POLON-ALFA LATEST TECHNOLOGY. HIGHEST QUALITY

FIRE DETECTION AND ALARM SYSTEM

POLON 6000

DISTRIBUTED
FIRE ALARM PANEL

FIRE ALARM SYSTEM **POLON 6000**

Overview

The addressable, interactive POLON 6000 fire alarm system is a set of latest technology equipment, designed for very fast detection and signaling of fire, precise indication of fire origin, control of fire protection safety devices, and information of appropriate intervention services or building guards about fire. It enables protection of mid-size, large and very large facilities, especially so called “intelligent” buildings with huge amount of fire protection safety devices. POLON 6000 can be easily integrated with variety of existing building management systems. Due to its specific features it enables to arrange perfect set of necessary devices, well-fitted to site requirements.
The POLON 6000 system is based on newly designed control panels with distributed architecture and new range of line elements. All devices of the POLON 6000 system meet requirements of the latest edition of EN 54 European Standards.

The POLON 6000 control panel with a distributed architecture

The POLON 6000 control panel design was based on the idea of a module device with a distributed architecture. It consists of many unified modules of various types, installed inside standardized cabinets. Cabinets can be arranged as separate units or combined in sets (so called nodes) and can be located in different places of site area, even if those locations are distant. All modules within one node and nodes between themselves are connected with a common, doubled (redundant) digital communication bus.

Each control panel can be flexibly assembled with modules and nodes well-fitted to individual building requirements. Such solution enables the arrangement of the control panel equipment, installed in required locations. This provides maximum optimization of the system, reduction costs of installation. All that is possible thanks to implementation of doubled main processor controllers, communication buses and connections between nodes.
The POLON 6000 control panel consists of the PSO-60 operation panels with 10’’ touch screen, functional modules: detection lines MLD-61 and MLD-62, input-output MKS-60, relay outputs MPK-60, signalling outputs MWS-60, conventionale line module MLK-60, high current relay outputs MPW-61, supervision inputs MWK-60, supply MZP-60 and transmission MTI-61, MTI-62, MTI-63 v2.
PSO panels and modules are installed inside the cabinets with standard dimensions, which can be mechanically binded. A set of such mechanically connected cabinets create a control panel node. The control panel need to have at least one node in which main control panel PSO-60 (having number 1) is installed. This is the “main node” of the control panel. There is always only one “Main node” in the system. The rest of elements (modules) of the control panel is configured in form of external nodes which are connected to the “main node”. The communication between nodes is provided by double cable connection (RS-485) or double fiber optic cables. Each node shall be equipped – depending on the size of node and expected current consumption – with one or more supply modules. Each node can contain line modules with connected detection lines, input-output modules for direct control or supervision of fire safety devices. In each external node the PSO-60 panel can be implemented, acting as the parallel operation panel.

[FLEXIBLE DESIGN]

COMPONENTS OF THE **POLON 6000** CONTROL PANEL

Fire detection line module MLD-61/62

The MLD-61/62 enables to connect of two fire detection lines/loops. The MLD-61 is equipped with 27 V line voltage converter which enables to power up to 4 detection lines/loops. In order to minimalize the current consumption and to expand the number detection lines/loops, it is recommended to use one MLD-61 together with one MLD-62. Each detection line can support up to 250 adresseble line elements.

Conventional detection line module MLK-61

The MLK-61 allows to connect up to eight conventional detection lines/zones. Each conventional detection line can operate with up to 32 detectors or 10 manual call points.
All these lines are supervised for continuity and short-circuit.

Input/output module MKS-60

The module is equipped with:
- two potential-free relay outputs with max load 1 A/30 V,
- two potential outputs (signaling lines) with 0,5 A/24V,
- two low voltage monitoring inputs.

The module is fail-safe ready and the position of the relay or its operation in case of fault can be programmed. Inputs and outputs are equipped with external line continuity monitoring circuits. Monitoring input can be programmed as 2-states (quiescent and action) or 3-states (quiescent, action 1 and action 2). States are identified by different resistance of the line.

Relay outputs module MPK-60

The module is equipped with 4 relay potential-free outputs with current load up to 1 A/30 V. The module is fail-safe ready and the position of the relay or its operation in case of fault can be programmed. Outputs are equipped with external line continuity monitoring circuits.

Conventional lines module MLK-60

The module is equipped with 8 conventional lines to connect conventionl detectors and manual call points.

Printer MD-60

The module is equipped with the controller and the thermal printer mechanism.

Signaling lines module MWS-60

The module is equipped with 4 signaling lines with 0,5 A/30 V. Outputs are equipped with external line continuity monitoring circuits.

Monitoring inputs module MWK-60

The module is equipped with 8 resistance monitoring inputs. Inputs are equipped with external line continuity monitoring circuits. They can be programmed as 2-states (quiescent and action) or 3-states (quiescent, action 1 and action 2). States are identified by different resistance of the line.

High voltage relay outputs module MPW-61

The module is equipped with:
- two high voltage potential-free relay outputs with 5 A/230 V AC,
- two monitoring inputs.

Inputs and outputs are equipped with external line continuity monitoring circuits. Monitoring input can be programmed as 2-states (quiescent and action) or 3-states (quiescent, action 1 and action 2). States are identified by different resistance of the line.

[SCALABILITY]

Operator panel PSO-60
Remote operator panel WPO-60

The PSO-60 is an operator panel equipped with 10” touch screen (800x600 pixels) and keypad integrated with main controller MCS-60 and redundant controller MSR-60. It is installed in doors of OM-62 cabinet or can operate as a remote panel fitted in small cabinet OS-61. The remote panel (PSO-60 and OS-61) marked as WPO-60 is equipped with two transmission modules MTI-61 and MTI-62 but has no power supply unit.

Power supply modules MZ-60-150/MZ-60-300

Power supply modules consist of power unit and supervising unit MZP-60. Two versions are available: 150 W and 300 W (max current load is 5 A/24 V or 10 A/24V). Power supply modules are complete units being installed inside control panel’s cabinets.
Modules are equipped with:
- two potential-free relay outputs with 1 A/30 V,
- two potential outputs to power auxiliary devices with the total current load of 0,5 A (not programmable),
- output for batteries and temperature probe.

Casing

Elements of the control panel can be installed in several types of casings:
- OM-61 – dedicated case for installation of functional modules, power suppliers and batteries,
- OM-62 – dedicated case for installation of the operator panel PSO-60, printer, MD-60 and functional modules,
- OS-61 – dedicated case for installation of the operator panel PSO-60 only. This configuration is marked as WPO-60 – remote operator panel,
- OA-61 – battery container, 2 x 12 V, max 134 Ah,
- OA-62 – battery container, 2 x 12 V, max 90 Ah.

Transmission modules MTI-61, MTI-62 and MTI-63 v2

Transmission modules MTI secure the data bus of the control panel. MTI-61 is a transmission module without separation. The module is used for connection of transmission channels between cabinets within single node. It contains also two power supply lines.
MTI-62 is a transmission module with galvanic isolation. The module is used for connection of transmission channels between nodes. The maximum distance is limited to 1200 m.
MTI-63 v2 – is a transmission module dedicated for the connection of transmission channels between nodes using fiber optic cable.

Assembly elements

According to the panel configuration following elements can be used:
- SM-60 – assembly frame for max four functional modules,
- assembly brackets WP-61/WL-62 and WP-63/WP-64 dedicated for installation of assembly frame either at the top or at the bottom part of the cabinet,
- cables with different length for communication and power supply distribution within the node.

ADDRESSABLE LINE ELEMENTS

Control panel technical data

Power supply:	
- mains voltage	230V +10% - 15% / 50 Hz
- batteries	2 x 12V from 17 Ah to 134 Ah
Control panel components max quiescent current consumption:	
PSO-60	450 mA
MLD-61	173 mA
MLD-62	153 mA
MZP-60	45 mA
MKS-60, MPK-60, MWS-60, MWK-60, MPW-60	15 mA
MD-60, MTI-62	35 mA
MTI-63 v2	70 mA
Configuration of detection lines	6000/4000 protocole
Resistance of detection line	max 2 x 100 Ohm
Capacity of detection line	max 300 nF
Detection line load	max 50 mA
Alarming modes	15 + individual
Operation temperature range	from -5°C to +40°C
IP rating	IP 30
Dimensions (L x H x W)	
OM-61, OM-62 (main case)	445 x 455 x 177 mm
OS-61 (remote panel case)	350 x 336 x 96 mm
OA-61 (battery container)	445 x 682 x 199 mm
OA-62 (battery container)	445 x 522 x 199 mm

Line elements of POLON 6000 system

All the POLON 6000 system line elements are equipped with individual short-circuit isolators with possibility to program their switching on and off. Setting of a line element address is programmable. All element data are saved in its non-volatile memory and are readable from the control panel after its installation in the detector line.

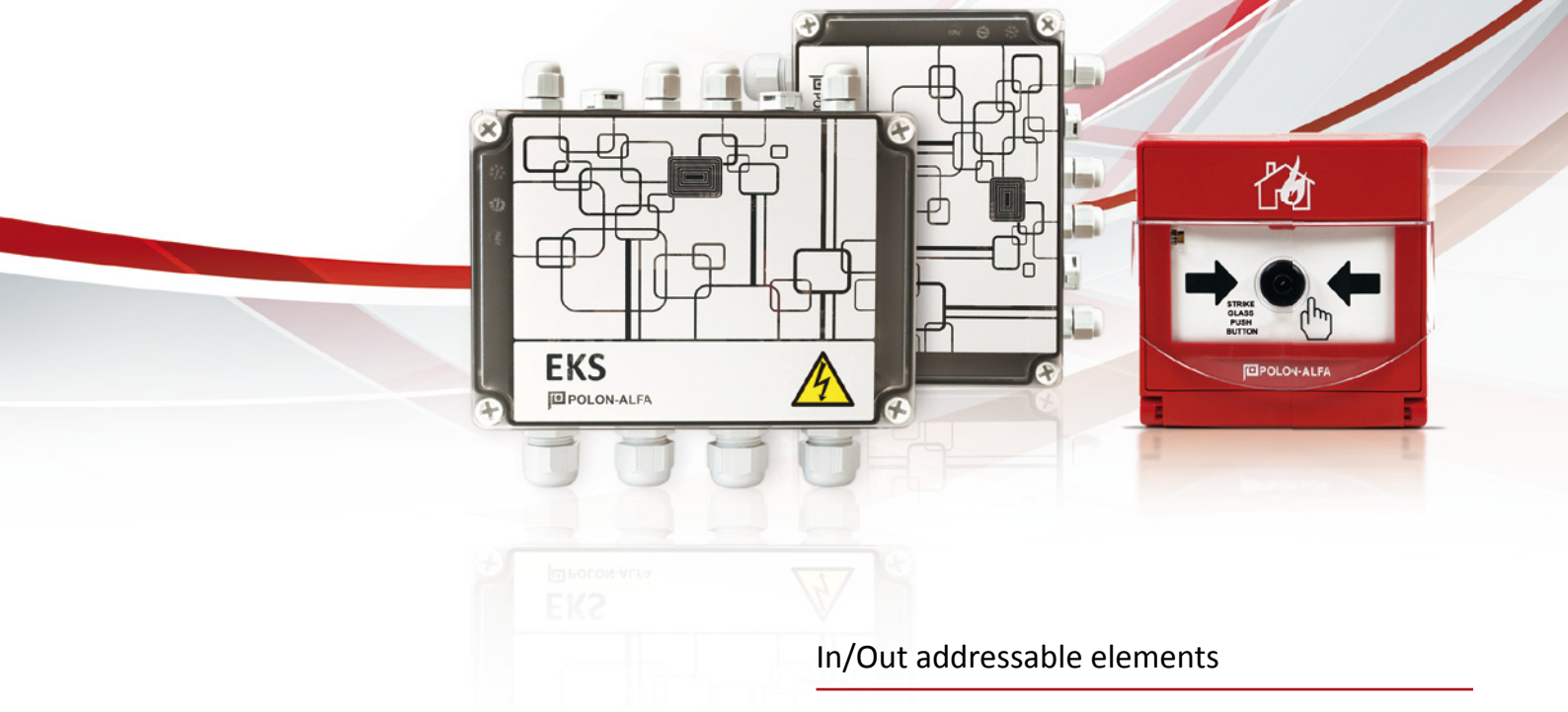
Fire detectors

The 6000 model range detectors are analogue detectors with programmable sensitivity (using the control panel). This ability enables an adjustment of detectors response time to the phenomena occurring in detector vicinity. All detectors are equipped with automatic sensitivity self-compensation mechanism that maintains constant sensitivity during dirtnes progressing inside the measuring chamber and also during changes of air pressure and vapor condensation. Built-in microprocessor and the detector software guarantee that the entire fire phenomenon within the vicinity of the detector will be analyzed quickly and false alarms will be eliminated.

DETECTOR	TYPE
DUO-6046 (AD)	optical smoke with double smoke sensors (IR and UV), optional siren (AD)
TUN-6046	universal heat, programmed to various classes
DOP-6001	addressable, beam smoke detector
DUR-4047	universal optical smoke, wireless
DOT-4046	multi-sensor smoke and heat
DUT-6046 (AD)	multi-sensor smoke and heat with doubled smoke and heat sensors, optional siren (AD)

Detectors (except the beam smoke detector DOP-6001) are installed in the G-40 base.

ADVANCED OUTPUT OPERATIONS



Detectors technical data:

Operating voltage	from 16.5 V to 24.6 V
Max quiescent current consumption:	
- DOT, TUN, DUT, DUO	< 150 µA
- DOP-6001	< 300 µA
Operating temperature range	from -25°C to +55°C
Detector dimensions (including base)	115 x 54 mm
	(DOT - 115 x 71 mm; DUO, DUT - 115 x 61 mm)
Base dimensions	107 x 28,5 mm
DOP-6001 dimensions	128 x 79 x 84 mm

Manual call points

The ROP-4001M/ROP-4007 and ROP-4001MH/ROP-4007H manual call points are designed to send information about a fire to the fire alarm control panel by a person who has noticed the fire and manually has initiated the fire alarm. The ROP-4001M/ROP-4007 manual call points are designed to be installed indoors, while ROP-4001MH/ROP-4007H call points are designed for outdoor installation. ROP-4007(H) are wireless and require ACR-4001 to communicate with the fire alarm panel.

Manual call point techical data:

Operating voltage	from 16.5 to 24.6 V
Max quiescent current consumption	< 140 µA
Operating temperature	ROP-4001M, ROP-4007, ROP-4007H
	from -25°C to +55°C
ROP-4001MH	from -40°C to +70°C
IP rating:	
ROP-4001M, ROP-4007	IP 30
ROP-4001MH, ROP-4007H	IP 55
Dimensions	102 x 98 x 46 mm

In/Out addressable elements

Line, addressable control and supervision elements are controlled from the control panel. They allow actuation (using its relays) the alarm or fire safety devices e.g. signaling devices, fire dampers, fire doors etc. and also supervision of their efficient operation.
Seven types of elements allow their optimal use in the installation:
- EKS-6044 – 4 in/4 out,
- EKS-6022 – 2 in/2 out,
- EKS-6004 – 4 out,
- EKS-6040 – 4 in,
- EKS-6202 – 2 in/2 out (high voltage)
- EKS-6400 – 4 in (high voltage)
- EKS-6222P – 2 high power HV outputs, 2 HV inputs, 2 LV inputs

I/O modules technical data:

- EKS-6040	< 210 µA
- EKS-6022	< 220 µA
- EKS-6004, EKS-6044	< 240 µA
- EKS-6202	< 250 µA
- EKS-6400	< 230 µA
- EKS-6222P	< 550 µA
Relay contacts load capacity	max 2 A/230 V AC/62.5 VA
Relay contacts load capacity (EKS-6222P)	max 12 A/230 V AC/2.76 kVA
Relay output fail safe function	programmable
Input activation:	
- potential free contact	NO or NC
- potential output	(EKS-6400, EKS-6202, EKS-6222P only)
Operating temperature range	from -40°C to +85°C
	from -40°C to +70°C (EKS-6222P)
IP rating	IP 66
EKS-6040 dimensions	max 202 x 152 x 74 mm
Other EKS types dimensions	max 202 x 180 x 74 mm

INNOVATIVE
ACOM 6.0
FEATURE

The SAL-4001 signaling device

The SAL-4001 addressable signaling devices are designed for local signaling of a fire alarm. It can be powered simultaneous or independently using one out of three sources of power: addressable detection line, 9 V battery installed inside the siren or external power supplier. Switching between these sources is automatically in order to provide the highest possible strength of the sound. The selected source of power is monitored. They are switched on by the control panel after fulfilling programmed operating criteria, e.g. after activation of fire detector (or manual call point) at chosen detection zone, pre-alarm conditions in the control panel, etc.

Technical data:

Operating voltage	from 16.5 to 24.6 V
Current consumption from detection line:	
- quiescent condition	150 µA
- alarming mode	600 µA
Sound pressure when powered with:	
- detection line	85 dB
- 9 V battery	94 dB
- external power supplier	100 dB
Operating temperature range	from -10°C to +55°C
Dimensions (including base)	ø 115 x 54 mm

The universal control panel UCS 6000

The UCS 6000 universal control panel is designed for actuation of fire protection devices, used for mechanical or gravitation smoke ventilation (fire dampers, smoke exhaust dampers etc.). It allows to create from 1 to 8 independent control zones within one device. The UCS 6000 control panel can operate as an independent or multi-zone universal smoke exhaust controller or as an addressable device, which is installed in addressable loops of the POLON 6000 system control panels.

The SAW-6001/6006 signaling device

Addressable signaling devices SAW-6001/6006 are designed for local signaling of a fire alarm with either tones (SAW-6001) or tones and voice messages (SAW-6006). For a proper operation it requires two sources of power supply; detection line and 9 V battery or detection line and external power supplier. The selected sources of power are monitored. The strength of the sound is independent from the selected source of the power.

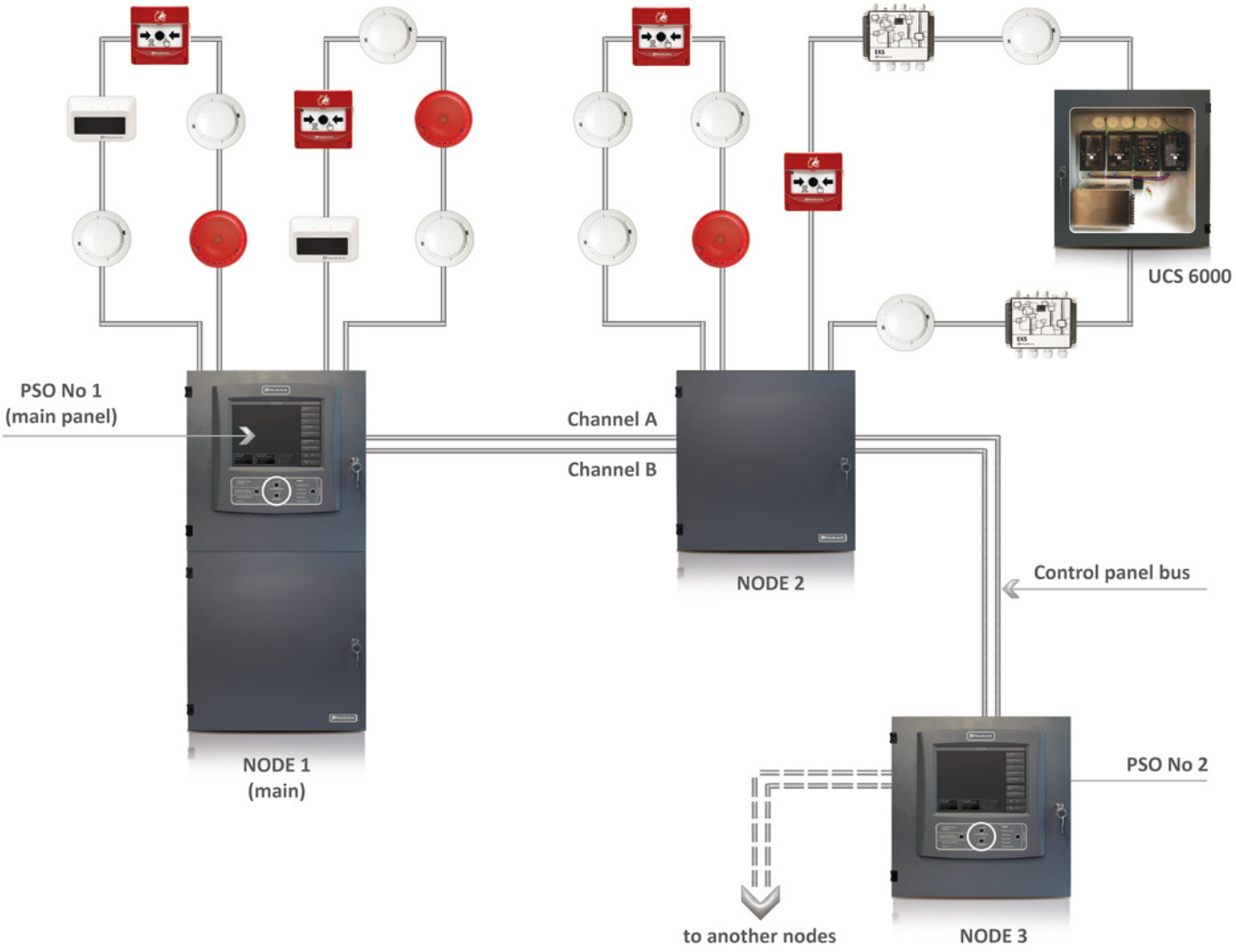
Technical data:

Operating voltage	from 16.5 to 24.6 V
External power supplier voltage	from 9.6 V to 30 V
Current consumption from detection line:	150 µA
Max current consumption from power supplier:	50 mA
Max sound pressure	103 dB
Operating temperature range	from -25°C to +55°C
Dimensions (including base)	ø 115 x 70 mm

ADC-4001M and ACR-4001 adapters

The ADC-4001M adapter is designed to transfer information about the status of the detector line connected to the adapter, so called ‘side line’ (conventional), as well as about the status of the non-addressable, double-state conventional deectors range 40 installed in this line (including intrinsically safe detectors or manual call points) or other elements, equipped with non-potential relays.
The ACR-4001 adapter enables connection of wireless detectors DUR-4047 and wireless manual call points ROP-4007(M) to the control panel. One ACR-4001 can operate with max 16 addressable, wireless devices.

FUNCTIONAL DIAGRAM OF THE POLON 6000 CONTROL PANEL



Maximum configuration of distributed control panel

Number of all modules	990
Number of modules of one type	99
Number of line modules	198
Number of addressable lines/loops	396
Number of addressable elements installed	99000
Number of line elements on one loop	250
Number of all possible control outputs	64000
Number of control outputs on one loop	256
Number of non-potential/potential control outputs on the functional modules	1000/600
Number of all supervision inputs	64000
Number of supervision inputs in one detection loop	256
Number of supervision inputs in functional modules	1200

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