



**Elpro**

# SGBA

Protection Panel for  
Railway Electrical  
Systems

Hilfsenergie DC 220V/24V  
24V+24V-  
Stromspannung DC 220V TL+TL-  
Stromspannung DC 220V 0V+0V/-  
Antriebs-  
Tabelle  
DC 220V 0V

Schleife  
D14  
24V

# PROTECTION AND CONTROL PANEL FOR RAILWAY ELECTRICAL SYSTEMS

The Protection and Control Panel for Railway Electrical Systems (PCRS) combines protection and monitoring functions with a flexible PLC for controlling equipment and system components on stationary DC rail applications.

The PCRS is a modular combination of:

- Protection module
- Capacitor trigger
- User-programmable PLC
- Measurement value recording/ measurement value output
- I/O modules
- Cable monitoring
- Visualization and parameter programming display.

Two independent high-performance processors operate the extensive protection and control functionality.

The versatile safety functions of the PCRS continuously monitor current and voltage levels above and below parameter-controlled thresholds.

When the protection functions are tripped, the capacitor trigger integrated into the PCRS enables a rapid disconnect of the DC switch.

The integrated interface allows message and measurement value archives to be transferred to a USB stick.

The integrated PLC is user-programmable iaw. IEC 61131-3. The required runtime license is already permanently integrated into the PCRS.

Validated control and communication software modules facilitate flexible and efficient programming.

User-friendly software is available for analysis and diagnosis. The software is used to provide detailed charts for measurement value tracking, reporting events and for programming PCRS parameters.

## Dimensions

Width: 315 mm

Height: 222 mm

Depth: 190 mm

Mass: 3000 g

## Functions for:

### Protection:

- $I_{max}$ ,  $I_{max}$  reverse
- $di/dt$
- $\Delta I$
- I-UMZ, I-UMZ reverse
- $U_{min}$
- $U_{max}$
- $I^2t$
- Cable monitoring

### Control and monitoring

- Switch monitoring
- Automated rail section testing and restart
- Energy and output calculation
- Up to 112 digital inputs/outputs
- User-programmable iaw. IEC 61131-3

### Communication

- Profibus DP
- Modbus TCP Server
- CANopen
- IEC 60870-5-103
- IEC 61850 Ed.2 (TÜV certified)
- Other protocols on request

# TECHNICAL DATA

## Ambient climatic conditions

- Ambient temperature 0 to 60°C
- Relative humidity ≤ 80%
- Max. installed elevation 1000 m above mean sea level

## Ambient mechanical conditions

- Vibrations iaw. IEC 600068-2-6
- 10-150 Hz; 9,81 m/s<sup>2</sup> (1g)
- Shock iaw. IEC 60068-2-27
- 150 m/s<sup>2</sup> (15g), 11 ms

## Electromagnetic compatibility

- iaw. EN 50121-5/7.06
- Electrostatic discharge iaw. IEC/EN 61000-4-2
- Air discharge
- Contact discharge

Bust impulse iaw. IEC/EN 61000-4-4

Surge impulse iaw. IEC/EN 61000-4-5

HF irradiation iaw. IEC/EN 61000-4-3

HF energized iaw. IEC/EN 61000-4-6

## Emission von Funkstörungen

Class A iaw. IEC CISPR 22

## Protection type

IP 40

## Characteristic electrical values

Power supply: 60 VDC, (110VDC, 220 VDC)

Power loss: ≤ 39 W (without digital inputs/outputs)

## Digital input

- 24V DC
- 20 mA
- 0.5 W per digital input at H level

## Digital output

- 24V DC
- ≤ 0.5 A (max. 2 A per module)
- Short-circuit resistant

## Analog output

- 2 x 0 .. 10 V; 2 x ±10 V
- parameter-controlled

## Capacitor trigger

- 250V DC
- 2000 µF

## Isolation amplifier

- 50 µs of measurement value tracking
- (current, voltage, test current, redundant current)
- Measurement range, shunt input ± 300 mV
- Measurement range, voltage 1200 V

## Protection module

- **Independent** processor
- 50 µs takt of measurement value formatting
- 1 x fieldbus D-Sub 9
- 1 x serial RS232 D-Sub 9

## PLC Module

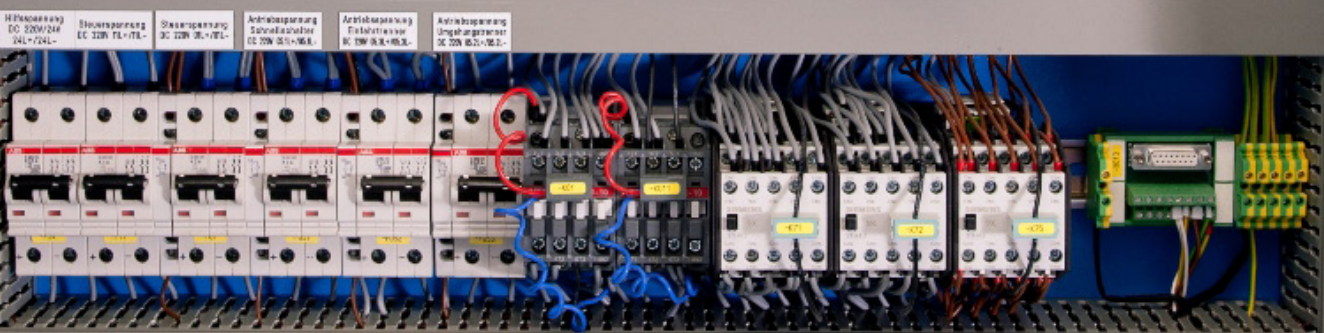
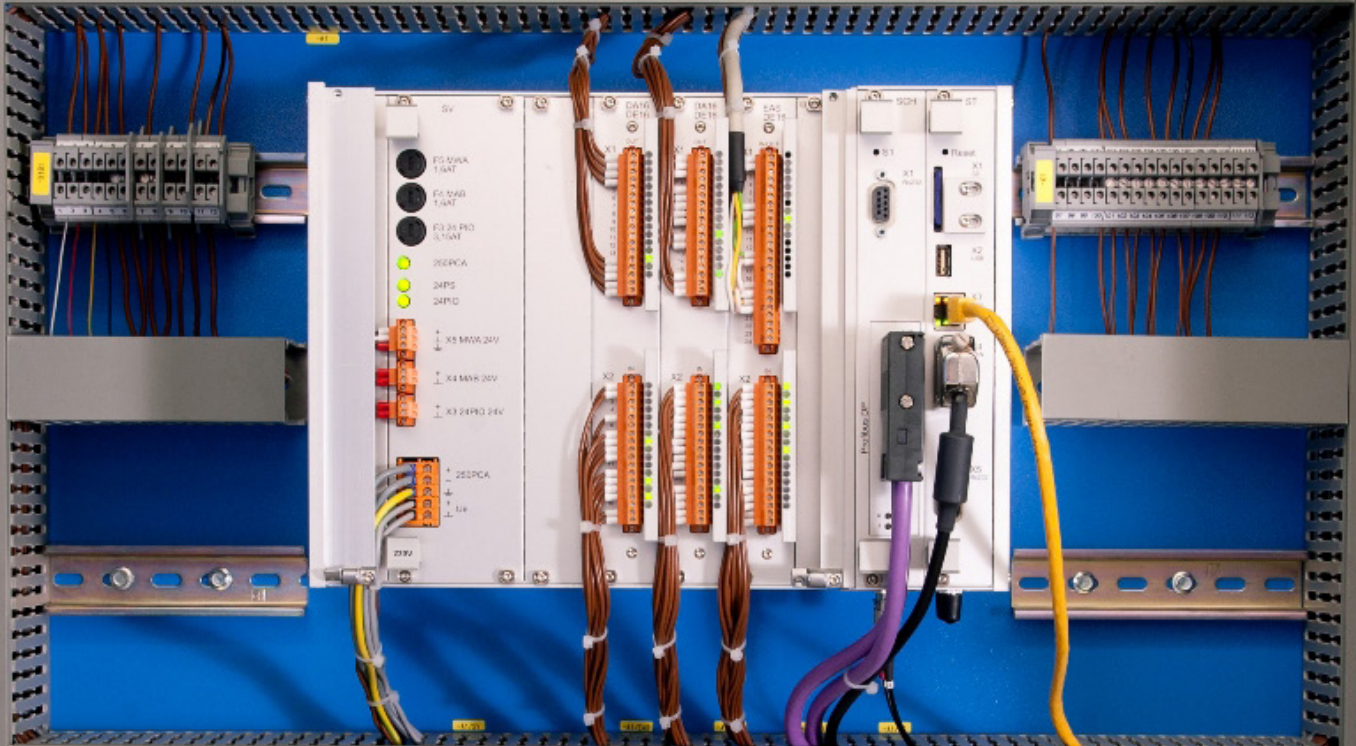
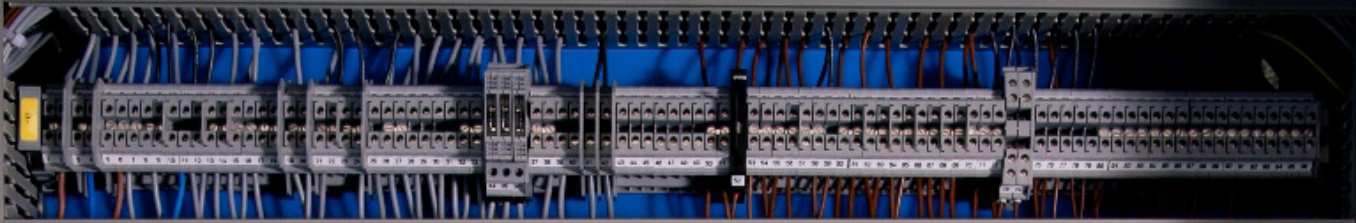
- Independent processor 8 MB RAM, 8 MB flash
- Complies with 61131-3
- Programming languages: FUP, KOP, AWL, ST, CFC
- 1 x USB (archive and parameters)
- 1 x SD card (program and data)
- 1x Ethernet 10/100MBit/s RJ45
- 1 x CAN Bus D-Sub 9
- 1 x serial RS232 D-Sub 9

## Messaging system

- No time limit on data storage
- 50 measurement values archives with current and voltage tracking
- Approx. 30,000 messages in 10 archives

## Display

- Resolution: 320 x 240
- Size: 5.7"
- Fully-graphic color display
- 24 keys + 16 function keys or resistive touch



HF-Belegung DC 200V/24V 24L+24L-

Stromversorgung CC 220V 1L+1L-

Stromversorgung DC 220V 2L+2L-

Antriebsversorgung Schmelzsicherer CC 220V 0L+0L-

Antriebsversorgung Elektroventile CC 220V 0L+0L-

Antriebsversorgung Umgebungsventil DC 220V 0L+0L-

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