POLON 4100 FIRE ALARM CONTROL PANEL

Overview

The POLON 4100 fire alarm control panel is designed to integrate all interactive addressable POLON 4000 fire alarm system elements. The control panel coordinates the operation of all units in the system as well as makes decisions about actuating a fire alarm, control of the collaborating signalling devices and fire protection equipment and transmitting information to the monitoring centre or the supervision system.

The POLON 4100 control panel is recommended for protection of various types of buildings, especially small size premises such as hotels, office buildings, banks, warehouses, historical buildings, „intelligent" buildings, etc.

The POLON 4100 control panel interoperates with 4043 model range detectors - without possibility to use interactive alarm variants - on with such possibility when using 4046 model range detectors.

Functionality

The POLON 4100 is a multi-processor control panel, guaranteeing dependable system operation and providing many conveniences during programming and later usage of the fire detection system.

The control panel is equipped with two addressable detector loops, with a possibility of installing up to 64 addressable elements in each loop. 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 in 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. It is allowed to lead a single branch line from the main detector loop what makes the design and wire installation process easier.

Addressable elements of each control panel can be program assigned to 128 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 and developed window menu (similar to the PC operation system) make service of and communication with the control panel much easier.

There are three ways to enter the configuration of the fire alarm installation into the control panel memory:
- 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 a single branch). 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 a 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 functions can be done using only a computer keyboard connected to the proper input in the control panel. The device verifies the data entered by the installer and compares them with those it collects from the memory of the line elements actually installed.

If both sets are consistent the line elements are automatically numbered by the control panel,
- manual configuration – enables discretional configuration of the line elements, without the necessity to observe the order of element numbering. Therefore, it makes possible to introduce changes into an existing installation (e.g. after a detector replacement).

After actuation of a detector or a manual call point in an addressable detector loop, the POLON 4100 control panel using the proper decision algorithms, activates pre- or main fire alarm, depending on the programmed alarm variant and on the line element which actuated the alarm mode.

Every monitored zone may be programmed in one of 17 alarm variants. Different alarm variants, related to different detection algorithms, allow for optimal usage of the fire alarm system detecting abilities in specific conditions existing in an individual zone. They enable also to implement individual criteria for efficient design of a given object protection system. Additionally, within one zone it is possible to divide the installed line elements into two groups, what enables creation of 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 4100 control panel can control the signalling and fire-fighting equipment using two built-in groups of control outputs. These are:
- 2 relay outputs with potential free, change-over contacts, and
- 1 supervised monitoring line.

The control panel outputs can be program bound to optional zone or zone group in 6 operation categories and in numerous variants in one category.

Two supervised control lines enable to supervise state of connected external devices or circuits.

Serial outputs (RS 232, RS 485, USB and PS/2) enable connection of a computer keyboard, a computer, a digital monitoring system, an integration and system supervising equipment to the control panel or parallel indication terminal.

The POLON 4100 control panel remembers 2000 latest occurrences, which took place during supervision of indoor premises. The record of these occurrences can be printed out on paper tape in a systematic order according to date and time of the occurrence with a built-in thermal printer or shown on the control panel display. Additionally, the POLON 4100 control panel remembers 9999 alarms.
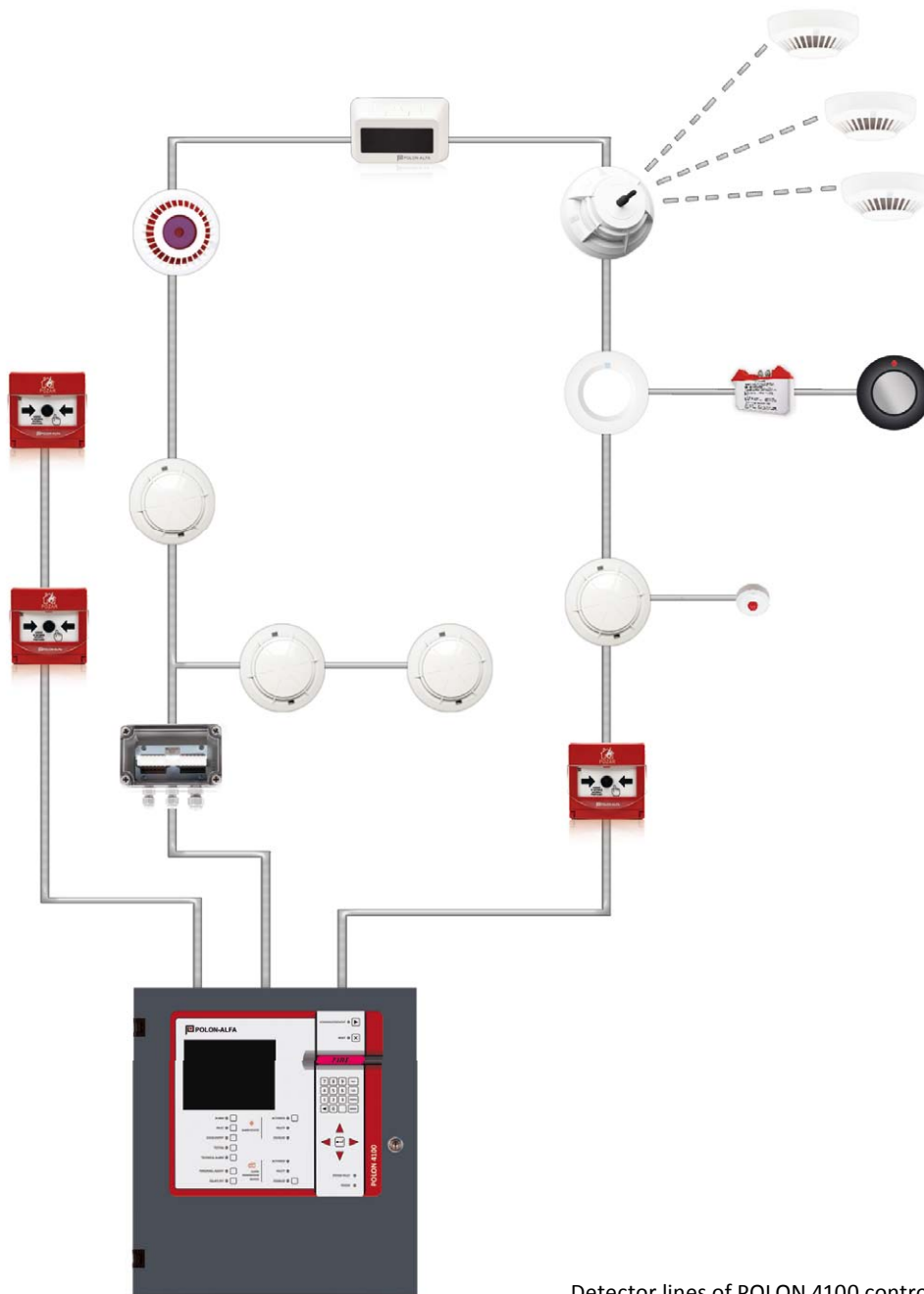
Detector lines of POLON 4100 control panel

Design

The POLON 4100 fire alarm control panel is made in a form of cabinet, which can be fastened to the wall. The cabinet has a door, carrying signalling and handling elements, that 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 that inform about the present state of the fire alarm system. 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, 22 Ah are placed at the bottom of the control panel case as a secondary power supply source.

The exact information for installers and supervising personnel of the POLON 4100 may be found in the Operation Manual and the Programming Manual, which are included in the package with the ordered unit.

Technical data

Supply voltage:
- mains   230 V +10 % -15 %/50 Hz
- reserve supply   24 V +25 % -10 %
Reserve supply 24 V DC source
secondary battery   max 22 Ah
Max. current consumption in stand-by mode   0.25 A
Available supply current for
external fire-fighting equipment   1 A
Number of addressable lines   2
Admissible resistance of detector line wires
(depending on configuration)   2 x 45 Ω, 2 x 75 Ω, 2 x 100 Ω
Admissible capacity of detector line wires   300 nF
Number of addressable line elements (in one line) 64

Line elements that can be installed in detector lines:
- 4043 and 4046 model range multi-state detectors,
- ROP-4001M, ROP-4001MH manual call points,
- ADC-4001M addressable unit,
- SAL-4001 addressable signalling device,
- EKS-4001 input/output device,
- EWS-4001 multi-output control device,
- EWK-4001 multi-input supervising device,
- UCS 6000 universal control panel
Max. line elements current consumption
from the detector line:
- at resistance of 2x100 Ω   20 mA
- at resistance of 2x75 Ω   22 mA
- at resistance of 2x45 Ω   50 mA
Current consumption of:
- DOR-4043 and DOR-4046 detectors   150 µA
- TUN-4043 and TUN-4046 detectors   150 µA
- DUR-4043 and DUR-4046 detectors   150 µA
- DOT-4046 detector   150 µA
- DPR-4046 detector   170 µA
- DUT-6046 detector   150 µA
- DOP-6001   300 µA
- ROP-4001M and ROP-4001MH manual call points   135 µA
- SAL-4001 addressable signalling device   150 µA
- EKS-4001 input/output device   145 µA
- EWS-4001 multi-output control device   140 µA
- EWK-4001 multi-input supervising device   150 µA
- ADC-4001M addressable unit (depending
on the operation mode):   from 0.5 mA up to 16 mA
- ACR-4001 adapter (max)   6 mA
- UCS 6000 control panel (40 pcs max, 20 pcs
 on each loop max)   0.6 mA

Detector line operation variants:
- loop shaped – with a possibility to eliminate
short circuits or breaks,
- radial (linear).
Max. number of detector zones   128
Number of alarm variants   17
Range of programmable (every 1 s) 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
Resolution of graphic display   320 x 240 pix
Programmable outputs:
- 2 relay outputs with potential-free, change-over
contacts   1 A / 24 V
- 1 signal line   0.5 A / 24 V
Programmable inputs:
- 2 monitoring lines
Co-operating equipment:
- computer keyboard,
- computer
- digital monitoring system.
Operating temperature range   from -5 °C up to +40 °C
Ingress protection   IP 30
Dimensions   420 x 384 x 115 mm
Mass   about 7 kg