1. Product Description

The automation of electric power systems is characterized by the use of robust, reliable, and high-tech equipment and devices with the ability to operate in hostile environments, where there are significant levels of electromagnetic interference and exposure to higher operating temperatures. This is the reality of applications in hydroelectric power plants (HPPs), electricity substations, and wind farms, among others.

In this context, the Hadron Xtorm Series is an innovative Remote Terminal Unit (RTU), perfect for applications in electricity generation, transmission, and distribution. The Series has an ideal set of features with high performance and facilities for the various stages in the life cycle of an application, to reduce engineering, installation, and commissioning costs and minimize downtime and system maintenance when in operation. With intuitive and user-friendly interfaces, precise and intelligent diagnostics, a modern and robust design, and several innovative features, Hadron Xtorm exceeds the requirements of applications in this market.

The Series has an intelligent and versatile architecture, offering modularity in input and output (I/O) points, redundancy options, hot-swapping of modules, high-speed communication protocols such as IEC 61850 and DNP3, implementation of logic in compliance with the IEC 61131-3 standard and time synchronization.

The racks feature simple installation and maintenance procedures and are available in two models: 9-position rack (HX9001) and 18-position rack (HX9003). The product choice depends on the required amount of I/O points in the automation system. If additional modules are necessary, the bus expansion feature can be used, in order to connect the main rack with remote input and output racks.

Its main features are:

- 9 or 18-position available sizes

- Easy insertion and removal of modules

- Robust design

- CPU and Power Supply redundancy compatible

- High-speed bus

- Automatic addressing of modules

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2.   Ordering Information

2.1.   Included Items

The product package contains the following items:

- HX9001 or HX9003 rack

2.2.   Product Code

The following codes should be used to purchase the product:

Code	Description
HX9001	9-position Rack
HX9003	18-position Rack

Table 1: Product Code

3.   Related Products

The following products must be purchased separately when necessary:

Code	Description
HX9102	Backplane Connector Cover

Table 2: Related Products

Note:

HX9102: The HX9102 is designed to protect the unused rack connectors against dust, humidity and ESD (electrostatic discharge). It is strongly recommended the use of the rack connector cover on all unused connectors. The HX9102 must be purchased separately.

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4. Product Features

4.1. General Features

	HX9001	HX9003
IP level	IP 20	
Operating temperature	-5 to 70 °C	
Storage temperature	-25 to 75 °C	
Relative humidity	5 to 96%, non-condensing	
Conformal coating	Yes	
Power Supply redundancy support	Yes	
CPU redundancy support	Yes	
Isolation Logic to protective earth ⏚	2500 Vac / 1 minute	
Module dimensions (W x H x D)	364.4 x 247.2 x 28.0 mm	708.2 x 247.2 x 28.0 mm
Package dimensions (W x H x D)	438.0 x 324.0 x 52.0 mm	810.0 x 332.0 x 40.0 mm
Net weight	1700 g	3000 g
Gross weight	2200 g	3900 g
Current consumption	126 mA	252 mA

Table 3: Product Features

Notes:

IP level: The IP level was defined considering that the rack is fully filled with Hadron Xtorm Series modules.

Power Supply redundancy support: In this case the redundant power supply needs to be connected in the in the rack positions 0 and 1.

CPU redundancy support: In this case the CPUs must be connected in the rack positions 2 and 3 and it is mandatory the use of Power Supply redundancy too.

Conformal coating: Conformal coating protects the internal parts of the product from moisture, dust and other harsh elements to electronic circuits.

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4.2. Standards and Certifications

Standards and Certifications	
IEC	61131-2: Industrial-process measurement and control - Programmable controllers - Part 2: Equipment requirements and tests
CE	2014/30/EU (EMC) 2014/35/EU (LVD) 2011/65/EU and 2015/863/EU (ROHS)
UKCA	S.I. 2016 No. 1091 (EMC) S.I. 2016 No. 1101 (Safety) S.I. 2012 No. 1101 (ROHS)

Table 4: Standards and Certifications

5. Installation

5.1. Electrical Installation

Information and guidance on the correct electrical installation can be found in the Hadron Xtorm User Manual – MU223600.

5.2. Mechanical Assembly

The figures below indicate the attachment positions for fixing the Hadron Xtorm series rack on a panel. More information about mechanical assembly can be found in the Hadron Xtorm User Manual – MU223600.

Dimensions in mm.

> **ATTENTION**
>
> Products with broken warranty seal are not covered in warranty.

> **CAUTION**
>
> The device is sensitive to static electricity (ESD). Always touch in a metallic grounded object before handling it.

> **DANGER**
>
> Hadron Xtorm Series can operate with voltage up to 250 Vac. Special care must be taken during the installation, which should only be performed by qualified technical personnel. Do not touch the field wiring when in operation.

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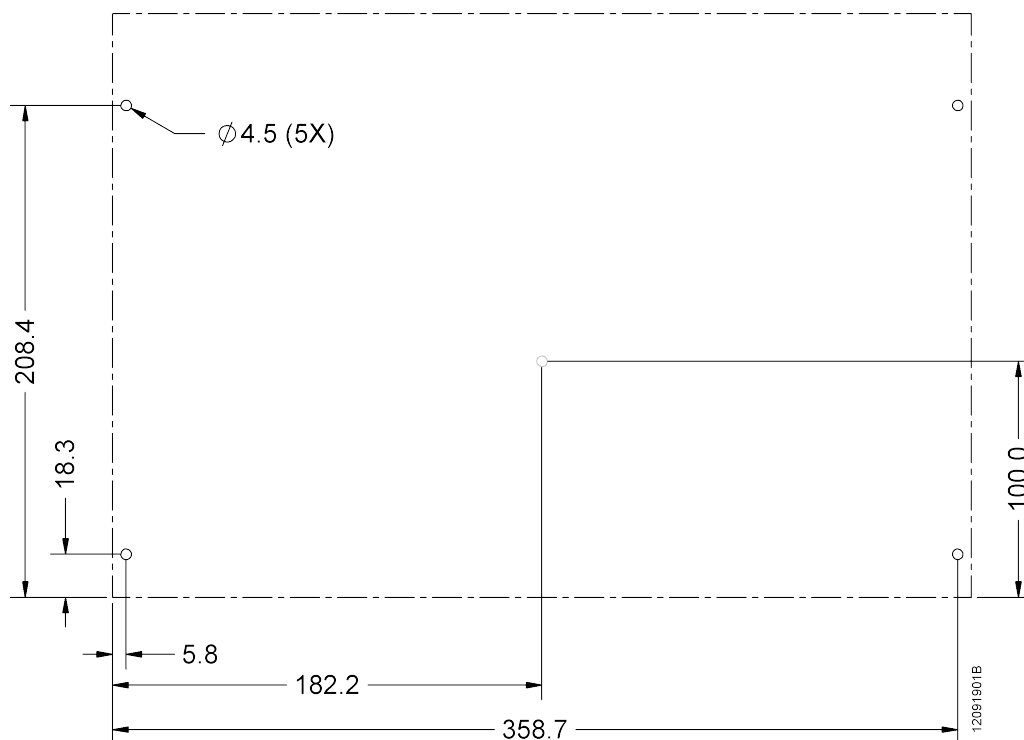### 5.2.1. 9-Position Rack (HX9001)

Figure 1: 9-Position Rack (HX9001)

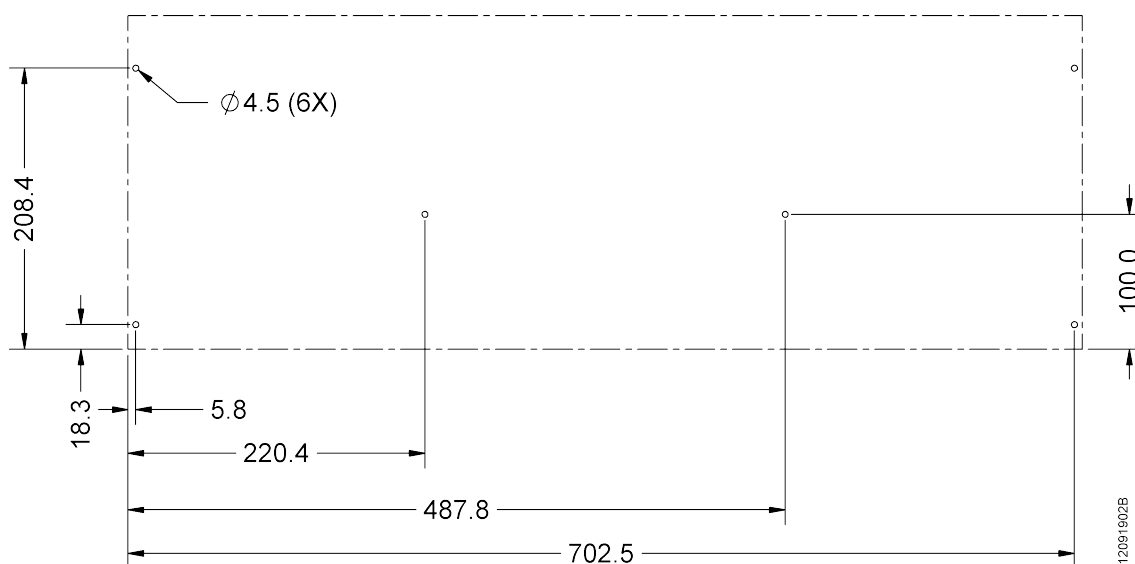### 5.2.2. 18-Position Rack (HX9003)

Figure 2: 18-Position Rack (HX9003)

5.3. Physical Dimensions

Dimensions in mm.

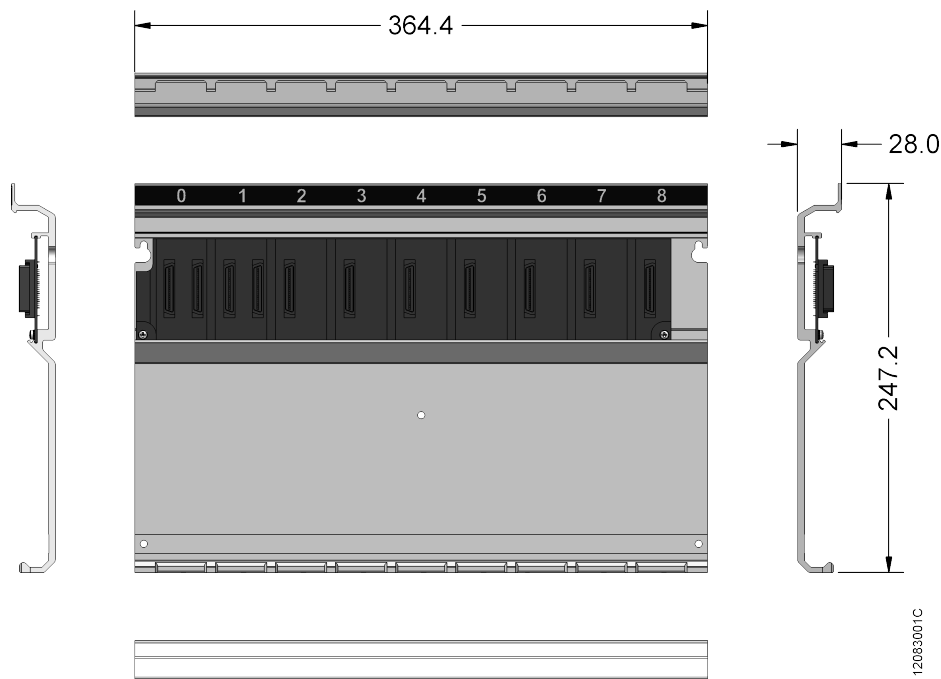### 5.3.1. 9-Position Rack (HX9001)

Figure 3: 9-Position Rack (HX9001)
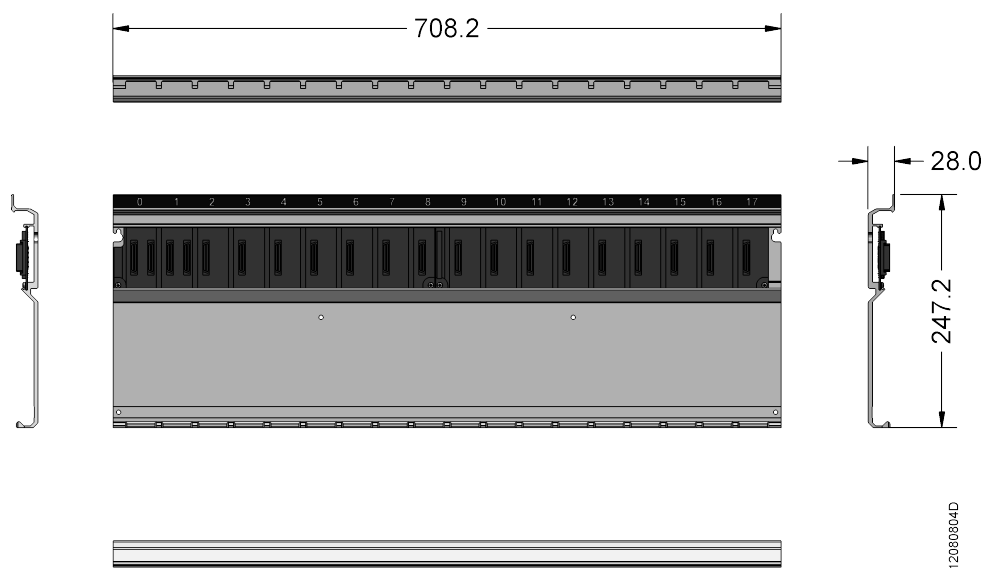
5.3.2. 18-Position Rack (HX9003)

Figure 4: 18-Position Rack (HX9003)

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6. Maintenance

Altus recommends that all modules' connections should be checked and any dust or any kind of dirt in the module's enclosure should be removed at least every 6 months.

7. Manuals

For further technical details, configuration, installation and programming, the table below should be consulted.

The table below is only a guide of some relevant documents that can be useful during the use, maintenance, and programming of this product.

Code	Description	Language
CE123000	Hadron Xtorm Series Technical Characteristics	English
CT123000	Características Técnicas Série Hadron Xtorm	Portuguese
MU223600	Hadron Xtorm Utilization Manual	English
MU223000	Manual de Utilização Hadron Xtorm	Portuguese

Table 5: Related Documents

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