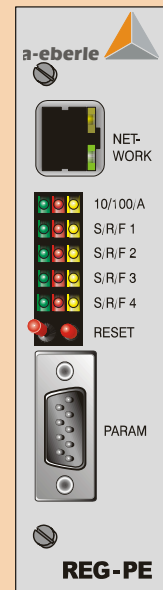


Central station coupling-module type REG-PE

* as 19" rack version



Application

Working as a coupling-device with control centres or with central units, the REG-PE operates with all remote control protocols.

Features

- boots itself after power-on
- coordinates the telegram traffic between one or more substation units and WT- and/or modem-connections to central stations or substations
- checks automatically and continuously the memory of the device
- controls the watchdog
- parameters can be set online at any time
- adjustable to any remote control protocol
- multiple choices for connection such as fibre optics, RS 485, RS 232

Specification

The REG-PE board is equipped with an 32Bit CMOS - processor PPC860T and represents an independant computer, with an address-range of 64 GByte.

The CPU runs at a speed of 50-80 MHZ. The board has a maximum capacity of 2 RAM modules with 32MB in total memory as working memory.

Depending on the kind of the module the storage capacity for saving of special system device data as well as for the specific remote control protocol structure are up to 32MB flash memory.

All 16 hardware-timers are required for the TELE-DATA - realtime operating system TDXact. One timer is used for the system cycle. All of the processor-included UART - modules turn the 6 asynchronous V.24-interfaces. Each of these interfaces have their own baudrate timers.

Serial interface 0 is able to work from 600 Bd. up to 115200 Bd. and serial interface 1-3 from 60 Bd. up to 115200 Bd. The last timer is used for the protocol software.

For serial coupling in pulse-width-modulation (pulse-duration-m.) 100 Bd. up to bis 2400 Bd. are available. All interfaces can be used either in PWM- or in PCM (pulse-code-m.) - mode or as control lines for modem, so that up to 4 coupling partners can be served.

Despite the functions running by different software branches on REG-PE, there are general functions in order to protect the REG-PE module against malfunctions. These functions are realized by hardware supplements and by software parts.

Interfaces

The REG-PE module offers the following interfaces for communication with parametrizing PC and for connection with serial communication partners:

- 10/100Mbit Ethernet
- upto 6 serial interfaces
- 4 of those serial interface to PCM or PWM coupling partners
- 4 of those serial interfaces RS485
- up to 4 serial fibre optic interfaces (optional)
- all transmitters and receivers are galvanically isolated by optocouplers
- all drivers are able to work as V24

Interfaces for serial communication are connected via rackmount connector. They include control lines, data lines and the requested power supply potentials. With the help of short-circuit connectors you can adjust the inversion of the specific signals. The status of each channel is shown on the 3 LEDs on the front panel.

Socket Connections on the front

On the left hand side of front panel you see a 9pin-Sub-D-socket. This is used for 2 serial ports in order to supply e.g. parametrizing data. Via this connection you can easily parametrize REG-PE online at any time.

General Functions

Beside the functions, running by different software applications, there are main functions protecting against malfunctions of the device. These functions are realized by hardware-implementations and by software-routines:

Reset

There are four possibilities to trigger a reset on a REG-PE. A proper restart of REG-PE is guaranteed in each case:

- by pressing "RESET" on the front panel
- Watchdog runs up
- reconnection and return of power supply
- Reset by monitoring software module

Watchdog

Watchdog is a hardware-supplement to monitor the smooth process of the software. It consists of a timer that has to be triggered continuously by a background software program. Lack of retriggering leads to a hardware-reset. The correct status of watchdog is displayed by a red LED on the front panel near the Reset-button.

Contact positions for SCCs and power

z	b	d	
PROZG	FREMD-N	FREMD-P	2
PROZA	COM4-GND	COM4-GND	4
COM4-RTS	485-N-4	COM4-CTS	6
COM4-TXD	485-P-4	COM4-RXD	8
COM3-GND	COM3-GND	COM3-GND	10
COM3-RTS	485-N-3	COM3-CTS	12
COM3-TXD	485-P-3	COM3-RXD	14
COM2-GND	COM2-GND	COM2-GND	16
COM2-RTS	485-N-2	COM2-CTS	18
COM2-TXD	485-P-2	COM2-RXD	20
COM1-GND	COM1-GND	COM1-GND	22
COM1-RTS	485-N-1	COM1-CTS	24
COM1-TXD	485-P-3	COM1-RXD	26
PE	PE	PE	28
GND	GND	GND	30
VCC	VCC	VCC	32

Technical Data

Processor MPC860T
 Processor Technology CMOS
 Memory 64MB SDRAM
 Operating system realtime-UNIX

Serial Interfaces 6
 Input-resistance 1000 Ohm
 Output-resistance 120 Ohm
 Input voltage +-3..12V

Power supply TK860 + 5 V +/- 10% 0,6 A max.

Reference conditions during operation in a 19" rack

temperature: - 10..+55C
 relative humidity: max. 85% at 25°C
 Storage: temperature: -25..+65C
 relative humidity: max. 80% at 25°C

Parametrizing TK860

A generated file is transferred via serial interface from a standard PC into REG-PE. Data is kept in flash memory.

Applied rules and standards

EN 55011: 1991 und EN 50082-2: 1995
 DIN 40050
 EN 50178 / VDE 0160 / 11.94
 ICE 1010/EN61010 (VDE 0411)
 ICE 255-4
 ICE 529
 VDE0110 / IEC 664-1
 VDE0106 Teil 100

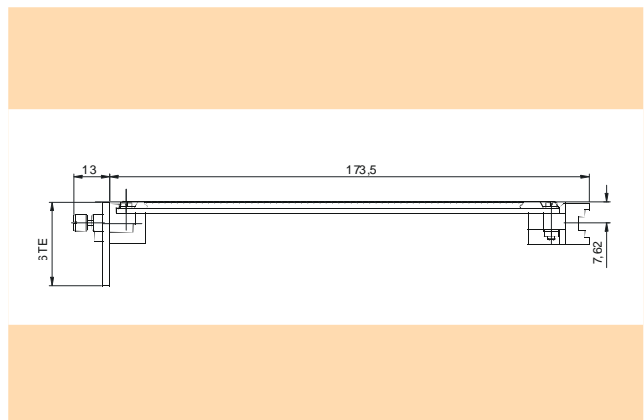


Mechanical construction

Front Panel ALU, RAL 7035
 height, width 3U, 6T (129 mm, 71 mm)
 weight ≤ 0,4 kg

Protection class
 plug in device IP 00
 terminal block IP 00

Mounting according DIN 41494 Part 5
 connector block DIN 41612



Picture 1 Dimensions plug-in module

Data programming cable

Cable has to be shielded and may not be longer than 1.5m.

PC-Sub-D connector 9 pin	meaning	REG-PE Sub-D-connector 9pin
1	n.a.	-
2	TXD SMC1	3
3	RXD SMC1	2
4	n.a.	-
5	GND	5
6	n.a.	-
7	TXD SMC2	-
8	RXD SMC2	-
9	n.a.	-

Electric security

Protection class 1
 Grade of pollution 2
 Overvoltage category, rated insulation voltage

Name	Overvoltage	max. Over-voltage
Serial interfaces front	II	300 V
Serial interfaces back	II	350 V

Transient voltage strength Immunity 5 kV, 1,2/50 ms, 0,5 Ws

Electrostatic discharge Airlod 8 kV
 Contactload 4 kV

Electromagnetic fields 80 MHz...1000 MHz 10 V / m
 900 MHz ± 5 MHz 10 V / m pulsemodulated

Rapid transient disturbance quantities (Bursts) Power supply AC 230 V, 2 kV

Contacted RF-disturbance factors 0,15 MHz...80 MHz
 $U_{eff} = 10 V$

50 Hz-magnetic field 30 A / m

Disturbance emission Group 1
 limit class A

Electrical Connection

Terminal screws with selflocking protection; clip on connector block

RS485-Processing

In order to terminate the RS485-bus you should use an external termination resistor.

Fibre-optic connectors

All connectors have SMA/ST-standard-size. The wavelength is at 660/850nm and is ready for glass and plastic fibre-optics.

Jumpersettings fibre-optic board

Jumper	meaning
X5-1	receiver invert
X6-1	transmitter invert

Operating modes

The telecontrol board REG-PE has got no jumpers on board. In order to switch between the operating modes RS485 and RS232 (fibre optic mode is done via RS232 mode and additional piggy back module) a software parameter has to be set accordingly.

Commissioning of the board

For commissioning purposes a quick guide and an elaborately user manual with parameterizing guide is coming with the board and also downloadable on our home page. The parameterizing is done via web browser or a Windows-based application.

Fields of application

The telecontrol board REG-PE processes the following telecontrol protocols together with eberle devices:

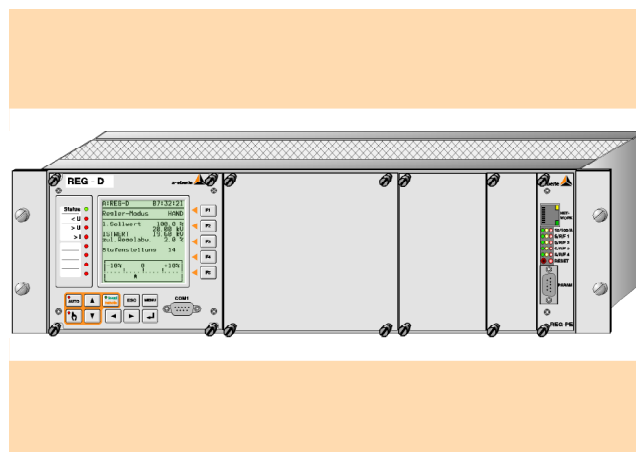
- IEC 60870-5-101
- IEC 60870-5-103
- IEC 60870-5-104
- IEC 61850
- DNP 3.0
- Other protocols on demand

The telecontrol connection can be made via RS232, RS485 and fibre optics.

The parameterizing is done via web browser or a Windows-based application, which is divided in two main sections:

- common part where only baud rate and device address have to be entered and
- advanced part where specialist may adjust specifics.

This implies timeouts etc. and other protocol specifics as well as modification possibilities of the telecontrol profiles. Example picture of mounting in 19"-rack:



Working as a protocol converter the following telecontrol protocols are available:

(further protocols on demand)

		C O N N E C T I O N T O C E N T R A L S T A T I O N									
		1	2	3	4	5	6	7	8	9	10
PROTOCOL		IEC 61850	IEC 60870-5-101	IEC 60870-5-103	IEC 60870-5-104	RIDAT	DNP 3.0	MODBUS RTU	OPC	IMPAS	Y
C O N N E C T I O N T O S U B S T A T I O N	A IEC 61850										
	B IEC 60870-5-101										
	C IEC 60870-5-103										
	D IEC 60870-5-104										
	E RIDAT										
	F DNP 3.0										
	G MODBUS RTU										
	H OPC										
	I IMPAS										
	J ASCII										
	K X										

Ordering details

Please note:

- Only one code with the same capital letter is possible
- The code can be omitted when the capital letter is followed by zero only

FEATURE	CODE
Protocol-Interface-Card 6TE, 3HE, 6 ser. Interfaces, 10/100Mbit Ethernet	REG-PE
Connection Types	
RJ45 (standard)	
Fibreoptics (ST)	FTR-100
Further connectiontypes on demand	
Type of telecontrol protocol	
IEC103	Z93
IEC104	Z92
IEC61850	Z31
Application Type	
For use with REG-D	L1
For use with combinations of REG-D/DA, REG-DP/DPA, EOR-D, PQI-D	L9
Operation Manual	
German	G1
Further fields of application	
The board can be used as protocol converter or coupling module for RTUs.	