

**PRE-INSULATED NETWORK
STATIONARY INDICATOR**
(LOGSTOR, STAR PIPE, CWA impulse alarm system)

ACN - 2Z



OPERATING INSTRUCTION

levr

General information

The ACN-2Z device is used to monitor the technical state of two pipeline sections of a pre-insulated heat distribution network that is equipped with an impulse alarm system. Each of the sections may be up to 2000 m in length (sensor loop length).

The specifications of the impulse alarm systems define the lowest acceptable resistance of the polyurethane insulation for the maximal length of the network's section (sensory loop). It is assumed that a resistance lower than the minimal value indicates a leak.

The ACN-2Z device separately recognizes and signals one of three states for each of the controlled sections. These control states and their characteristics are detailed below.

- **STAN DOBRY ['OK STATE']**
(LED light green) The resistance between the carrier pipe and the copper wire is higher than the minimal value. The alarm (sensory) system is operating correctly
- **PRZECIEK ['LEAK']**
(LED light red) The resistance between the carrier pipe and the copper wire is lower than the minimal value. The alarm (sensory) system is not damaged.
- **PRZERWA ['BREAK']**
(LED light red) There is an electrical break in the sensory loop of the controlled section.

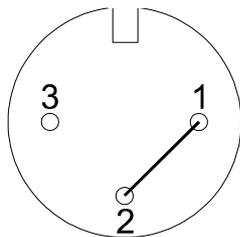
ACN-2Z device may be equipped with an ACNMT or ACNRS module that allow for digital transmission of sensory data. This allows for transmitting the data on the state of the heat distribution network and the alarm system to the data collecting equipment. The data transmitted consists of a unique module number, the ordinal number of the controlled section, and state's code (dobry [OK], przeciek [LEAK], przerwa [BREAK]).

Operating notes

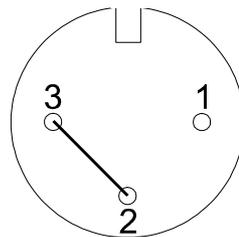
The design parameters of ACN-2Z assume that during a leak the measured resistance between the copper wire and the carrier pipe is between 50 and 550Ω. This state is indicated by a lighted red LED light with the description PRZECIEK [LEAK]. The same red LED light, when pulsating, indicates a direct contact (short-circuit) between the copper wire and the carrier pipe. In this second case, the resistance is from 0 to 50Ω. A short-circuit makes recognizing an electric brake in the sensor loop impossible.

In case of a malfunction (short-circuit, leak, electric break) the ACN-2Z device may initiate an external signaling device (sound, light). The element that initiates an external alarm is the transmitter. The terminal ends of the transmitter's connectors are lead to an external connection socket with 'Alarm' description. The same connector is used for digital data transmission. Only one of the above functions can be used at the same time.

Dia. 1 Possible placement of the connectors in the „Alarm” socket.



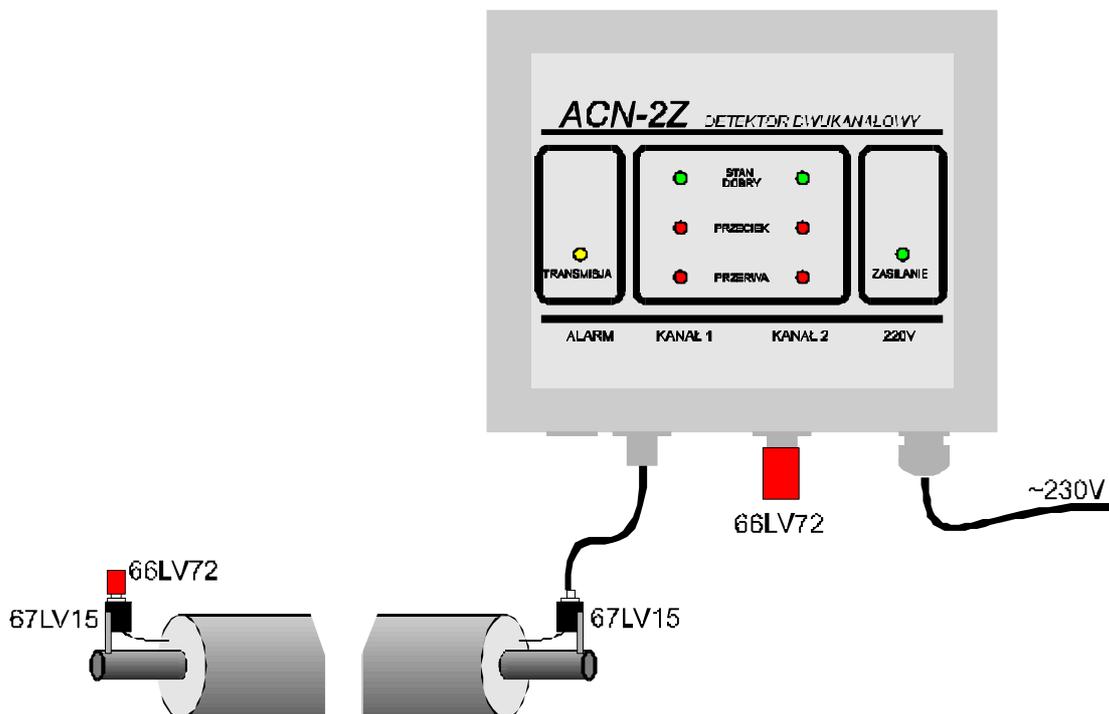
State of the transmitter's connectors for the STAN DOBRY [OK STATE] (two green LED lights on)



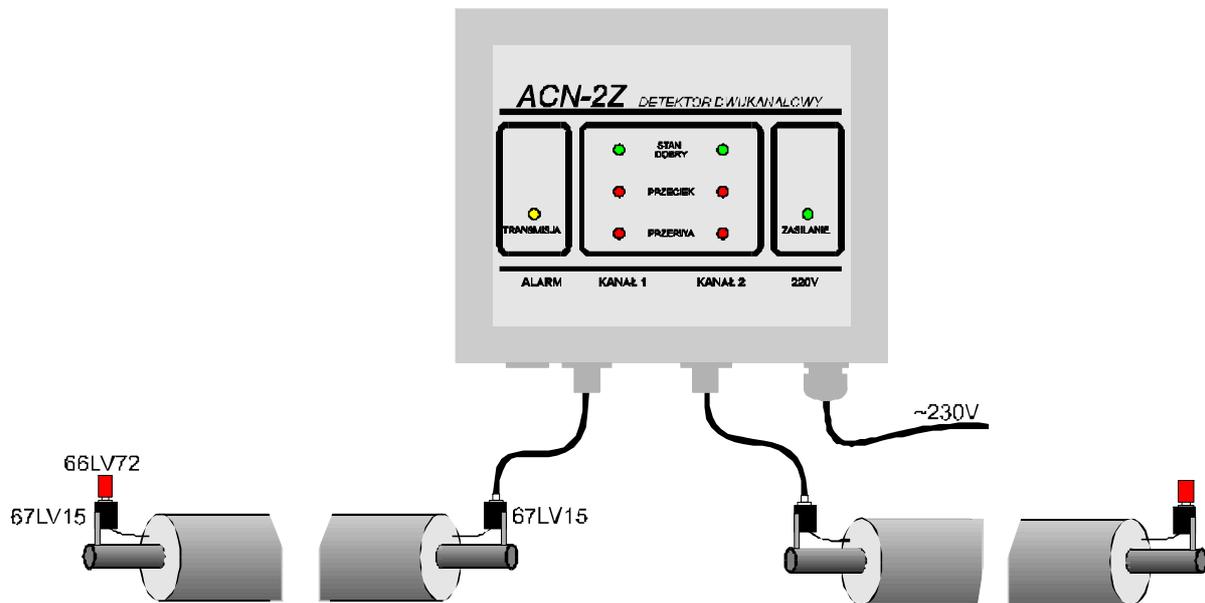
State of the transmitter's connectors for the AWARIA (MALFUNCTION) (at least one red LED light on)

The ACN-2Z device is a two-channel device. If only one channel is used, the unused input is to be closed by using a 6672 special tip.

Dia. 2 Methods of connecting the ACN-2Z device to a single sensor loop. Connections are to be made using 67LVxx concentric cables.



Rys. 3 Methods of connecting the ACN-2Z device to two sensor loops.
Connections are to be made using 67LVxx concentric cables.



Working conditions for ACN-2Z

The device is intended for use in closed spaces. The device operates properly in the following ambient conditions: temperature from $+5^{\circ}\text{C} \div +50^{\circ}\text{C}$, relative humidity not higher than 80%. When the device is stored the range of allowable temperatures is from -40°C to $+70^{\circ}\text{C}$.

After storing or transporting the device in temperature below $+5^{\circ}\text{C}$ it is recommended to wait at least 3 hours before switching on the device. After this time the device should reach a proper operating temperature.

The device cannot be used in spaces characterized by high dustiness, or containing explosive or highly corrosive gasses.

The measurement errors given in the specifications are achieved after 30 minutes of operation in proper conditions.

Maintenance of ACN-2Z device

To remove dust from the device's casing use a clean, dry cloth. The remaining stains or dirt is to be removed by using a cloth soaked in 1% solution of a cleaning agent. Greasy stains should only be removed by using a cleaning agent for computer parts. The transparent part of the casing should be cleaned using a soft cloth or special tissues used to clean computer screens. Using white spirit, naphtha, or other solvents to clean the device is prohibited. Using such agents may result in damage to the device's casing. When the device has been cleaned, it should be wiped dry using a soft cloth. When performing cleaning activities, care should be taken not to allow significant amount of cleaning liquids inside the device.

Periodic inspection of ACN-2Z

In order to assure proper operation of the device, it should undergo control testing every two years. The testing should be performed in the following manner:

1. Remove the measuring wires from the device's sockets described as KANAŁ 1 [CHANNEL 1, CHANNEL 2].
2. Screw 66LV72 tips (2 pcs.) onto KANAŁ 1 and KANAŁ 2 sockets. In up to two minutes two green LED lights should turn on, indicating "OK state". The connectors of the "Alarm" socket should be in position shown on Dia.1 on page 3.
3. Screw 66LV72T tips (2 pcs.) onto KANAŁ 1 and KANAŁ 2 sockets. In up to three minutes two green LED lights should turn on, indicating "OK state". The connectors of the "Alarm" socket should be in position shown on Dia.1 on page 3

After the testing is finished, the measuring wires should be reconnected to the device's sockets, connecting the device to the sensor loop of the heat distribution network.

ACN-2Z

(alarm system Alstom Power / ABB)

TECHNICAL CHARACTERISTICS

1. Number of monitored sections of a heat distribution network2
2. Maximal length of the section.....2000m
3. Boundary resistance of the polyurethane insulation..... set: $100\Omega \div 550\Omega$ every 50Ω *)
4. Accuracy of the resistance measurement $\pm 10\%$
5. Display characteristics:
 - Value of polyurethane resistance between copper wire and the carrier pipe higher than 550Ω .
Sensor loop is in proper state. Led lights, green
Description: STAN DOBRY ['OK STATE']
 - Value of polyurethane resistance between copper copper wire and carrier pipe not higher than 550Ω .
Sensor loop is in proper state. LED lights, red
lights continuously on
Description: PRZECIEK ['LEAK']
 - Direct contact between copper wire and carrier pipe
Measured resistance lower than 50Ω . LED lights, red
lights pulsating
Description: PRZECIEK ['LEAK']
 - There is an electrical break in the sensory loop
of the controlled section. LED lights, red
lights continuously on
Description: PRZERWA ['BREAK']
6. Characteristics of "ALARM" socket used to control external signaling device:
 - Connectors open in case of "AWARIA" [MALFUNCTION] or lack of power.
 - Permissible voltage on the connectors:
 - alternating current 120 V
 - direct current 24 V
 - Connecting power 24 W - DC 60VA-AC
 - Maximal direct current load 1A-DC, 0.5A-AC
7. Methods of communication with data collecting systems:
 - State of the transmitter's connectors ALARM connector
 - Digital data transmission ACN-MT module
ACN-RS module
8. Power usage 0,75VA
9. Power source 230V50Hz
10. Operating temperature range..... $0\div 50^{\circ}\text{C}$
11. Housing class IP54
12. Insulation protection class B
13. Dimensions 180x160x60
14. Devices weight 850g

*) Manufacturer's settings: 550Ω