

## CZIP-PRO

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

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The **CZIP-PRO** protection relay for MV switchgear has been developed by Relpol S.A. R&D department in Zielona Góra, 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. More than 10000 CZIP systems have been sold since the first version was introduced in 1997.



The **CZIP-PRO** is designed to protect and control different MV switchgear cubicle types.

New generation of the CZIP protection relay contains all the functions and features that have proven themselves in the previous models of CZIP, becoming the industry standard in Central Europe.

The **CZIP-PRO** is a versatile device. Preinstalled firmware allows the user to choose from the menu already predefined settings and parameters specified to the different MV switchgear bay type.



## **Application:**

- power engineering,
- wind and hydropower plants,
- power stations,
- thermal power stations,
- industrial MV switchgears.



## The **CZIP-PRO** protects and controls different MV switchgear cubicles:

- supply and distribution cubicle,
- 110 kV transformer cubicle,
- capacitor cubicle,
- 0,4 kV transformer cubicle,
- voltage-current measurements cubicle,
- double busbar cubicle, ect...

The **CZIP-PRO** supports also 110 kV transformer in scope of protection, measurement, control, communication, record keeping and cooperation with local automatics. Relay protection can cooperate with residual current devices.





## Protection functions:

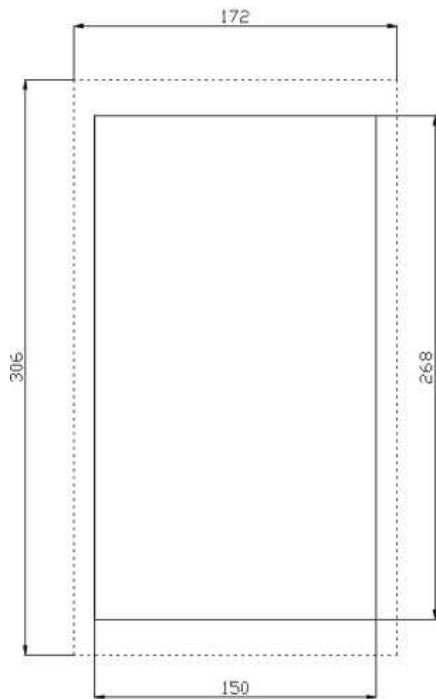
The **CZIP-PRO** feeder protection relay offers a wide range of protections, like: time overcurrent + operating characteristic, short-circuit overcurrent, earth-fault and reverse power that are used to support supply and distribution cubicle proper functionality.

However, a number of other functions is also supported to facilitate protection of other applications: overcurrent from overload, overvoltage, busbar, phase overcurrent, phase undercurrent, ground fault overvoltage, power flow, gas protection, time overcurrent from interphase faults, internal short-circuit, current-independent short-circuit and current-dependent short-circuit.

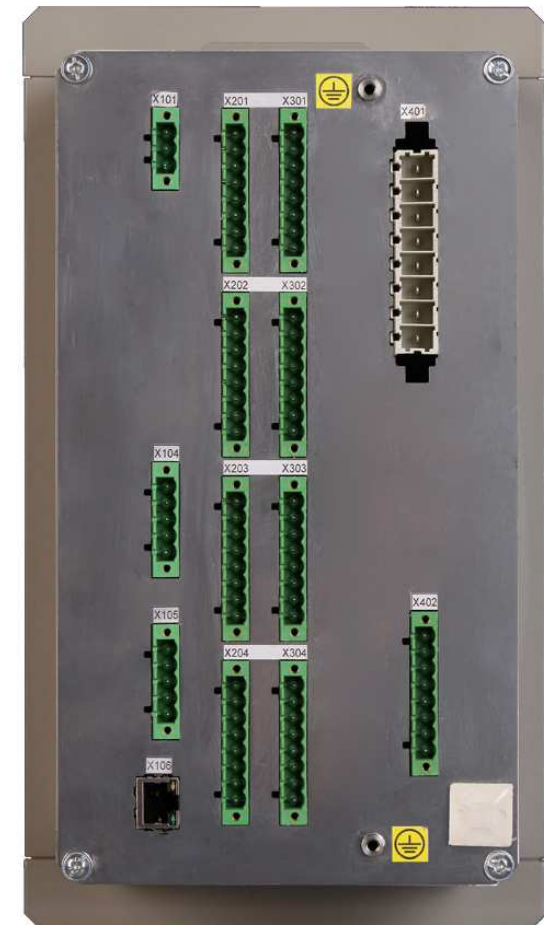
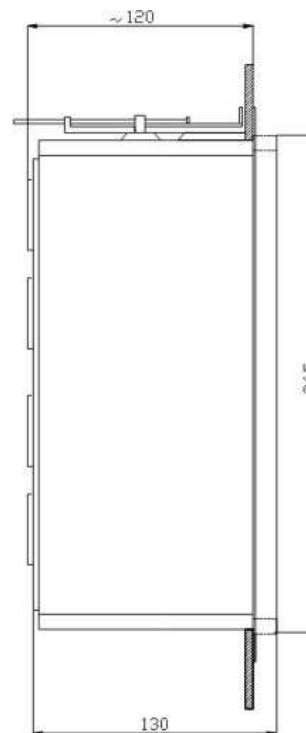


# The **CZIP-PRO** mounting

Front view



Side view







## The **CZIP-2R PRO** Automatic Transfer Switch (ATS) protection

Due to technological changes in construction, ATS protection is supported by the **CZIP-2R PRO** protection relay type.

The **CZIP-2R PRO** protection relay can record all events that have occurred and communicate with the master system.



## The **CZIP-2R PRO** Features:

- Solid-state undervoltage
- Solid-state overvoltage
- Residual voltage control
- Voltage difference control
- Permanent ATS switch off
- Temporary ATS switch off



# The **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 all 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.

The screenshot displays the CZIP-Set software interface. At the top, there is a menu bar with options like 'Plik', 'Narzędzia', 'Opcje', and 'Pomoc'. Below the menu, there are several panels:

- STEROWNIK POLA SN CZIP-PRO:** A schematic diagram of a power line with various components labeled.
- Pomiar po stronie pierwotnej:** A table showing measurement data for various parameters.
- Przebieg rejestratora zdarzeń:** A table listing recorded events with columns for time, delta time, description, and value.
- Konfiguracja lampki:** A panel for configuring indicator lamps, showing a grid of checkboxes and labels.

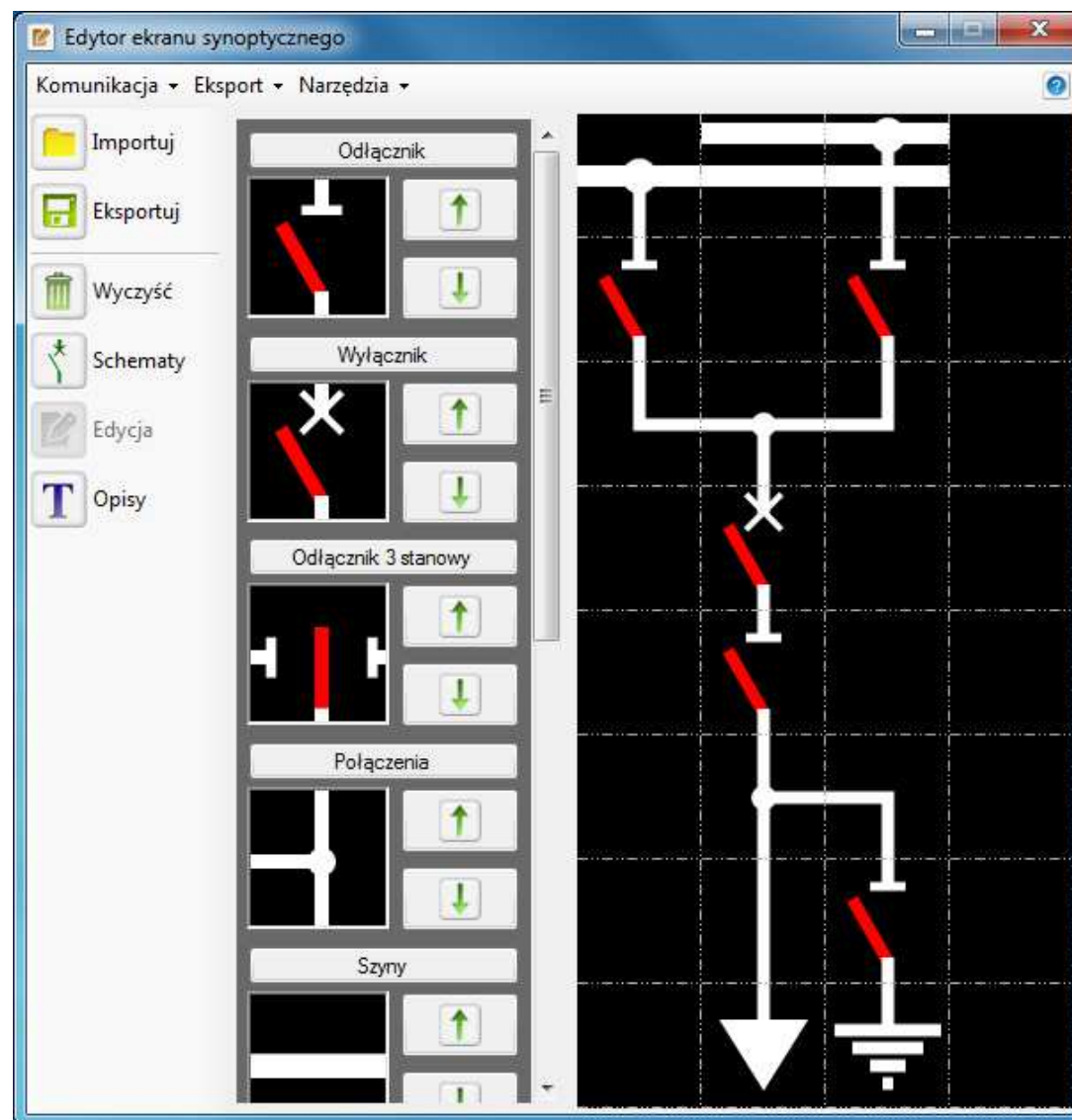
Opis pomiaru	Wartość	Jednostka
I <sub>L1</sub>	0,000	A
I <sub>L2</sub>	0,000	A
I <sub>L3</sub>	0,000	A
I <sub>max</sub>	0,000	A
I <sub>o</sub>	0,000	A
U <sub>o</sub>	0,000	kV
U <sub>L1</sub>	0,000	kV
U <sub>L2</sub>	0,000	kV
U <sub>L3</sub>	0,000	kV
P <sub>3</sub>	0,000	MW
Q <sub>3</sub>	0,000	Mvar
P <sub>3max</sub> 0	0,000	MW
P <sub>3max</sub> 1	0,000	MW

Czas	Δ Czas	Opis	Opis rozszerzony	Wartość
24-01-12,16:06:08.576	00:00:01.0941094	Ik> koniec	Koniec przetężenia	0
24-01-12,16:06:08.682	00:00:01.2001200	I>	Rozruch faza: -3 I>	16
24-01-12,16:06:08.722	00:00:01.2401240	I>T	Wylączenie -3 I>T	16
24-01-12,16:06:08.764	00:00:01.2821282	I> koniec	Koniec przetężenia	0
24-01-12,16:06:08.779	00:00:01.2971297	Zmiana nast.	Zmiana nastaw Podst.-Podst.	0
24-01-12,16:06:08.874	00:00:01.3921392	ZW	Załączenie przez ZW	0
24-01-12,16:06:08.889	00:00:01.4071407	RN tak	RN Rozbrojenie napędu	0
24-01-12,16:06:08.943	00:00:01.4611461	WL zam	Prąd załączenia I <sub>max</sub>	0A
24-01-12,16:06:08.975	00:00:01.4931493	RN nie	Zaobrojenie napędu	0
24-01-12,16:06:09.014	00:00:01.5321532	I>	Rozruch faza: -3 I>	16
24-01-12,16:06:09.081	00:00:01.5991599	I>T	Wylączenie -3 I>T	16
24-01-12,16:06:09.174	00:00:01.6921692	WL otw	Max prąd pracy I <sub>max</sub>	0A
24-01-12,16:06:09.200	00:00:01.7181718	I> koniec	Koniec przetężenia	0
24-01-12,16:06:09.258	00:00:01.7761776	Zmiana nast.	Zmiana nastaw Podst.-Podst.	0
24-01-12,16:06:09.324	00:00:01.8421842	I>	Rozruch faza: -3 I>	16
24-01-12,16:06:09.345	00:00:01.8631863	I2S>>	Blokada ZS I2S>>	0A



## The **CZIP-Set**

The **CZIP-Set** software gives user possibility to edit block diagrams of switchgear bays. This process can also be performed directly on the screen of the protection relay, thanks to preinstaled software and functional touch user interface.





## The **CZIP-PRO** characteristics

- predefined settings for the different MV switchgear cubicle 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)





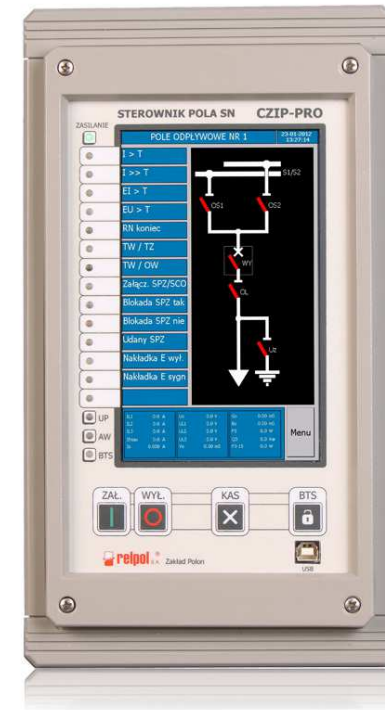
## The **CZIP-PRO** characteristics

- relay outputs (20), digital inputs (28)
- 14 two-color, programmable LEDs with programable description on the screen
- 512 MB internal memory,
- time synchronization with SNTP and IRIG-B server
- communication interfaces: Ethernet10100 Base-TX, IRIG-B, 2xRS-485, USB
- communication protocols: DNP3.0, IEC60870-5-101, IEC61850, Modbus<sup>®</sup> ASCII / RTU, Modbus<sup>®</sup> TCP, HTTP (Web server), FTP (server), NTP
- embedded operating system ARM Cortex A8 800MHz(dodane)





# The **CZIP-PRO** characteristics



During the development process, a great emphasis has been placed to create great user experience. Thanks to simple and intuitive manu the **CZIP-PRO** is user friendly and easy to operate.

Menu in other languages can be preinstalled on special request.



## Summary

- modern,
- **versatile**,
- easy to use,
- reliable,
- supports the new IEC 61850 standard,
- conforms with the 2006/95/EC and 2004/108/EC Directives,
- communicates by Ethernet,
- equipped with touch user interface (7"),
- Relays have preinstaled settings for different types of MV switchgear bays.
- Free computer software included in the package





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