
# CPC12EN *ControlPlex*®
# CONTROLLER

Instruction manual

E-T-A®
ENGINEERING TECHNOLOGY

# CONTENTS


1 **General Information...........................................4**
1.1 Safety Instructions .........................................4
1.2 Qualified Personnel .........................................4
1.3 Use ..............................................................4
1.4 Delivery State ................................................4

2 **General Description...........................................5**
2.1 Design of the Entire System ...........................6
2.2 CPC12XX-TX Dimensions..............................7
2.3 Status Indication and Terminals .....................7
2.3.1 Terminals for Voltage Supply .............8
2.3.2 EtherNet/IP™ Interfaces with Integral Switch, XF1, XF2 Sockets...........................8
2.3.3 Ethernet Interface, Connector X1.......8
2.3.4 LED Status Indication.........................9

3 **Mounting and Installation ...............................10**

4 **Operating Modes of the CPC12 Bus Controller 11**
4.1 Operating Mode: Start-Up Mode ..................11
4.2 Operating Mode: System Error Mode...........11
4.3 Operating Mode: Configuration Error Mode . 11
4.4 Operating Mode: Stand-Alone Mode............11
4.5 Operating Mode: Slave Mode.......................12
4.6 Operating Mode: Firmware Update Mode ....12

5 **Basic Functions of the Entire System ............13**
5.1 Internal Cycle Times ....................................13
5.2 Hot Swap of the Circuit Protectors ...............13
5.3 Additional Ethernet Interface ........................13
5.3.1 Web Server......................................13
5.3.2 Default X1 IP address.......................13
5.3.3 Username and Password .................14

6 **Communication via EtherNet/IP™...................15**
6.1 *ControlPlex*® Device Model...........................15
6.2 EDS File.......................................................15
6.3 Identity Object (ID Class: 0X01) ...................16
6.4 TCP/IP Interface Object (ID Class: 0XF5) ....16

7 **Cyclical I/O Data...............................................17**
7.1 CPC12 Controller I/O Data Input ..................17
7.2 I/O Data Input: Total Current ........................18
7.3 I/O Data Input: Circuit Protectors..................18
7.4 I/O Data Output: Circuit Protectors ...............19

8 **Non-Cyclical Data ............................................21**
8.1 CPC12 Controller..........................................21
8.1.1 CPC12 Controller Device information 22
8.1.2 CPC12 Controller Configuration Data 23
8.1.3 CPC12 Controller Action Commands 24
8.1.4 CPC12 Controller Dynamic Information................................................25
8.2 Circuit Protectors/Channels ..........................25
8.2.1 Device Parameters for one Channel 25
8.2.2 Device Information for one Channel .26
8.2.3 Configuration Data for one Channel .28
8.2.4 Event Message for one Channel ......29
8.2.5 Action Commands for one Channel .29

# CONTENTS


8.2.6 Diagnostic Data for one Channel ..... 30

**9 Appendix ........................................................ 33**

# 1 GENERAL INFORMATION

### 1.1 Safety Instructions

This manual points out possible danger for your personal safety and gives instruction how to avoid property damage. The following safety symbols are used to draw the reader's attention to the safety instructions included in this manual.

**DANGER!**
Danger to life and limb unless the following safety precautions are taken.

**WARNING!**
Danger to machinery, materials or the environment unless the following safety precautions are taken.

**NOTE!**
Information is provided to allow a better understanding.

**CAUTION!**
Electrostatically sensitive devices (ESD). Devices must exclusively be opened by the manufacturer.

**DISPOSAL GUIDELINES**
Packaging can be recycled and should generally be brought to re-use.

### 1.2 Qualified Personnel

This user manual must exclusively be used by qualified personnel, who are able - based on their training and experience - to realise arising problems when handling the product and to avoid related hazards. These persons must ensure that the use of the product described here meets the safety requirements as well as the requirements of the presently valid directives, standards and laws.

### 1.3 Use

The product is part of a continuous enhancement process. Therefore, there might be deviations between the product in hand and this documentation. These deviations will be remedied by a regular review and resulting corrections in future editions. The right to make changes without notice is reserved. Errors and omissions excepted.

### 1.4 Delivery State

The product is supplied with a defined hardware and software configuration. Any changes in excess of the documented options are not permitted and lead to liability exclusion.

## 2 GENERAL DESCRIPTION

The customer's demands for consistent quality and increased quantities of their products pose high challenges on the machine construction and process control. At the same time, globalisation leads to worldwide value streams and production chains. Machines and plants that were organised only region- ally some years ago are connected via global networks today. These developments increase the requirements of machine and system control as well as the used components. An increasing number of measuring data must be recorded, analysed, evaluated and stored. This increases transparency and the system availability of production processes.

Even the DC 24 V power distribution is affected by this development. The control voltage supplies the essential components of machines or systems. They include not only the programmable controls, but e.g. actuators and sensors. Therefore, it plays an important part in all production processes. Their availability and stability are essential for the system availability and the quality of the produced goods. The REX system meets these requirements. It includes electronic circuit protectors, which are connected without requiring further accessories via an integral contact arm. The EM12 supply module can supply the circuit protectors with max. 40 A. The new CPC12 bus controller provides access to all system relevant data of the superordinate control systems via an EtherNet/IP™ interface and an Ethernet interface.

This is how the CPC12 connects the circuit protectors with the superordinate control system. The connection from the REX product group to the intelligent circuit protectors are realised via the internal **ELBus®** interface. The CPC12 allows entire access to all required parameters of the electronic circuit protectors, their control unit and the visualisation of the device data, either via the field bus interface of the superordinate control unit or via the RJ45 inter-face for operation on site. The system provides a fully parametrisable protection for DC 24 V circuits and ensures the selective overcurrent protection of sensors and actuators, decentralised periphery modules etc. and their supply lines.

1 For a clear presentation and description, the intelligent circuit protectors are only named with their system designation REX. This indication includes the REX12D and REX22D circuit protectors.

## 2.1 Design of the Entire System

The CPC12 bus controller is the centre of the ***ControlPlex®*** system. It allows consistent communication between the electronic circuit protectors and the superordinate control level, connected HMIs and even up to the Cloud.

The EtherNet/IP™ interface connection to the superordinate control unit is realised with two RJ45 sockets. It allows connection of the required control unit with the ***ControlPlex®*** system and therefore, to display, analyse and diag-nose the individual measuring values. The individual electronic circuit protectors can be con- trolled selectively. The integral web server of the bus controller can be directly accessed via an additional Ethernet interface. Service staff can access the system on site. Furthermore, the connected infrastructure of the company can be accessed from all over the world. In the future, OPC UA and MQTT provide the option to transmit all measuring values and status information, independent from the control system, e.g. to a superordinate Cloud application. Any changes of the measuring values of all electronic circuit protectors are also signalled to the automation system. This enables the user to have unrestricted access to the safety-relevant functions even in the event of an interruption. Any occurring failures will be detected quickly and can be remedied without delay. The ***ControlPlex®*** system effectively reduces system downtimes and significantly increases productivity.

Up to 16 double-channel electronic circuit protectors can be connected to the CPC12 bus controller.

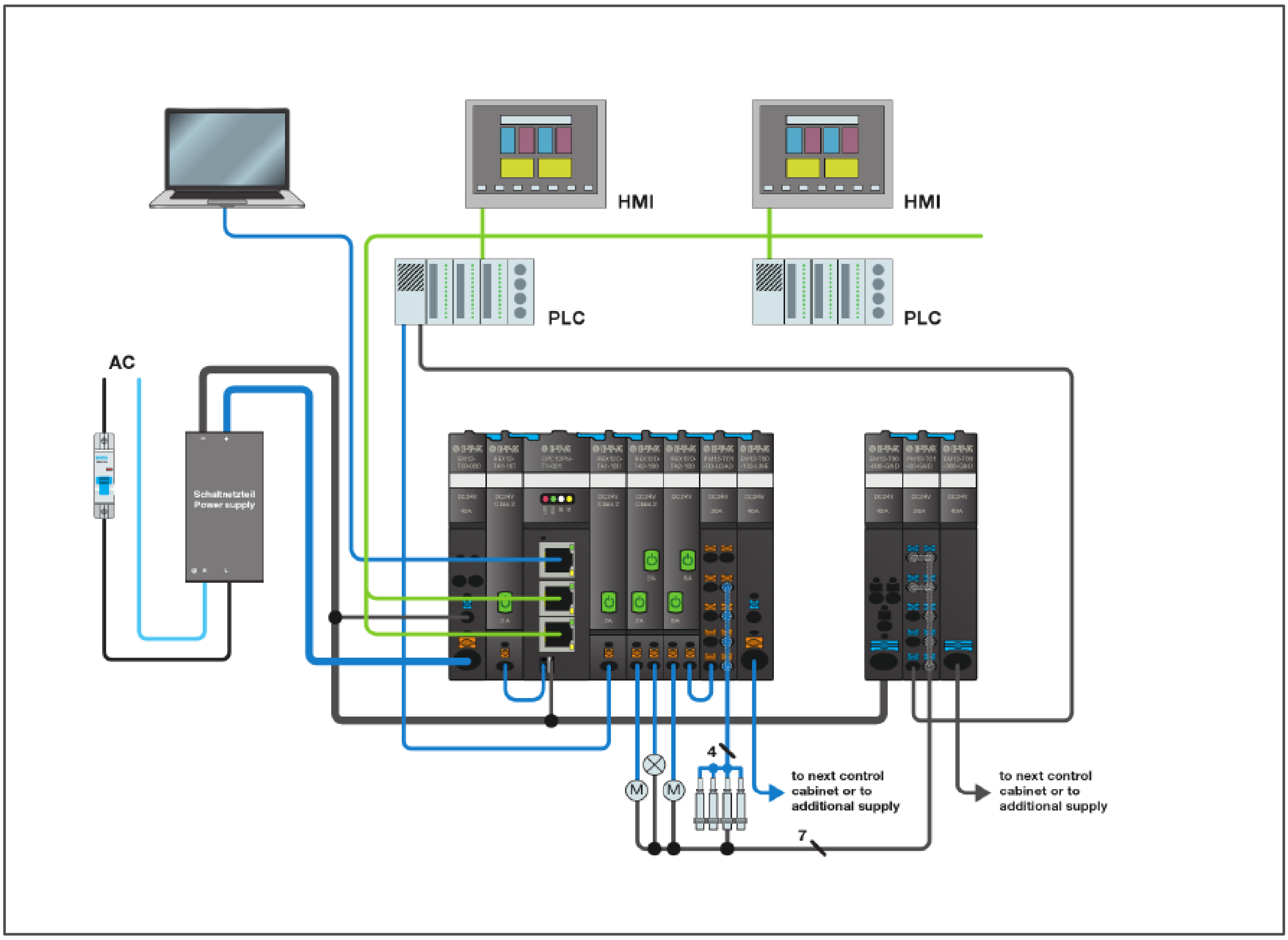


*Figure 1: System Overview*

## 2.2 CPC12XX-TX Dimensions

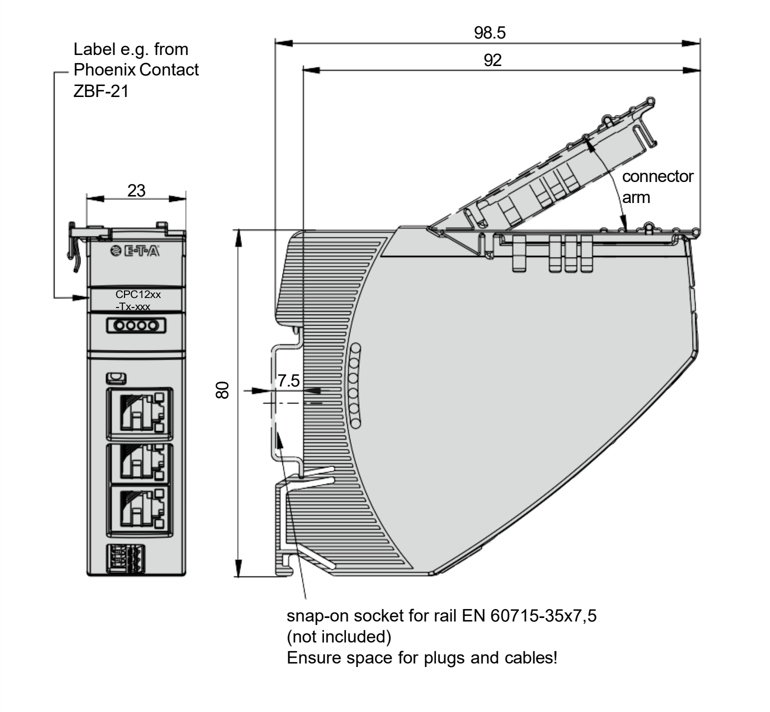


*Figure 2: CPC12 dimensions*

## 2.3 Status Indication and Terminals

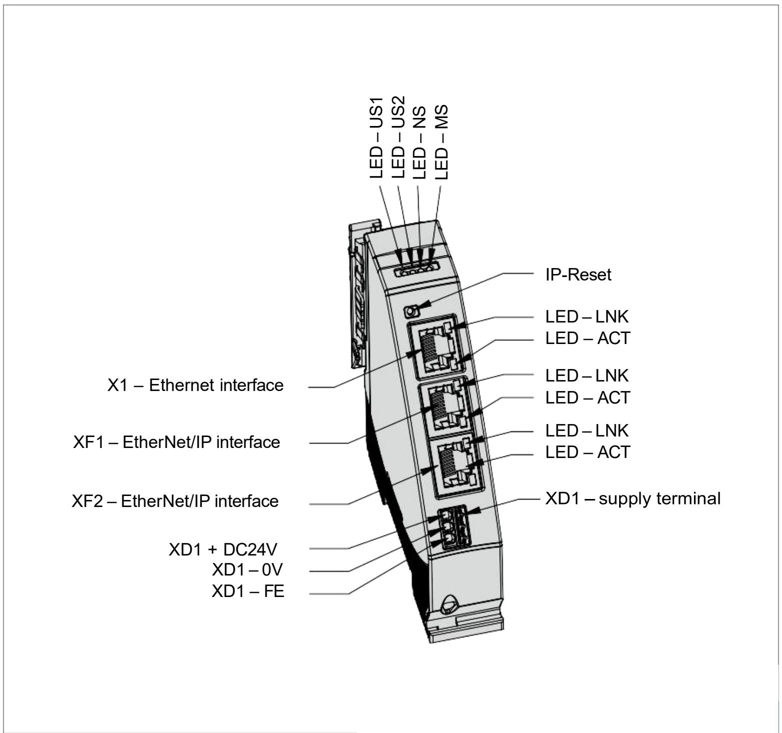


*Figure 3: CPC12 Status Indication and Terminals*

### 2.3.1 Terminals for Voltage Supply

Supply XD1

| | | |
|---|---|---|
| Voltage ratings: | DC 24 V (±5 % → 18 ... 30 V) | |
| Rated current: | typ. 75 mA | |
| Terminal design: | 3 x push-in terminals (+/0V/ FE) | |
| | max. cable cross section rigid | 0.2 – 1.5 $mm^2$ |
| | flexible with wire end ferrule (without plastic sleeve) | 0.2 – 1.5 $mm^2$ |
| | flexible with wire end ferrule (with plastic sleeve) | 0.2 – 0.75 $mm^2$ |
| | cable cross section | AWG24 – AWG16 str. |
| | stripping length | 8 mm |

Using a supply voltage outside the indicated operating range can cause malfunctions or destruction of the device.

The power supply of the CPC12 bus controller is also ensured by the EM12 supply module through the integrated connector arm. The use of the power supply terminal XD1 is optional.

### 2.3.2 EtherNet/IP™ Interfaces with Integral Switch, XF1, XF2 Sockets

XF1 Connection to bus system EtherNet/IP™
Type: RJ45

XF2 Connection to bus system EtherNet/IP™
Type: RJ45

When wiring and connecting to the bus system EtherNet/IP™, the installation and wiring regulations of the EtherNet/IP™ Specification have to be observed.

### 2.3.3 Ethernet Interface, Connector X1

X1 Connection to the CPC12 bus controller and the integral web server
Type: RJ45

### 2.3.4 LED Status Indication

Visual status indication by means of multicoloured LED:

| Operating mode | Indication of operating mode | |
|---|---|---|
| | LED US1 | LED US2 |
| **Supply voltage OK** | Green | n.a. |
| **Firmware Update** | Off | Off |
| **Actuator voltage OK** | Green | Green |
| **No actuator voltage** | Green | Red |
| **No connected device or bus error** | Green | Orange blinking |

*Figure 4: LED status indication*

n.a. = not applicable

| Network Status | |
|---|---|
| **Operating mode** | **LED NS** |
| **No IP address** | Off |
| **Valid IP address, no CIP connection** | Green blinking |
| **CIP connection active** | Green |
| **CIP session expired** | Red blinking |
| **Duplicate IP recognised** | Red |

| Module Status | |
|---|---|
| **Operating mode** | **LED MS** |
| **Off** | Off |
| **Operating mode** | Green |
| **Device not configured** | Green blinking |
| **Serious, but recoverable error** | Red blinking |
| **Serious, irrecoverable error** | Red |

*Figure 5: LED status indication fieldbus*

Optical signalling of the RJ45 interfaces:

LED LNK

| Operating mode | Indication of operating mode |
|---|---|
| **Link available** | Green |
| **No link available** | Off |

LED ACT

| Operating mode | Indication of operating mode |
|---|---|
| **Act available** | Orange blinking |
| **No act available** | Off |

*Figure 6: RJ45 sockets LED indication*

# 3 MOUNTING AND INSTALLATION

The preferred mounting position of the ***ControlPlex***® system is horizontal.

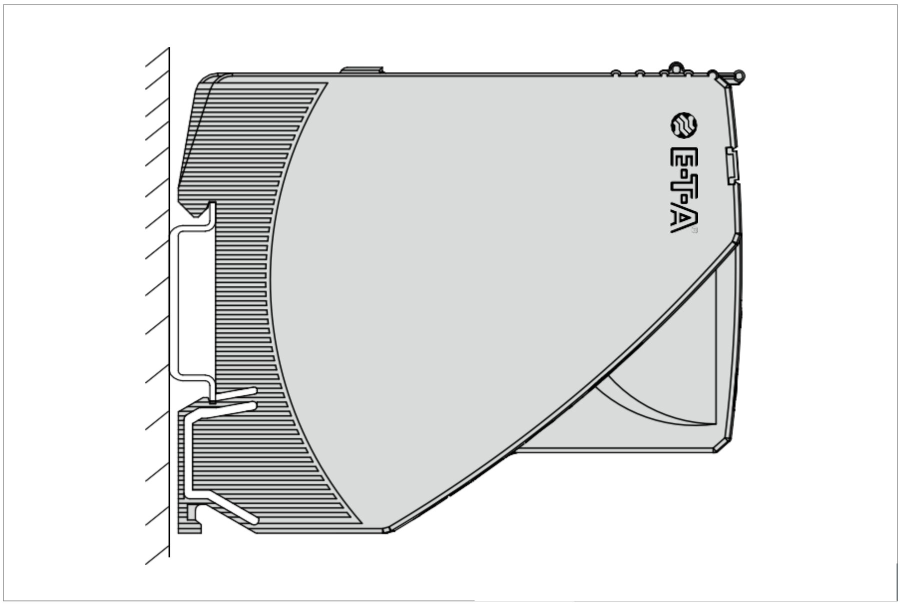


*Figure 7: CPC12 installation drawing*

# 4 OPERATING MODES OF THE CPC12 BUS CONTROLLER

Independent of the respective operating mode, the system has a basic safety function. As soon as a circuit protector channel is switched off manually, it cannot be switched on again via the control or the web server. The channel must be switched on manually again.

### 4.1 Operating Mode: Start-Up Mode

The CPC12 bus is initialised by applying the supply voltage. The device carries out internal programme memory tests and self-test routines. Communication via the interfaces is not possible in this time.

### 4.2 Operating Mode: System Error Mode

If a failure is detected during the self-test routines, the bus controller will change into the System Error operating mode. You can only exit this operating mode by re-starting the device and it prevents the data exchange via the interfaces. If the bus controller is in the aforementioned operating mode, it is unable to control the electronic circuit protectors and they will remain in the stand-alone mode (overcurrent protection).

### 4.3 Operating Mode: Configuration Error Mode

If there are no valid or invalid configuration data available at the EtherNet/IP™ controller, it will change into this operating mode. This operating mode only allows a non-cyclical data exchange. The cyclical data exchange is prevented. You can exit this operating mode upon receipt of the correct module and slot parameters and configuration data.

### 4.4 Operating Mode: Stand-Alone Mode

During normal operation, there is a connection between the bus controller and the superordinate control unit. The CPC12 bus controller will automatically take over the control and parametrisation of the electronic circuit protectors, as all required data sets are stored there. You can access the electronic circuit protectors and their status and parameters via the Ethernet interface by means of the web server. This way, you can change e.g. the parameter data of the various electronic circuit protectors. After the failure on the communication level is remedied, you can exit this operating mode and the superordinate control unit will take over control again as master. If a parameter was changed during the time when no communication was available, this will be signalled to the superordinate control unit. This helps the user define the control behaviour accordingly and programme it in the programmable control unit. This allows the users to select a reaction perfectly adapted to their requirements.

### 4.5 Operating Mode: Slave Mode

In this operating mode, the CPC12 bus controller is integrated in a EtherNet/IP™ system. The communication to the CPC12 bus controller works faultlessly and the controller can be addressed and controlled via the superordinate control unit. If communication breaks down, this will have no influence on the protective function of the circuit protectors. You can determine the bus controller behaviour in case of parallel use of the field bus interface and the web server via the device configuration of the superordinate control unit. You can specify whether the Ethernet interface or the web server only has reader access or reader and editor access. The editor access allows to make changes to the parametrisation of the electronic circuit protectors as well as to the field bus system. These parameter changes will then be transmitted to the superordinate control system and can be taken over by it or overwritten. The user can select the behaviour accordingly.

### 4.6 Operating Mode: Firmware Update Mode

The devices are supplied with a software programmed according to their functionality. If the function scope of the devices is extended, the new functions are added via the firmware update. If you want to use the new function, you must carry out a firmware update.

The firmware updates of the bus controller can be downloaded via the integral web server. You can find further information on this in the instruction manual of the web server. The current firmware file is available in the download portal of the ***ControlPlex***® systems via the E-T-A homepage.

**INSTRUCTION MANUAL**
**WEB SERVER**

**DOWNLOAD PORTAL LINK**
**CONTROLPLEX SYSTEMS**

# 5 BASIC FUNCTIONS OF THE ENTIRE SYSTEM

## 5.1 Internal Cycle Times

The cycle time of the system depends on the number of connected electronic circuit protectors and the internal baud rate. The internal baud rate can amount to 9600 Baud or 19200 Baud. The baud rate only amounts to 19200 when all connected circuit protectors support this function. These are normally REX22D circuit protectors and REX12D devices with the software version 2.0.2 printed on their enclosure.* The software version can be found below the white type label on the front side of the REX12D. The baud rate is displayed in the cyclical data in the "Status Controller". The current cycle time can be requested via the non-cyclic access to the "dynamic CPC12 information".

The cycle time for 16 circuit protectors at an internal baud rate of 9600 Baud is about 480 ms for the cyclic data, i.e. 30 ms per device. A time window of 130 ms is reserved for non-cyclic data. This makes a total cycle time of max. 610 ms. With an internal Baud rate of 19200 Baud the cycle time for cyclical data is reduced to about 240 ms, i.e. 15 ms per device. A time window of 100 ms is reserved for non-cyclic data. This makes a total cycle time of max. 340 ms.

## 5.2 Hot Swap of the Circuit Protectors

If a new circuit protector is installed at an existing application, it is automatically parametrised with the parameters designated for this circuit protector address. The parameter transmission will be done without interruption of the cyclical data exchange between the CPC and the electronic circuit protectors.

## 5.3 Additional Ethernet Interface

The additional Ethernet interface (X1) expands the function scope of the bus controller. The following functions are provided via this interface:

### 5.3.1 Web Server

The web server provides all measuring data, status information, parametrisation options and control functions of the CPC12 bus controller. The parametrisation of the interface is explained separately.

### 5.3.2 Default X1 IP address

The default IP address of the CPC12 is:

| | |
|---|---|
| **IP Address** | 192.168.1.1 |
| **Netmask** | 255.255.255.0 |
| **Gateway** | 192.168.1.254 |

The web server can be reached via this IP address. By pressing the IP reset button for 3 seconds, the IP address is reset to the default value.

* Customised solutions are excluded from this regulation.

### 5.3.3 Username and Password

The user must have the necessary access authorisation to be able to carry out configurations via the web server. This authorisation is defined in the user administration.

The default setting is:

| | |
|---|---|
| **User** | admin |
| **Password** | admin |

It is highly recommended to individually adjust the device settings during the first operation.
Please note that it is not possible to automatically reset the user and password to the default settings.

# 6 COMMUNICATION VIA ETHERNET/IP™

EtherNet/IP™ is a Common Industrial Protocol (CIP™) network adaptation developed by the ODVA organisation. CIP uses abstract object modelling to describe the available communication services and data, provided by a product. Objects and their components are addressed using an addressing scheme that consists of a Node Address (IP address), Class Identifier (class ID), Instance Identifier (Instance ID), Attribute Identifier (attribute ID) and a service code. Assembly objects are used for I/O messages by summarising several I/O data in one block. The IP address is normally assigned by a DHCP server in the network. Supported EtherNet/IP™ functions: Address Conflict Detection (ACD), Quality of Service (QoS), Device Level Ring (DLR) – media redundancy.

### 6.1 *ControlPlex*® Device Model

The power distribution system with CPC12 controller consists of a passive supply module EM12-T00-000-DC24V-40A and up to 16 intelligent circuit protectors of the REX series.
The power distribution system ***ControlPlex***® uses the following EtherNet/IP™ model:

| EtherNet/IP™ | CPC12EN |
|---|---|
| **Class 0x01, 0x06, 0x47, 0xF5, 0xF6** | The EtherNet/IP™ interface requires several mandatory objects. These are the identity object (0x01), the connection manager object (0x06), the Device Level Ring object (DLR, 0x47), the TCP/IP interface object (0xF5) and the Ethernet link object (0xF6).. |
| **Class 100** | The class 100 represents the CPC12EN controller.<br>All system-relevant data and settings can be accessed via this class.<br>Please refer to chapter 9 for further details.<br>For more details on the CPC12EN I/O data, please see chapter 7.1. |
| **Class 101** | The class 101 represents the circuit protectors connected to the CPC12EN.<br>All circuit protector-specific data and settings can be accessed via this class. Please refer to chapter 9 for further details.<br>The I/O data of each circuit protector contain the control bytes, the byte status and the measuring values. The process data image of the PLC contains 10 input bytes and 2 output bytes for each circuit protector. Please refer to chapter 7.2 for further details. The amount of cyclically exchanged process data can be adjusted in the settings.<br>If less circuit protectors are connected than configured, the status of the missing circuit protector is indicated as “not available”.<br>If more circuit protectors are configured than connected, the PLC cannot access them.<br><br>⚠ The CPC12 allows configuration of 1 to max. 16 circuit protectors. |

*Figure 8: Communication properties*

### 6.2 EDS File

The EDS file is available on the E-T-A website and can be downloaded there.

### 6.3 Identity Object (ID Class: 0X01)

The Identity object only supports instance 1.
The service codes Get_Attributes_All (1) and Get_Attribute_Single (14) are supported.
Further details can be found in the EtherNet/IP™ specification.

| Name | Attribute | Data Type | Description |
|---|---|---|---|
| **Sales contact ID** | 1 | UINT | Vendor identification |
| **Device type** | 2 | UINT | Standard version of the product |
| **Product code** | 3 | UINT | Vendor product code |
| **Revision** | 4 | USINT, USINT | Revision of the product |
| **Status** | 5 | WORD | Summary of the device status |
| **Serial number** | 6 | UDINT | Serial number of the device |
| **Product description** | 7 | SHORT_ STRING | Profile ID |
| **Status** | 8 | USINT | 2 = Standby<br>3 = Functional<br>4 = Serious recoverable error<br>5= Serious irrecoverable error |
| **Consistency value configuration** | 9 | UINT | |
| **Heartbeat interval** | 10 | USINT | |

*Figure 9: Identity object features*

### 6.4 TCP/IP Interface Object (ID Class: 0XF5)

The TCP/IP interface object only supports instance 1.
The service codes Get_Attributes_All (1) and Get_Attribute_Single (14) are supported.
Further details can be found in the EtherNet/IP™ specification.

| Name | Attribute | Data Type | Description |
|---|---|---|---|
| **Status** | 1 | DWORD | Status interface |
| **Configuration capability** | 2 | DWORD | Capability flags interface |
| **Control configuration** | 3 | DWORD | 0 = Statically assigned IP configuration<br>1 = IP configuration via BOOTP<br>2 = IP configuration via DHCP |
| **Physical connection object** | 4 | STRUCT | Path for physical connection object |
| **Configuration interface:**<br>**IP address**<br>**Network mask**<br>**Gateway address**<br>**Server name**<br>**Server 2 name**<br>**Domain name** | 5 | STRUCT of:<br>UDINT,<br>UDINT,<br>UDINT,<br>UDINT,<br>UDINT,<br>STRING | IP configuration |
| **Host name** | 6 | STRING | Host name |

*Figure 10: TCP/IP Interface object features*

# 7 CYCLICAL I/O DATA

EtherNet/IP™ enables the exchange of cyclical process data from a sender (e.g. PLC) to a receiver (CPC12EN) S→R and vice versa R→S. The number of exchanged I/O data bytes can be adjusted. The Forward_Open requirement for the connection manager initiates the I/O communication and determines the required package interval (RPI), the priority, the data size and the connection path. The valid RPI area of the CPC12EN is between 1 ms and 1000 ms. An exclusive owner, a listen-only and an input-only connection are supported at simultaneously.

The S→R connection contains a Run/Idle Header, which occupies the first four bytes.
The data size of the S→R-module (100) can be adjusted between 0 and 32 byte.
The data size of the S→R-module (101) can be adjusted between 0 and 164 byte.
The connection path must be set to 0x20 04 24 00 2C 64 2C 65, as no configuration group is used.

The EDS file provided for the project tool enables the relevant configuration.

### 7.1 CPC12 Controller I/O Data Input

Sender→Target bytes 0 ... 1
The 2 bytes input data contain the following global error- and diagnostic messages.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Status controller** | 0 HighByte<br>1 LowByte | UInt16 | 0xFFFF | Bit 0 = No configuration data available<br>Bit 1 = Invalid configuration data<br>Bit 2 = Connected device type does not correspond to the con figuration<br>Bit 3 = Parameters restored<br>Bit 4 = Reset<br>Bit 5 = No communication to the **ELBus**® 1<br>Bit 6 = Reserve<br>Bit 7 = Reserve<br>Bit 8 = Reserve<br>Bit 9 = CPC temporary error<br>Bit 10 = CPC hardware error<br>Bit 11 = **ELBus**® 1 communication speed: 0 = 9600 Baud, 1 = 19200 Baud<br>Bit 12 = Reserve<br>Bit 13 = Reserve<br>Bit 14 = Reserve<br>Bit 15 = Writing authorisation deactivated via web server = 1, authorised = 0 |

*Figure 11: CPC12EN cyclic diagnosis data*

### 7.2 I/O Data Input: Total Current

Sender→Target bytes 2 ... 3

The total current supplies a standardised 16-bit value with the calculated total current of all circuit protectors (2-byte input data).

The measuring value is indicated as follows:

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Total current** | 0 HighByte<br>1 LowByte | UInt16 | 0 ... 65535 | A standardised 16-bit-value with a resolution of 10 mA is provided.<br>Example for calculating the measuring value:<br>Value (1320) / 100 ≙13.20 Ampere |

*Figure 12: Total current*

### 7.3 I/O Data Input: Circuit Protectors

Sender→Target bytes 4 ... 163

Each circuit protector has up to two channels. The input and output data are always transmitted for both possible channels.

10 byte input data are exchanged for each circuit protector, which include the channel status, the load current and the load voltage. If the used circuit protector only has one channel, the status of the second channel is marked as not available (0xFF) and the load current and load voltage are set to 0.

The input bytes per circuit protector are structured as follows:

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Status Channel 1** | 0 | Byte | 0 ... 255 | 0xFF (255) ≙ no device available or incorrect configuration<br>Bit 0 = Load output ON<br>Bit 1 = Short circuit<br>Bit 2 = Overload<br>Bit 3 = Low voltage<br>Bit 4 = Reserve<br>Bit 5 = Reserve<br>Bit 6 = Current limit value<br>Bit 7 = Event / or button actuated<br>"True" means that the status is active. |
| **Load current Channel 1** | 1 HighByte<br>2 LowByte | UInt16 | 0 ... 65535 | A standardised 16-bit-value with a resolution of 10 mA is provided.<br>Example for calculating the measuring value:<br>Value (150)/100 ≙1.50 Ampere |
| **Load voltage Channel 1** | 3 HighByte<br>4 LowByte | UInt16 | 0 ... 65535 | A standardised 16-bit-value with a resolution of 10 mV is provided.<br>Example for calculating the measuring value:<br>Value 2512)/100 ≙ 25.12 Volt |

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Status Channel 2** | 5 | Byte | 0 ... 255 | 0xFF (255) ≙ no device available, incorrect configuration or 1-channel-device in use<br>Bit 0 = Load output ON<br>Bit 1 = Short circuit<br>Bit 2 = Overload<br>Bit 3 = Low voltage<br>Bit 4 = Reserve<br>Bit 5 = Reserve<br>Bit 6 = Current limit value<br>Bit 7 = Event / or button actuated<br>"True" means that the status is active. |
| **Load current Channel 2** | 6 HighByte<br>7 LowByte | UInt16 | 0 ... 65535 | A standardised 16-bit-value with a resolution of 10 mA is provided.<br>Example for calculating the measuring value:<br>Value (150)/100 ≙ 1.50 Ampere |
| **Load voltage Channel 2** | 8 HighByte<br>9 LowByte | UInt16 | 0 ... 65535 | A standardised 16-bit-value with a resolution of 10 mV is provided.<br>Example for calculating the measuring value:<br>Value (2512)/100 ≙ 25.12 Volt |

*Figure 13: Circuit protector data input*

### 7.4 I/O Data Output: Circuit Protectors

Target→Sender bytes 0 ... 31
2 byte output data are exchanged to control the circuit protector.

The output bytes per circuit protector are structured as follows:

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Control unit Channel 1** | 0 | Byte | 0 ... 255 | Bit 0 = Load output ON/ OFF<br>Bit 1 = Reset load output (only reacts to rising peaks 0 -> 1)<br>Bit 2 = Reserve<br>Bit 3 = Reserve<br>Bit 4 = Reserve<br>Bit 5 = Reserve<br>Bit 6 = Reserve<br>Bit 7 = Reserve<br>"True" means that the status is active. |
| **Control unit Channel 2** | 1 | Byte | 0 ... 255 | Bit 0 = Load output ON/ OFF<br>Bit 1 = Reset load output (only reacts to rising peaks 0 -> 1)<br>Bit 2 = Reserve<br>Bit 3 = Reserve<br>Bit 4 = Reserve<br>Bit 5 = Reserve<br>Bit 6 = Reserve<br>Bit 7 = Reserve<br>"True" means that the status is active. |

*Figure 14: Data output of the circuit protector*

Sample configuration:
8 REX circuit protectors with 16 channels connected to the CPC12EN. The S→T data size can be configured to 84 input byte and 16 bytes T→S data are made available.

Addressing the output data is done according to the REX sequence:
Circuit protector 1: Channel 1.1 control input byte address [0]
Circuit protector 1: Channel 1.2 control input byte address [1]
Circuit protector 2: Channel 2.1 control input byte address [2]
Circuit protector 2: Channel 2.2 control input byte address [3]
Circuit protector 3: Channel 3.1 control input byte address [4]

…….

Addressing the input data is done according to the REX sequence:
Controller status: Address [0 ... 1],
Total current: Address [2 ... 3]
Circuit protector 1: Channel 1.1 Status: Address [4], load current: Address [5 ... 6], Load voltage: Address [7 ... 8]
Circuit protector 1: Channel 1.2 Status: Address [9], load current: Address [10 ... 11], Load voltage: Address [12 ... 13]
Circuit protector 2: Channel 2.1 Status: Address [14], load current: Address [15 ... 16], Load voltage: Address [17 ... 18]
Circuit protector 2: Channel 2.2 Status: Address [19], load current: Address [20 ... 21], Load voltage: Address [22 ... 23]

…….

# 8 NON-CYCLICAL DATA

Explicit EtherNet/IP™ messages enable the exchange of further data with the CPC12 controller and the circuit protectors. The access enables direct addressing of a circuit protector. EtherNet/IP™ class, instance and attributes are required. Class 100 is used to read and edit the CPC12 data. Class 101 is used to read and edit the circuit protector data. Access to the circuit breakers is distributed across channels. There are two channels for each circuit protector.

The non-cyclical access to the CPC12 data is structured as follows:
Class 100 and class 101 only support service codes Get_Attribute_Single (14) and Set_Attribute_Single (16).

| Class 2 ID | Instance ID | Attribute ID | Number of Data bytes | Reading (R) Writing (W) | Description |
|---|---|---|---|---|---|
| **100** | 1 | 1 | 19 | R | CPC12 controller device information (see chapter 8.1.1) |
| **100** | 1 | 3 | 5 | R/W | CPC12 controller configuration data (see chapter 8.1.2) |
| **100** | 1 | 4 | 1 | W | Action commands for all channels and the CPC12 controller (see chapter 8.1.3) |
| **100** | 1 | 2 | 4 | R | CPC12 controller dynamic information (see chapter 8.1.4) |

*Figure 15: CPC12EN object features*

The non-cyclical access of the CPC12 data is structured as follows:

| Class 2 ID | Instance ID | Attribute ID | Number of Data bytes | Reading (R) Writing (W) | Description |
|---|---|---|---|---|---|
| **101** | 01… 32 | 3 | 2 | R/W | Device parameters of the channel (see chapter 8.2.1) |
| **101** | 01… 32 | 1 | 19 | R | Device information of the channel (see chapter 8.2.2) |
| **101** | 01… 32 | 6 | 2 | R/W | Configuration data of the channel (see chapter 8.2.3) |
| **101** | 01… 32 | 5 | 1 | R | Event message of the channel (see chapter 8.2.4) |
| **101** | 01… 32 | 4 | 1 | W | Action commands for one channel (see chapter 8.2.5) |
| **101** | 01… 32 | 2 | 22 | R | Diagnosis data of the channel (see chapter 8.2.6) |

*Figure 16: Channel object features*

**8.1 CPC12 Controller**
The non-cyclical parameters of the controller are described in the following chapters.

### 8.1.1 CPC12 Controller Device information

The device information of the controller consist of 19 bytes.
Class ID = 100, instance ID = 1 and attribute ID = 1
Service code: Get_Attribute_Single (14)
All device information with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Device type** | 0 HighByte<br>1 LowByte | UInt16 | 0 ... 65535 | 16469 = CPC12EN-T1<br>This list can be extended with future controllers. |
| **Hardware version** | 2 HighByte<br>3 LowByte | UInt16 | 0 ... 65535 | Contains the hardware version of the installed product |
| **Internal assembly order numbers** | 4 HwHb<br>5 HwLB<br>6 LwHB<br>7 LwLB | UInt32 | 0 ... 4294967295 | Contains the assembly order number of the installed product |
| **Internal order split number** | 8 HighByte<br>9 LowByte | UInt16 | 0 ... 65535 | Contains the internal order split number of the installed product |
| **Number of the production site** | 10 HighByte<br>11 LowByte | UInt16 | 0 ... 65535 | Contains the number of the production site of the installed product |
| **Serial number** | 12 HwHb<br>13 HwLB<br>14 LwHB<br>15 LwLB | UInt32 | 0 ... 4294967295 | Contains the serial number of the installed product |
| **Software version (major.x.x)** | 16 | Byte | 0 ... 255 | Contains the major software version of the installed product |
| **Software version (x.minor.x)** | 17 | Byte | 0 ... 255 | Contains the minor software version of the installed product |
| **Software version (x.x.structure)** | 18 | Byte | 0 ... 255 | Contains the installation software version of the installed product |

*Figure 17: CPC12EN device information*

### 8.1.2 CPC12 Controller Configuration Data

The device information of the controller consist of 5 bytes.
Class ID = 100, instance ID = 1 and attribute ID = 3
Service code: Get_Attribute_Single (14), Set_Attribute_Single (16)
All configuration data with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **CPC configuration data** | 0 | Byte | 0 ... 255 | Bit 0 = Writing via the web server is permitted. Enables parame ters to be changed via the server, even when the bus connection is active.<br>Bit 1<br>True: In the event of a fieldbus error, the status of the load out puts is preserved.<br>Wrong: In the event of a fieldbus error, all load outputs are set to OFF condition.<br>Bit 2 = Power-saving mode, the LEDs are dimmed to save power.<br>Bit 3 = Reserve<br>Bit 4 = Reserve<br>Bit 5 = Reserve<br>Bit 6 = Reserve<br>Bit 7 = Reserve<br>Unless stated otherwise,<br>“True” means that the function is active. |
| **PLC Lock: Control com-mands deactivate ELBus® 1 on CPC channel 1 ... 16** | 1 HighByte<br>2 LowByte | UInt16 | 0 ... 65535 | Each bit represents one channel.<br>(Bit 0 = channel 1; Bit 1 = channel 2 ...)<br>When the bit is set, this means that the channel cannot be switched on or off via the control unit of the web server. |
| **PLC Lock: Control com-mands deactivate ELBus® 1 on CPC channel 17 ... 32** | 3 HighByte<br>4 LowByte | UInt16 | 0 ... 65535 | Each bit represents one channel.<br>(Bit 0 = channel 17; bit 1 = channel 18 ...)<br>When the bit is set, this means that the channel cannot be switched on or off via the control unit of the web server. |
| **Reserve** | 5 HighByte<br>6 LowByte | UInt16 | 0 | Reserve |
| **Reserve** | 7 HighByte<br>8 LowByte | UInt16 | 0 | Reserve |

*Figure 18: CPC12EN configuration data*

### 8.1.3 CPC12 Controller Action Commands

The action commands of the controller consist of 1 byte. All action commands sent to the CPC12 execute the action for all channels.
Class ID = 100, instance ID = 1 and attribute ID = 4
Service code: Set_Attribute_Single (16)
Action commands with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Action commands** | 0 | Byte | 0 … 255 | 116 = Reset trip counter<br>118 = Reset device parameters to factory settings, incl. CPC12 1)<br>131 = Back to Box 2)<br>132 = Transfer device type Configuration for connected devices (see chapter 8.2.3)<br>192 = Reset statistical minimum values<br>196 = Reset statistical maximum values<br>220 = Reset statistical average values<br>No other values are accepted. |

*Figure 19: CPC12EN action commands*

1) The command "118 = Reset device parameter to factory settings including CPC12" within the action commands of the CPC12 resets the following data:

- Parameters (rated current = 10 A, load current limit value = 80 %) of each channel
- PLC lock bit of each channel (default = true, i.e. channel cannot be controlled via the PLC)
- **Not** the configured device types
- **Not** the statistic values (min, max, avg) of the channels
- **Not** the error memory, trip counter and trip reason of the channels
- Configuration data
  - Energy-saving mode = False = LEDs normal
  - Load output behaviour in the event of fieldbus malfunctions = True = Status is preserved
  - Writing via web server permitted = True

2) The command "131 = Back to box" within the action commands of the CPC12 resets the following data:

- Parameters (rated current = 10 A, load current limit value = 80 %) of each channel
- PLC lock bit of each channel (default = True, channel cannot be controlled via the PLC)
- Configured device types (standard = REX12D-TA1 = 0x9009 = 36873)
- Statistic values (min, max, avg) of the channels
- Error memory, trip counter and trip reason of the channels
- Configuration data:
  - Energy-saving mode = False = LEDs normal
  - Load output behaviour in the event of fieldbus malfunctions = True = Status is preserved
  - Writing via web server permitted = True

- IP configuration of the third ETH-Ports X1:
    - IP address = 192.168.1.1
    - Network mask = 255.255.255.0
    - Gateway = 192.168.1.254
    - DHCP = False
- User data:
    - Name = “admin”
    - Password = “admin”

### 8.1.4 CPC12 Controller Dynamic Information

The dynamic information of the controller consists of 4 bytes.
Class ID = 100, instance ID = 1 and attribute ID = 2
Service code: Get_Attribute_Single (14)

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Cycle time ELBus® 1** | 0 HighByte<br>1 LowByte | UInt16 | 0 ... 65535 | Contains the internal cycle time of the **ELBus®** in milliseconds [ms]. |
| **Reserve** | 2 HighByte<br>3 LowByte | UInt16 | 0 ... 65535 | Reserve |

*Figure 20: CPC12EN dynamic information*

## 8.2 Circuit Protectors/Channels

The parameters of the circuit protectors are described in the following chapters. The parameters are organised by channels.

### 8.2.1 Device Parameters for one Channel

The device information of one channel consist of 2 bytes.
Class ID = 101, instance ID = 1… 32 and attribute ID = 3
Service code: Get_Attribute_Single (14), Set_Attribute_Single (16)
All device parameters with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Rated current** | 0 | Byte | 1 ... Max. rated current of the circuit protectors | Contains the rated current of the channel.<br>With adjustable devices, you can set a new current rating range here and transmit it with a write command.<br>1 = 1 A rated current<br>2 = 2 A rated current<br>3 = 3 A rated current<br>...<br>10 = 10 A rated current (standard values) |
| **Limit value load current** | 6 | Byte | 50 ... 100 | Determines from which percentage of the rated current of a channel the limit value is exceeded. Exceeding the limit is indicated with one bit in the "Channel status” of the cyclical data.<br>The range lies between 50 % and 100 %.<br>The standard value is at 80 %. |

*Figure 21: Device parameters of the channel*

### 8.2.2 Device Information for one Channel

The device information of one channel consist of 19 bytes.
Class ID = 101, instance ID = 1… 32 and attribute ID = 1
Service code: Get_Attribute_Single (14)
All device information with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Circuit protectors p/n** | 0 HighByte<br>1 LowByte | UInt16 | 0 ... 65535 | 36873 = REX12D-TA1-100<br>36874 = REX12D-TA2-100<br>36873 = REX12D-TA1-100<br>36874 = REX12D-TA2-100<br>36878 = REX12D-TE2-100<br>36910 = REX12D-TE2-100-CL2<br>36905 = REX12D-TB1-100<br>36937 = REX12D-TA1-100-CL2<br>36969 = REX12D-TB1-100-CL2<br>36906 = REX12D-TA2-100-CL2<br>36942 = REX12D-TE2-101<br>36974 = REX12D-TE2-101-CL2<br>37001 = REX12D-TA1-101<br>36938 = REX12D-TA2-101<br>37033 = REX12D-TB1-101<br>37065 = REX12D-TA1-101-CL2<br>37097 = REX12D-TB1-101-CL2<br>36970 = REX12D-TA2-101-CL2<br>37130 = REX22D-TD2-100-CL2<br>37162 = REX22D-TD2-100<br>37129 = REX22D-TD1-100<br>37161 = REX22D-TA1-100<br>37134 = REX22D-TE2-100<br>37166 = REX22D-TE2-100-CL2<br>37194 = REX22D-TD2-101-CL2<br>37226 = REX22D-TD2-101<br>37193 = REX22D-TD1-101<br>37225 = REX22D-TA1-101<br>37198 = REX22D-TE2-101<br>37230 = REX22D-TE2-101-CL2<br>This list can be extended with future circuit protectors. |
| **Hardware version** | 2 HighByte<br>3 LowByte | UInt16 | 0 ... 65535 | Contains the hardware version of the installed product |
| **Internal mounting order** | 4 HwHb<br>5 HwLB<br>6 LwHB<br>7 LwLB | UInt32 | 0 ... 4294967295 | Contains the assembly order number of the installed product |
| **Internal order split number** | 8 HighByte<br>9 LowByte | UInt16 | 0 ... 65535 | Contains the internal order split number of the installed product |
| **Number of the production site** | 10 HighByte<br>11 LowByte | UInt16 | 0 ... 65535 | Contains the number of the production site of the in-stalled product |

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Serial number** | 12 HwHb<br>13 HwLB<br>14 LwHB<br>15 LwLB | UInt32 | 0 ...<br>4294967295 | Contains the serial number of the installed product |
| **Software version (major.x.x)** | 16 | Byte | 0 ... 255 | Contains the major software version of the installed product |
| **Software version (x.minor.x)** | 17 | Byte | 0 ... 255 | Contains the minor software version of the installed product |
| **Software version (x.x.structure)** | 18 | Byte | 0 ... 255 | Contains the installation software version of the in-stalled product |

*Figure 22: Device Information of the channel*

### 8.2.3 Configuration Data for one Channel

The configuration data of one channel consist of 2 bytes.
Class ID = 101, instance ID = 1… 32 and attribute ID = 6
Service code: Get_Attribute_Single (14), Set_Attribute_Single (16)
All configuration data with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Circuit protectors p/n** | 0 HighByte<br>1 LowByte | UInt16 | 0 ... 65535 | The expected device type can be adapted to the channel here. The device type always has an influence on the circuit protector, i.e. both possible channels.<br>36873 = REX12D-TA1-100<br>36874 = REX12D-TA2-100<br>36873 = REX12D-TA1-100<br>36874 = REX12D-TA2-100<br>36878 = REX12D-TE2-100<br>36910 = REX12D-TE2-100-CL2<br>36905 = REX12D-TB1-100<br>36937 = REX12D-TA1-100-CL2<br>36969 = REX12D-TB1-100-CL2<br>36906 = REX12D-TA2-100-CL2<br>36942 = REX12D-TE2-101<br>36974 = REX12D-TE2-101-CL2<br>37001 = REX12D-TA1-101<br>36938 = REX12D-TA2-101<br>37033 = REX12D-TB1-101<br>37065 = REX12D-TA1-101-CL2<br>37097 = REX12D-TB1-101-CL2<br>36970 = REX12D-TA2-101-CL2<br>37130 = REX22D-TD2-100-CL2<br>37162 = REX22D-TD2-100<br>37129 = REX22D-TD1-100<br>37161 = REX22D-TA1-100<br>37134 = REX22D-TE2-100<br>37166 = REX22D-TE2-100-CL2<br>37194 = REX22D-TD2-101-CL2<br>37226 = REX22D-TD2-101<br>37193 = REX22D-TD1-101<br>37225 = REX22D-TA1-101<br>37198 = REX22D-TE2-101<br>37230 = REX22D-TE2-101-CL2<br>This list can be extended with future circuit protectors. |

*Figure 23: Configuration data of the channel*

#### 8.2.4 Event Message for one Channel

The event messages of one channel consist of 1 byte.
Class ID = 101, instance ID = 1… 32 and attribute ID = 5
Service code: Get_Attribute_Single (14)
All event messages with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Category** | 0 | Byte | 0 … 255 | Bit 0 = Waiting for parametrisation<br>Bit 1 = Reserve<br>Bit 2 = New rated current range available<br>Bit 3 = Channel switched off via button/switch<br>Bit 4 = Reserve<br>Bit 5 = Reserve<br>Bit 6 = Reserve<br>Bit 7 = Device error detected<br>"True" means that the status is active. |

*Figure 24: Event message of the channel*

#### 8.2.5 Action Commands for one Channel

The action commands of one channel consist of 1 byte.
Class ID = 101, instance ID = 1… 32 and attribute ID = 4
Service code: Set_Attribute_Single (16)
Action commands with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Action commands** | 0 | Byte | 0 … 255 | 116 = Reset trip counter<br>118 = Reset device parameters to factory settings [1)]<br>131 = Back to box [2)]<br>192 = Reset statistical minimum values<br>196 = Reset statistical maximum values<br>220 = Reset statistical average values<br>No other values are accepted. |

*Figure 25: Action commands for one channel*

[1)] The command "118 = Reset device parameter to factory settings" within the action commands per channel resets the following data:

- Parameters (rated current = 10 A, load current limit value = 80 %) of each channel
- PLC lock bit of each channel (default = True, channel cannot be controlled via the PLC)
- **Not** the configured device types
- **Not** the statistic values (min, max, avg) of the channels
- **Not** the error memory, trip counter and trip reason of the channels

2) The command "131 = Back to box" within the action commands per channel resets the following data:

- Parameters (rated current = 10 A, load current limit value = 80 %) of each channel
- PLC lock bit of each channel (default = True, channel cannot be controlled via the PLC)
- Configured device type (default = REX12D-TA1 = 0x9009 = 36873)

- Statistic values (min = 655.35 A/V, max = 0 A/V, avg = 0 A/V) of the channel
- Error memory, trip counter and trip reason of the channel

### 8.2.6 Diagnostic Data for one Channel

The dynamic information of one channel consist of 22 byte.
Class ID = 101, instance ID = 1… 32 and attribute ID = 2
Service code: Get_Attribute_Single (14)
All dynamic information with possible conditions are described in the following table.

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Error memory** | 0 HighByte<br>1 LowByte | UInt16 | 0 ... 65535 | Bit 0 = No parameters available<br>Bit 1 = Error parameter memory<br>Bit 2 = Error programme memory<br>Bit 3 = Error data memory<br>Bit 4 = Error control unit<br>Bit 5 = Reset via Watchdog<br>Bit 6 = Reserve<br>Bit 7 = Reserve<br>Bit 8 = Reserve<br>Bit 9 = Reserve<br>Bit 10 = Reserve<br>Bit 11 = Reserve<br>Bit 12 = Reserve<br>Bit 13 = Reserve<br>Bit 14 = Reserve<br>Bit 15 = Reserve<br>“True” means that the status is active. |
| **Trip counter** | 2 HighByte<br>3 LowByte | UInt16 | 0 ... 65535 | The number of disconnections since the trip counter was last reset is indicated here. |
| **Reason of the tripping** | 4 | Byte | 0 ... 255 | 0 = No tripping<br>1= Short circuit<br>2= Overload<br>3 = Device temperature too high<br>4 = Internal device failure |
| **Min. load voltage** | 5 HighByte<br>6 LowByte | UInt16 | 0 ... 65535 | Contains the lowest measured voltage of the channel since the last reset.<br>A standardised 16-bit-value with a resolution of 10 mV is provided.<br>Example for calculating the measuring value:<br>Value (2512)/100 ≙ 25.12 Volt |
| **Max. load voltage** | 7 HighByte<br>8 LowByte | UInt16 | 0 ... 65535 | Contains the highest measured voltage of the channel since the last reset.<br>A standardised 16-bit-value with a resolution of 10 mV is provided.<br>Example for calculating the measuring value:<br>Value (2512)/100 ≙ 25.12 Volt |
| **Average value load voltage** | 9 HighByte<br>10 LowByte | UInt16 | 0 ... 65535 | Contains the medium voltage value of the channel since the last reset.<br>A standardised 16-bit-value with a resolution of 10 mV is provided.<br>Example for calculating the measuring value:<br>Value (2512)/100 ≙ 25.12 Volt |

| | Byte | Type | Scope | Description |
|---|---|---|---|---|
| **Min. load current** | 11 HighByte<br>12 LowByte | UInt16 | 0 ... 65535 | Contains the lowest measured current of the channel since the last reset.<br>A standardised 16-bit-value with a resolution of 10 mA is provided.<br>Example for calculating the measuring value:<br>Value (150)/100 ≙ 1.50 Ampere |
| **Max. load current** | 13 HighByte<br>14 LowByte | UInt16 | 0 ... 65535 | Contains the highest measured current of the channel since the last reset.<br>A standardised 16-bit-value with a resolution of 10 mA is provided.<br>Example for calculating the measuring value:<br>Value (150)/100 ≙ 1.50 Ampere |
| **Average value load current** | 15 HighByte<br>16 LowByte | UInt16 | 0 ... 65535 | Contains the medium current value of the channel since the last reset.<br>A standardised 16-bit-value with a resolution of 10 mA is provided.<br>Example for calculating the measuring value:<br>Value (150)/100 ≙ 1.50 Ampere |
| **Reserve** | 17 HighByte<br>18 LowByte | UInt16 | 0 ... 65535 | Reserve |
| **Reserve** | 19 HighByte<br>20 LowByte | UInt16 | 0 ... 65535 | Reserve |
| **Diagnosis information of the chan-nel** | 21 | Byte | 0 ... 255 | 0 = OK<br>1 = Present device type does not correspond to the configu ration type<br>2 = No device identified<br>3 = Channel not assigned<br>144 = Device parameters not plausible<br>146 = Channel switched off via button/switch<br>147 = Low voltage detected<br>148 = Excess temperature detected<br>149 = Reset command required<br>150 = Command was run correctly<br>151 = Parametrisation required<br>152 = Internal error detected<br>153 = Unknown command<br>154 = Set length error<br>155 = Rated current available, check total error<br>156 = Rated current selection switch was actuated |

*Figure 26: Dynamic information*

# 9 APPENDIX

## List of Figures

Figure 1: System Overview....6
Figure 2: CPC12 dimensions....7
Figure 3: CPC12 Status Indication and Terminals....7
Figure 4: LED status indication....9
Figure 5: LED status indication fieldbus....9
Figure 6: RJ45 sockets LED indication....9
Figure 7: CPC12 installation drawing....10
Figure 8: Communication properties....15
Figure 9: Identity object features....16
Figure 10: TCP/IP Interface object features....16
Figure 11: CPC12EN cyclic diagnosis data....17
Figure 12: Total current....18
Figure 13: Circuit protector data input....19
Figure 14: Data output of the circuit protector....19
Figure 15: CPC12EN object features....21
Figure 16: Channel object features....21
Figure 17: CPC12EN device information....22
Figure 18: CPC12EN configuration data....23
Figure 19: CPC12EN action commands....24
Figure 20: CPC12EN dynamic information....25
Figure 21: Device parameters of the channel....25
Figure 22: Device Information of the channel....27
Figure 23: Configuration data of the channel....28
Figure 24: Event message of the channel....29
Figure 25: Action commands for one channel....29
Figure 26: Dynamic information....31

**E-T-A Elektrotechnische Apparate GmbH**
Industriestraße 2-8
90518 Altdorf
phone: +49 9187 10-0
Fax: +49 9187 10-397
mail: info@e-t-a.de

**global.e-t-a.com**