



APPLICATION GUIDE

# Installation Manual

EUROPROT+



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PROTECTION, AUTOMATION AND  
CONTROL FOR POWER INDUSTRY



## VERSION INFORMATION

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## USED SYMBOLS

## Symbols on devices:



Test voltage: 2 kV



Protective conductor terminal



Do not dispose of this device

## Symbols in this document:



Caution, risk of electric shock



Caution, hot surface



Caution, refer to the documentation



Do not dispose of this device

## 1 Introduction

This manual is intended to provide instruction for proper device installation, which includes mechanical mounting and electrical wiring. Furthermore, the information provided here will strongly support commissioning, maintenance, and deinstallation work as well. This document's targeted user groups are skilled electrical professionals executing installation works and commissioning with EuroProt+ devices.

Given that the EuroProt+ product family has a modular design, the instructions provided here can cover all configurations. Therefore, this manual shall be used in conjunction with the "EuroProt+ Hardware description" document, which includes essential information about all hardware components of the product.

## 2 Equipment handling

### 2.1 Unpacking

Inspect the package for transport damages. Carefully remove the packing material without applying excessive force.

## 2.2 Visual inspection

Identify the product by reading the order code. This can be found on the device nameplate located mostly on the right side of the device in the top right corner and shall be identical to your order.

Picture 2-2 Device nameplate



The protection device may have loose items packed in a different box based on the configuration. Check, that these items are also included in the shipment.

Visually inspect all unpacked items for damages, water ingress, or any sign of external impact. If you discover any transport damage, please notify Protecta Ltd. first and do not start any further work on the equipment.

## 2.3 Storage

If temporary storage is required before installation, please store the device in its original packing in a dry and clean place. The required environmental conditions can be found in the “General data” section of the “EuroProt+ Hardware description” document.

# 3 Mounting

## 3.1 Tools for mounting

The tools and screws necessary for mounting depend on the method of the mounting, see the “Mounting methods” section of the “EuroProt+ Hardware description” document.

Assuming the panel or cubicle is ready for installation of the device, screwdrivers matching the screws used, pliers, wrenches, etc. are necessary. For safety aspects, mechanical protective gloves shall be used to avoid injuries.

## 3.2 Environmental conditions

Make sure, that the mounting location fulfils environment requirements stated in the “General data” section of the “EuroProt+ Hardware description” document. The IP protection class of the device shall fit the surrounding environment at the place of installation. It is also important to have space around the device to support conventional cooling (See 3.3).

## 3.3 Mounting location

Before mounting the device make sure, that suitable space is available in the location of installation. Cutouts shall fit the device rack dimensions and it is recommended to leave 80mm free space behind the IED for the wiring.

The minimum distance between an EP+ device and its wire channel must be at least 3 cm. The minimum distance between two EP+ devices must be at least 10 cm.

### 3.4 Mounting the device

The EuroProt+ product line utilizes different rack sizes and depending on that different mounting methods. An overview of the rack sizes with dimensions and mounting methods can be found in the “Mounting methods” section of the “EuroProt+ Hardware description” document.

During the installation make sure that the shortest possible length for PE (Protective Earth) cable routing is applied.

### 3.5 Safety aspects

#### 3.5.1 Earth connections

##### 3.5.1.1 Protective earth

The device shall be connected to the station earth system with a minimum of 2,5 mm<sup>2</sup> cross-section solid or stranded wire. A 6,3 mm (1/4 inch) female flat connector (according to IEC 61210) shall be used crimped to the earthing wire. During the installation make sure that the shortest possible length for PE (Protective Earth) cable routing is applied.

The earth connection of the device is situated at all kinds of Power supply modules. In the case of more Power supply modules, all of them shall be earthed.



The protective earth connections should not be removed when the equipment is energized.

Picture 3-5-1-1 Earth connection point of the device at the Power supply module



##### 3.5.1.2 Stranded wires

Soft soldering of stranded wires is not allowed due to the cold flow of the solder material.



Loose strands of stranded wires can cause fire risk or electric shock. Insulated crimp terminals shall be used.

### 3.5.1.3 Cable screen connection

The screen of the telecommunication cables connected directly to the device shall be terminated to the earthing connection point of the corresponding module.

Picture 3-5-1-3 An example of the cable screen connection



### 3.5.1.4 CT and VT circuits



The CT and VT circuits to be connected to the device shall be connected to the station earth system.

### 3.5.2 Connections of the device

Before connecting the wires, make sure that all voltage levels correspond to the device ratings. It is particularly important by the power supply, trip and binary input, CT and VT module

Use only the connectors provided to the device or identical ones.



The CT connectors shall be fixed with screws provided. During the operation of the device, the CT connectors can be disconnected only after the CT circuits having short-circuited.

### 3.5.3 Optical ports



Take adequate measures to protect your eyes and do not view directly into optical ports.

The fiber optics cables are vulnerable. Sharp bending can damage them. The minimum bending radius can be between 15 cm and 25 cm approximately, depending on the type and the material of the cable. For details see the datasheets of the fiber optics cables to be installed. The fiber shall not be twisted or bent. When connecting or disconnecting the cable always hold the connector, not the cable.

### 3.5.4 Removing and changing modules



Before removing and changing modules first the power supply voltage of the device shall be disconnected. Then all the energizing quantities connected to each module of the device shall be disconnected. Before removing the connectors of the CT modules, the CT circuits shall be short-circuited and disconnected.

The protective earth connection can be disconnected last if it is necessary (e.g. when removing a Power supply module).



The devices contain components that are sensitive to electrostatic discharges. ESD wrist strap shall be worn during any operations with modules.



Some of the modules can operate at high internal temperatures. Remove these modules carefully to avoid any burn injury. Take care of the possible high temperature at each module.



The modules have got sharp edges. Remove them carefully to avoid injury.

After changing a module, it shall be fixed with the screws provided with a torque of 0,5 Nm. Use Philips 2 screwdriver.

## 4 Wiring

### 4.1 Tools for connecting

Screwdrivers for the connectors: blade 0,6/3,5 mm, 0,4/2,5 mm.

Cutter, stripper, crimping tools to prepare the connecting end of the wires.



## 4.2 Connectors

The “Connectors” section of the “EuroProt+ Hardware description” provides information about the required conductor dimensions and connecting methods. The “Connectors” table shall be used together with the other sections describing the different modules.

# 5 Deinstallation and Repair

## 5.1 Deinstallation



Before removing the device make sure, that all incoming power supply and control voltages are switched off. The earth connection of the device shall be disconnected last.

## 5.2 Repair



Thanks to its modular design, many hardware problems can be fixed by replacing single modules. By executing this procedure note, that the printed board's surface may get hot during normal operation.



In addition, attention shall be paid to the sharp edges of the modules to avoid minor injuries on the hand.

## 5.3 Disposal



Removed IEDs shall be handed over to a local electronic waste handler for proper disposal and recycling.

Table 5-3 Disposal of the components and parts

IED	PARTS	MATERIAL	METHOD OF DISPOSAL
<b>Enclosure</b>	Metal sheets, fastening elements	Aluminum, steel	Separation and recycling
<b>Modules</b>	Metallic parts, fastening elements	Aluminum, steel	Separation and recycling
	Mounted PC boards	Plastic, various electronic elements	Separation and recycling
	Connectors	Plastic, various metals	Separation and recycling
	Transformers, coils	Iron, copper, plastic, paper	Separation and recycling
	Relays	Iron, copper, plastic, other metals	Separation and recycling
<b>Package</b>	Box	Cardboard	Recycling
<b>Attachments</b>	Manuals, certificates	Paper	Recycling