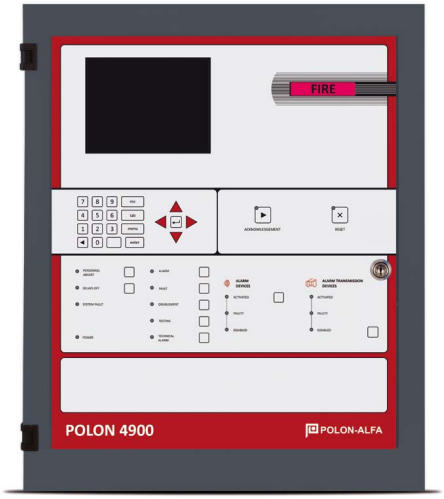



# POLON 4900 FIRE ALARM CONTROL PANEL

## Overview

The POLON 4900 fire alarm control panel is designed to integrate all interactive addressable POLON 4000 fire alarm system elements. The control panel coordinates operations of all units in the system. The control panel makes decision about actuation of the fire alarm, control of the co-operating signalling and fire protection equipment and transmitting information to the monitoring centre or to the supervising system.
The POLON 4900 control panel is recommended for protection of various premises (especially very large buildings) such as hotels, office buildings, banks, warehouses, historical buildings, „intelligent" buildings, etc.

## Functionality

The POLON 4900 control panel is a multi-processor one, with two processor circuits (redundancy). In case of the control panel main processor damage, its functions are taken over by the second one, without any break in the system operation.
A basic version of the control panel is equipped with four addressable detector loops enabling connection (and addressing) of 127 line elements in each loop. It can be extended with additional 4 loops, creating a system with over 1,000 line elements.
The POLON 4900 fire alarm control panels can interoperate in a hierarchical, ring structure, forming a network, which consists of up to 31 units (with more than 31,000 addressable elements).
The detector lines can operate as loops or as open detection lines. In case of a detector loop, it is possible to eliminate the damages caused by a short-circuit or a brake of a part of the detector line. Ability to control and signal an excess of detector line wire allowable resistance and capacity values is a novelty in this design. When the installation is designed, there is a possibility to create branch lines from the main detector loop, what makes the installation of wires easier.

Addressable elements of each control panel can be program assigned to 1024 zones and described with user messages, consisting of two rows, 32-character text each. In case of an alarm, the proper information is given on a large liquid crystal display, enabling fast and precise location of the fire source. Additionally, the user of the control panel has an option to create his own communiqués representing technical alarms of particular interoperating devices of the fire protection installation.
A large graphic display with developed window menu (similar to the PC operation system) makes service and communication with the control panel much easier.

Configuring of the fire alarm installation in the memory of the control panel can be done in three ways:
• automatic configuration – when the control panel itself checks where the line elements are installed in each detector loop (even in case of a loop with single branches). On this basis, all the data are saved in the control panel memory and every line element address (number) is entered and saved in its own internal memory,
• installer configuration – in this option, an installer (relying on the data described in the installation design) prepares system configuration as a computer file, using the special software delivered by the manufacturer. Then the configuration is transferred to the control panel memory. All these function can be done using only a computer keyboard, connected to the proper input in the control panel. Then entered data are verified (the fitter's configuration is compared with the actual state by reading the memory of line elements).
If the real state is corresponding with the fitter's configuration data, the line elements will be automatically numbered,
• manual configuration – enables free configuration of the line elements, without necessary watching for numbering of elements. It makes possible to implement changes into the installation (e.g. after replacement of some detectors). This operation can be done much faster by using a bar code reader, connected to the control panel.

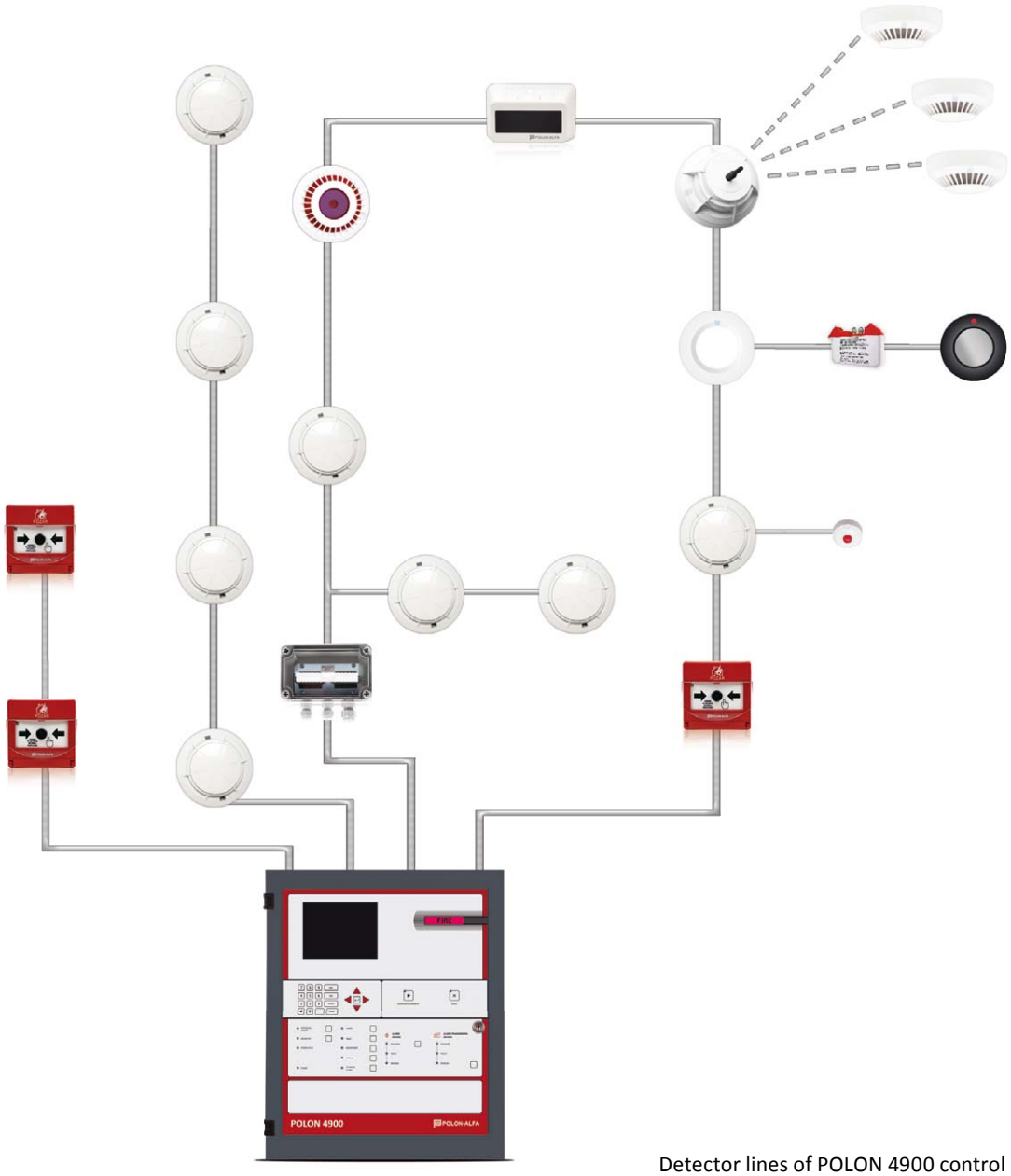
After activation of a detector or a manual call point in an addressable detector loop, the POLON 4900 control panel, using decision algorithms, activates the pre- or main fire alarm, depending on programmed line alarm variant or on which element was activated.
It is possible (at the POLON 4900 control panel level) to program the choice of one of 17 alarm variants for each zone. Different alarm variants, related to different detection algorithms, enable optimal usage of the fire alarm system in individual conditions existing in a particular zone.
They also allow creating individual criteria for efficient organi-

zation of a given object protection system. Additionally, there is a possibility to divide the line elements in one zone into two groups, what enables to create a coincidence in this zone.

Available alarm variants:
- normal, single and double-stage
- alarm with single reset of 40/60 element single and double-stage,
- alarm with single reset of 60/480 element single and double-stage,
- alarm with double-detector coincidence, single and double-stage,
- alarm with group-time coincidence, single and double-stage,
- single and double-stage interactive alarm,
- double-stage alarm with group correlation,
- single-stage alarm in a „Personnel absent" operation mode.

The POLON 4900 control panel can control the signalling and fire extinguishing equipment using two built-in groups of control out-puts. These are:
- 16 relay outputs with potential free, change-over contacts, and
- 8 supervised control lines.

The control panel outputs can be program bound to an optional zone or zone groups in 6 operation categories and in numerous variants in one category. 8 supervised control lines enable to super-vise the state of connected external devices or circuits.
Serial interfaces (PS/2, RS 232, USB and RS 485) enable to connect a computer keyboard, a computer, a bar code reader, a digital monitoring system and an integration and supervising system equipment to the control panel, as well as interconnecting control panels into a network structure.
The POLON 4900 control panel remembers 2,000 latest occurrences, which took place during monitoring of the premises and max. 9,999 alarms. The record of these occurrences can be printed out on paper tape in a systematic order according to the date and time of the occurrences, with a built-in thermal printer, or shown on the control panel display.




Detector lines of POLON 4900 control panel

## Design

The POLON 4900 fire alarm control panel is made in a form of a cabinet, which can be fastened to the wall. The cabinet has a door, carrying signalling and handling elements, which is closed with a cylinder lock. A large liquid crystal display is placed at the left top part of the door. In the middle, there are the control panel main service elements – a keyboard and LED diodes, informing of the current state of the fire alarm system. There is a slot in the bottom part of the door – an output of the printer paper tape.
The main electronic circuits, having a form of modules, are mounted on the internal side of the door and on the rear wall of the control panel. Two reserve batteries 2 x 12 V, 17 Ah are placed at the bottom of the control panel case as a source of backup supply. When necessary – an additional PAR-4800 battery case can be attached to the bottom wall of the control panel cabinet. It is used for batteries with a capacity of up to 44 Ah or in case of installing the secondary batteries in different (than the control panel) room. Max. power supply capacity of co-operating batteries is 90 Ah.

## Customer Information

An additional equipment can be ordered for the control panel, expanding its functional possibilities:
1. MSL-2M line module (additional 4 addressable lines/loops),
2. MSI-48 network module (enables the control panel to work in a network),
3. PAR-4800 secondary battery container (for external batteries 2 x 12 V, capacity up to 44 Ah),
4. Bar code reader,
5. Computer keyboard.

In order to use fibre optic cables to connect a control panel working in a network environment, a fibre optic converter-equipped control panel marked as POLON 4900S needs to be ordered.
The detailed information provided for installers and maintenance service of the POLON 4000 system control boards is contained in the Operation Manual and in the Programming Manual, which are delivered to customer together with the hardware.

## Technical specifications

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| Supply voltage: | |
| - mains | 230 V +10 % -15 %/50 Hz |
| - backup supply | 24 V +25 % -10 % |
| Backup supply source | |
| secondary battery | 17 ÷ 90 Ah |
| Max. current consumption in normal mode | 1.5 A |
| Max. current consumption in stand-by mode | 0.6 A |
| Available supply current for external devices | 1 A |
| Number of addressable lines | 4 or 8 (optional) |
| Max. current line elements consumption | |
| from the detector line: | |
| - at resistance of 2 x 100 Ω | 20 mA |
| - at resistance of 2 x 75 Ω | 22 mA |
| - at resistance of 2 x 45 Ω | 50 mA |
| Max. allowable resistance of detector line wires | |
| - addressable | 2 x 100 Ω |
| - ADC-4001M branch line | 2 x 25 Ω |
| Admissible capacity of detector line wires | 300 nF |
| Number of addressable line elements (in one line) | 127 |

Line elements that can be installed in detector lines:
- 4046 series multi-state detectors,
- DUR-4047 wireless detector (via ACR-4001)
- ROP-4001M, ROP-4001MH manual call points,
- ACR-4001M wireless detector hub unit
- ADC-4001M addressable unit,
- SAL-4001 audio signalling device
- EKS-4001 input/output device
- EWS-4001 multiple output device
- EWK-4001 multiple input device
- UCS 6000 universal control panel

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| Current consumption of: | |
| - DOR-4046 detector | 150 µA |
| - DOT-4046 detector | 150 µA |
| - TUN-4046 detector | 150 µA |
| - DPR-4046 detector | 170 µA |
| - DUR-4046 detector | 150 µA |
| - DUT-6046 detector | 150 µA |
| - DOP-6001 | 300 µA |
| - ROP-4001, ROP-4001H manual call points | 135 µA |
| - SAL-4001 audio signalling device | 150 µA |
| - EKS-4001 (max 250 pcs in control panel) | 165 µA |
| - EWS-4001 (max 100 pcs, max 20 pcs in line) | 150 µA |
| - EWK-4001 (max 100 pcs, max 20 pcs in line) | 150 µA |
| - ADC-4001 addressable unit (depending on the operation mode) | from 0.5 mA up to 16 mA |
| - ACR-4001 wireless detector hub unit | max 6 mA |
| - UCS-6000 universal control panel (100 pcs max, 20 pcs on each loop max) | 0.6 mA |
| Detector line operation mode: | |
| - loop shaped – with a possibility of elimination of short circuits or breaks, | |
| - radial (linear). | |
| Max. number of detector zones | 1024 |
| Resolution of graphic display | 320 x 240 pixels |
| Number of alarming variants | 17 |
| Range of programmable times: | |
| - the 1st STAGE ALARM confirmation awaiting | 0 ÷ 10 min |
| - situation recognition after the 1st STAGE ALARM confirmation | 0 ÷ 10 min |
| - alarm output actuation delay | 0 ÷ 10 min |

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| Programmable outputs: | |
| - 16 relay outputs with potential-free, change-over contacts | 1 A/24 V |
| - 2 signalling lines | 0.5 A/24 V |
| - 6 signalling lines | 0.1 A/24 V |
| Programmable inputs: | |
| - 8 monitoring lines | |
| Co-operating devices: | |
| - bar code reader, | |
| - computer keyboard, | |
| - computer, | |
| - digital monitoring system. | |
| Operating temperature range | from +5 °C up to +40 °C |
| Ingress protection | IP 30 |
| Dimensions | 536 x 492 x 218 mm |
| Mass | about 17 kg |