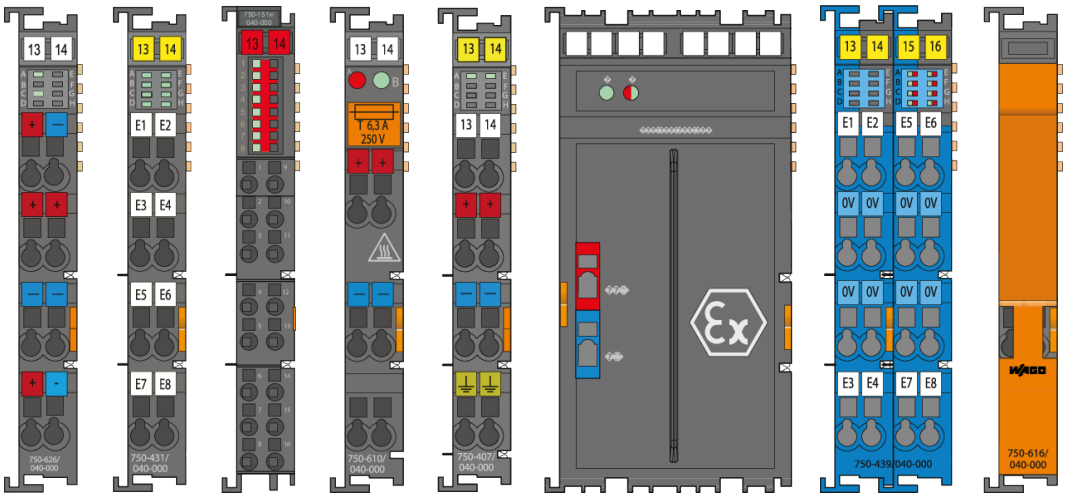


Figure 2: Example I/O Module Housings

The housings of the I/O modules may differ, for instance in terms of:

- The module width (12 mm, 24 mm or 48 mm)
- The structure of the wiring interface (CAGE CLAMP® or Push-in CAGE CLAMP® connections)
- Different indicators

- The number of power jumper contacts
- The fuse holder (supply module)
- The protective cover (distance module)

3.1.2 Structure of the Head Stations

Example View of PFC

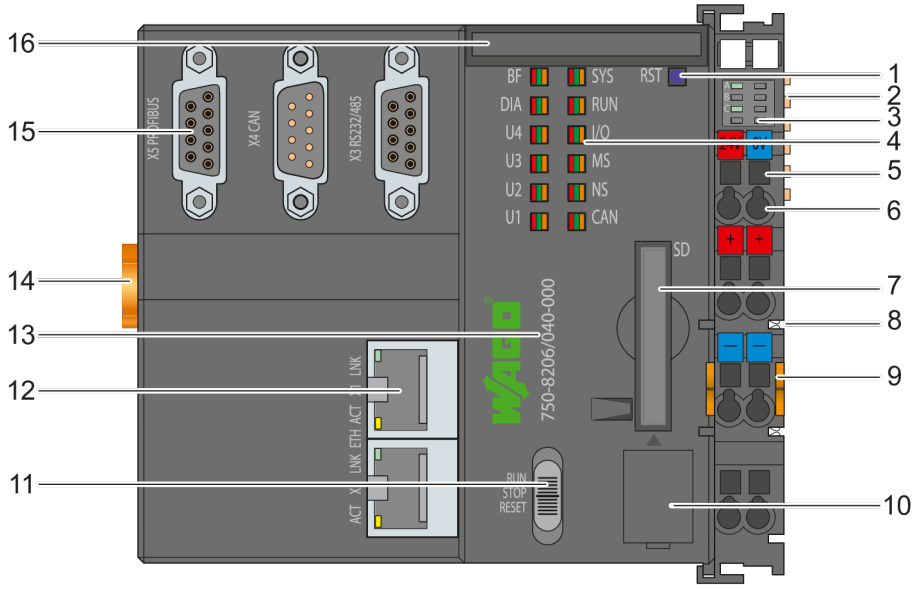


Figure 3: Example View of PFC

1	Reset button	Product Manual
2	Data contacts	System Contacts [▶ 21]
3	Indicators: power supply status	Product Manual
4	Indicators: system status	Product Manual
5	Access to open the associated CAGE CLAMP® connection	Conductor Termination [▶ 50]
6	CAGE CLAMP® connection for the power supply	
7	Memory card slot with protective flap	Product Manual
8	Power jumper contact (spring)	System Contacts [▶ 21]
9	Release tab	Assembly and Disassembly [▶ 45]
10	Service interface cover	Product Manual
11	Mode selector switch	Product Manual
12	Network connection	Product Manual
13	Item number	Product Identification [▶ 17]
14	DIN-rail locking cam	Assembly and Disassembly [▶ 45]
15	Serial interface (optional)	Product Manual
16	Slot for Mini-WSB (optional)	Marking Elements [▶ 22] and Color Coding for Identifying Functionality [▶ 17]

Example View of the Fieldbus Coupler/Controller

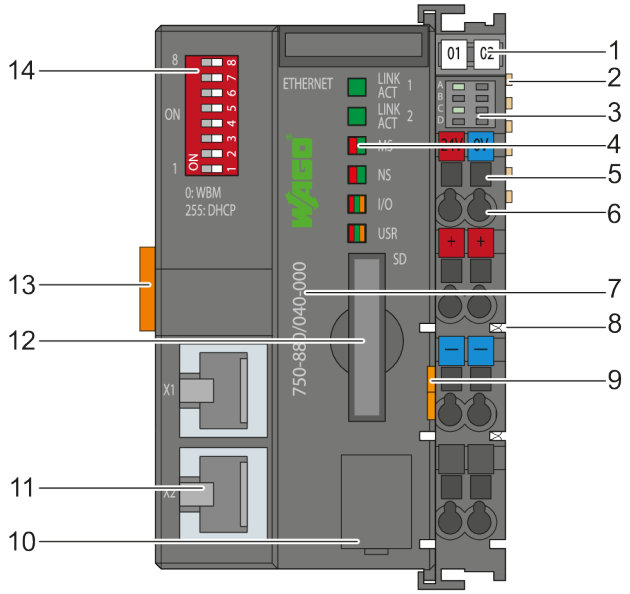


Figure 4: Example View of the Controller

1	Slot for Mini-WSB (optional)	**Marking Elements [▶ 22]** and **Color Coding for Identifying Functionality [▶ 17]**
2	Data contacts	**System Contacts [▶ 21]**
3	Indicators: power supply status	**Product Manual**
4	Indicators: fieldbus status	**Product Manual**
5	Access to open the associated CAGE CLAMP® connection	**Conductor Termination [▶ 50]**
6	CAGE CLAMP® connection for the power supply	
7	Item number	**Product Identification [▶ 17]**
8	Power jumper contact (spring)	**System Contacts [▶ 21]**
9	Release tab	**Assembly and Disassembly [▶ 45]**
10	Service interface cover	**Product Manual**
11	Fieldbus connection (optional)	**Product Manual**
12	Memory card slot with protective flap	**Product Manual**
13	DIN-rail locking cam	**Assembly and Disassembly [▶ 45]**
14	Address selection switch (optional)	**Product Manual**

3.1.3 I/O Module Configuration

Example View of the I/O Module in the 8-Channel Housing (CAGE CLAMP®-Connections)

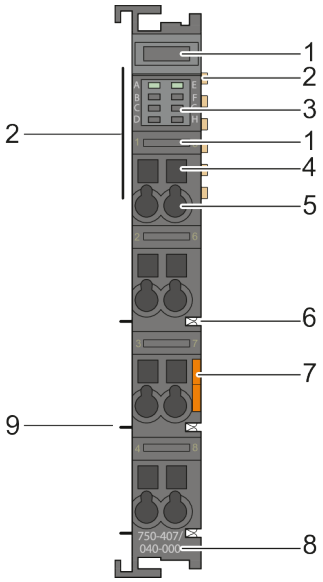


Figure 5: Example View of I/O Module with CAGE CLAMP® Connections

1	Slot for Mini-WSB (optional)	Marking Elements [▶ 22] and Color Coding for Identifying Functionality [▶ 17]
2	Data contacts	System Contacts [▶ 21]
3	Indicators	Product Manual
4	Access to open the associated CAGE CLAMP® connection	Conductor Termination [▶ 50]
5	CAGE CLAMP® connection	
6	Power jumper contact (spring)	System Contacts [▶ 21]
7	Release tab	Assembly and Disassembly [▶ 45]
8	Item number	Product Identification [▶ 17]
9	Power jumper contact (blade)	System Contacts [▶ 21]

Example View of the I/O Module in the 16-Channel Housing (Push-in CAGE CLAMP®-Connections)

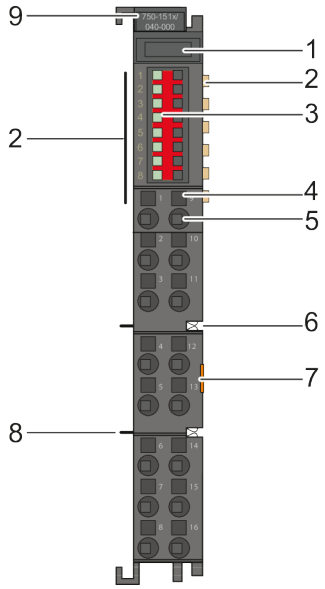


Figure 6: Example View of I/O Module with Push-in CAGE CLAMP® Connections

1	Slot for Mini-WSB (optional)	Marking Elements [▶ 22] and Color Coding for Identifying Functionality [▶ 17]
2	Data contacts	System Contacts [▶ 21]
3	Indicators	Product Manual
4	Access to open the associated Push-in CAGE CLAMP® connection	Conductor Termination [▶ 50]
5	Push-in CAGE CLAMP® connection	
6	Power jumper contact (spring)	System Contacts [▶ 21]
7	Release tab	Assembly and Disassembly [▶ 45]
8	Power jumper contact (blade)	System Contacts [▶ 21]
9	Item number	Product Identification [▶ 17]

3.1.4 Product Identification

3.1.4.1 Versions

Housing Colors

The components of the WAGO I/O System 750 XTR can be identified by their dark gray housing, which clearly sets them apart visually from the components of the WAGO I/O System 750/753. To allow the intrinsically safe components of the series to be identified quickly, the XTR Ex i modules are designed in two colors (blue/dark gray).

Color Coding for Identifying Functionality

To allow you to get an overview of the component classes present in a node quickly and easily, they are color-coded.

- I/O modules in the 8-channel housing can be color-coded by attaching marking elements (Mini-WSB) above the indicators.
- I/O modules in the 16-channel housing have a color background for the installed indicators.

If the I/O modules are marked by the manufacturer, the marking has the following meaning:

Coding Key Color	Component Class
Green	Analog inputs
Blue	Analog outputs
Yellow	Digital inputs
Red	Digital outputs
Transparent	Feed-in/supply, function and technology modules

3.1.4.2 Marking

The marking on the products includes the terminal allocation, the serial number and information on approvals.

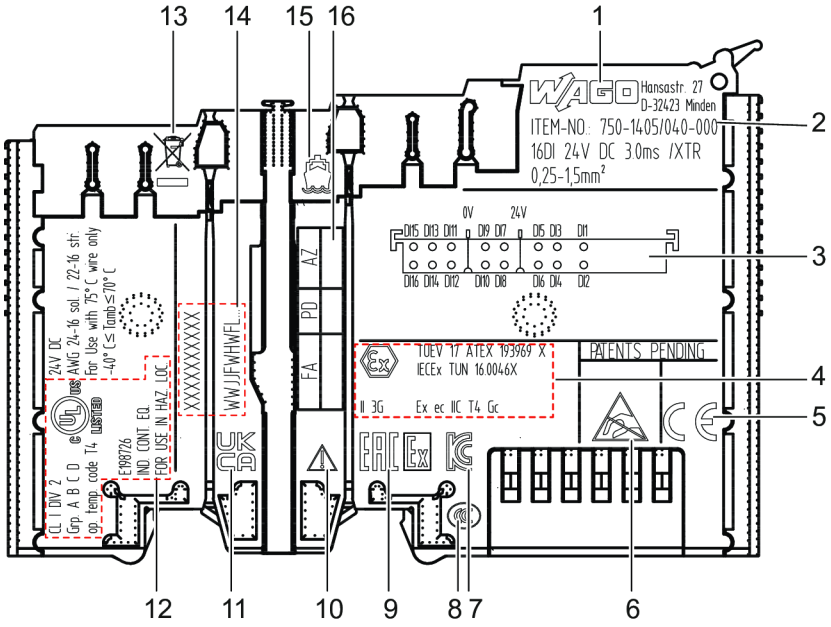


Figure 7: Example Marking of XTR I/O Module

Table 1: Explanation of the Marking Example

No.	Content		Description
1	WAGO Hansastr. 27 D-32423 Minden	WAGO logo and address	WAGO GmbH & Co. KG
2	Product information		Item number and product description; conductor cross-section if applicable
3	Terminal allocation		For more information on Sprungziel: Anhang, see the corresponding 🕮 **Product Manual**.
4		“Ex” registration icon	The product meets the classified requirements according to ATEX for operation in hazardous areas. For more information on approvals, see the corresponding 🕮 **Product Manual**.
5		CE mark	With the CE mark, WAGO declares that the product meets the applicable requirements as set out in Community harmonization legislation per EC Regulation 765/2008, which allows the product to carry this mark.
6		“ESD” mark	**Note:** Avoid electrostatic discharge! The products are equipped with electronic components that may be destroyed by electrostatic discharge when touched. Please following the safety precautions per DIN EN 61340-5-1/-3 to prevent electrostatic discharge.
7		“KC” registration icon	This approval mark indicates compliance with Korean product safety requirements for electrical and electronic devices and components.
8		“CCC” mark	With the CCC (China Compulsory Certification) mark, WAGO declares that the product meets the applicable requirements according to standards valid for the Chinese market.

No.	Content		Description
9		“EAC Ex” icon	The EAC Ex mark indicates that the product meets the safety requirements set forth in the EEU technical requirements for operation in hazardous areas.
10		“Caution” exclamation icon	**Note:** Observe the product documentation! Applicable information and documents concerning the product exist which must be observed.
11		UKCA	The UKCA (UK Conformity Assessed) mark declares that the conformity requirements for the UK market are met.
12		“UL Listed” mark	“Certification Mark for Safety” of UL-listed product in the North America and Canadian market
13		“WEEE” mark	**Note:** Electrical and electronic equipment must not be disposed of with household waste! Electrical and electronic equipment contain materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use. For more information on this topic, see **Disposal and Recycling [▶ 52]**.
14	Production number		**Identification [▶ 20]**
15		“Marine approvals” icon	Collective icon for marine approvals. For more information on this topic, see **Special Applications and Environments [▶ 37]**. For more information on the topic of approvals, see the corresponding **Product Manual**.
16	Update matrix		**Update Matrix [▶ 20]**
-		“Hot surface” warning symbol	**Warning:** Do not touch hot surfaces! The housing surface can become hot during operation. If the product has been used in high ambient temperatures, let it cool down before touching it.
-			Production data

For head stations, to ensure that the serial number can also be read when they are installed, this is also printed on the front, on the cover flap of the service interface.

3.1.4.3 Identification

The production number contains internal production data, as well as product-specific production data. The production number can be:

- One row: XXXXXXXXXX_WWYYFWHWFL
- Two row: XXXXXXXXXX
  WWYYFWHWFL

Table 2: Production Number

XXXXXXXXXX	Production order number, 10-digit
WWYYFWHWFL	WW: production week YY: production year FW: firmware index HW: hardware index FL: firmware loader index

3.1.4.4 Update Matrix

In the event of a factory update, the updated production data is documented in the update matrix. The initial manufacturing information on the product housing remains unchanged. In the case of a head station, the updated production number is also printed on the cover flap of the service interface.

Table 3: Update Matrix

FA	XXXXXXXXXX	Production order number, 10-digit
PD	WWYY	WW: production week YY: production year
AZ	FWHWFL	FW: firmware index HW: hardware index FL: firmware loader index

3.1.5 System Contacts

3.1.5.1 Data Contacts

The data contacts have the following function:

1. Forwarding of the system supply to subsequent I/O modules
2. Communication between head station and I/O modules

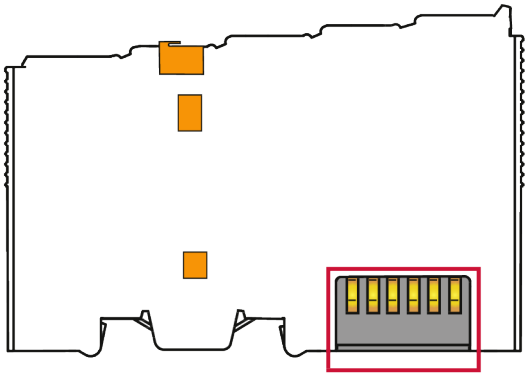


Figure 8: Data Contacts

3.1.5.2 Power Jumper Contacts

The field power supply is distributed in the I/O system via the power jumper contacts. The power supply for the field side is routed through the power jumper contacts. This happens automatically when the respective I/O module is snapped on.
The power jumper contact are designed as blade contacts on the left side and as touch-proof spring contacts on the right side. I/O modules can only be arranged in sequence if they are mechanically compatible.

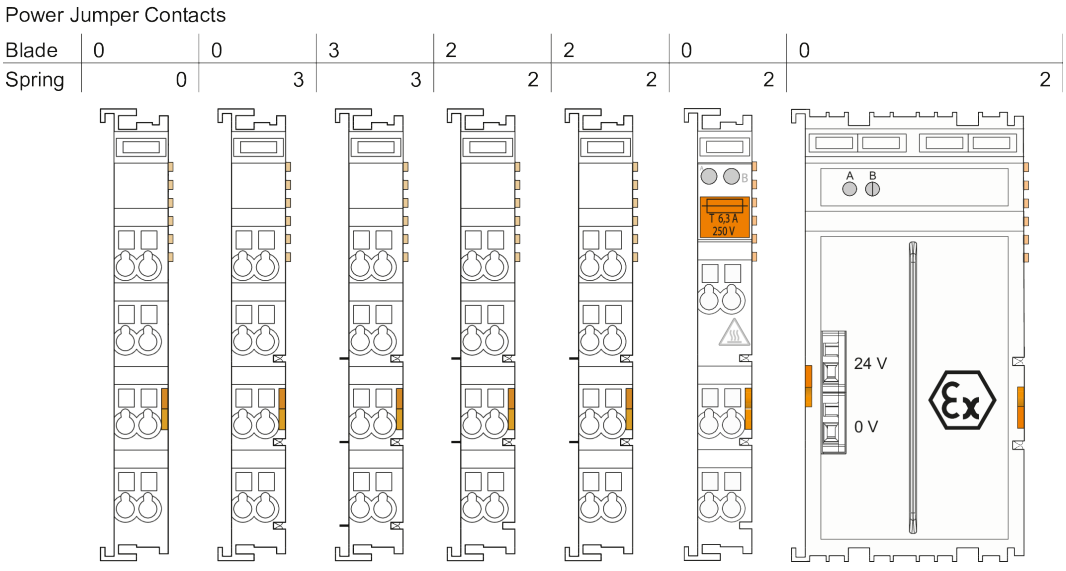


Figure 9: Examples for the Arrangement of Power Jumper Contacts (Blade/Spring)

Adding an I/O module without power jumper contacts interrupts the field supply, so it must be fed in again after. This new power feed-in may also include a potential change.

Potentials of the Power Jumper Contacts

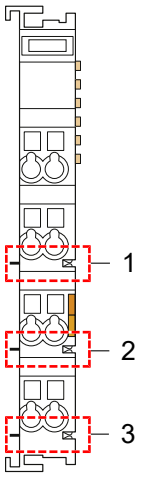


Figure 10: Potentials of the Power Jumper Contacts

1	1st potential of the field power supply
2	2nd potential of the field power supply, usually 0 V/ground potential
3	Functional ground (FE)

3.1.5.3 DIN-Rail Contact

Many components of the I/O system transmit electromagnetic interference to the DIN-rail via DIN-rail contacts. The DIN-rail contacts of the modules are automatically connected when they are snapped on to the DIN-rail.

For the I/O modules, there is usually no direct connection between the DIN-rail contact and the ground connections of the wiring interface and the associated power jumper contacts. The specific design is described in 🕮 **Product Manual**.

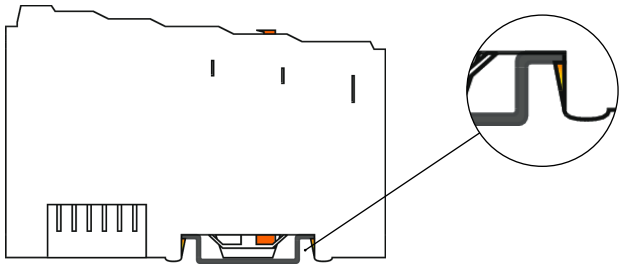


Figure 11: DIN-Rail Contact (example)

3.1.6 Marking Elements

The system components can be provided with marking elements (**Mini-WSB**):

- On all components: above the indicators
- On head stations with integrated power supply: above the individual connections
- On I/O modules with 8-channel housing: above the individual connections

3.2 Electrical Structure

3.2.1 Potential Levels

The I/O system is divided internally into the following potential groups.

- **System Level**
  This potential group encompasses all the system-side electronics and includes the system supply and local bus signals among other things.
- **Field Level**
  This potential group contains the field-side power supply and I/O signals. The node structure can be divided into different sections with supply and segment modules. Different field potentials can be used in the individual sections.
- **Fieldbus**
  This potential group contains the signals of the corresponding fieldbus interface. The voltage and current levels depend on the fieldbus standard used.
- **Functional Ground**
  To discharge EMC interference, the system power supply, the field power supply and the I/O signal inputs and outputs are capacitively coupled within the module to the functional ground via the DIN-rail contacts.

I/O modules with dangerously active voltages on the field level are safely isolated from the system level. Functional isolation from the system level is provided for I/O modules with SELV/PELV voltages on the field level.

You can find product-specific information on “Isolation” in the technical data of the corresponding 🕮 **Product Manual**.

Example Potential Groups/Isolation with Electrically Isolated Power Supply Infeed

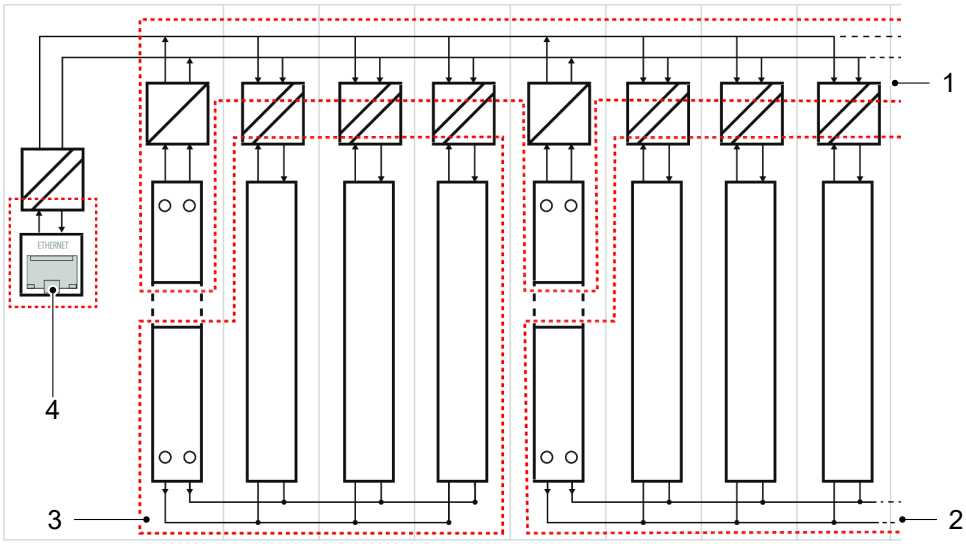


Figure 12: Illustration of the Various Potential Groups

1	System-level potential groups
2	Field-level potential groups in right node section
3	Field-level potential groups in left node section
4	Fieldbus system potential groups

3.2.2 System Supply

The system is supplied through the fieldbus coupler/controller and, where needed, through additional supply modules with bus power supplies. The system-side component electronics are protected against reverse polarity.

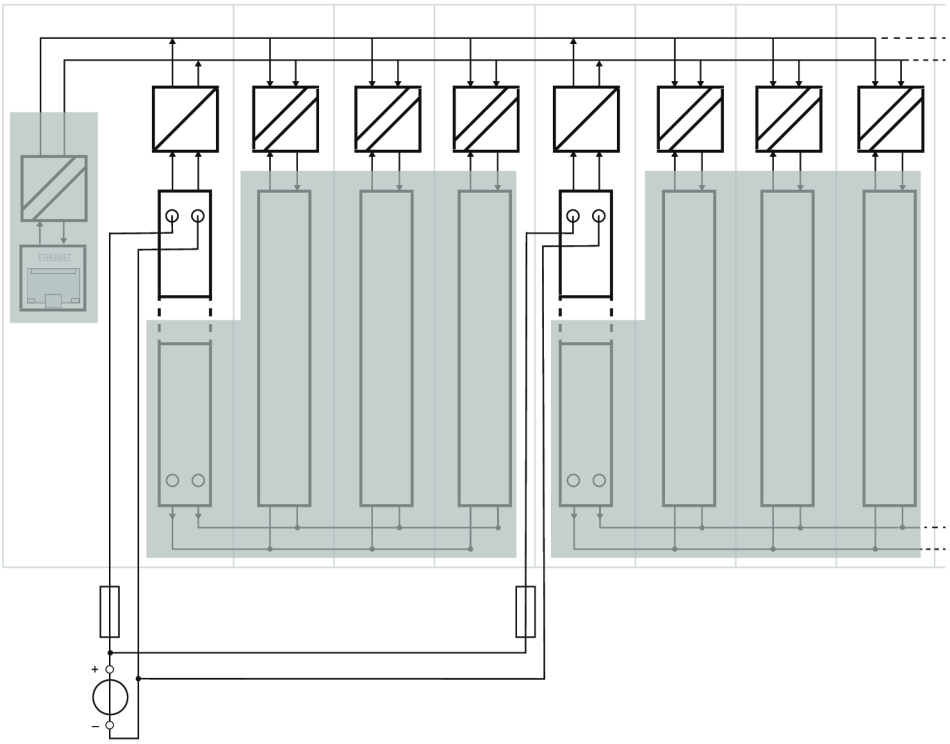


Figure 13: Supplying System Power (Example)

Observe the following requirements for system power supply:

- SELV/PELV power supplies shall be used.
- Power **must** be supplied simultaneously to **all** system power supply units. WAGO recommends using the same voltage source to realize the power supply.
- Use a suitable overcurrent protection for each infeed. Product-specific information is available in the respective 🕮 **Product Manual**.

3.2.3 Field Supply

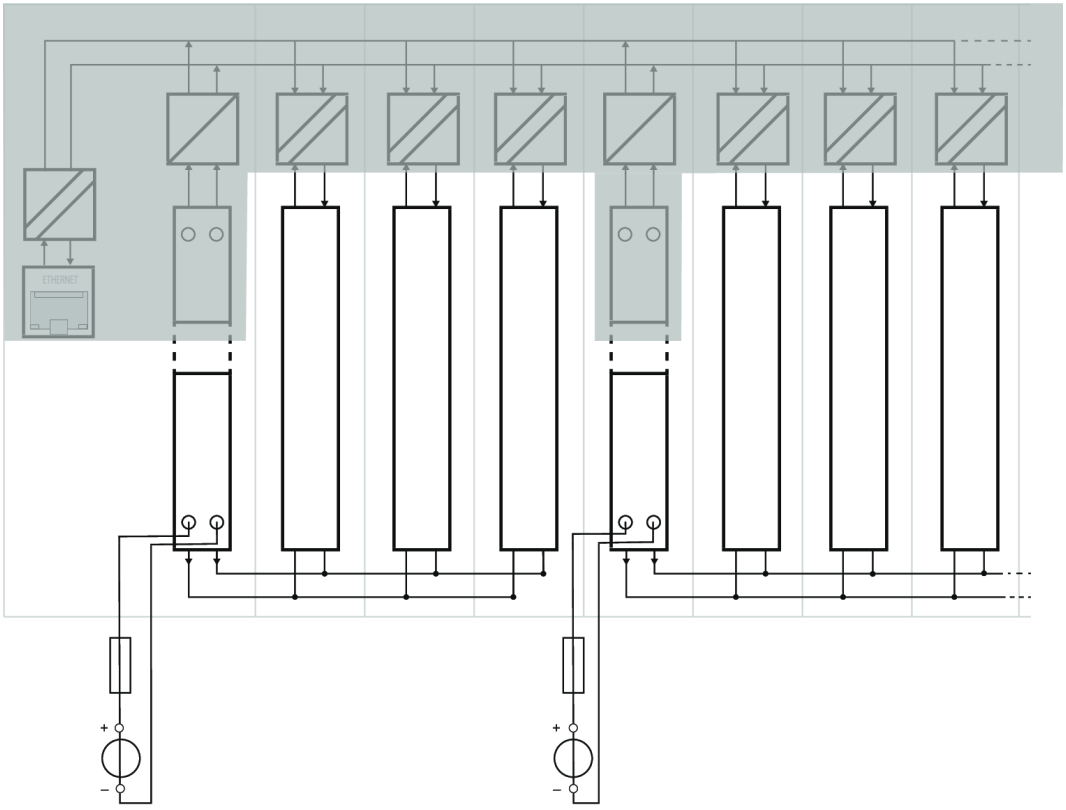


Figure 14: Field Supply Infeed (Example)

Observe the following requirements for the field supply:

- For non-hazardous active voltages per EN/UL/IEC 61010-1, use SELV/PELV power supplies.
- Use suitable overcurrent protection for each infeed. You can find detailed product information in the corresponding 🕮 **Product Manual**.

Additional supply modules are needed for:

- Higher power requirements
- Use of different reference voltages
- Use of different field voltages (e.g., 230 VAC, 120 VAC or 24 VDC)
- Switching to special applications and environments (e.g., Ex i)

Adding a supply module interrupts the field power supply that passes through the power jumper contacts. A new power infeed, which may also include a potential change, begins at that point.

3.2.4 Power Supply Components

The following components are needed in order to establish a power supply:

- **Voltage Sources**
  - SELV/PELV voltage sources for non-hazardous active voltages per EN/UL/IEC 61010-1
  - Voltage sources according to the field supply requirements
- **Overcurrent Protective Equipment**
  - Supply modules with integrated fuses
  - External fuse terminal blocks
  - Circuit-breakers

- **Suitable Isolation Devices,** e.g., non-automatic circuit-breaker
- **Supply Modules**
  - Bus power supplies
  - Supply module

Depending on the application area, the following may also be needed:

- **Filter modules**
- **Distance modules**
- **Voltage buffer**
  - UPS modules
  - Capacitive buffer modules

4 Functions

4.1 Process Image

After switching on, the head station identifies the inserted I/O modules that send or expect to receive data (data width > 0). The head station creates an internal local process image from the data width, the module type and the position of the I/O module in the node. This process image is divided into input and output data zones.

The head station provides one or more external process images that are used for data transmission via a fieldbus, for example. The structure of an external process image depends on:

- The selection and arrangement of the I/O modules in the node. Some I/O modules allow you to configure the arrangement and amount of the data they provide. Information on the process data provided by an I/O module is available in the 🕮 **Product Manual** of the I/O module.
- The properties of the external interface (e.g., of the fieldbus) and the properties of the head station. More information is available in the 🕮 **Product Manual** of the head station. Examples of process image properties that can differ among head stations:
  - Arrangement of the process data in the order of the physical placement of the I/O modules
  - Grouping of the process data so that analog field signals come before digital field signals
  - Insertion of filler bits or bytes so that data of an I/O module starts at a word boundary
  - Hiding of diagnostic bits from the process data of the I/O modules and/or mapping of them to fieldbus-specific diagnostic mechanisms
  - Adaptation of the endianness to the properties of the fieldbus
  - Limitation of the amount of data to packet sizes that can be processed by the fieldbus

5 Planning

This section provides helpful information for planing the use of the I/O system.

5.1 Node Structure

Note that product-specific configuration or test steps may be necessary. For example before:

- Commissioning
- Recommissioning
- Exchange and replacement of I/O modules

These configuration or test steps are described in the respective 🕮 **Product Manual**.

Types of Components

Several different types of components are used in the I/O system:

- **Head Stations:**
  - PFC
  - Controller
  - Fieldbus couplers
- **I/O Modules:**
  - Analog input and output modules
  - Digital input and output modules
  - Function and technology modules
  - Communication modules
  - Supply and segment modules

Node Configuration

A node configuration consists of at least the following:

- A head station
- A power supply
- An I/O module
- An end module

Structuring a Node

When planning a node, please take the following into account:

- Grouping by potential group
- Optical delimitation of the potential groups

For fast, effortless planning, use the WAGO Configurator Smart Designer.

Number of I/O Modules

The maximum number of I/O modules that can be operated in one node depends on several factors:

- **Mechanical expansion:**
  The distance between a head station and an end module must not exceed 768 mm, including the end module. If a node is wider, it must be divided into multiple sections with an additional head station.

- **Addressability:**
  Up to 64 I/O modules can be addressed, depending on the head station.
  I/O modules that do not have any process or diagnostic data (e.g., distance modules) do not need to be taken into account when calculating the number.
- **Head station memory:**
  Head stations have a limited memory for the process image.
- **Fieldbus technology characteristics**

5.2 Structure Guidelines

5.2.1 Warning Messages for Structure Guidelines

⚠ WARNING

DIN-Rail Protection Connection!

If voltage is hazardous active on the I/O system, a protective connection of the DIN-rail to PE is required.

- Take this protective connection into account in your planning!

⚠ WARNING

Different Field Supplies on the Power Jumper Contacts!

Different field supplies can be fed into the I/O system. The respective power supply can be passed on to the following I/O modules via the power jumper contacts.

- In your planning, take into account that the field supply that is fed in is suitable for all I/O modules within a supply section!

5.2.2 Safety Measures at the Installation Location

Additional Enclosure

The I/O System is an open type device. It must only be installed within appropriate enclosures, cabinets or electrical operation rooms that fulfill at least the following requirements:

- Offer adequate protection against direct or indirect contact.
- Offer adequate protection against UV irradiation.
- Restrict access to authorized personnel and may only be opened with tools.
- Ensure the required pollution degree in the vicinity of the system.
- Prevent fire from spreading outside of the enclosure.
- Guarantee mechanical stability.

5.2.3 Overcurrent Protection

System and field supply are through the head station and/or additional supply modules.

Protect the power supply as specified in the technical product data. Use:

- Supply modules with integrated fuses
- External fuses
- Circuit-breakers

5.2.4 Protective Conductor and Protective Ground

The I/O System does not provide any protective conductor functionality via the field connections. If a field device connected to the I/O System requires a protective ground connection, this connection must not be implemented via the I/O System's field connection. If hazardous active voltages are used, the DIN-rail must be suitably connected to protective ground (PE).

5.2.5 Buffering

To compensate for power interruptions per IEC 61131 (PS-1 or PS-2), external buffering is required.

Buffer capacity depends on the node configuration, which is why it is not possible to provide general information on the required capacity.

5.2.6 Mounting Position and Clearances

Maintain at least the following clearances to adjacent components, cable ducts and the sides of enclosures and frames for the entire node structure.

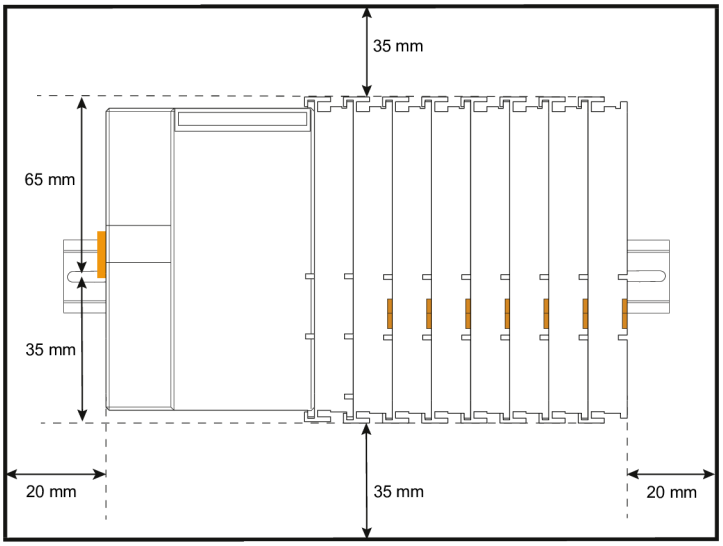


Figure 15: Installation Clearances

Note

Modified coordinate model

In product documentation published before 2021, the height (y) and depth (z) were swapped!

- Width = dimension along x axis = horizontal in nominal mounting position; parallel to DIN-rail longitudinal axis
- Height = dimension along z axis = vertical in nominal mounting position
- Depth = dimension along y axis = horizontal in nominal mounting position; perpendicular to DIN-rail longitudinal axis

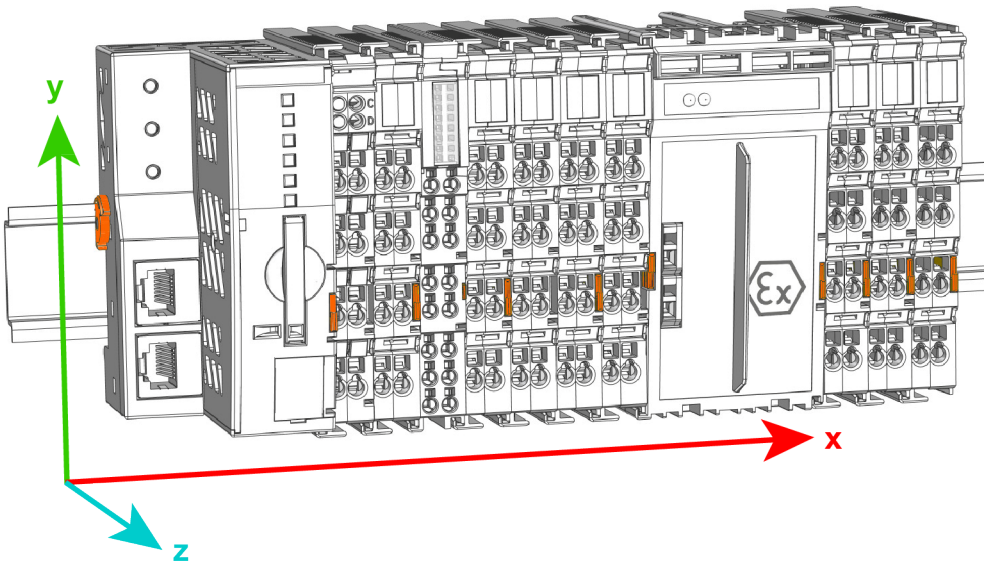
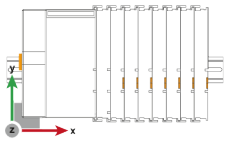
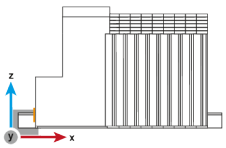
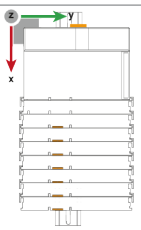
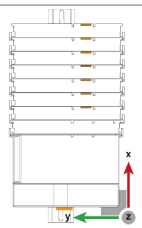
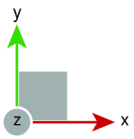
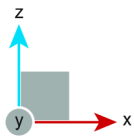
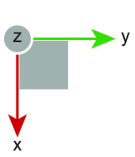
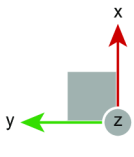


Figure 16: Coordinate model: width (x), height (y), depth (z)

Overview of Mounting Positions

The following mounting positions are approved for the WAGO I/O System 750 XTR:

Table 4: Permissible Mounting Positions

			
			
Horizontal, left (nominal mounting position)	Horizontal, up (floor mounting position, in conjunction with the additional enclosure)	Vertical, top	Mounting position, vertical bottom

Use an end stop for vertical installation!

For vertical installation, always mount an end stop below the node to prevent it from slipping off.

- Item no.: 249-116: end stop for DIN-rail 35, 6 mm wide
- Item no.: 249-117: end stop for DIN-rail 35, 10 mm wide
- Item no.: 249-197: end stop for DIN-rail 35, 14 mm wide; reinforced

The mounting positions shown correspond to the final orientation of the products within the additional enclosure.

Observe possible different technical specifications for mounting that does not correspond to the nominal mounting position.

5.2.7 DIN-Rail Characteristics

All components of the system can be snapped directly onto a DIN-rail per EN 60715 (TS 35, DIN-rail 35).

WAGO supplies standards-compliant DIN-rails that are ideal for use with the WAGO I/O System.
If you want to use non-WAGO DIN-rails, WAGO GmbH & Co. KG must perform a technical inspection and approve them.

DIN-rails have different mechanical and electrical characteristics. For optimal setup of the system on a DIN-rail, the following boundary conditions must be met:

- The material must have high corrosion resistance.
- Most of the components must have a discharge contact with the DIN-rail to discharge electromagnetic interference. In order to prevent corrosion, this tin-plated DIN-rail must not form a galvanic element that is capable of generating a differential voltage of more than 0.5 V (saline solution of 0.3 % at 20 °C/68 °F).
- The DIN-rail must provide optimal support for the EMC measures integrated into the system and the shielding via the I/O module connections.
- Select a sufficiently stable DIN-rail and, if applicable, use multiple mounting points (every 20 cm) for the DIN-rail to prevent bending and twisting (torsion).
- In order to ensure that the components are held securely in place, the DIN-rail geometry must not be altered. The DIN-rail must not be squeezed or bent, especially when shortening and installing it.
- The snap-in mounting foot of the components extends into the profile of the DIN-rail. For 7.5 mm high DIN-rails, mounting points (screw connections) under the node must be countersunk in the DIN-rail (countersunk screws or blind rivets).
- The medal springs on the bottom of the housing must have a low-impedance contact with the DIN-rail (wide contact surface is possible).

WAGO DIN-rails meet the electrical and mechanical requirements.

Table 5: WAGO DIN-Rails

Item No.	Description
210-112 / 210-113	35 × 7.5; 1 mm steel, blue, chromated; slotted/unslotted
210-197 / 210-114	35 × 15; 1.5 mm steel, blue, chromated; slotted/unslotted
210-118	35 × 15; 2.3 mm steel, blue; chromated; unslotted
210-198	35 × 15; 2.3 mm copper; unslotted
210-196	35 × 8.2; 1.6 mm aluminum; unslotted

For vibration loads > 4g, observe the following installation instructions:

- Use pan-head screws or blind rivets at least every 60 mm (12 mm pin spacing) to secure the DIN-rail.
- Make the open conductor length between the strain relief mechanism and wire connection as short as possible.
- Use the 249-197 reinforced end stop.
- Furthermore, if the PFC200 750-8202/040-00x, PFC200 750-8212/040-00x or PFC200 750-8216/040-000 is used, DIN-rails without an oblong hole must also be used. Alternatively, a material thickness of min. 1.5 mm/0.59” must be maintained.
- Furthermore, if the 750-364/040-010 and 750-750-365/040-010 couplers and the PFC200 750-8206/040-00x and 750-821x/040-010 are used, DIN-rails without an oblong hole with a material thickness of min. 2.3 mm must also be used.

Table 6: Permissible WAGO DIN-Rails for Vibration Loads > 4g

Item No.	750-8202/040-00x, 750-8212/040-00x, 750-8216/040-000	750-8206/040-00x, 750-821x/040-010, 750-364/040-010, 750-365/040-010
210-113	×	–
210-114	×	–
210-197	×	–
210-118	×	×

5.2.8 EMC Installation

- **Use filter modules for 24 V supply lines longer than 30 m.**
  To comply with EN 61000-6-2:2019, filter modules (e.g., item no.: 750-626/040-000 or 750-624/040-000) must be used for system and field supply lines longer than 30 m.
- **Ground DIN-rails.**
  Ground the DIN-rails to divert electromagnetic interference.
- **Use shielded cables for data and signal lines.**
  Electromagnetic interference is reduced and signal quality increased. Measurement errors, data transmission faults and interference due to excessive voltage can be prevented!
- **Keep data and signal lines separate from interference sources.**
  Route data and signal lines separately from all power supply cables and other sources of high electromagnetic emissions (e.g., frequency converters or drives).
- **Connect the cable shielding with the ground potential.**
  Integrated shielding is mandatory to meet technical specifications regarding measurement accuracy. Establish the connection between the cable shielding and ground potential at the inlet of the cabinet or housing. This grounding allows induced interferences to dissipate and be kept away from devices in the cabinet or housing.
- **Improve shielding performance with a large contact area.**
  A low-impedance connection between shielding and ground achieves better shielding performance. For this purpose, connect the shielding over a large surface area, e.g., using the WAGO Series 790 Shield Connection System. This is especially recommended for large-scale systems where equalizing or high impulse currents may occur.

5.2.9 Insulation Testing

Both the system and the field voltage side are capacitively coupled to the DIN-rail. If an I/O module is mounted on the DIN-rail, application of an AC voltage between the DIN-rail and at least one of these two potentials can destroy the module.

Use only direct current (DC) for insulation testing. Discharge the module completely before applying the test voltage again.

5.2.10 Data Security

Professional planning and design is an important requirement for securing data confidentiality, availability and integrity.

Random Influences

Data transmission and processing can be disrupted by random influences, such as temporary electromagnetic disturbances. Proper setup can significantly reduce the likelihood of corruption or destruction of data.

For additional information see: **EMC Installation [▶ 33]**.

Deliberate Influences

Use in ETHERNET Areas

ETHERNET products are designed for use in local networks. Please note the following when using ETHERNET products in your system:

- Do not connect control components and control networks to an open network such as the Internet or an office network.
  WAGO recommends putting control components and control networks behind a firewall.
- In the control components, close all ports and services (e.g., for WAGO-I/O-*CHECK* and CODESYS) not required by your application to minimize the risk of cyber attacks and to enhance cybersecurity.
  Only open the ports and services for the duration of the commissioning/configuration.
- Limit physical and electronic access to all automation components to authorized personnel only.
- To reduce the risk of unauthorized access to your system, change the default passwords before initial commissioning.
- To reduce the risk of unauthorized access to your system, regularly change the passwords used.
- To verify that the measures taken meet your security requirements, regularly perform threat analyses.
- To restrict access to and control of individual products and networks, employ a “defense-in-depth” mechanism in your system’s security configuration.

Additional documents

- **Manual Cybersecurity for PFC100 / PFC200 Controllers**
- **White Paper Cybersecurity in Production Facilities**

All the documentation and information is available at: **www.wago.com**.

Use of Cloud Services

Note

Please note the risks of using cloud services!

If you use third-party cloud services, sensitive data is transferred to the cloud service provider on your own responsibility. External access may result in manipulated data and/or unwanted control commands affecting the performance of your control system.

- Use encryption methods to protect your data.
- Observe the information provided by the Federal Office for Information Security – “Cloud: Risks and Security Tips.”
- Observe comparable publications of the responsible authorities of your country.

Additional information is available at: **www.bsi.bund.de**.

5.3 Designing the System Supply

Designing the system supply requires knowledge of the entire system-side current consumption of the installed I/O modules.

An additional system power supply must be used if:

- The total system-side power consumption exceeds the maximum permissible total current of the system supply

Do not exceed the maximum total current for I/O modules via data contacts! The data contacts for internal system supply can be damaged and the permissible operating temperature can be exceeded by higher values.

You can find product-specific information on “Total Current for System Supply” and “Current Consumption of System Supply (5 V)” in the technical data of the corresponding **Product Manual**.

For fast, effortless supply design, use the WAGO Configurator Smart Designer.

A calculation example is available at: **Examples and Aids [▶ 42]**

5.4 Field Supply Layout

Designing the field supply requires knowledge of the entire field-side current consumption of the installed I/O modules. The field-side current consumption of an I/O module consists of:

- Demand from the field-side I/O module electronics
- Possible output currents of the I/O modules used

You can find product-specific information on “Current Carrying Capacity of the Power Jumper Contacts” and “Current Consumption of the Field Supply (Module without External Load)”in the technical data of the corresponding **Product Manual**.

More power must be provided through an additional supply module if:

- The maximum permissible total current of the field power supply is reached
- The maximum permissible total current of the power jumper contacts is reached

- The I/O module positioned to the left in the sequence does not pass on the required potential

Do not exceed maximum total current for I/O modules via power contacts! The current carrying capacity of the power jumper contacts is 10 A. The power jumper contacts for the internal field supply can be damaged and the permissible operating temperature can be exceeded by higher values.

For fast, effortless supply design, use the WAGO Configurator Smart Designer.

A calculation example is available at: **Examples and Aids [▶ 42]**

5.5 Special Applications and Environments

5.5.1 Marine, On-/Offshore, Substation Instrumentation and Control, Telecontrol Technology, Railway Engineering

The I/O System 750 XTR can also be used in shipbuilding applications and onshore/offshore installations (e.g., platforms, loading facilities), as well as in telecontrol applications. This is demonstrated by compliance with the requirements of leading classification agencies such as DNV and Lloyd's Register.

As a general rule, for standards-compliant use in substation instrumentation and control, telecontrol technology, railway engineering or shipbuilding-certified operation, filters modules (surge) (item no.: 750-624/040-000 or 750-624/040-001) or supply filters (item no.: 750-626/040-000) should be used.

The following power supply requirements must be observed:

- The 24 V system power supply of the head station must be filtered and protected against overvoltage.
- Therefore, the power must be supplied through the supply filter (item no.: 750-626/040-000). The system supply must always be connected via a 2 A time-delay fuse.
- The 24 V field power supply systems must be protected against overvoltage. Therefore, the power must be supplied via filter modules (surge) (item no.: 750-624/040-000 or 750-624/040-001) or supply filters (item no.: 750-626/040-000).

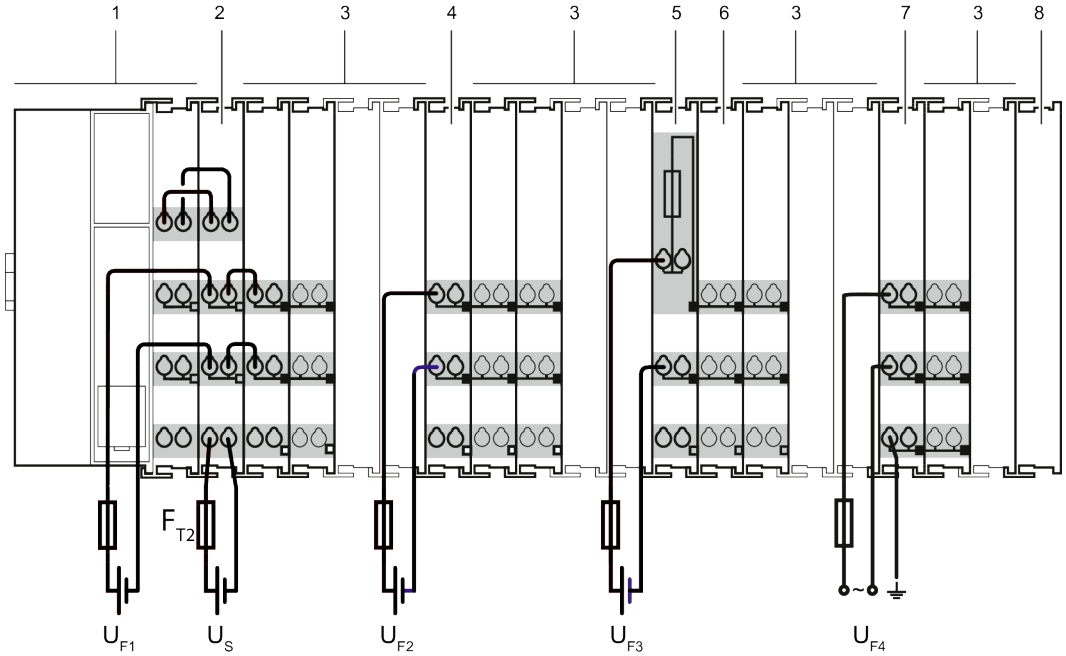


Figure 17: Power Supply Concept

No.	Explanation
1	XTR fieldbus coupler/controller
2	Supply filter; 24 VDC; higher isolation; extreme (item no.:750-626/040-000)
3	XTR I/O modules
4	Field supply filter (surge); 24 VDC; higher isolation; without power jumper contacts; extreme (item no.: 750-624/040-001)

No.	Explanation
5	Power supply; 24 VDC; fuse holder; extreme (item no.: 750-601/040-000 or 750-610/040-000)
6	Field supply filter (surge); 24 VDC; higher isolation; extreme (item no.: 750-624/040-000)
7	Power supply; 0 ... 230 VAC/DC; extreme (item no.: 750-612/040-000)
8	XTR end module (item no.: 750-600/040-00x)
Potential Groups	
U_{F1}	Field supply 1 (24 VDC)
U_S	System supply (24 VDC)
U_{F2}	Field supply 2 (24 VDC)
U_{F3}	Field supply 3 (24 VDC)
U_{F4}	Field supply 4 (230 VAC)

Marine Applications per DNV GL

- Class A: all areas except bridge and open deck
- Class B: all areas including bridge and open deck

5.5.2 Ex i XTR Applications

Some I/O modules are intended to be connected to devices located in hazardous areas. To ensure safety and reliability in these applications, several additional requirements must be taken into account:

- The node structure must meet the additional requirements specified below for the power supply, as well as the requirements for clearances and creepage distances.
- The operator must obtain a prototype test certificate that confirms the correct installation of the system and store it in the control cabinet/housing.

You can find the detailed requirements in the original wording of the respective certificate (Installation Regulations Specified by Approvals).

Power Supply Requirements

For all node sections containing I/O modules for Ex i applications, the following applies:

- **Supply of the Ex i XTR I/O modules only via “Power Supply 24 VDC Diagn for Ex i XTR Modules”**
  The Ex i XTR I/O modules must only be operated in conjunction with the 24 VDC power supply (item no.: **750-606/040-000**)!
- **Do not exceed maximum current via power jumper contacts**
  The maximum current provided by this 24 VDC power supply is 1 A.
  When configuring the system, make sure that this current is not exceeded. If it is, you must use an additional Ex i power supply module (item no.: **750-606/040-000**).

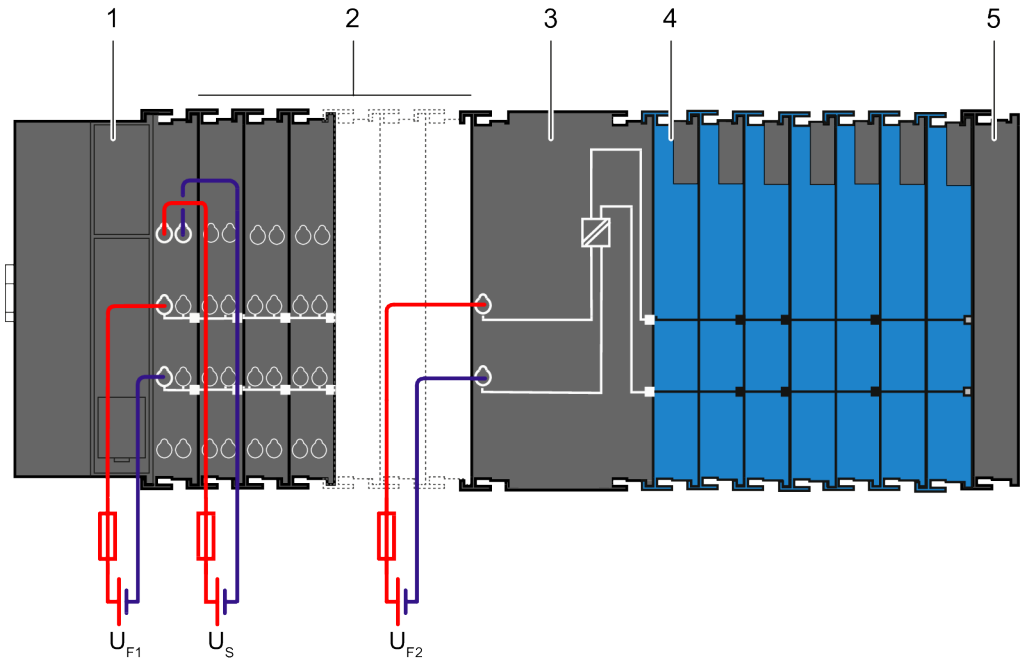
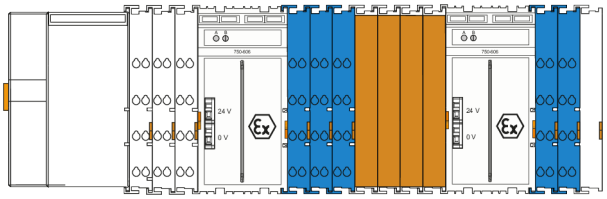


Figure 18: Ex i XTR Power Supply Concept

No.	Explanation
1	XTR head station
2	XTR I/O modules
3	XTR “Power Supply 24 VDC Diagn for Ex i XTR Modules” (750-606/040-000)
4	Ex i XTR I/O module
5	XTR end module (750-600/040-000)
U_{F1}	Field supply 1 (24 VDC)
U_S	System supply (24 VDC)
U_{F2}	Field supply 2 (24 VDC)

Clearance and Creepage Distance Requirements



- For all sections of a node that contain I/O modules for Ex i use, stricter requirements apply with regard to clearances and creepage distances.
  - Before such a node section, the respective supply module (item no. 750-606/040-000)ensures the required distance.
  - After such a node section, four XTR distance modules (item no.: 750-616/040-000) must be used. Exception: If the following section consists of only one XTR end module (item no.: 750-600/040-000), no distance modules are required.

- **Ensure clearance and creepage distances between intrinsically safe segments!**
  The maximum current provided by the supply module (item no.: 750-606/040-000) is 1 A. If the use of further 750-606/040-000 supply modules is required for capacity utilization reasons, use four 750-616/040-000 Distance Modules to maintain the distance between the intrinsically safe segments.

5.5.3 Ex i XTR Use in Substation Instrumentation and Control and Telecontrol Technology or in Marine Applications

As a general rule, for standards-compliant use of the Ex i XTR I/O module in substation instrumentation and control, telecontrol technology, railway engineering or shipbuilding-certified operation, filter modules (item no.: 750-624/040-001) or supply filters (item no.: 750-626/040-000) must be used.

Table 7: Filter Modules for 24 V Power Supply

Item No.	Name	Description
750-626/040-000	24 VDC HI XTR supply filter	System and field supply with filtering (24 V, 0 V)
750-624/040-001	Field supply filter 24 VDC HI NC XTR	24 V field supply with filtering

The following power supply concepts must be observed:

When using Ex i XTR I/O modules in shipping, substation instrumentation and control and telecontrol technology, the supply voltage of the “Power Supply 24 VDC Diagn for Ex i XTR Modules” (item no.: 750-606/040-000) must be supplied via the corresponding filter module.

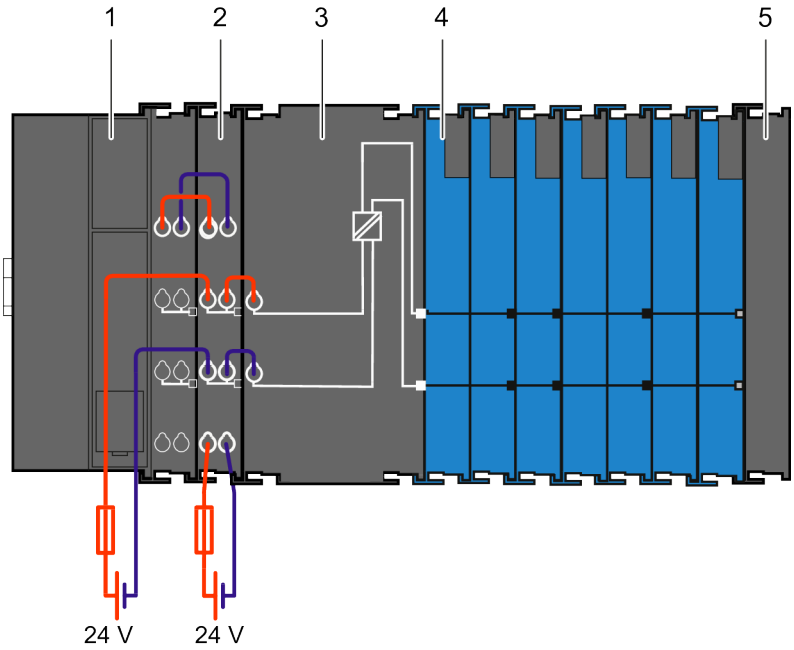


Figure 19: Power Supply Concept, Example 1

No.	Explanation
1	XTR head station
2	XTR filter module (750-626/040-000)
3	XTR “Power Supply 24 VDC Diagn for Ex i XTR Modules” (750-606/040-000)
4	Ex i XTR I/O module

No.	Explanation
5	XTR end module

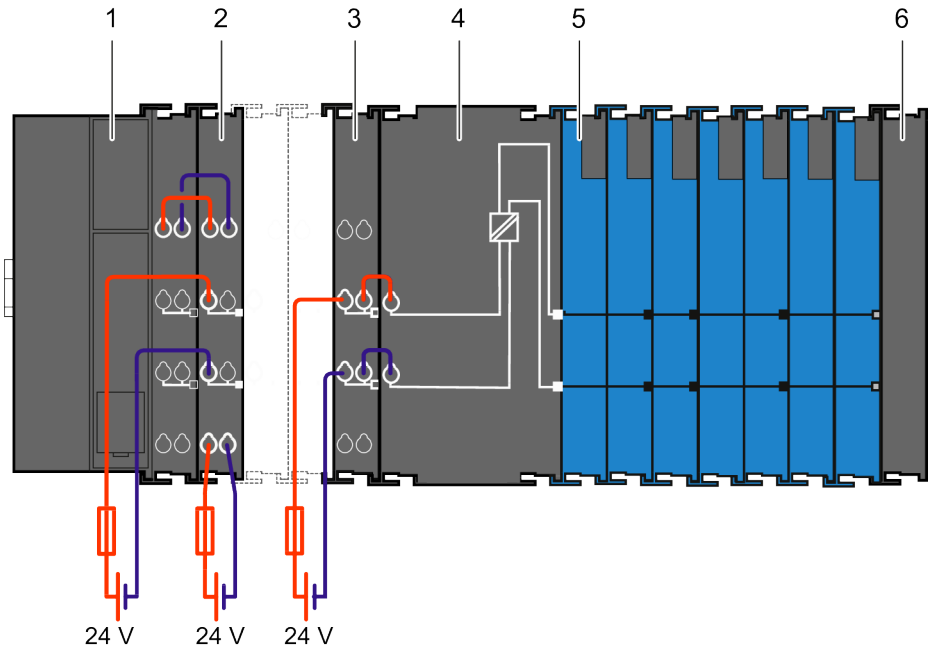


Figure 20: Power Supply Concept, Example 2

No.	Explanation
1	XTR head station
2	XTR filter module (750-626/040-000)
3	XTR filter module (750-626/040-000 or 750-624/040-001)
4	XTR “Power Supply 24 VDC Diagn for Ex i XTR Modules” (750-606/040-000)
5	Ex i XTR I/O module
6	XTR end module

5.6 Examples and Aids

5.6.1 Aids

WAGO supports you with a wide range of useful products and software solutions. The project planning aids include:

- ***e!COCKPIT***
  e!COCKPIT is an integrated development environment that supports every automation task, from hardware configuration and programming, to simulation and visualization, to commissioning – an all-in-one software package.
- **Smart Designer** offers true 3D configuration of WAGO's electrical interconnection and automation components, including the WAGO I/O System 750 XTR, circuit boards and terminal blocks. With this tool you can configure a node of the I/O system and calculate the approximate power demand, among other things.
- WAGO-I/O-*CHECK*
  Application for operating and displaying a node consisting of components of the 750/753 and 750 XTR WAGO I/O Systems.

Determining Power Loss

Power loss depends on the node structure and the applied field signals. To roughly determine power loss, use:

- Head station: 3 W
- I/O module: 1 W

System Supply Power Requirement: Example Calculation

The example calculation is based on the following node structure:

- Head station
- 5 × 16-channel digital input module
- 5 × 16-channel digital output module
- 11 × 8-channel analog input module
- 10 × 8-channel analog output module
- 2 × relay module
- I/O module ...

Table 8: Power Requirement: Example Calculation

Head station	**1,700 mA**
5 × 16-channel digital input module (25 mA)	− 125 mA
5 × 16-channel digital output module (40 mA)	− 200 mA
11 ×8-channel analog input module (69 mA)	− 759 mA
10 × 8-channel analog output module (61 mA)	− 610 mA
Remaining total system supply current At this point, an additional supply module must be used!	**6 mA**
Supply module	**2,000 mA**
2 × relay module (100 mA)	− 200 mA
I/O module ...	− ...

Field Supply Power Requirement: Example Calculation

The field supply layout must be handled in a similar manner as the system supply. In addition, power requirements for external actuators and sensors must be taken into account. Additional supply modules may be needed. Detailed product information is available in the respective 🕮 **Product Manual**.

5.6.2 I/O Test

The WAGO I/O System allows easy, effective testing of your wiring with an I/O test.

For example, WAGO software solutions such as **e!***COCKPIT* and WAGO-I/O-*CHECK* make it possible to:

- Switch inputs and outputs
- Display digital input states
- Display analog input values
- Output analog values

Detailed instructions are available in the 🕮 product manuals for **e!***COCKPIT* and WAGO-I/O-*CHECK*.

6 Transport and Storage

The original packaging offers optimal protection during transport and storage.

- Store the products in suitable packaging; preferably, in the original packaging.
- Only transport the products in suitable containers/packaging.
- Make sure the product contacts are not contaminated or damaged when packing or unpacking.
- Observe the specified ambient climatic conditions for transport and storage of the products.

7 Assembly and Disassembly

ⓘ Note

Assembly must be preceded by professional planning!

Before you assemble an I/O System node, make sure that the intended assembly follows all safety precautions and planning instructions in this documentation.

The following information must be provided:
- Information about the correct node structure
- Information about permissible mechanical, electrical and climatic ambient conditions
- Circuit diagrams
- Mounting position, clearances, cable types and lengths

7.1 Warning Messages for Assembly and Disassembly

⚠ WARNING

Accidental Contact with Hazardous Active Voltage!

When voltage is hazardous active, accidental contact may result in an electric shock.

1. Always disconnect all voltages from the system before starting work on the system!
2. Make sure the system do not carry any voltage!

7.2 Assembly Sequence

Head stations and I/O modules from the WAGO I/O System 750 XTR are snapped directly onto a DIN-rail (EN 60715 (TS 35)).
A groove and spring system ensure secure positioning and reliable connection. An automatic locking mechanism ensures secure mounting on the DIN-rail.

Starting with the head station, the I/O modules are assembled in sequence according to the project planning. This approach makes errors in the configuration of the node involving potential groups (connections via the power jumper contacts) evident, since I/O modules with power jumper contacts (blade contacts) cannot be connected in a sequence with I/O modules that have fewer power jumper contacts.

Note the following:
- **Only insert I/O modules in the intended order:** All I/O modules feature grooves for power jumper contacts on the right side. For some I/O modules, the grooves are closed on the top. Therefore, I/O modules featuring a power jumper contact on the left side cannot be snapped on from the top. This mechanical coding helps to avoid configuration errors that could destroy the components.
  Therefore, insert I/O modules only from the right and from the top.
- **Start XTR sections exclusively with XTR power supply modules:** The power jumper contacts of XTR products use a different contact material than WAGO I/O System 750/753 products. Connecting power jumper contacts of XTR components to power jumper contacts of non-XTR components leads to irreversible deterioration in

contact characteristics in the long run. Therefore, only start sections of XTR modules with an XTR power supply module. Only connect XTR modules after XTR power supply modules, never other modules.

- **Do not forget bus termination:** Always plug an end module (item no.: 750-600/040-000 or 750-600/040-001) onto the end of the fieldbus node! You must always use this end module in all fieldbus nodes with XTR head stations of the WAGO I/O System 750 XTR in order to guarantee proper data transfer!

7.3 Snapping the Head Station onto the DIN-Rail

1. When replacing a head station that is already present, position the new head station so the groove and spring are connected to the following I/O module.
2. Snap the head station onto the DIN-rail.

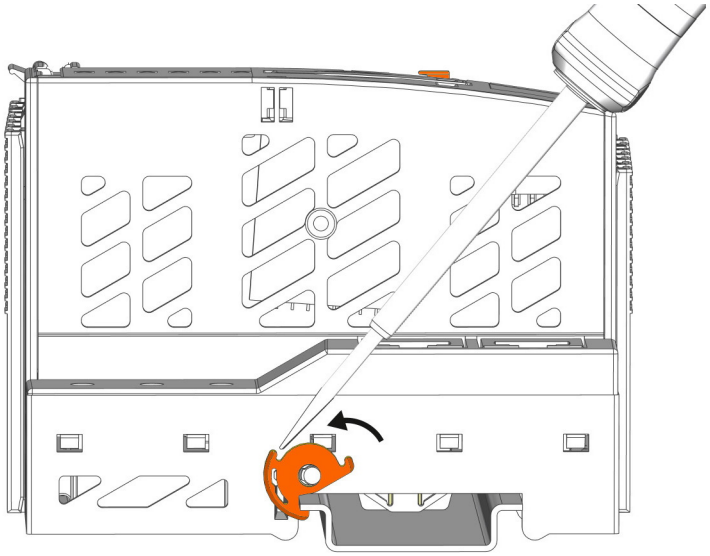


Figure 21: Locking the Head Station

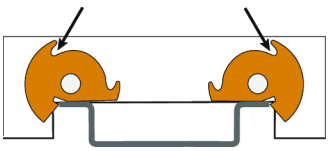
3. Use an operating tool to turn the DIN-rail locking cam(s) until the nose of the respective DIN-rail locking cam engages behind the DIN-rail.

   ⇨ This secures the head station against tilting on the DIN-rail.

⇨ Once the head station has been snapped into place, the electrical connections for the data contacts and power jumper contacts (if any) to the following I/O module are established.

Special Case: Head Stations with Two DIN-Rail Locking Cams

Some head stations have two DIN-rail locking cams. In this case, the head station must also be locked onto the DIN-rail with both DIN-rail locking cams.



7.4 Attaching an I/O Module

1. Position the I/O module in such a way that the grove and spring are connected to the preceding and, if applicable, the following components.

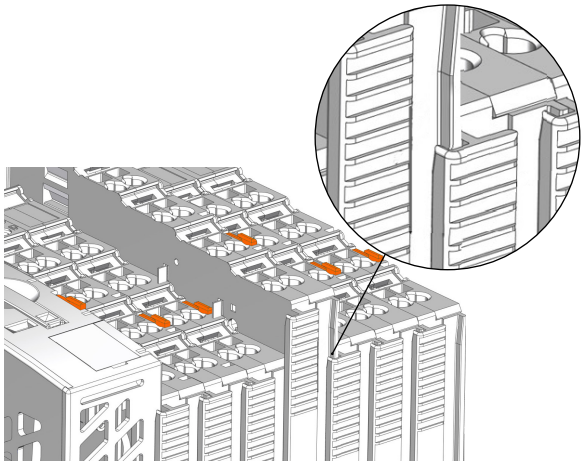


Figure 22: Inserting the I/O Module

2. Press the I/O module into the assembly until the I/O module snaps onto the DIN-rail.

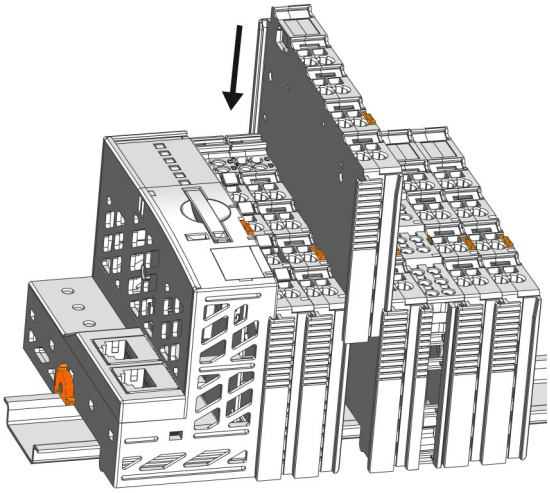


Figure 23: Snapping in the I/O Module

3. Check that the I/O module is seated securely on the DIN-rail and in the assembly.

⇨ Once the I/O module has snapped into place, the electrical connections for the data contacts and power contacts (if any) to the head station or to the preceding and, if applicable, following I/O module are established.

7.5 Removing a Head Station from the DIN-Rail

On some head stations, the supply connections are located in an I/O-module-like housing part. This part is securely connected to the rest of the head station housing. When pulling out a head station of this type, be sure to pull the release tabs of both housing parts at the same time. This is essential in order to avoid damaging the internal connection.

Follow these steps to remove a head station from a DIN-rail:

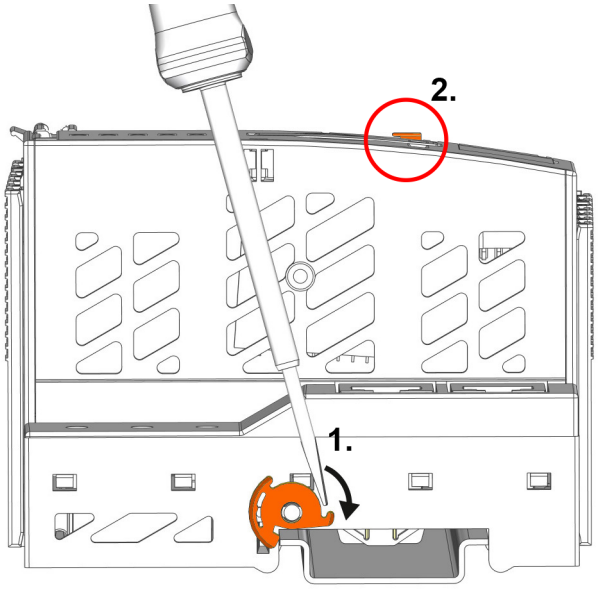


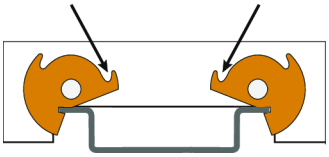
Figure 24: Unlocking Head Station

1. Use an operating tool to turn the DIN-rail locking cam until the nose of the DIN-rail locking cam disengages from the DIN-rail.
2. Use the release tab to pull the head station off the DIN-rail and, if necessary, out of the assembly. To remove head stations with two release tabs, both tabs must be pulled at the same time!

⇨ When the head station is pulled out of an assembly, the electrical connections of the data contacts or power jumper contacts to the subsequent I/O module are separated.

Special Case: Head Stations with Two DIN-Rail Locking Cams

Some head stations have two DIN-rail locking cams. In this case, both DIN-rail locking cams must also be released in order to detach the head station from the DIN-rail.



7.6 Removing an I/O Module

An I/O module can be detached from the DIN-rail with the help of its release tab and pulled out of the assembly.

⚠ CAUTION

Risk of injury due to sharp-edged power jumper contacts!

Removing the products in a careless manner can cause cuts.

- When removing the products, pay attention to the power jumper contacts!

1. Pull the orange release tab on the I/O module upwards. To remove I/O modules with two release tabs from an assembly, both tabs must be pulled at the same time!

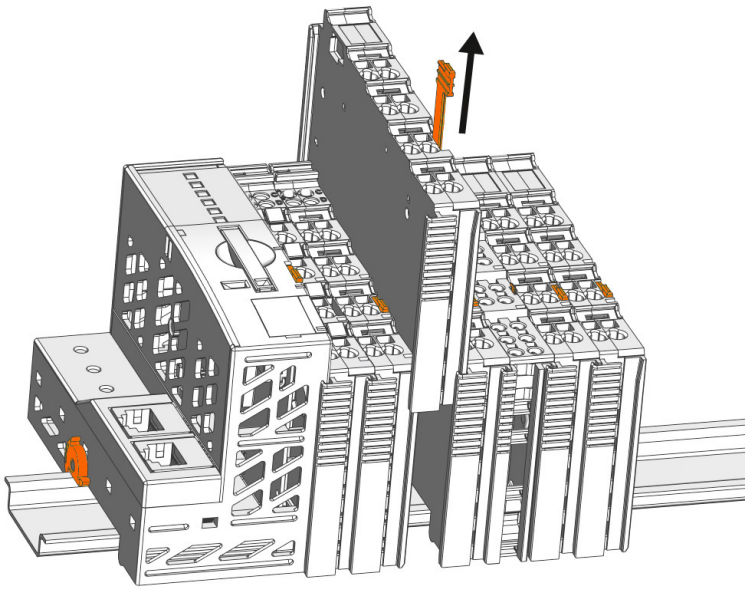


Figure 25: Pulling the Release Tab

2. Pull the I/O module out of the assembly by the release tab.

⇨ When the I/O module is pulled out of the assembly, the electrical connections of the data and power contacts are disconnected.

8 Conductor Termination

8.1 Conductor Termination

CAGE CLAMP®- and Push-in CAGE CLAMP® Connectors are designed for solid, stranded and fine-stranded conductors.

Only one conductor may be connected to each clamping unit.

8.1.1 Connecting Conductors to CAGE CLAMP®

To connect the conductor, an operating tool must be used to open the CAGE CLAMP®.

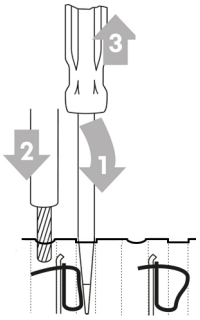


Figure 26: Connecting a Conductor to a CAGE CLAMP®

To connect a conductor, proceed as follows:

✓ You need an operating tool.

1. Insert the operating tool straight into the rectangular opening above the connection to open the CAGE CLAMP®.
2. Insert the conductor into the corresponding connection opening (round housing opening).
3. Remove the operating tool again to close CAGE CLAMP®.

⇨ The conductor is now securely clamped.

8.1.2 Connecting Conductors to Push-in CAGE CLAMP®

Stranded and fine-stranded conductors with ferrules, as well as solid conductors can be plugged directly into
Push-in CAGE CLAMP® Connectors.
For all other conductor types, an operating tool must be used to open the Push-in CAGE CLAMP®.

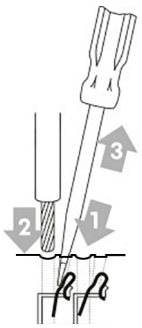


Figure 27: Connecting Conductor to Push-in CAGE CLAMP®

To open a Push-in CAGE CLAMP® Connector, proceed as follows:

✓ You need an operating tool.

1. Insert the operating tool at an angle into the rectangular opening above the connection to open the CAGE CLAMP®.
2. Insert the conductor into the corresponding connection opening (round housing opening).
3. Remove the operating tool again to close the Push-in CAGE CLAMP®.

⇨ The conductor is now securely clamped.

9 Decommissioning

9.1 Shutting Down

1. Bring the process to a secure stop.
2. Disconnect the respective system component from the power supply.
3. Check if the voltage is isolated.
4. Protect the system component from accidental or unauthorized restart.
5. Switch off any system and/or field supply to the node that is still connected. The order has no effect.

⇨ The node does not carry any power and the product can be dismounted (**Assembly and Disassembly [▶ 45]**).

9.2 Disposal and Recycling

	**WEEE Mark** Electrical and electronic equipment may not be disposed of with household waste. This also applies to products without this mark.

Electrical and electronic equipment contain materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use. Environmentally friendly disposal benefits health, protects the environment from harmful substances in electrical and electronic equipment and enables sustainable and efficient use of resources.

- Observe the national and local regulations for the disposal of electrical and electronic equipment, lithium-ion batteries, lead–acid batteries and packaging.
- Clear any data stored on electrical and electronic equipment.
- Remove lithium-ion batteries, lead–acid batteries or memory cards that are added to the electrical and electronic equipment.
- Wear appropriate personal protective equipment when removing the lithium-ion batteries/lead–acid batteries.
- Dispose of the removed lithium-ion batteries/lead–acid batteries according to your local waste regulations (e. g. collection boxes at the retail or local collection points).
- Have electrical and electronic equipment sent to a local collection point.
- Dispose of all types of packaging to ensure a high level of recovery, reuse and recycling.
- Transport packages from the B2B area can be taken back free of charge via a return system in accordance with the Packaging Act. Please contact our service provider Interseroh directly. The corresponding certificate can be found at: **corporate-certificates**
- Throughout Europe, Directives 2006/66/EC, 94/62/EC and 2012/19/EU (WEEE) apply. National directives and laws may differ.

10 Appendix

10.1 Setup Guidelines, Standards and Approvals

10.1.1 Use in Residential Areas

The system with the head station meets the requirements for emission of interference in residential areas:

- **ETHERNET**
  750-352/040-000
  750-362/040-000
  750-364/040-010
  750-880/040-000
  750-880/040-001
  750-890/040-000
  750-8202/040-000
  750-8202/040-001
  750-8206/040-000
  750-8206/040-001
  750-8210/040-000
  750-8211/040-000
  750-8211/040-001
  750-8212/040-00x
  750-8212/040-010
  750-8213/040-010
  750-8216/040-000
- **CANopen**
  750-338/040-000
  750-838/040-000
- **Modbus TCP**
  750-363/040-000
  750-365/040-010

With individual approval, the system can also be used for residential areas (residential, business and commercial areas, small business) with other head stations. The individual approval can be obtained from a governmental or testing agency. In Germany, the Federal Office for Post and Telecommunications and its extensions issue the individual approval.

Use of other head stations is possible under certain conditions. Please contact WAGO GmbH & Co. KG.

10.1.2 Standards and Approvals

The WAGO I/O System 750 XTR Series was tested according to the following standards and guidelines. Depending on the selected components, there may be limitations on fulfillment of individual EMC standards.

The test values can be found in the manuals of the corresponding components:

Table 9: Climatic and Mechanical Environmental Conditions

Area	Per Standard	Title
Environmental assessment	EN 50155*	Railway applications – Rolling stock – Electronic equipment
	EN 50125-3*	Railway applications – Environmental conditions for signaling and telecommunications equipment
	EN 61373*	Railway applications – Rolling stock equipment – Shock and vibration tests
	EN 61131-2	Programmable controllers – Tests
	EN 60721-3-1	Environmental conditions – Storage
	EN 60721-3-3	Environmental conditions – Stationary use at weatherprotected locations
	EN 60870-2-2	Telecontrol equipment and systems – Environmental conditions
	EN 61850-3	Communication networks and systems for power utility automation
	IEEE 1613	Environmental and Testing Requirements in Power Substations
	Shipbuilding	Systems for maritime shipping

** Not valid for Ex i modules, for 750-495/040-010 and for 750-8211/040-00x PFCs*

Table 10: EMC

Area	Per Standard	Title
EMC immunity to interference	EN 61000-6-1	EMC – Generic standards – Immunity standard for residential environments
	EN 61000-6-2	EMC – Generic standards – Immunity for industrial environments
	EN 61131-2 Zone C	Programmable controllers – Tests
	Shipbuilding	Systems for maritime shipping
	EN 50121-3-2	EMC – Railway applications – Apparatus
	EN 50121-4	Railway applications – Electromagnetic compatibility – Emission and immunity
	EN 50121-5	Railway applications – Electromagnetic compatibility – Emission and immunity
	EN 60255-26	Measuring relays and protection equipment – Electromagnetic compatibility requirements
	EN 60870-2-1	Telecontrol equipment and systems – Electromagnetic compatibility

Area	Per Standard	Title
	EN 61850-3	Communication networks and systems in stations – General requirements
	IEC 61000-6-5	Immunity for power station and substation environments
	IEEE 1613	Environmental and Testing Requirements in Power Substations
	IEEE 1613a	Environmental and Testing Requirements in Power Substations Amendment
	IEEE 1613.1	Environmental and Testing Requirements in Transmission and Distribution Facilities
EMC emission of interference	EN 61000-6-3	EMC – Generic standard – Emission standard for equipment in residential environments
	EN 61000-6-4	EMC – Generic standard – Emission standard for industrial environments
	EN 61131-2	Programmable controllers – Tests
	Shipbuilding	Systems for maritime shipping
	EN 50121-3-2	EMC – Railway applications – Apparatus
	EN 50121-4	Railway applications – Electromagnetic compatibility – Emission and immunity
	EN 50121-5	Railway applications – Electromagnetic compatibility – Emission and immunity
	EN 60255-26	Measuring relays and protection equipment – Electromagnetic compatibility requirements
	EN 60870-2-1	Telecontrol equipment and systems – Electromagnetic compatibility
	EN 61850-3	Communication networks and systems in stations – General requirements

Table 11: Standards and Rated Conditions for Explosion Protection Applications – XTR Standard: ATEX

ATEX per Directive 2014/34/EU	
General Requirements	
EN 60079-0:2018	Group II electrical equipment
Equipment Requirements in the Types of Protection	
EN 60079-7:2015/A1:2018	Electrical equipment in “e” type of protection with “ec” level of protection
EN 60079-15:2010	Electrical equipment in the “n” type of protection with “nC” level of protection

Table 12: Standards and Rated Conditions for Explosion Protection Applications – XTR Standard: IECEx

IECEx Certificates of Conformity	
General Requirements	
IEC 60079-0 ed. 7	Group II electrical equipment
Equipment Requirements in the Types of Protection	

IECEx Certificates of Conformity	
EC 60079-7 ed. 5.1	Electrical equipment in “e” type of protection with “ec” level of protection
IEC 60079-15 ed. 5	Electrical equipment in the “n” type of protection with “nC” level of protection

Table 13: Standards and Rated Conditions for Explosion Protection Applications – XTR Ex i: ATEX

ATEX per Directive 2014/34/EU	
General Requirements	
EN 60079-0:2018	Group II electrical equipment
Equipment Requirements in the Types of Protection	
EN 60079-7:2015/A1:2018	Electrical equipment in “e” type of protection with “ec” level of protection
EN 60079-11:2012	Equipment protection by intrinsic safety “i”

Table 14: Standards and Rated Conditions for Explosion Protection Applications – XTR Ex i: IECEx

IECEx Certificates of Conformity	
General Requirements	
IEC 60079-0 ed. 7	Equipment – general requirements
Equipment Requirements in the Types of Protection	
IEC 60079-7 ed. 5.1	Equipment protection by increased safety “e”
IEC 60079-11 ed. 6	Equipment protection by intrinsic safety “i”

The following standards and operating conditions for railway applications are only applicable to XTR standard products, not to XTR Ex i.
The PFC 750-8211/040-00x and 750-495/040-010 Power Measurement Module are also exceptions.

Table 15: Standards and Rated Conditions for Railway Applications (EN 50155:2017)

Requirement	Class/Standard Compliance
4.3 Environmental service conditions	
4.3.1 Altitude	AX (EN 50125-1)
4.3.2 Operating temperature	OT4
4.3.3 Switch-on extended operating temperature	ST1
4.3.4 Rapid temperature variations	H1
4.3.5 Shock and vibration	1B (EN 61373)
4.3.7 Relative humidity	95 % (EN 50125-1)
5.1 Power supply	
5.1.1.2 DC supply range	
Minimum continuous voltage	$0.7 \times U_n$
Maximum continuous voltage	$1.25 \times U_n$
5.1.1.3 Temporary DC power supply fluctuation	
Minimum voltage	$0.6 \times U_n$
Maximum voltage	$1.4 \times U_n$
5.1.1.4 Interruptions of voltage supply	S1
5.1.3 Switching classes (power supply)	Must be ensured with a suitable external power supply
5.2.3 Electromagnetic compatibility	EN 50121-3-2
5.2.6 Insulation	EN 50124-1; overvoltage category OV2
6.2 Useful life	LX

Requirement	Class/Standard Compliance
10.7 Protective coatings for printed board assemblies	PC2
11.3 Fire behavior requirements	EN 45545-2 hazard level HL3
1**2 Documentation**	Per appendix G
MTBF values (per MIL-HDBK-217-F2)	Are available and are provided upon request on a project-specific basis

WAGO is certified in accordance with the IRIS quality standard.

Table 16: Additional EMC Requirements for Railway Applications

Requirement	Class Compliance
EBA (German Federal Railway Authority) Regulation No. EMC 06 Technical rules on electromagnetic compatibility: Certification of the radio compatibility of rail vehicles with railway radio services	Coupler and I/O modules: S0 PFC200: S2
Electromagnetic compatibility	EN 50121-4 and EN 50121-5

10.2 Installation Regulations Specified by Approvals

10.2.1 Special Notes Regarding Explosion Protection

The following warning notices are to be posted in the immediate proximity of the product (WAGO I/O System 750 XTR):

- **WARNING – DO NOT REMOVE OR REPLACE FUSED WHILE ENERGIZED!**
- **WARNING – DO NOT DISCONNECT WHILE ENERGIZED!**
- **WARNING – ONLY DISCONNECT IN A NON-HAZARDOUS AREA!**

Before using the components, check whether the intended application is permitted in accordance with the respective printing. Pay attention to any changes to the printing when replacing components.

The product is open type equipment. As such, the product must only be installed in appropriate enclosures or electrical operation rooms to which the follwing applies:

- Can only be opened using a tool or key.
- Inside pollution degree 1 or 2.
- In operation, internal air temperature within the highest minimum value and lowest maximum value of the permissible surrounding air temperature of all components
- Minimum degree of protection: min. IP54 (acc. to EN/IEC 60529)
- For use in Zone 2 (Gc), compliance with the applicable requirements of the standards EN/IEC/ABNT NBR IEC 60079-0, -11, -15
- For use in Zone 22 (Dc), compliance with the applicable requirements of the standards EN/IEC/ABNT NBR IEC 60079-0, -11, -15 and -31
- For use in mining (Mb), minimum degree of protection IP64 (acc. EN/IEC 60529) and adequate protection acc. EN/IEC/ABNT NBR IEC 60079-0 and -1
- Depending on zoning and device category, correct installation and compliance with requirements must be assessed and certified by a "Notified Body" (ExNB) if necessary!

Explosive atmosphere occurring simultaneously with assembly, installation or repair work must be ruled out. Among other things, these include the following activities:

- Insertion and removal of components
- Connecting or disconnecting from fieldbus, antenna, D-Sub, ETHERNET or USB connections, DVI ports, memory cards, configuration and programming interfaces in general and service interface in particular
- Operating DIP switches, coding switches or potentiometers
- Replacing fuses

Wiring (connecting or disconnecting) of non-intrinsically safe circuits is only permitted in the following cases:

- The circuit is disconnected from the power supply.
- The area is known to be non-hazardous.

Outside the device, suitable measures must be taken so that the rated voltage is not exceeded by more than 40 % due to transient faults (e.g., when powering the field supply).

Product components intended for intrinsically safe applications may only be powered by supply modules which are intended for intrinsically safe applications themselves.

Only field devices whose power supply corresponds to overvoltage category I or II may be connected to these components.

10.2.2 UL Requirements from Installation Regulations

10.2.2.1 UL Ordinary Locations per Report Reference E175199-19970402

ⓘ Note

Valid Installation Regulations

The underlying installation regulations are covered by the instruction leaflet and the product manuals at the time of manufacture prior to July 4, 2014.

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Installation instructions revised on 2014-07-04

For cULus examination, the WAGO I/O System Series 750, 753 and 758 s have only been investigated for risk of fire and electrical shock (in accordance with UL508 and CSA C22.2 No. 142).

For devices with EtherCAT/Ethernet connectors:

- Only for use in LAN, not for connection to telecommunication circuits

For devices 750-1400, 750-1402, 750-1500, 750-1501 and 750-1502:

- Connection shall be made with R/C (ECBT2) Type 612-230, manufactured by Wuerth Elektronik Eisos GmbH & Co KG, rated 150°C provided with R/C (AVLV2) Style 2464, rated 300 V, 80°C.

10.2.2.2 UL Ordinary Locations per Report Reference E175199-20180807

Note

Valid Installation Regulations

The underlying installation regulations are covered by the instruction leaflet and the product manuals at the time of manufacture prior to August 19, 2022.

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Manual statements revised on 2022-08-19

For Bus coupler, Bus controller for 24V system supply input voltage an external fuse, rated max. 2A, slow acting, min. 30Vdc shall be used.

For field supplied Module (also supplied by Power jumper contacts) for 24V field supply input voltage an external fuse, rated max. 10A, slow acting, min. 30Vdc shall be used.

For field supplied Module (also supplied by Power jumper contacts) with field supply input voltage up to 250Vac/Vdc an external fuse, rated max. 10A, slow acting, related to the appropriate voltage shall be used.

For products Module Nos. 750-750-495, 750-495/000-001 750-495/000-002, 750-495/040-000, 750-495/040-001, 750-495/040-002 for Voltage measurement inputs Three-phase, three-wire system: 600 Vac:

The Neutral shall not be connected. Neutral conductors as part of the mains circuit, shall be considered hazardous live. No PI in Neutral provided.

With distance module mounting (eg. Module Nos. 750-616) with a width of 12 mm. Additional Supplementary insulation shall be provided.

For Models 750-439/040-000, 750-481/040-000, 750-484/040-000, 750-486/040-000, 750-489, 750-535/040-000, 750-585/040-000, 750-586/040-000, and 750-633/040-000:

Shall only be operated with a power supply 24 Vdc Diagn for Ex I XTR Modules 750-606/040-000.

10.2.2.3 UL Ordinary Locations per Report Reference E175199-20181019

Note

Valid Installation Regulations

The underlying installation regulations are covered by the instruction leaflet and the product manuals at the time of manufacture prior to August 19, 2022.

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Manual statements revised on 2022-07-12

For Bus coupler, Bus controller for 24V system supply input voltage an external fuse, rated max. 2A, slow acting, min. 30Vdc shall be used.

For field supplied Module (also supplied by Power jumper contacts) for 24V field supply input voltage an external fuse, rated max. 10A, slow acting, min. 30Vdc shall be used.

For Module No. 750-8211, 750-8211/040-000, 750-8211/040-001:

These devices are to be used with Optical Transceivers / SFP modules as prescribed in the Installation instructions of WAGO. Such SFP modules need to be in compliance with Laser Class I in accordance with 21 CFR 1040 and rated max. 1 W Neutral shall not be connected. Neutral conductors as part of the mains circuit, shall be considered hazardous live. No PI in Neutral provided.

10.2.2.4 UL Ordinary Locations per Report Reference E175199-20210716

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Manual statements issued on 2021-07-16

For Bus coupler, Bus controller for 24V system supply input voltage an external fuse, rated max. 2A, slow acting, min. 30Vdc shall be used.

For field supplied Module (also supplied by Power jumper contacts) for 24V field supply input voltage an external fuse, rated max. 10A, slow acting, min. 30Vdc shall be used.

10.2.2.5 UL Ordinary Locations per Report Reference E175199-20230421

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Manual statements issued on 2023-04-21

For Bus coupler, Bus controller for 24V system supply input voltage an external fuse, rated max. 2A, slow acting, min. 30Vdc shall be used.

For field supplied Module (also supplied by Power jumper contacts) for 24V field supply input voltage an external fuse, rated max. 10A, slow acting, min. 30Vdc shall be used.

10.2.2.6 UL Hazardous Locations per Report Reference E198726-19980911

ⓘ Note

Valid Installation Regulations

The underlying installation regulations are covered by the instruction leaflet and the product manuals at the time of manufacture prior to August 19, 2022.

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Installation and operating instructions revised on 2022-12-08

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D Or nonhazardous locations only.

This equipment is to be fitted within tool-secured enclosures only.

English	French
WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2.	ATTENTION – DANGER D'EXPLOSION – L'ÉCHANGE DE COMPOSANTS PEUT ALTÉRER L'APTITUDE DE CLASSE I, DIV. 2.

Applicable for each operator accessible connector and fuse holder:

English	French
WARNING - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS	ATTENTION – NE DÉBRANCHER L'APPAREIL QU'EN L'ABSENCE DE COURANT OU LORSQUE LA ZONE EST CONSIDÉRÉE SANS RISQUE D'EXPLOSION.
WARNING - USE MODULE 750-642 ONLY WITH ANTENNA MODULE 758 -910	AVERTISSEMENT : UTILISEZ LE MODULE RÉF. 750-642 UNIQUEMENT AVEC LE MODULE D'ANTENNE RÉF. 758-910 !

Module 750-538 only

Manual shall contain CONTROL DRAWING No.750538 with its entity parameters. “In Hazardous Locations, Non-Incendive only when installed per Control Drawing No. 750538”

The Modules 750-439, 0750-0486, 750-538, 0750-0539, 750-633, 750-663/000-003, 750-489 shall only be supplied with 750-606 or 750-625/000-001.

For Models 0750-0439/0040-0000, 0750-0481/0040-0000, 0750-0484/0040-0000, 0750-0486/0040-0000, 0750-0535/0040-0000, 0750-0585/0040-0000, 0750 -0586/0040-0000, and 0750-0633/0040-0000: Shall only be operated with a power supply 24 Vdc Diagnosis for Ex I XTR Modules 0750-0606/0040-0000

For head stations containing SD card reader sockets only:

English	French
WARNING: DO NOT CONNECT OR DISCONNECT SD-CARD WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRANTIONS OF FLAMMABLE GASES OR VAPORS.	AVERTISSEMENT: NE PAS BRANCHER NI DÉBRANCHER *SD-CARD* PENDANT QUE LE CIRCUIT EST SOUS TENSION À MOIS QUE L´EMPLACEMENT NE SOIT EXEMPT DE CONCENTRATIONS INFLAMMABLES.

For devices with Ether CAT/Ethernet connectors:

Only for use in LAN, not for connection to telecommunication circuits.

For the following modules:

750-8212/040-000, 750-8212/040-001, 750-8216/040-000, 750-8216/040-001 the max. ambient temperature for vertical mounting positions (Modules are vertically piled above each other) is 65 °C.

For Couplers/Controllers and Economy bus modules only:
The configuration interface Service connector is for temporary connection only. Do not connect or disconnect unless the area is known to be non-hazardous. Connection or disconnection in an explosive atmosphere could result in an explosion.

For devices containing fuses:

English	French
WARNING - DEVICES CONTAINING FUSES MUST NOT BE FITTED INTO CIRCUITS SUBJECT TO OVERLOADS, E.G. MOTOR CIRCUITS	ATTENTION – DES APPAREILS AVEC FUSIBLES NE DOIVENT PAS ÊTRE INTÉGRÉS DANS DES CIRCUITS QUI SONT SOUMIS À UNE SURCHARGE, PAR EX. DES CIRCUITS DE MOTEUR.

A switch suitable for the location where the equipment is installed shall be provided to remove the power from the fuse.

10.2.2.7 UL Hazardous Locations per Report Reference E198726-2023-01-31

Because the following information refers to language-specific regulations, standards or certifications applicable to the specific installation and operation location, it is presented in the respective original language.

Installation and operating instructions Issued on 2023-01-31

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D Or nonhazardous locations only.

This equipment is an OPEN-TYPE device meant to be installed in an enclosure (DIN rail mounted) suitable for the environment and that is only accessible with the use of a tool.

English	French
WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS FREE OF IGNITABLE CONCENTRATIONS.	AVERTISSEMENT − RISQUE D´EXPLOSION − NE DÉBRANCHER L'APPAREIL QU'EN L'ABSENCE DE COURANT OU QUE L´EMPLACEMENT NE SOIT EXEMPT DE CONCENTRATIONS INFLAMMABLES.

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