



The Electronic Brand of



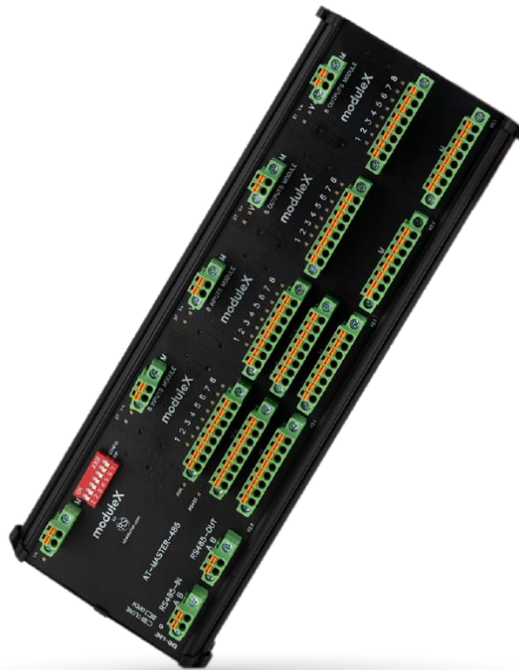
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## USE AND MAINTENANCE MANUAL

# moduleX

Expandable and remote I/O modules

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# Section 1

**Declaration of conformity**  
**Manufacturer's Data**  
**Documentation Information**

## DECLARATION OF CONFORMITY

The device described in this documentation is accompanied at the sales by the declaration of conformity, drawn up in accordance with the current legislation in force in the European territory.



### PLEASE NOTE

*BEFORE USING THE DEVICE IN ANY WAY, VERIFY THE PRESENCE OF THE DECLARATION OF CONFORMITY.*



### PLEASE NOTE

*IF THE DEVICE IS TRANSFERRED TO THIRD PARTIES, ALL DOCUMENTATION MUST BE DELIVERED TOGETHER WITH IT.*

---

## MANUFACTURER'S DATA

Company name	IDT S.r.l. Societal benefit
Company address	Corso Or Bassano 402/6 - 10137 - Turin (TO)
VAT NUMBER	IT11481370010
Tel.	+39 011 0922786
E-mail	<a href="mailto:info@idtsolution.com">info@idtsolution.com</a>
Website	<a href="https://idtsolution.com/">https://idtsolution.com/</a>

## AUTHORIZED ASSISTANCE

**Authorized assistance on the device is carried out directly by the manufacturing company or by a certified technician appointed by them.**

## PRESENTATION OF THE MANUAL

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### PLEASE NOTE

*UPON RECEIPT OF THE DEVICE, BEFORE PERFORMING ANY OPERATION, PLEASE READ THIS MANUAL CAREFULLY.*

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The manual is composed of various sections, each of which covers a series of topics, divided into chapters and paragraphs.

The general index lists all the topics covered in the entire manual. The page numbering is progressive, and each page displays its number. This manual is intended for the user responsible for configuring, using, and maintaining the device throughout its technical life after production and sale.

In the event that the device is subsequently transferred to third parties for any reason (sale, loan, or any other reason), it must be delivered complete with all documentation.

**Before beginning any operation, it is necessary to have at least read the entire manual and then delve into the topic related to the operations you intend to perform.**

This manual contains confidential information and cannot be provided, even partially, to third parties for any use and in any form, without the prior written consent of the manufacturing company.

The manufacturing company declares that the information contained in this manual is consistent with the technical and safety specifications of the device to which the manual refers.

A certified copy of this manual is kept in the technical file of the device, held by the manufacturing company.

The manufacturing company does not recognize any documentation that has not been produced, issued, or distributed by itself or by an authorized representative.

This manual, along with the entire technical file, will be kept by the manufacturer for the period required by law (10 years).

During this period, a copy of the documentation accompanying the product may be requested at the time of sale.

The entire technical file remains available exclusively for the control authorities during this period, who may request a copy.

After this period, it will be the responsibility and duty of whoever manages the product to ensure that both the product and the documentation comply with the laws in force at the time of inspection.

## Conventions

In order to achieve a more immediate understanding of the topics, the manual adopts graphical and typographic symbols and conventions described below.

### *Graphic warning conventions*

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#### **PLEASE NOTE**

*NOTES CONTAIN IMPORTANT INFORMATION, HIGHLIGHTED OUTSIDE THE TEXT THEY REFER TO.*

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#### **WARNING**

*WARNING INDICATIONS INDICATE PROCEDURES WHOSE TOTAL OR PARTIAL NON-OBSERVANCE MAY CAUSE DAMAGE TO THE DEVICE, ITS COMPONENTS, AND MAY EXPOSE INDIVIDUALS TO DANGER.*

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#### **DANGER**

*DANGER INDICATIONS INDICATE PROCEDURES WHOSE TOTAL OR PARTIAL NON-OBSERVANCE MAY CAUSE DAMAGE OR INJURY TO THE HEALTH OF INDIVIDUALS. SERIOUS DAMAGE TO THE DEVICE.*

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## ATTACHED DOCUMENTATION

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### **PLEASE NOTE**

*BEFORE USING THE DEVICE, VERIFY THE PRESENCE OF ALL ATTACHED DOCUMENTATION.*

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### **PLEASE NOTE**

*IF IT IS TRANSFERRED TO THIRD PARTIES, ALL DOCUMENTATION OF THE DEVICE MUST BE DELIVERED TOGETHER WITH IT.*

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In addition to this manual and the declaration of conformity, the following documents are part of the manual:

- MX-master485\_datasheet
- MX-8DI\_datasheet
- MX-8DO\_datasheet
- MX-4AI\_datasheet
- MX-4AOV\_datasheet



# Section 2

## Warranty

General safety standards

Technical specs

Intended and unintended use

Residual risks

## WARRANTY

The warranty terms, fully listed in the purchase contract, are only valid if the device is used under intended conditions.

Except for the interventions described in the **MAINTENANCE section** and performed using the indicated procedures, any repair or modification made to the device by the user or unauthorized companies will result in the forfeiture of the warranty.

The warranty does not cover damages caused by incompetence or negligence in the use of the device, or by improper or omitted maintenance.

<b>The products sold by us are covered by a warranty for the device under the following conditions:</b>	
1	The warranty is valid for a period of 12/24 months depending on the legal status of the customer.
2	The manufacturing company undertakes to replace, at its discretion, malfunctioning or incorrectly manufactured parts, only after a careful inspection and confirmation of incorrect assembly.
3	The transportation and/or shipping costs for the repair or replacement of the product are always the responsibility of the buyer.
4	During the warranty period, the replaced products become the property of the manufacturer.
5	Only the original purchaser who has adhered to the instructions for normal maintenance contained in the manual can benefit from this warranty. Our warranty responsibility expires when: the original owner transfers ownership of the product, or modifications have been made to it.
6	The warranty does not cover damages resulting from excessive stress, such as using the product after detecting an anomaly, using inappropriate exercise methods, or failing to observe the instructions for use and maintenance.
7	The manufacturer assumes no responsibility for any difficulties that may arise in resale or use abroad due to the regulations in force in the country where the product was sold.
8	The defective product or part of the defective product will not be replaced without proof of purchase (invoice, copy of payment received); otherwise, the replaced part will be charged to the buyer.

**Notice:** If you believe it is necessary to use the warranty, please provide the following information:

1	Type/Version
2	Date of purchase (presentation of the purchase document)
3	Detailed problem description



### PLEASE NOTE

*FAILURE TO COMPLY WITH THE INTERVENTION AND USAGE METHODS OF THE DEVICE DESCRIBED IN THIS DOCUMENTATION RESULTS IN THE FORFEITURE OF WARRANTY TERMS.*

## GENERAL SAFETY STANDARDS

### Warning

If any part of the documentation is partially missing or illegible, please consult the manufacturing company before performing any further operations on the device.

This chapter describes the general safety standards to be observed during any operation carried out with the device. The intervention procedures, described in the following chapters, must be carried out respecting both the indicated execution methods and the general safety standards of this chapter.

**The safety standards and usage and maintenance procedures outlined in this document also supplement the general workplace safety standards that must be adhered to.**

Different countries may have different safety regulations. It is therefore emphasized that in all cases where the regulations in the documentation conflict with or are less stringent than the regulations of the country in which the device is used, the regulations of the country shall take precedence over those of the documentation.



### PLEASE NOTE

*THE MANUFACTURING COMPANY CANNOT BE HELD RESPONSIBLE UNDER ANY CIRCUMSTANCES FOR ACCIDENTS OR DAMAGES RESULTING FROM THE INAPPROPRIATE USE OF THE DEVICE, AS WELL AS FROM THE PARTIAL NON-COMPLIANCE WITH THE SAFETY REGULATIONS AND INTERVENTION PROCEDURES DESCRIBED IN THE DOCUMENTATION.*

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Failure to comply with the rules of use and the procedures for intervention, use, and maintenance of the device contained in the manual also results in the cancellation of warranty terms.

### Safety standards

During the installation, configuration, and subsequent use of the device, situations of incorrect and unforeseen operation may occur, which are not described in the documentation. These completely abnormal situations may sometimes be caused by environmental factors or fortuitous failures that are not foreseeable by the manufacturer.

The manual must be kept by the user and/or by the personnel responsible for managing, maintaining, and using the device.

In case of deterioration or loss, the purchaser may request a certified copy from the manufacturing company. We suggest keeping a backup copy in a place where it cannot be damaged or lost.



### WARNING

*SINCE IT WOULD BE IMPOSSIBLE TO DESCRIBE ALL THE OPERATIONS THAT MUST NOT OR CANNOT BE PERFORMED, IT IS CONSIDERED THAT ALL OPERATIONS (OTHER THAN NORMAL USE) THAT ARE NOT EXPLICITLY DESCRIBED IN THE MANUAL PROVIDED WITH THE DEVICE ARE TO BE CONSIDERED INFEASIBLE.*

---

## DESCRIPTION

ModuleX is a modular I/O solution designed specifically for the industrial sector, intended to be used to expand the input and output capabilities of a main control system (PLC or similar), to provide the possibility of placing I/O systems along the automation line or machine and not necessarily confined within a single cabinet.

The heart of ModuleX is the "main" module, the main device capable of managing up to 16 expansion modules. The devices connected together form an "I/O cluster".

The main board "AT-MASTER-485", through Modbus-RTU communication, can communicate with any electronic board or PLC via RS-485 serial port.

The slave devices are specific expansion I/O modules. The 4 available models are:

- **MX-8DI** (8 digital inputs): This module is designed to acquire signals from sensors, switches, or other input devices. It has 8 separate inputs that can be used to monitor various types of signals.
- **MX-8DO** (8 digital outputs): This module offers 8 outputs that allow controlling actuators, relays, or other output devices. It is ideal for activating or deactivating devices or systems according to the application's needs.
- **MX-4AI** (4 configurable analog inputs): This module is designed to acquire analog signals from sensors or other devices (PLC, embedded devices). The device can be configured via DIP switch to acquire 0-10V or 0-20mA analog signals.
- **MX-4AOV** (4 voltage analog outputs): This module is designed to generate analog signals in the range of 0-10V on the 4 output channels with a maximum output current of 25mA per channel.

It is possible to prepare space for a module by inserting the **MX-E** plug.

The main board and expansion devices have both logic circuitry and "field" circuitry, which interfaces with sensors and actuators, galvanically isolated to ensure the product's immunity to disturbances and interference.

## KEY ELEMENTS

### PLUG & PLAY

No software configuration is required; the main board connects with 2 wires to any device with an RS-485 interface. The use of inputs and outputs is done through reading and writing to Modbus registers.

### MODULAR

A cluster consists of 1 main device and can manage up to 16 expansion modules. By adding and removing modules, the system dynamically self-configures, thus not requiring any manual configuration.

### DISTRIBUTED

It is possible to relay the RS-485 bus from each master, reaching up to 16 clusters distributed throughout a facility. This setup can support up to 2048 digital I/Os!

### SIMPLIFIED WIRING

In a traditional electrical panel, I/O modules or PLCs are wired to distribution terminals to which sensors, actuators, etc., are then connected. ModuleX eliminates this step for the installer thanks to the integrated distribution terminals on each module, thus resulting in significant space, time, and cost savings.

### SPEED

The cluster has an I/O cycle of 10 milliseconds for applications requiring high-speed response.

## STANDARD CONFIGURATION

The I/O cluster is available in 4 configurations with a specific number of modules, and the main module is counted in each configuration. The length of the cluster varies based on the number of modules:

- **2 modules:** L = 150mm
- **4 modules:** L = 245mm
- **6 modules:** L = 335mm
- **8 modules:** L = 423mm

Custom dimensions are available upon request.

During the ordering phase, the customer must specify the required module configuration. Examples of configurations include:

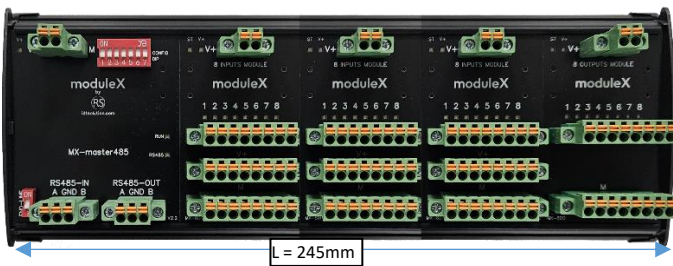
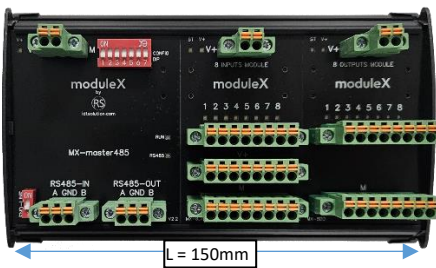
- **2 modules:** MX-master485 + MX-8DI + MX-8DO
- **4 modules:** MX-master485 + MX-8DI + MX-8DI + MX-8DI + MX-8DI
- **6 modules:** MX-master485 + MX-8DI + MX-8DI + MX-8AI + MX-8DO + MX-AOV + MX-E
- **8 modules:** MX-master485 + MX-8DI + MX-8DI + MX-8AI + MX-8DO + MX-AOV + MX-8DO + MX-8DO + MX-8DO

There are no limitations on the order of the modules; it is possible to alternate slave models within the I/O cluster.

The I/O cluster can be prepared for future expansions by inserting the **MX-E** module to reserve space for an additional module.

**Note:** the MX-E module should only be inserted as the last module of the cluster; it cannot be inserted between other modules.

## EXAMPLES OF CONFIGURATION



## TECHNICAL SPECS

### AT-MASTER-485 Data

<b>Dimensions</b>	63 x 72 x 40 mm
<b>Weight</b>	33 g
<b>IP protection grade</b>	IP20
<b>Operating temperature</b>	0 to +50°
<b>Operating humidity</b>	Max 95%, no condensation
<b>Power supply</b>	24 VDC +/- 10% 0.5A max. Galvanically isolated.
<b>Internal protocol</b>	Xbus: up to 16 devices <sup>1</sup> , 10mSec refresh rate
<b>Communication protocol</b>	Modbus-RTU up to 115200bps, configurable address (1-16). IN-OUT port. 8 data bytes, no parity, 1 stop bit (8N1). Galvanically isolated.
<b>Connection</b>	Pluggable push-in terminal block with screw lock. AWG(mm <sup>2</sup> ): 24-16(0.2-1.5)
<b>Configuration</b>	Through DIP switch: Modbus ID, baud rate, register mode <sup>2</sup> , end-line resistor
<b>Boot up time</b>	5 seconds

Further details about the device and technical specifications can be found in the specific technical document.

### MX-8DI Data

<b>Dimensions</b>	45 x 72 x 40 mm
<b>Weight</b>	40 g
<b>IP protection grade</b>	IP20
<b>Operating temperature</b>	0 to +50°
<b>Operating humidity</b>	Max 95%, no condensation
<b>Logic power supply</b>	5 VDC 0.03A max via xbus
<b>Auxiliary power supply<sup>1</sup></b>	24 VDC +/- 10% 2A max. Galvanically isolated.
<b>Communication protocol</b>	Xbus
<b>Connection</b>	Pluggable push-in terminal block with screw lock. AWG(mm <sup>2</sup> ): 24-16(0.2-1.5)
<b>Configuration</b>	Automatic configuration through xbus
<b>Boot up time</b>	Logic: 100msec, Aux power: 10msec
<b>Input signal filter</b>	3 msec
<b>"0" signal voltage</b>	0..5V
<b>"1" signal voltage</b>	11..30V
<b>Input current</b>	3 mA

Further details about the device and technical specifications can be found in the specific technical document.

### MX-8DO Data

<b>Dimensions</b>	45 x 72 x 40 mm
<b>Weight</b>	35 g
<b>IP protection grade</b>	IP20
<b>Operating temperature</b>	0 to +50°
<b>Operating humidity</b>	Max 95%, no condensation
<b>Logic power supply</b>	5 VDC 0.03A max via xbus
<b>Auxiliary power supply<sup>1</sup></b>	24 VDC +/- 10% 6A max. Galvanically isolated.
<b>Communication protocol</b>	Xbus
<b>Connection</b>	Pluggable push-in terminal block with screw lock. AWG(mm <sup>2</sup> ): 24-16(0.2-1.5)
<b>Configuration</b>	Automatic configuration through xbus
<b>Boot up time</b>	Logic: 100msec, Aux power: 10msec
<b>Max output current</b>	0.7A per channel, short circuit proof
<b>Short circuit current</b>	1.7A max.
<b>Load type</b>	ohmic, inductive, lamp load

Further details about the device and technical specifications can be found in the specific technical document.

**MX-4AI Data**

<b>Dimensions</b>	45 x 72 x 40 mm
<b>Weight</b>	33 g
<b>IP protection grade</b>	IP20
<b>Operating temperature</b>	0 to +50°
<b>Operating humidity</b>	Max 95%, no condensation
<b>Logic power supply</b>	5 VDC 0.03A max via xbus
<b>Auxiliary power supply<sup>1</sup></b>	24 VDC +/- 10% 2A max. Galvanically isolated.
<b>Communication protocol</b>	Xbus
<b>Connection</b>	Pluggable push-in terminal block with screw lock. AWG(mm2): 24-16(0.2-1.5)
<b>Configuration</b>	Automatic configuration through xbus
<b>Boot up time</b>	Logic: 100msec, Aux power: 50 msec
<b>Input signal filter</b>	10 msec
<b>Channel type</b>	Voltage/current selectable via dip switch
<b>Measuring range</b>	0..10V / 0..20mA
<b>ADC resolution</b>	15 bit
<b>Measure values range</b>	0..32768
<b>Channel protection</b>	Overvoltage max. 25V

Further details about the device and technical specifications can be found in the specific technical document.

**MX-4AOV Data**

<b>Dimensions</b>	45 x 72 x 40 mm
<b>Weight</b>	30 g
<b>IP protection grade</b>	IP20
<b>Operating temperature</b>	0 to +50°
<b>Operating humidity</b>	Max 95%, no condensation
<b>Logic power supply</b>	5 VDC 0.03A max via xbus
<b>Auxiliary power supply<sup>1</sup></b>	24 VDC +/- 10% 0.5A max. Galvanically isolated.
<b>Communication protocol</b>	Xbus
<b>Connection</b>	Pluggable push-in terminal block with screw lock. AWG(mm2): 24-16(0.2-1.5)
<b>Configuration</b>	Automatic configuration through xbus
<b>Boot up time</b>	Logic: 100msec, Aux power: 50 msec
<b>Channel type</b>	Voltage
<b>Output range</b>	0..10V max. 25mA/channel
<b>DAC resolution</b>	12 bit
<b>Measure values range</b>	0..4096
<b>Channel response time</b>	20 msec
<b>Channel protection</b>	Short-circuit, current limitation.
<b>Channel status led</b>	When output is operative led turns on. VOUT > 0

Further details about the device and technical specifications can be found in the specific technical document.

**MX-E Data**

<b>Dimensions</b>	45 x 72 x 40 mm
<b>Weight</b>	10 g
<b>IP protection rating</b>	IP20

## INTENDED USE

The device is a modular I/O solution specifically designed for the industrial sector, intended to expand the input and output capabilities of a main control system (PLC or similar). It allows for the relocation of clusters along the automation line or machine, not necessarily confined within a single cabinet. It also enables direct wiring of sensors and actuators to slave modules, eliminating the need for distribution terminals.

## UNINTENDED USE

No usage other than those described in the **DESCRIPTION** and **INTENDED USE** section is permitted.

It is also strictly prohibited to:

- Use the device with components other than those supported and provided with the product at the time of purchase.
- Use the device for applications inconsistent with those indicated.
- Modify the device (hardware and firmware).

Reusing any unit after the device has been taken out of service releases the manufacturer from any liability arising from the use of the unit.



### PLEASE NOTE

*THE MANUFACTURER CANNOT UNDER ANY CIRCUMSTANCES BE HELD LIABLE FOR ACCIDENTS OR DAMAGES RESULTING FROM UNINTENDED USE OF THE DEVICE. ANY UNINTENDED USE ALSO RESULTS IN THE EXPIRATION OF WARRANTY TERMS.*

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### Residual risks

During the design phase, the manufacturing company conducted a thorough risk analysis of the system under consideration. From this analysis, certain risks emerged that are inherent and unavoidable in nature. These risks were then individually examined, and in this manual, emphasis has been placed on providing instructions on how to avoid them. Therefore, it is important that any user responsible for configuring, using, and maintaining the device has read the manual beforehand.



### PLEASE NOTE

*THE MANUFACTURER CANNOT UNDER ANY CIRCUMSTANCES BE HELD RESPONSIBLE FOR ACCIDENTS OR DAMAGES RESULTING FROM UNINTENDED USE OF THE DEVICE DUE TO NEGLIGENCE ON THE PART OF A USER.*

Particularly:

- It is strictly forbidden to make any modifications to the device. Any damage to people, animals, or property resulting from the improper modification of the device by an unauthorized operator releases the manufacturer from all liability.
- Carefully keep this manual, necessary for the correct and safe use of the device. Periodically check the status of the label applied to the product and replace it if damaged. (if damaged, contact authorized assistance)
- If the external structure of any component of the device presents sharp edges or edges due to an accidental impact, making it dangerous, it is necessary to contact authorized assistance and follow their instructions.



**Important:**

- Do not expose the device to water or other liquids.
- Proceed with caution during installation, configuration, and usage to avoid damaging the device.
- The device must be used only with compatible systems.
- The device must be used only with compatible power sources.

**OPERATIONS THAT INVOLVE RISKS FOR THE OPERATOR:**

Even during the design phase, solutions have been adopted to ensure the safe use of the device in all stages of operation: transportation, assembly, adjustment, use, and maintenance. However, not all potential risks to operators and the environment have been eliminated, either due to technological limitations (device reliability) or management challenges (excessive disposal difficulties). Therefore, residual risks are identified.



# Section 3

**Locations**

**Handling**

**Installation and configuration**

## WARNINGS

The lighting system (natural and/or artificial) of the configuration area must ensure the following minimum illumination values: 200 lux.

In the operations of handling and installing the product, it is necessary to provide for the use of personal protective equipment (PPE) such as:

- **Gloves:**

Operating in areas with hazardous tools and live parts requires the use of CE-marked gloves as PPE that protect against the entire set of risks just analyzed.

- **Protection glasses**

They are necessary in all jobs where there is a danger that an object and/or material may be projected into the eyes of an operator.



## UNPACKING INSTRUCTIONS

The device is supplied inside a cardboard packaging; the size of the package may vary depending on the number of modules.

Inside the package, you will find:

- Cluster I/O configured as per order
- Snap-in connection terminals

## LOCATIONS

Before proceeding with the handling and subsequent use of the device, it is important to consider some aspects. In particular, it is necessary to verify certain factors:

- The storage area of the product should be chosen so that it cannot be exposed to water, steam jets, and corrosive acids.
- The device should never be exposed to atmospheric agents.
- Operating temperature range: 0°C to +50°C
- Storage temperature range: -20°C to +85°C
- Maximum relative air humidity conditions: up to 90% without condensation.
- The device can only be used in indoor environments or within containment systems that allow compliance with the conditions indicated in the previous points.

## HANDLING

The device is supplied inside packaging to preserve its characteristics during storage and transportation. Despite this, it must be handled with care and using devices suitable for electrostatic discharge (ESD) prevention to avoid breakage or damage. After removing the packaging, dispose of it and never make it available to children.

The manufacturer is not liable for any damages to persons, animals, or property resulting from use that does not comply with the specifications outlined in this manual.

Due to its weight and compact dimensions, the device can be moved manually. Handle the device with care to avoid damage.

## INSTALLATION AND CONFIGURATION

### Warnings

All devices are tested and fine-tuned by the manufacturing company before shipment and delivery to the customer. The device is designed, manufactured, and tested to meet all specific standards (see the declaration of conformity) when configured according to best practices.

If the use and/or maintenance of the device are not conducted according to best practices, anomalies may occur during operation, and safety issues may arise. Improper use and maintenance void the warranty terms.

Before operating the device, completely remove any dust or moisture protections and any packaging materials.

### Preliminary checks

#### Damage check

Please ensure that the various parts of the system do not present physical damage due to impacts, tears, or abrasions. Pay particular attention to the following:

- Ensure there are no signs of dents or dings, indicative of impacts that may have occurred during transportation.
- Check that the input and output connectors are intact.

#### Damage reporting procedure

If damages are found, interrupt the configuration procedure and report the nature of the damages to the customer support office of the manufacturing company.



### WARNING

*CHECK THE POWER SUPPLY SYSTEM OF THE PRODUCT IS COMPLIANT WITH THE TECHNICAL DATA OF THE DEVICE.*



### WARNING

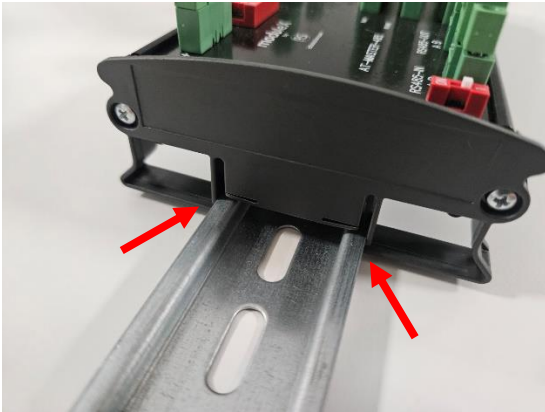
*PRIOR TO THE DEVICE INSTALLATION, PLEASE CHECK IF THE SYSTEM IS DE-ENERGIZED (NOT POWERED ON), AS THERE IS A RISK OF ELECTROCUTION.*

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## Installation and connection

Remove the I/O cluster from the box. Verify that all necessary accessories and components are included. The installation operation must be performed with no power supply.

- **DIN rail mounting:** Position the device on the DIN rail and push it downward until it is securely anchored. Ensure it is securely fixed to prevent unwanted movements.
- **Terminal Connection:** Connect the wires to the snap-in terminals by directly pressing the terminals in the case of rigid wires. For flexible wires, use a 2.5mm screwdriver to press the release button of the corresponding terminal. Insert the wire and release the button to ensure a secure connection.
- **Connection Verification:** Carefully verify that all connections are securely established. All modules must be connected to the power supply for proper operation.



## Configuration

Refer to the specific technical data sheet of every module for the correct configuration.

## Module substitution

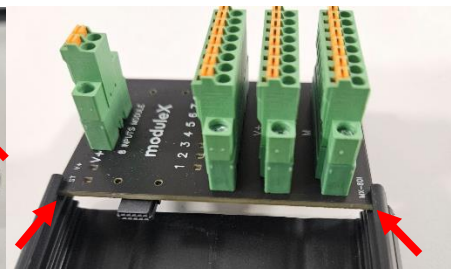
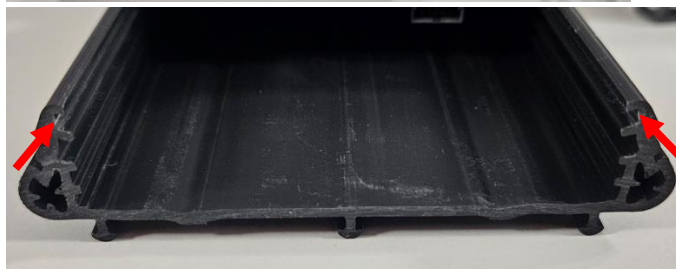
It may be necessary to replace, add a module or change the arrangement of modules within the I/O cluster, below is the procedure.

### Requisites:

- The operation must be performed on a clean work surface and free of external components that could damage the boards on contact
- Use appropriate electrostatic discharge (ESD) prevention devices

### Procedure:

1. Interrupt the general power supply of the system, ensure there are no residual power supplies before operating.
2. Remove the I/O cluster from the DIN rail.
3. Locate the 2 closing screws of the side cover of the housing, disassemble the cover closest to the module to be replaced.
4. Remove the cover.
5. The modules are connected to each other via the Xbus connector; individually disconnect the module by sliding it inside the housing. Caution: Do not remove all modules from the housing at once as this may damage the Xbus connectors.
6. Extract the module, pay particular attention during handling, and make sure to grip the module by the edges.
7. Insert the new module into the housing; insertion must occur within the top rail.
8. Ensure that the interlocking between the Xbus connectors occurs correctly.
9. Close the cover.



# Section 4

## Maintenance Disposal

## MAINTENANCE

Maintenance operations must be carried out by personnel who have previously read the manual.

Any type of cleaning or physical maintenance intervention must always be performed with the system turned off and disconnected from the power supply. When performing such interventions, strictly adhere to the instructions provided in this manual.

### Safety

In extraordinary maintenance operations of the device, it is necessary to provide for the use of personal protective equipment (PPE) such as:

**- Gloves:**

When working in areas with loads, live parts, and parts that can reach high temperatures, it is necessary to use CE-marked gloves as PPE that protect against the combination of risks just analysed.

**- Protection glasses:**

They are necessary in all jobs where there is a danger that an object and/or material may be projected into the eyes of an operator.



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## DANGER



*DISCONNECT THE DEVICE FROM THE POWER SYSTEM OR DE-ENERGIZE THE SYSTEM BEFORE PERFORMING ANY CLEANING OR MAINTENANCE OPERATION.*



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For any maintenance and cleaning intervention, in addition to the instructions contained in this manual, general safety regulations and, if applicable, general workplace safety regulations in force in the place where such operations are carried out must be followed.

### Periodic maintenance

Periodically, it is necessary to clean the device from any dust and dirt buildup that may have formed on the surface. Use a dry cloth if necessary. Do not use abrasive sponges, chemical solvents, detergents, or any type of liquid.

### Extraordinary maintenance

Extraordinary maintenance is required in case of breakdowns or malfunctions, unforeseen incidents, or inappropriate use of the device.

The situations that may arise are entirely unpredictable, and therefore it is not possible to describe appropriate intervention procedures.

In case of necessity, consult the technical service of the manufacturing company to receive instructions appropriate to the situation.

**All interventions, whether mechanical, electrical, or electronic, ordinary or extraordinary, must be carried out by specialized and authorized personnel/our assistance service.**



## OUT OF SERVICE

### Device deactivation

The device is produced and built according to criteria of robustness, durability, and flexibility, allowing it to be used for many years. Once it reaches the end of its technical and operational life, it must be decommissioned in such a way that it can no longer be used for the purposes for which it was originally designed and built, while still allowing for the reuse of the raw materials it is made of.

The same deactivation procedures must be followed in all of the following cases:

- Decommissioning the device and storing it in the warehouse.
- Final disposal and subsequent disposal.

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## PLEASE NOTE



*THE MANUFACTURING COMPANY ASSUMES NO RESPONSIBILITY FOR DAMAGES TO PERSONS OR PROPERTY RESULTING FROM THE REUSE OF INDIVIDUAL PARTS OF THE DEVICE FOR FUNCTIONS OR IN CONFIGURATIONS OF ASSEMBLY DIFFERENT FROM THE ORIGINAL ONES. THE MANUFACTURING COMPANY REJECTS ANY RECOGNITION, IMPLICIT OR EXPLICIT, OF SUITABILITY FOR SPECIFIC PURPOSES OF PARTS OF THE DEVICE REUSED AFTER THE DEFINITIVE DEACTIVATION IN VIEW OF ITS DISPOSAL.*

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## Disposal

The possibility of reusing some electrical parts of the device is subject to the total responsibility of the user. The symbol indicated in Legislative Decree no. 49 of March 14, 2014, which transposes Directive 2012/19/EU, has been reported on the label. This symbol indicates the need to dispose of the product in separate waste collection, specifically in electrical and electronic waste. Please refer to the waste collection point located in your area. Specific symbol:



For the disposal of the product packaging, refer to the symbols indicated on them.

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## PLEASE NOTE



*THE MANUFACTURER IS IN NO WAY RESPONSIBLE FOR DAMAGES CAUSED BY THE DEVICE IF NOT USED IN ITS FULL VERSION AND FOR THE USES AND METHODS OF USE SPECIFIED IN THIS MANUAL. THE MANUFACTURER IS IN NO WAY RESPONSIBLE FOR ANY DAMAGE TO PERSONS OR PROPERTY ARISING FROM THE RECOVERY OF PARTS OF THE DEVICE USED AFTER ITS DISPOSAL.*