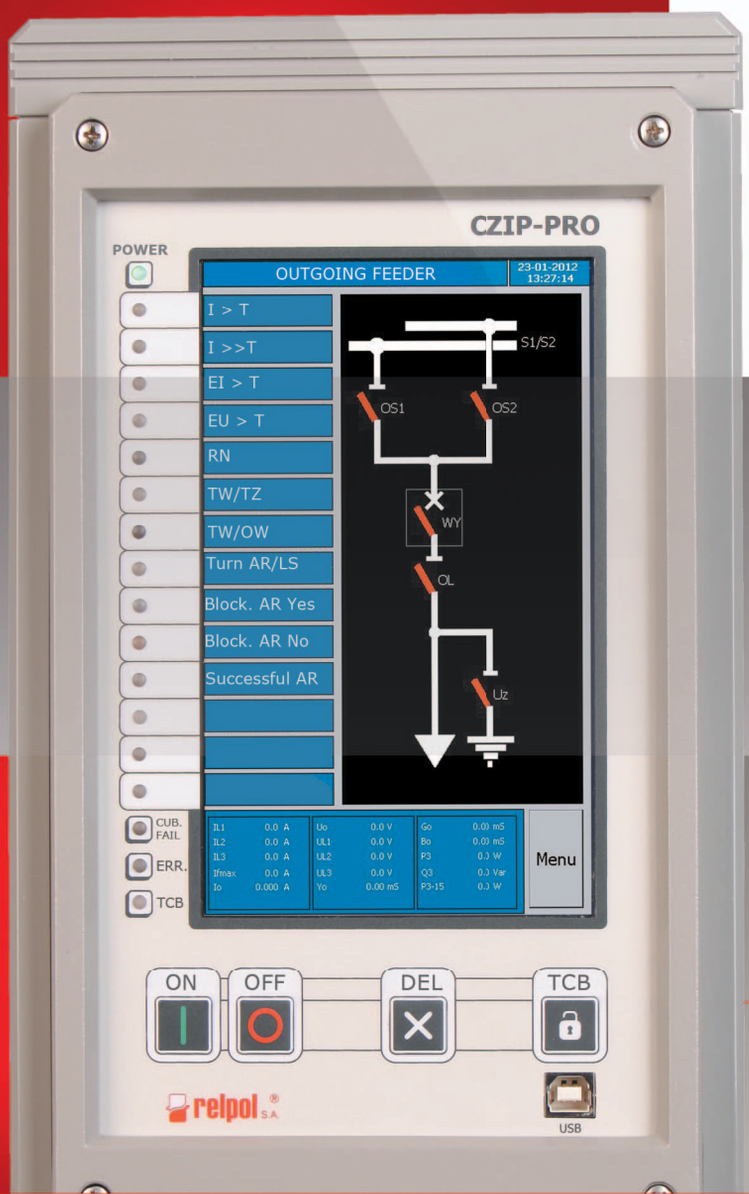
# CZIP-PRO




Digital protection, automation, measurement, control and communication system.

www.czip-pro.pl

relpol® S.A.

# CZIP-PRO
## Digital protection, automation, measurement, control and communication system.

The CZIP-PRO protection relay for MV switchgear has been developed by Relpol® R&D department, with a strong support from Poznan University of Technology. Thanks to the excellent cooperation and participation from scientists and professionals from the power industry, we have designed state-of-the-art products that comply with international standards.

### CZIP-PRO

The CZIP-PRO is a versatile device. It comes with predefined configurations for different bay types. Product can be customized to meet local market requirements.

Type of bay:

- **L** Feeder bay
- **E** Feeder bay with local power station (incl. wind farm)
- **T** MV side of 110 kV transformer
- **C** Capacitor bay
- **Y** 0.4 kV MV transformer bay
- **K** Grounding transformer in compensated network
- **P** Grounding transformer in network with neutral earthing resistor
- **X** Grounding transformer in network with choke/resistor parallel system
- **U** Voltage measurement bay,
- **S** Bus coupler bay
- **H** 110 kV bay of 110 kV/MV Transformer

### CZIP-PRO 2R R

Due to technological changes in construction, automatic transfer switch (ATS) protection is supported by the CZIP-PRO 2R protection relay type. The CZIP-PRO 2R protection relay can record events and communicate with the master system.

### CZIP-Set software

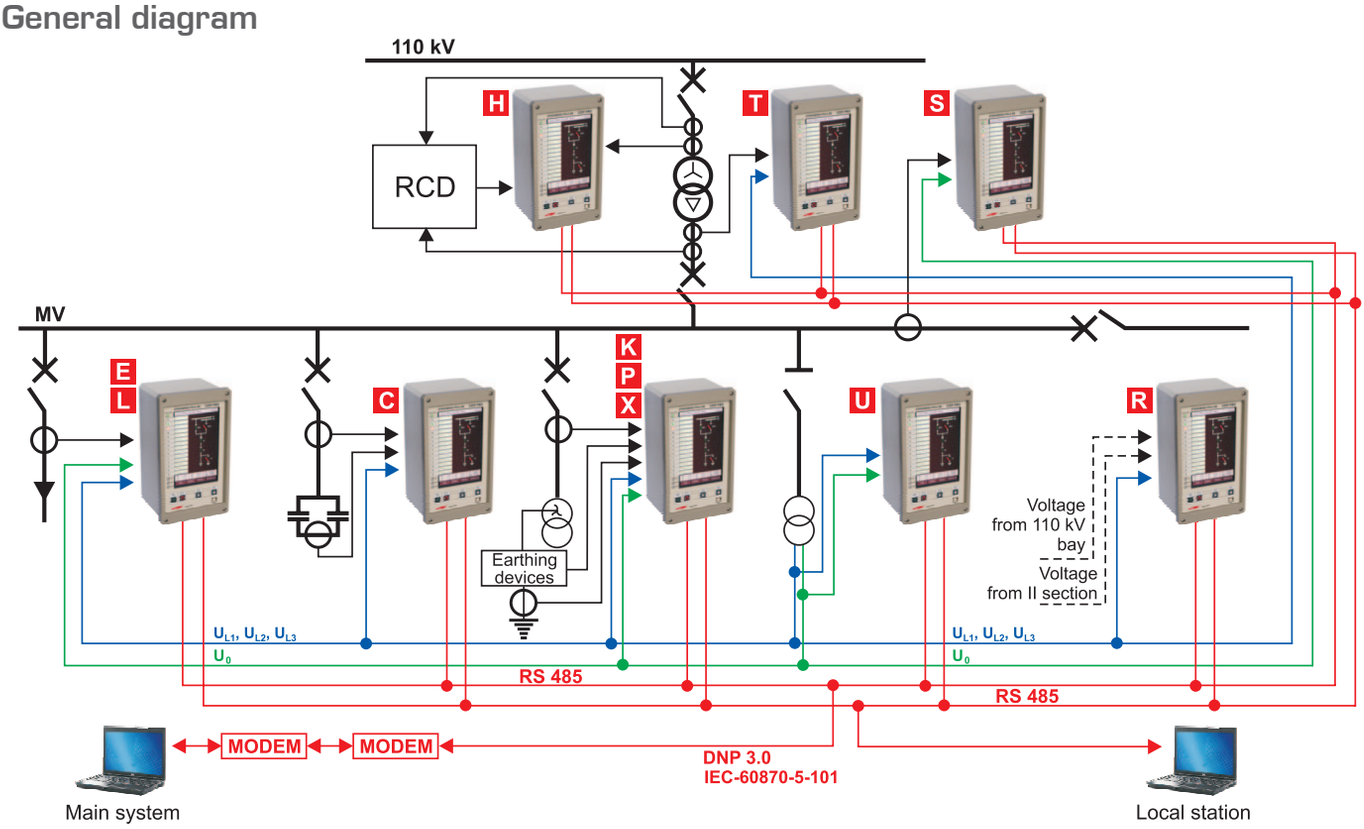
Software supplied with CZIP-PRO protection relay is a powerful engineering tool that helps the user to set up all the available parameters. The CZIP-Set also allows the user to read the current configuration data, measurements and records of events. The software also includes package that allows the user to read and conduct a comprehensive analysis of the sample data stored in the record of errors.

The CZIP-PRO communicates with a PC through the RS485 serial ports, USB or Ethernet.

## CZIP-PRO characteristics

- predefined settings for the different MV switchgear bay types,
- touch user interface with TFT 7” screen,
- graphical presentation box, with the mapping of connectors,
- presentation of the recorded events and wave forms in the form of: tables, graphs, bar charts.
- change of time zone, automatic summer / winter time change,
- English menu (simplicity in adding more languages)
- relay outputs (20), digital inputs (28)
- 14 two-color, programmable LEDs with programmable description on the screen
- 512 MB internal memory,
- time synchronization with SNTP and IRIG-B server
- communication interfaces: Ethernet 10/100 Base-TX, IRIG-B, 2xRS-485, USB
- communication protocols: DNP3.0, IEC60870-5-101, Modbus® ASCII / RTU, Modbus® TCP, HTTP (Web server), FTP (server), NTP, IEC61850 (by the end of 2012)

## General diagram



## Technical parameters

### PHASE CURRENT INPUT CIRCUITS

| | | | | | | |
|---|---|---|---|---|---|---|
| Rated current $I_n$ | | | | 5 A or 1 A | | |
| Measurement range | | | | 0-192 A | | |
| Measurement error | 0 A > | 0,35 A - 50 A | < 192 A | < 10% | < 1,5 % | < 10% |
| Rated frequency $f_n$ | | | | 50 Hz | | |
| Power consumption ($I=I_n$) | | | | < 0,5 VA | | |

### PHASE VOLTAGE INPUT CIRCUITS

| | |
|---|---|
| Rated voltage $U_n$ | 100 V |
| Measurement range | 0-130 V |
| Measurement error within the measurement range | < 1,5% |
| Rated frequency $f_n$ | 50 Hz |
| Power consumption ($U=U_n$) | < 0,4 VA |

### ZERO SEQUENCE CURRENT INPUT CIRCUITS

| | |
|---|---|
| Rated current $I_{0n}$ | 0,5 A |
| Measurement range | 0-5 A |
| Measurement error (20mA - 3,5A) | < 1,5% |
| Rated frequency $f_n$ | 50 Hz |
| Power consumption ($I=I_{0n}$) | < 0,4 VA |

### ZERO VOLTAGE INPUT CIRCUITS

| | |
|---|---|
| Rated voltage $U_{0n}$ | 100 V |
| Measurement range | 0-130 V |
| Measurement error within the measurement range | < 1,5% |
| Rated frequency $f_n$ | 50 Hz |
| Power consumption ($U=U_{0n}$) | < 0,4 VA |

### BISTABLE INPUT CIRCUITS

| | | |
|---|---|---|
| Rated input voltage | 24 V | 220 V |
| Input voltage range | 17-32 V | 88-253 V |
| Current consumption at 24V (220V) | < 0,25 mA | < 3 mA |

### RELAY INPUT CIRCUITS

| | | |
|---|---|---|
| Rated voltage | | 220 V |
| Permanent load | | 5A |
| Inductive circuit opening | • 220 V DC, L/R = 40 ms | 0,1 A |
| | • 220 V AC, cos Φ = 0,4 | 2 A |

### SWITCH CIRCUITS

| | |
|---|---|
| Rated voltage | 220 V |
| Permanent load | 8 A |
| Inductive circuit opening: 220 V DC, L/R = 40 ms | 1,2 A/300 cycles |
| Time - switching on impulse | min 0,1 s |
| Time - switching off impulse | 0,2 ÷ 1 s |

### OTHER DATA

| | | | | |
|---|---|---|---|---|
| Power supply | • Rated supply voltage | 220 V DC | 230 V AC | 24 V DC |
| | | 90..220..300 V | 85..230..265 V | 19..24..65 V |
| | • Power consumption | < 20 W | | |
| Environmental conditions | • Temperature | -5°C ... +55°C | | |
| | • Storage temperature | -25°C ... +70°C | | |
| | • Air pressure | > 800 hPa | | |
| | • Air relative humidity | no condensation | | |
| Weight | | 6 kg | | |
| Dimensions: | • Height | 306 mm | | |
| | • Width | 175 mm | | |
| | • Depth | 130 mm | | |
| Degree of protection | | IP 40 | | |
| Conformity | | 2006/95/EC and 2004/108/EC Directives | | |

# CZIP-PRO

## Digital protection, automation, measurement, control and communication system.

| Protection | L | E | T | C | Y | K | P | X | U | S | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Multi-stage overcurrent | •* | •* | | | | | | | | | |
| Overcurrent short-circuit | • | • | | | | | | | | • | |
| Overcurrent based earth-fault | • | • | | • | • | | | | | | |
| Admittance based earth-fault | • | • | | | • | | | | | | |
| Conductance based earth-fault (Non-directional & directional) | • | • | | | | | | | | | |
| Directional susceptance based earth-fault | • | • | | | | | | | | | |
| Reverse power | • | • | • | | | | | | | | |
| Islanding | | • | | | | | | | | | |
| Overvoltage | | • | • | • | • | | | | | | |
| Undervoltage | | • | | | • | | | | | | |
| Overcurrent against overload | | | • | • | • | | | | | | • |
| Time-overcurrent | | | • | | | • | • | • | | •* | |
| Short-circuit overcurrent | | | • | | | • | • | • | | | |
| Earth-fault protection | | | • | | | • | • | • | | • | |
| Busbar (logic-overcurrent) | | | • | | | | | | | | |
| Overcurrent against line-to-line short-circuit | | | | • | | | | | | | |
| Overcurrent against internal short-circuit | | | | • | | | | | | | |
| Short circuit independent | | | | | • | | | | | | |
| Short circuit dependent | | | | | • | | | | | | |
| Gas | | | | | | • | • | • | | | |
| Phase overvoltage | | | | | | | | | • | | |
| Phase undervoltage | | | | | | | | | • | | |
| Overvoltage earth-fault | | | | | | | | | • | | |
| External phase short-circuit fault time overcurrent | | | | | | | | | • | | |
| Internal phase short-circuit fault time overcurrent | | | | | | | | | • | | |
| Zero sequence current against earth-fault | | | | | | | | | | | • |
| **Automation** | **L** | **E** | **T** | **C** | **Y** | **K** | **P** | **X** | **U** | **S** | **H** |
| AR (Autoreclosing) | • | • | | | | | | | | | |
| Cooperates with LS or AR/LS (Load shedding - LS) | • | • | | | • | | | | | | |
| Cooperates with CBFP (Circuit-breaker failure protection) | • | • | | • | • | • | • | • | | | • |
| CBFP | | | • | | | | | | | • | |
| Capacitor bank controller | | | • | | | | | | | | |
| Cooperates with ATS (Automatic Transfer Switch) | | | • | | | | • | | | • | • |
| Capacitor bank switch controller | | | | • | | | | | | | |
| In-phase component enforcement | | | | | | • | | | | | |
| Resistor controller | | | | | | | • | | | | |
| Resistor autoreclosing | | | | | | | • | | | | |
| Choke and resistor controller | | | | | | | | • | | | |
| Under Frequency LS (II degree) | | | | | | | | | • | | |
| AR/LS | | | | | | | | | • | | |

* featuring operating characteristic

**The CZIP-PRO is available for flush mounting as well as wall-surface mounting.**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