

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

ACN - 4B



OPERATING INSTRUCTION

levr

General information

The ACN-4B device is used to monitor the technical state of four pipeline sections of a pre-insulated heat distribution network which is equipped with an impulse alarm system. Each section can be up to 2000m in length.

The measurement cycle of the ACN-4B repeats each hour. After this time the data displayed by the device is updated. The data is displayed by means of LED lights and a digital LCD screen.

The pulsating LED lights signal two basic states of the heating network:

- **STAN DOBRY ['OK STATE']** (LED light, green) Four controlled section of a heat distribution network are operating correctly (Measured values are not over chosen border values.)
- **AWARIA [MALFUNCTION]** (LED light, red) At least one of the four sections of the heat distribution network is malfunctioning.

The display shows, in a sequential manner, measurement data for each of the controlled sections. All the types of data displayed are described below.

- 1...4 = Good** The section number 1-4 is in proper technical state.
- 1...4 = FAIL** The section number 1-4 is in bad (malfunction) technical state.
- 1...4 = b** The section number 1-4 is experiencing an electrical break.
- 1...4 = h** The section number 1-4 is experiencing a leak.
- 1...4 = b h** The section number 1-4 is experiencing both an electrical break and a leak.

The letter codes of the malfunction are displayed after the **FAIL** message, which is displayed as a second one in the sequence. If the value of measured polyurethane insulation resistance is between 0 and 2250Ω, the LCD display an additional note, e.g.: **1= 600r**.

Which means that the current value of polyurethane insulation is 600Ω.

In case of a short-circuit between the measuring wire and the carrier pipe, the displayed note will read: **0r**.

The measured resistance values are shown only in case of an automatic or manual release of measurement via the "K" button. The button is located on the right side of the casing.

Each cycle of display of measured data ends with a display of the value of energy drawn from the device's battery. If the battery has run dry, the state is indicated by a **battery** note displayed.

The ACN-4B can be equipped with an ACN-MTB module for digital data transmission. The transmitted data include a unique device number, section's ordinal number and its state (dobry, awaria, typ awarii) [OK, malfunction, malfunction type).

Working conditions for ACN-4B

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 the 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-4B 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-4B

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 1-4 [CHANNEL 1-4].
2. Screw 66LV72 tips (4 pcs.) onto KANAŁ 1-4 [CHANNEL 1-4] sockets. In up to three minutes two green LED lights should turn on, indicating "OK state".
3. Screw 66LV72 tips (4 pcs.) onto KANAŁ 1-4 [CHANNEL 1-4] sockets. In up to three minutes two green LED lights should turn on, indicating "AWARIA" [MALFUNCTION] state. LCD display should show "FAIL" for all four channels.

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.

NOTES:

The ACN-4B device is a four-channel device. Unused measuring channel's sockets should be closed using a special tip (e.g. 6672).

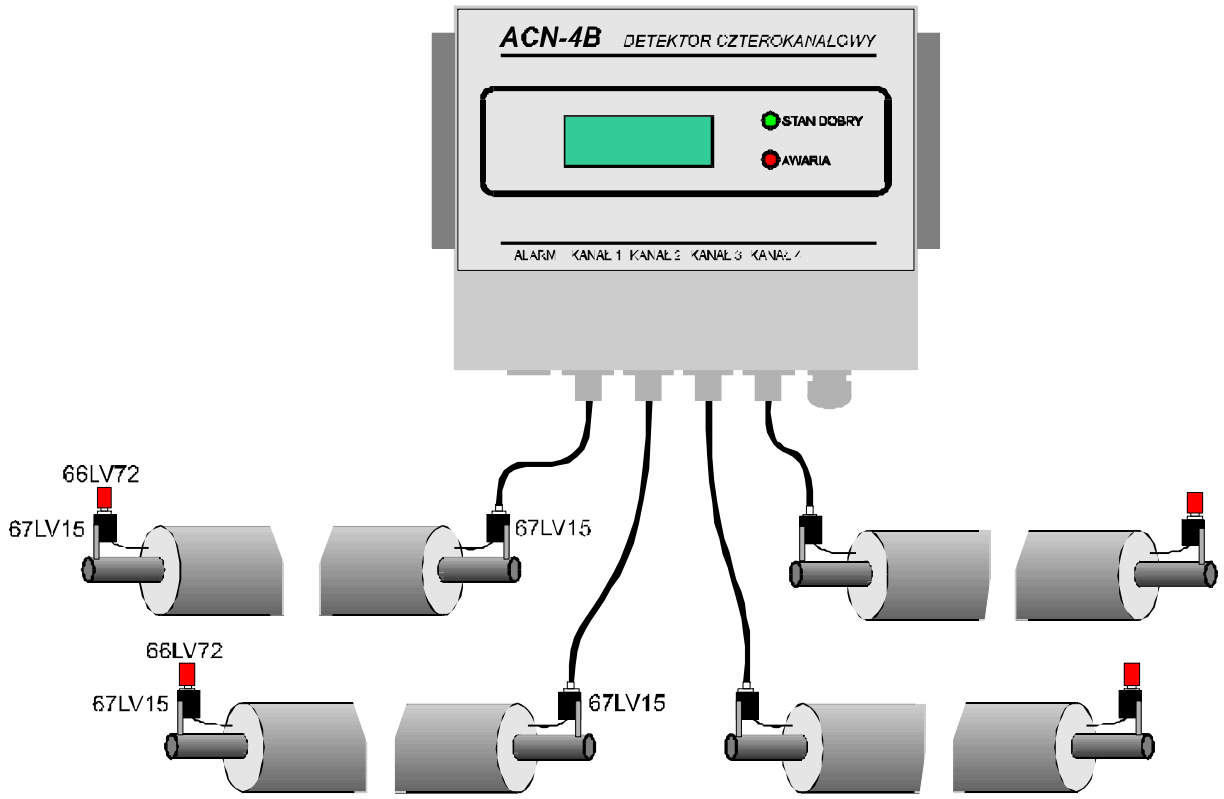
The ACN-4B device is powered by a single 3.6V lithium battery. During battery replacement, the energy used meter should be reset. Doing so requires the below steps

1. Remove the spent battery from the casing;
2. Place a new battery in the casing;
3. Unscrew the faceplate with the LCD display (4 screws)
4. Set the rotary switch SW1 (upper-left of the pcb) to "0" setting;
5. Press the "K" button (right side of the casing). An underlined message: ***ACN-4B*** should appear on the display;
6. The SW1 rotary switch should be set to "1";
7. The device should be re-assembled.

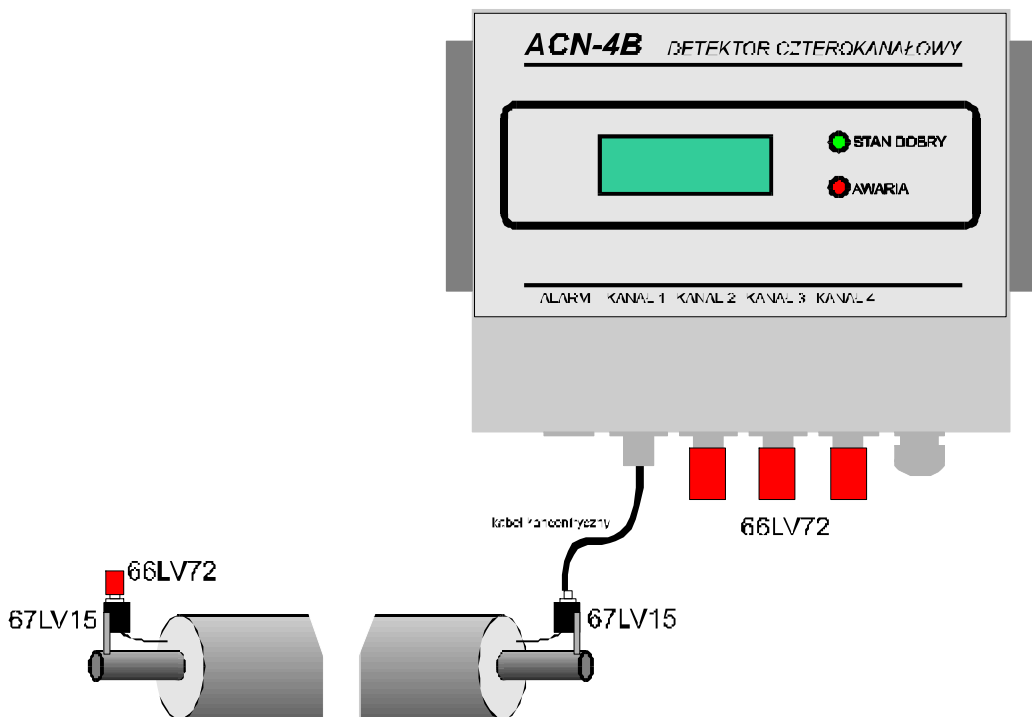
After the above steps are finished, the device is prepared for further operation.

The removed battery should be disposed of using a proper battery disposal bin.

Dia. 2 Method for connecting wires from 4 control loops.
Connections are to be made using 67LVxx concentric cables.



Dia. 3 Method of connecting wires of a single control loop.
Connections are to be made using 67LVxx concentric cables.



ACN-4B

(alarm system Alstom Power / ABB)

TECHNICAL CHARACTERISTICS

1. Maximal length of pre-insulated heat distribution section 4 x 2000m
2. Boundary resistance of the polyurethane insulation..... set: 100Ω ÷ 550Ω every 50Ω*)
3. Insulation resistance measurement error ±10%
4. Display characteristics:
 - Each section has resistance Led lights, green
higher than 150Ω; the four sensor loops are not damaged lights pulsating, every 30s.
Description: STAN DOBRY ['OK STATE']
 - At least one of the four sections of the heat distribution network LED lights, red
has resistance below 150Ω lights pulsating, every 30s.
and (or) at least one sensor loop is damaged Description: AWARIA [MALFUNCTION]
5. Characteristics of the displayed messages:
 - Number of the section 1 ÷ 4
 - Insulation resistance higher than 150Ω, sensor loop not damaged Good
 - Insulation resistance lower than 150Ω FAIL
or (and) electric break in the sensor loop
 - Leak (resistance lower than 150Ω) h (Eng. humid)
 - Electric break in the sensor loop b (Eng. break)
 - Depletion of the battery: Ah
 - Battery spent battery
 - Range of insulation resistance displayed with the "r" sign 0 and 50..2250Ω
The "r" sign on the display replaces the resistance unit „Ω”
6. Power source characteristics 3.6V battery
7. Operating time with a 3.6V/6.5Ah lithium battery no less than 3.5 year
8. Housing class IP54
9. Device measurements 210x200x120
10. Devices weight 1270g

*) Manufacturer's settings: 550Ω