ZPrAE Sp.z o.o.

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ISO 9001
ZPrAE Sp.z o.o.
20-letnie doświadczenie
* POLSKA *

ZRZ-28

EVENT RECORDER

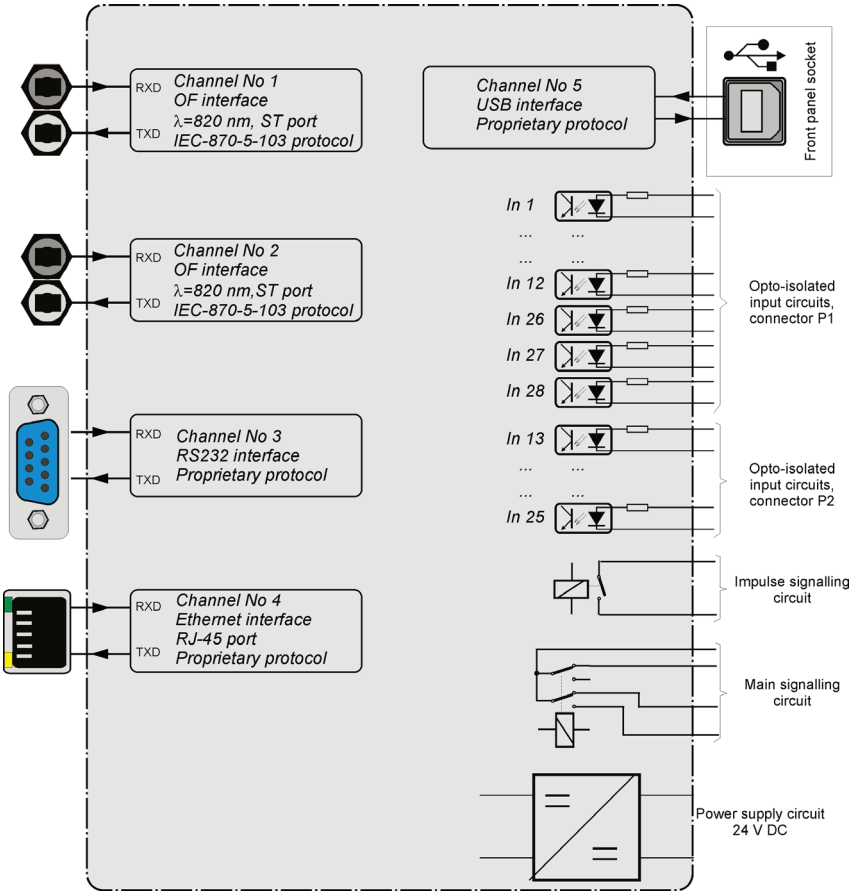

Fig. 1. Flowchart of a ZRZ-28 recorder

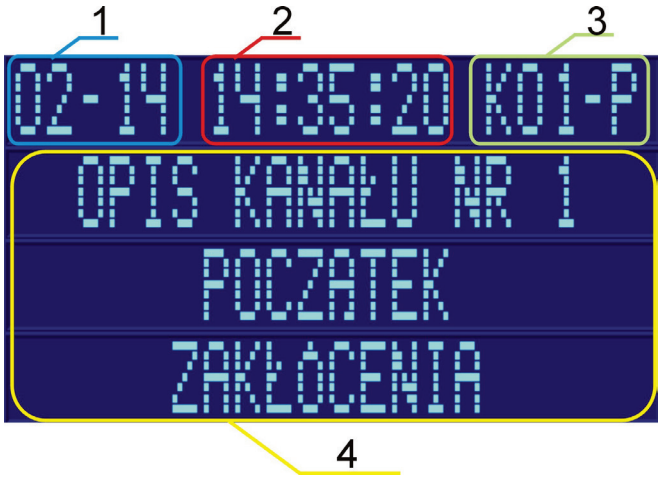

Fig. 2. LCD display view – alarm notification.

1. date field **Mm-Dd**, where Mm-month, Dd-day
2. time field **HH:MM:SS,** where HH-hours, MM-minutes, SS-seconds
3. input number field **Kxx-Yyy**, where Chxx- channel with a number between 1 and 28, Yyy-„P" signifying beginning of an event or „K" signifying end of an event
4. 60-character editable field for event description (3 lines, 20 characters each)

1. APPLICATION.

EVENT RECORDER (ZRZ-28) is dedicated to recording and monitoring electricity settling and measuring systems. It can also be used to record other events. The recorder allows for creation of group signals as required by operating personnel and for multiplication of appearing signals as required for remote signalling via communication with a control system. The device provides the operating personnel with quick and precise information about appearing threats, operations and breakdowns.

2. OPERATING PRINCIPLE.

The device records all changes of states of 28 binary inputs. Every input state change is recorded in the internal memory of the device with exact time and date, and is accompanied by an error message displayed on an LCD – see fig. 2.

The ZRZ-28 recorder can work with the following external circuits:

- binary input circuits,
- power supply circuit,
- signalling circuits,
- communication circuits of the station control system,
- service computer communication circuits,

Flowchart of a recorder with external circuits is shown in fig. 1. Detailed description of the aforementioned circuits is shown in fig. 5.

2.1. Binary input circuits.

All inputs are adapted for voltage of Uwn = 24 V DC. The inputs are galvanically isolated and their trip threshold is set to 0.7÷0.8 Uwn.

Each input can be programmed separately:

- input can respond to the activation or disappearance of the signal,
- for each input a delay of signal recording can be set from 10 ms to 60 s,
- state of all inputs can be viewed on the recorder's display.

2.2. Power supply circuit.

Rated input voltage Uzn = 24 V DC. The device also functions correctly, when the input voltage ranges from Uz_{min}= 16 V up to Uz_{max}=28 V DC. Power supply circuit is protected with a 315 mA fuse.

2.3. Signalling circuits.

ZRZ-28 is equipped with 2 separate signalling circuits i.e. main and auxiliary signalling.

Main signalling fulfils two functions:

- basic signalling when alarm is indicated.
  Signal disappears when alarm stops.
- auxiliary signalling when the recorder has no power supply. Signal is generated when there is no power supply.

In both cases 28a/28c and 28a/30c contacts of P2 connector are closed.

Impulse signalling (1s) appears each time the alarm is activated. In this case 32a/32c contacts of P1 connector are closed.

2.4. Communication circuits.

The device has 5 communication ports with the following protocols equipped as standard:

Channel 1 and 2 – IEC 870-5-103 protocol enables communication with a station control system. Information sent according to this protocol refers to the events recorded in the device and GI (General Interrogation) process – reading of current binary states.

Communication is done via optical fibre connectors (glass optical fibre) with ST terminals.

Channel 3, 4 and 5 – proprietary ZP6 protocol enables communication with the device through proprietary software supplied with the recorder. The software allows for full parametrisation of the device.

Communication is handled via:

- for channel 3 – RS–232 connector (DB9F installed on the rear panel of the device).
- for channel 4 – Ethernet (RJ-45 connector installed on the rear panel of the device).
- for channel 5 – USB-B connector (installed on the front panel of the device).

Digital recording of data allows for sending it to the master control and monitoring system. According to the IEC 870-5-103 standard, data can be transmitted at 19200 bps or 9600 bps. Default speed is 19200 bps. Communication address in this protocol can be set from 1 up to 254. The factory pre-set is 1. Protocol enables transmission of events (alarms) and current binary states.

ZP-6 protocol enables full parametrization of the device (main name, names of the input channels and their configuration, time synchronization, settings and transmission parameters). It is available to the user as a USB port on the front panel or as an RS232 connector and Ethernet RJ-45 connector on the rear panel of the device.

3. CONSTRUCTION OF THE ZRZ-28 EVENT RECORDER.

ZRZ-28 recorder is of microprocessor type based on 16-bit processors by Microchip. Module is supplied with 24 V DC. Front panel is equipped with an alphanumeric LCD display (4 rows x 20 characters), LEDs indicating recorder operating condition and buttons that enable operation. Figure 3 shows front panel view.

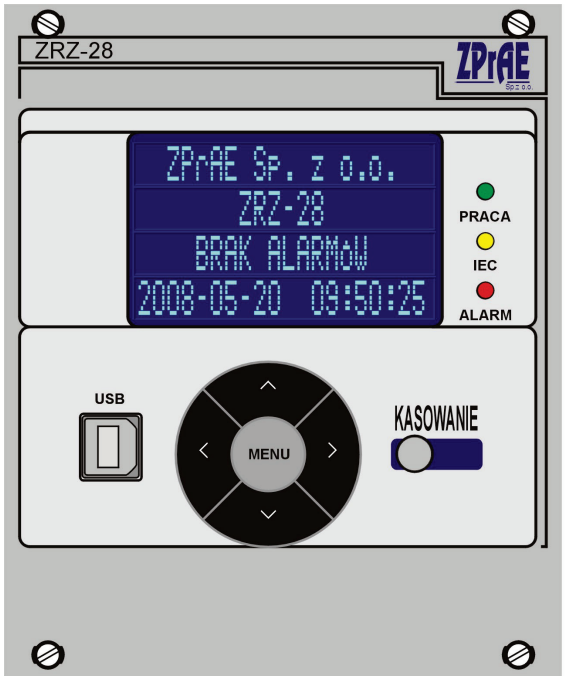

Fig. 3. Front panel view.

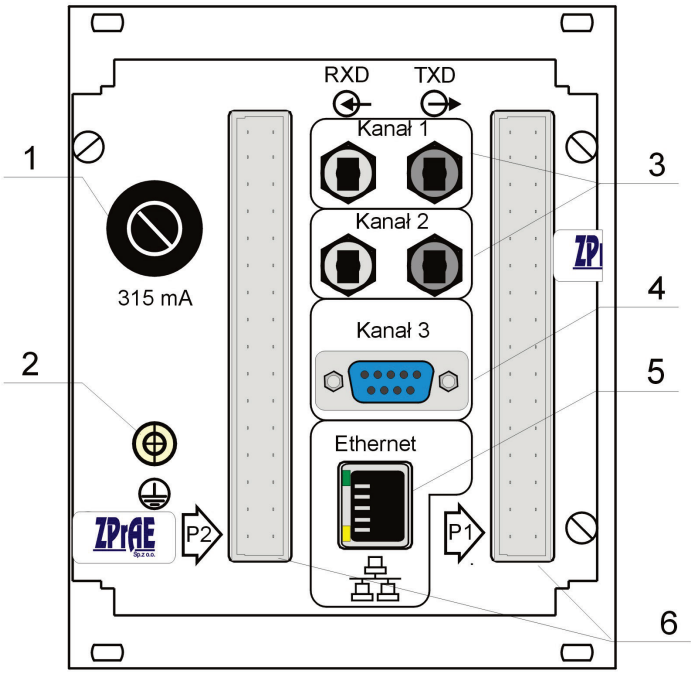

Fig. 4. Rear panel view.

Rear panel of the recorder includes:

1. Radio fuse socket I_n = 315 mA
2. Terminal enabling connection of a PE conductor
3. Two pairs of optical fibre ST terminals for IEC 870-5-103 protocol
4. Female DB9 connector, RS-232 communication channel with proprietary ZP6 protocol
5. RJ-45 Ethernet connector
6. P1 and P2 connectors

Figure 4 shows the view of rear panel and figure 5 detailed description of P1 and P2 connectors.

4. TECHNICAL PARAMETERS OF THE ZRZ-28 RECORDER.

Auxiliary power supply	
Nominal auxiliary voltage UPN:	24 V DC
Allowable auxiliary power supply voltage variation:	0.8 ÷ 1.1 UPN
Power consumption of auxiliary power supply circuit:	< 3.2 W
Signal inputs (galvanically isolated)	
Number of signal inputs:	28 inputs
Nominal value UWN.	24 V DC
Power consumption of signal input circuits:	< 0.2 W / input
Activation method:	Programmable: disappearance or increase
Activation threshold:	0.8 UWN
Input activation delay range:	> 10 ms to 60 sec.
LCD display	
Display type:	alphanumeric, negative mode LCD
Display size:	4 × 20 characters
Disturbance description:	60 characters (3 lines, 20 characters each)
Display colour:	blue
Signalling outputs	
Number of contacts:	3 contacts
Main signalling:	1 change-over contact, 1 make contact
Impulse signalling:	1 make contact
Continuous current-carrying capacity of the contacts:	4 A
Limiting capacity of the contacts:	3 A / 250 V AC 0.15 A / 250 V DC; L/R=40 ms
Recorder	
Number of events in the buffer:	6000 events
Memory type	battery supported SRAM
Communication	
Number of communication channels:	5 channels
Channel 1 - rear panel of the device:	ST OF connector - IEC 870-5-103 protocol
Channel 2 - rear panel of the device:	ST OF connector - IEC 870-5-103 protocol
Channel 3 - rear panel of the device:	RS232 - DB09 connector – ZP-6 protocol
Channel 4 - rear panel of the device:	Ethernet – RJ-45 connector – ZP-6 protocol
Channel 5 - front panel of the device:	USB – USB-B connector – ZP-6 protocol
Insulation	
Rated insulation voltage:	63 V
Rated impulse voltage:	800 V (1.2/50 μs)
Overvoltage protection category:	III
Dielectric strength:	0.5 kV; 50Hz; 1 min.
Casing protection class:	IP-40
Miscellaneous	
Dimensions of the device:	Modular unit to be installed in chassis 19” 3U/21TE (106.3×128.4×172.5 mm), W×H×D
Weight:	ca. 1 kg
Allowable operating temperature range:	268 – 318 K (from -5 to +45 C)
Allowable ambient air humidity:	< 95 %
Allowable atmospheric pressure	70-106 kPa (0 – 3000 a.s.l.)

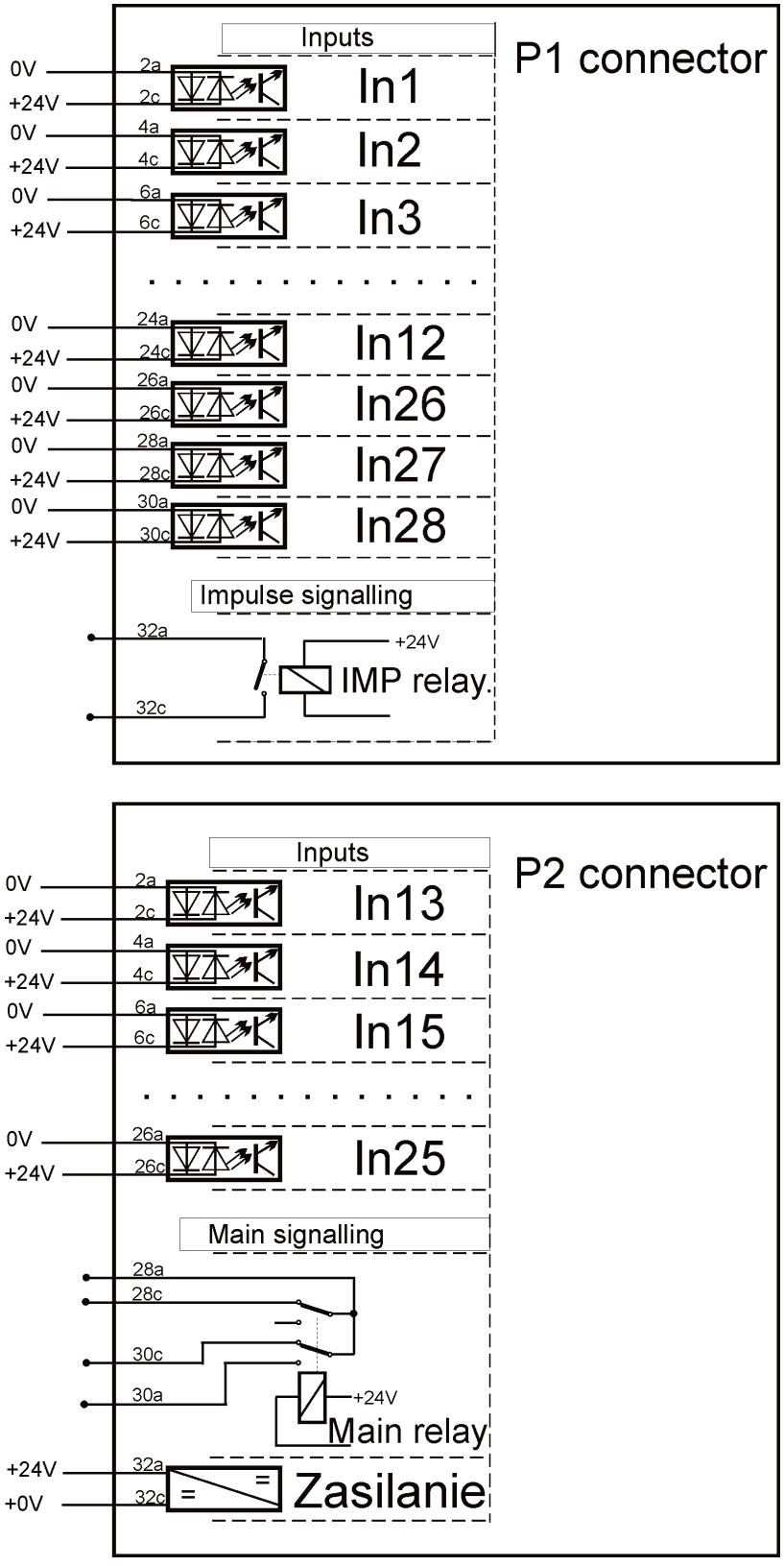

Fig. 5. Description of P1 and P2 connectors.

ZRZ-28

OFFER

Busbar protections and breaker failure protections type TSL-9r, TSL-11

Auxiliary and signalization relays

Reserve Central Signalling System type MSA-9, MSA-12, MSA-24

Protection relays type AZT-9, APP-9

Disturbance recorder RZS-9

Energy measurement system and event recorder ZRZ-28

Load Resistors for measuring transformers

DC and AC auxiliary power supply switchgears

Cubicle-contained sets of control and supervision protections

Modular power supplies, measuring suitcases, measuring and registering system RFQ-8

PROFIL-L cubicles

Periodical and post-failure tests, as well as repairs and overhauls of busbar protections TSL

Servicing, strting-up and post assembly tests

RE line® ENERGETIC STANDARDS

RSH-3, RSH-3S - tripping

RS-6, RPD-2, RPP-4, RPP-6 - interposing

RMS-2 - signalling

RCW-3, RCDW-1 - circuit continuity monitoring

RKO-3 - power supply circuit continuity monitoring

RB-1, RBS-1, RBS-2 - bistable

RT-22 - time

RUT-2, RUT-3 - time-voltage

RJT-1, RJT-3 - time-current

RKU-1, RKS-1 - final controlling

LZ-1, LZ-2 - operation counters

RPZ-1 - supply source switching

GPS-1 - time synchronisation

MDD-6, MDS-12 - Diode modules

PH-XX, PS-XX - Modules of switches, pushbuttons and control lamps

Relay racks