ul. Grzegorza z Sanoka 2
80-408 Gdańsk
tel. (58) 341 42 45
tel./fax (58) 341 39 85

TECHNICAL MANUAL

Power and Control Panel

mcr OMEGA

mcr OMEGA C2100c, mcr OMEGA C2300c,

Power Supply mcr OMEGA

revision Omega 20.03.17.1

FIRE VENTILATION SYSTEMS

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ATTENTION

All previous issues of this Technical Manual expire on the date of issue hereof.
This Technical Manual does not apply to any controllers manufactured prior to this Manual's date of issue.

1. INTRODUCTION

This Technical Manual is addressed to operators of the modular Power and Control Panels mcr OMEGA C2100c, C2300c and Power Supply mcr OMEGA for smoke and heat control systems. Its aim is to provide instructions of use, construction, exploitation and servicing of the above devices. This manual also includes information on transportation and warranty of such.

Read this Technical Manual thoroughly before installing this equipment at its operating site and commissioning.
Not following of instructions in this manual may result to dangerous situations, damage or injuries.
The manufacturer shall not be liable for any consequences of non-intended use or misuse of the equipment.

The mcr OMEGA Power and Control Panel complies with the requirements of Technical Approval by CNBOP-PIB (Poland) No **AT-0401-0394/2013** and the European Union directives:

- 2006/95/EC (**LVD**) Low Voltage Directive.
- 2004/108/EC (**EMC**) Electromagnetic Compatibility Directive.

Compliance with the above has been confirmed by certificates for mcr OMEGA C2100c and C2300c by CNBOP-PIB (Poland):

- Certificate of Conformity No **3004/2015**;
- Certificate of Approval No **2331/2015 – pt. 12.1** (control) **and 12.2** (power supply);
- Certificate of Consistency of Performance No **1438-CPR-0483**;

and certificates for the smoke and heat control systems, power supply mcr Omega:

- Certificate of Approval No **2798/2016 – pt. 12.2** (power supply)**;**
- Certificate of Consistency of Performance No **1438-CPR-0495**.

2. INTENTED USE

The Power and Control Panel **mcr OMEGA C2100c** is intended for use in fire smoke ventilation systems, jet fans and evacuation routes safety systems. This control panel can fulfill the requirements of procedures for smoke extraction systems, differentia pressure control and ventilator timing control for venting. Moreover, this control panel can also control access control devices for fire partitioning.

The **mcr OMEGA C2300c** Power and Control Panel is intended for control and power supply of devices in fire ventilation systems such as: fire dampers, shut-off dampers, transfer panels, valves with electromagnetic release. This panel can control ventilators and other smoke extraction system components. Also this panel can control fire partitioning systems or gravitational smoke extraction systems by control and power supply of linear actuators and position monitoring.

Power Supply mcr OMEGA is intended for supplying power to all fire protection devices in smoke and heat control systems i.e.: fire ventilation systems, jet fans,. The power supply is designed for supplying power to fire extraction and aerating ventilators and other end devices. Depending on the configuration and design it can power a group or single receivers.

The basic intent of mcr OMEGA type panels is to control fire protection devices according to the required fire scenario. The alarm control procedure is triggered when a Fire Alarm Control Panel (FACP) signal, of certain parameters, is supplied to a designated and preprogrammed input in the panel controller. The mcr OMEGA panels can operate with all types of FACP with the following signal procedure:

- the power and control panel receives a hardwired alarm input signal, the number of such signals is dependent on the number of protection zones,
- feedback to FACP about any system or controlled devices fault,
- controlled devices correct switching confirmation signal to FACP,
- selected data transmission to operator panels, visual control and diagnostics stations (BMS).

The panel can control devices with selected time delays. It also includes built in self-control systems for maintaining the software and control modules reliability.

The mcr OMEGA power and control panels can be connected to other fire extraction systems of the same type or other FACP, which provide controlled hardwire output signals to fire protection devices according to EN 54-1 standard.

mcr OMEGA Power Supply enables:

- fire extraction, air intake and exhaust, positive pressure ventilators control and power supply;
- ventilator capacity control with a frequency inverter (VFD) (optional);
- power supply line continuity control for ventilators and other output devices;
- networked data transfer between control panels using an open communications protocol RS485 (optional)
- specific data transfer to operator panels, graphic control and diagnostics stations.
- connection to BMS systems using open communications protocol RS485 (optional).

mcr OMEGA C2100c Power and Control Panel enables:

- power supply and control of fire dampers with position control and signaling of following states:
  - discontinuity (supply line damaged),
  - short circuit (limit switch closed),
  - line continuity control by an end of line resistor on limit switch connectors,
  - control of switching time of limit switches on the actuator during alarm and surveillance mode;
- power supply and control of extraction, intake and exhaust ventilators and venting systems using:
  - direct, star-delta, Dahlander start up systems or frequency inverters;
  - one or multi-speed, one way or reversible ventilator control;
  - power supply contactor state control;
  - line continuity control for all connected devices including ventilators in surveillance mode;
- networked data transfer between control panels using an open communications protocol RS485 (optional)
- specific data transfer to operator panels, graphic control and diagnostics stations.
- connection to BMS systems using open communications protocol RS485 (optional);
- connection to other control panels or systems i.e. CO/LPG or FACP.

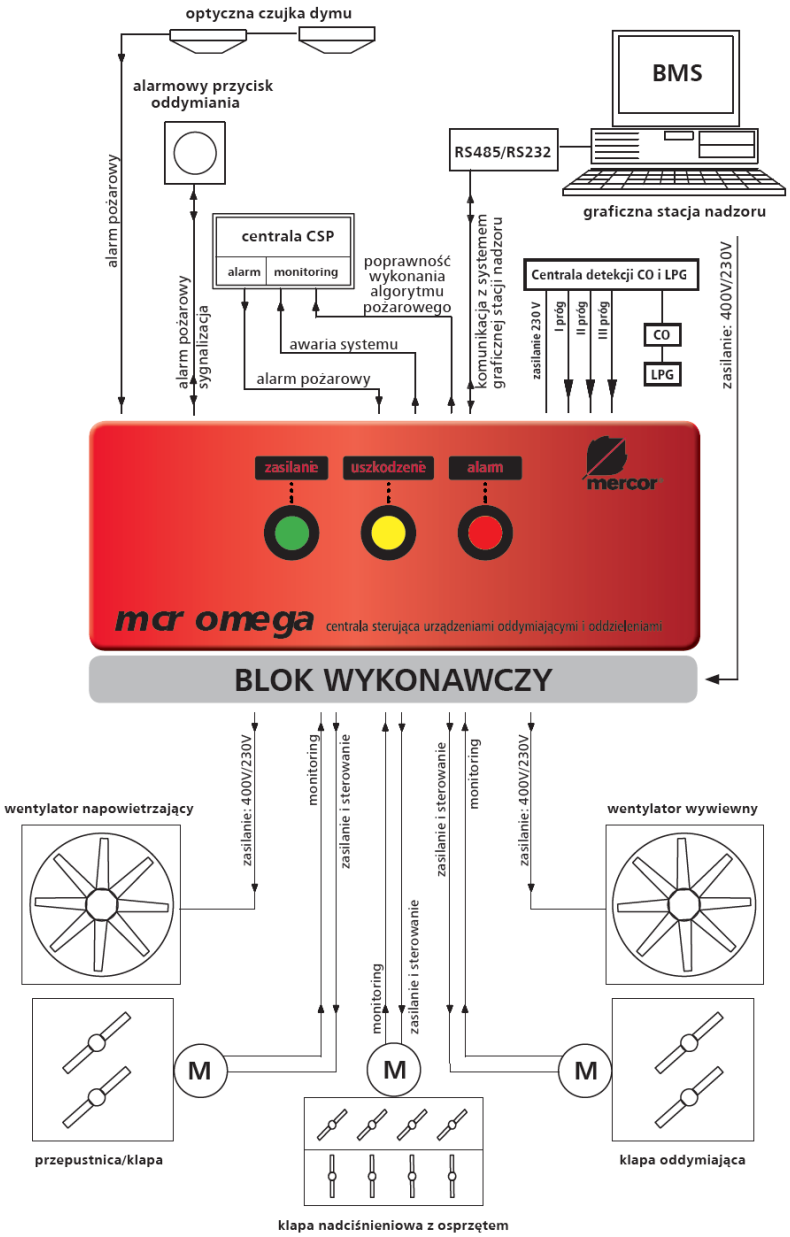

Fig.1. OMEGA C2100c system diagram.

The **mcr Omega C2300c** Power and Control Panel enables power supply, control and status monitoring of below:

- Fire dampers and fire ventilation dampers equipped with axial actuators with return springs and current break control;
- Fire dampers and fire ventilation dampers equipped with axial actuators with return springs and current pulse control;
- Fire ventilation dampers with electric drives and no return spring and long current make pulse by supply voltage polarity reversion;
- Door release triggers with current break control;
- Door release triggers with current pulse control;
- Linear electric actuators;
- Fire extraction ventilators, air intake ventilators, venting panels, etc., depending on the dampers position or according to a custom algorithm required by the fire scenario of the designation building.

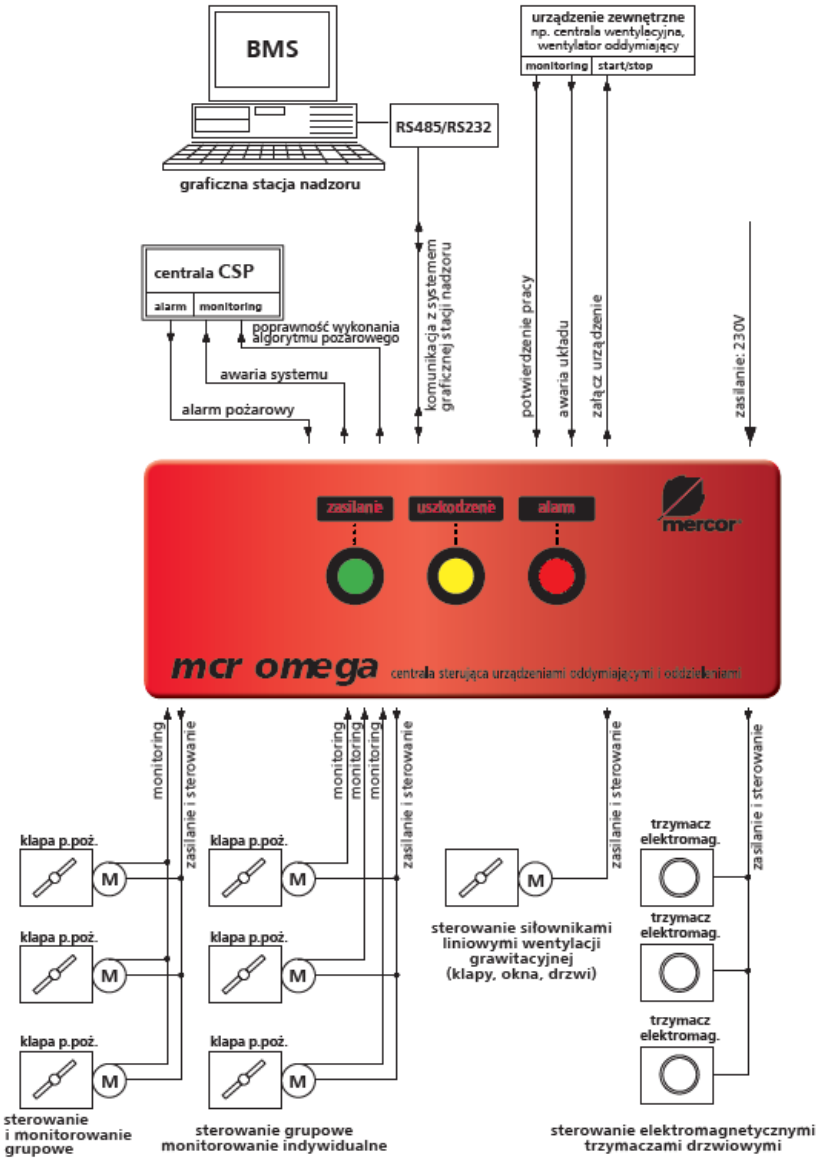

Fig. 2. OMEGA C2300c system diagram.

It is allowed to use the mcr OMEGA Power Supply together with C2100c or C2300c Panel in one unit to reduce the number of enclosures on site. This way optimal ventilator startup and Panel configuration parameters are achieved for complying with the buildings fire scenario requirements, what is more outdoor use is then allowed. Further on all of the above devices will be referred to as **mcr OMEGA** control panel.

3. DESIGN AND EQUIPMENT

mcr OMEGA control panels are delivered in steel enclosures and equipped accordingly to the designation building requirements and the individual fire scenario. The enclosure depending on the can be of IP55 (indoor) or IP65 (outdoor) class. The outdoor version is equipped with a small rooftop which protects the enclosure from water stills. The panel doors are equipped with a rubber seal and access protected with a key lock. Wiring can be done either from bottom or top of the panel using electric cable glands. The number of glands and spacing is dependent on the system size and configuration. Enclosure sizes vary between 600x400x200 – 2200x1200x600 (length x width x height [mm]) depending on the number of controlled devices and the complexity level of operations and the panels switching program.

The panel door include:

- Signal panel with LEDs for indication of the panel state:
  - Power – greed LED, if ON the power supply is good;
  - Fault – yellow LED, if OFF the panel is functioning correctly;
  - Alarm – red LED – if ON there is a FACP alarm signal and the switching procedure is on;
- „Alarm Reset" switch – restores the panel to basic control state, resetting the alarm state of the panel.

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Fig. 3 Enclosure door – signal panel and reset button.

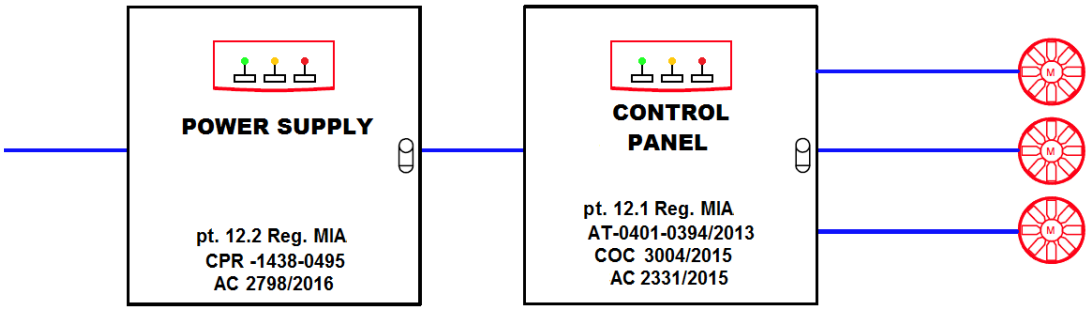
The basic components of mcr OMEGA panels, depending on the system size, are:

- Control module including:
  - special microprocessor control and monitoring modules mcr MMS 2063 and MMS 2081.
  - special microprocessor management and communication modules mcr MZK 2001, MW 2001.
- Power supply module for microprocessor modules with a suppression filter, overcurrent protection and 230/24 VAC transformer.
- Panel mains supply module.
- Power supply and output circuits overcurrent protection module.
- Surge protector module (optional).
- Output circuits power supply module (power and control lines for connected output devices).
- Venting and heating module (optional).

3.1. POWER SUPPLY AND CONTROL

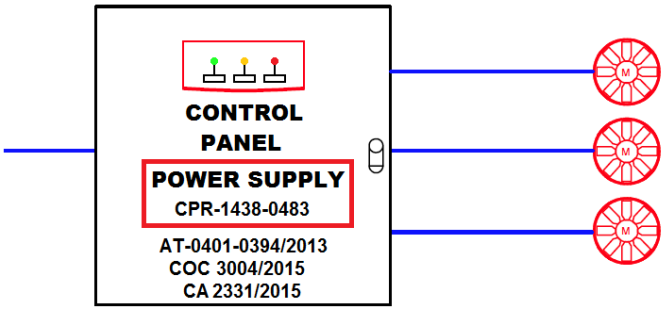
As mentioned above the mcr OMEGA Power and Control Panel can be built in three variations – Power supply and Control Panel separate, only Control Panel, Control Panel and Power Supply in one enclosure. Below diagrams show the differences in certificates and configurations.

- Power supply done by mcr OMEGA power supply and control by Control Panel



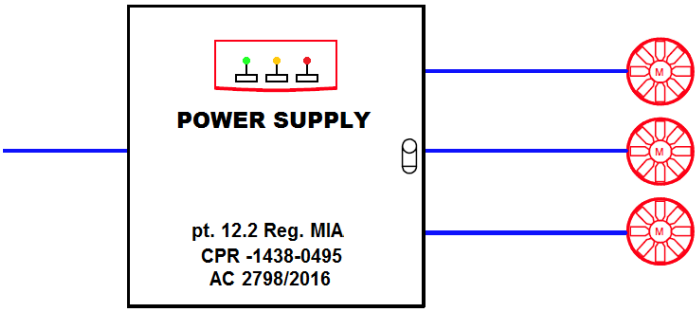
Startup possibilities: direct, star-delta, Dahlander, frequency inverter.

- Control panel with integrated power supply.



Startup possibilities: direct, star-delta, Dahlander.

- Power supply for fire protection devices mcr OMEGA.



Startup possibilities: direct, start-delta, Dahlander, frequency inverter.

3.2. CONTROL MODULE

The control module is equipped with special microprocessor control and monitoring modules mcr MMS. The following types are used:

- MMS 2081 – 8 input, 1 output module,
- MMS 2063 – 6 input, 3 output module,
- MZK 2001 – communication and management module,
- MW 2001 – signal amplifier module.

Control modules work accordingly to a site specific program, stored inside the module memory, depending on each buildings fire scenario. Module inputs acquire signals from connected devices and depending on their state the module relay outputs are set. Each control module has color LEDs signaling the following:

- Inputs – line continuity – line break, shortcircuit, line open;
- Outputs – relay state – on or off.

The MMS modules have a watchdog procedure implemented to control the microprocessor proper functioning. Each module can communicate with other modules inside the panel which forms the whole control system. Communication lines between every module uses RS232 standard. The Master module initiates the data exchange and the Slave modules respond with data values. Each slave module is addressed with a unique number set by a dip-switch or stored in the program memory. The data exchange protocol is based on Modbus.
The MZK 2001 are used when more than 5 MMS modules are required. These modules function as Master modules managing all input/output MMS modules. The MZK modules can be also used for BMS or other systems communication.
The input signals to the module are galvanicaly separated. For further noise reduction on input signals, there are time filters for eliminating frequent switching of these signals. Module outputs are relay type which ensure full galvanic isolation from switched voltages.

Fig. 4 MMS and MZK modules front view.

MMS module state signals

MMS modules can control the input line continuity by an end of line (EOL) resistor **R=10 kΩ**. The input and output state on each module is signaled by color LEDs.

INPUTS:

- Green LED – input open (R=EOL resistance value),
- Red LED – input closed (R=0),
- No led signal – line discontinuity, input open (R $\rightarrow\infty$),
- Red LED flashing – input signal closed too long, input time exceeded
- Green LED flashing – input signal open too long, input time exceeded.

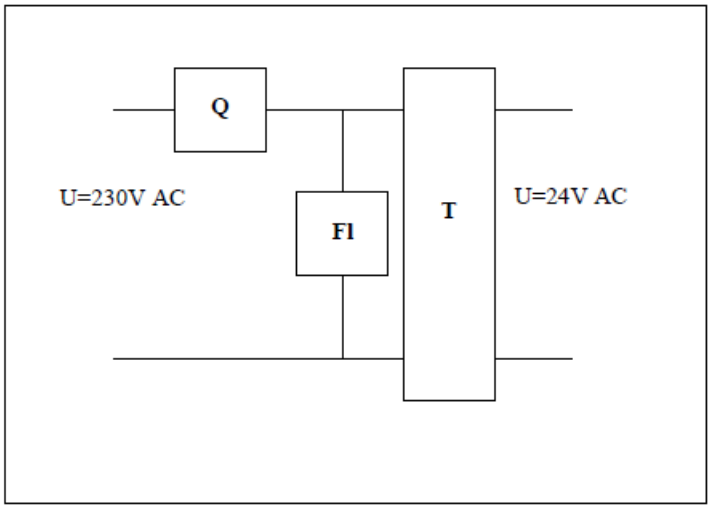
The input LED flashing signal after exceeding the input time parameter is maintained until proper program functioning and input time is done.

Default input time values:
- Damper with spring return actuator – spring working time – 30 s.
- Damper with spring return actuator – actuator working time – 180 s.
- Damper with actuator without spring – actuator working time – 90 s.

OUTPUTS:
- Yellow LED – relay ON.

MODULE POWER SUPPLY:
- Yellow LED – power ON.

3.3. CONTROL MODULES POWER SUPPLY MODULE

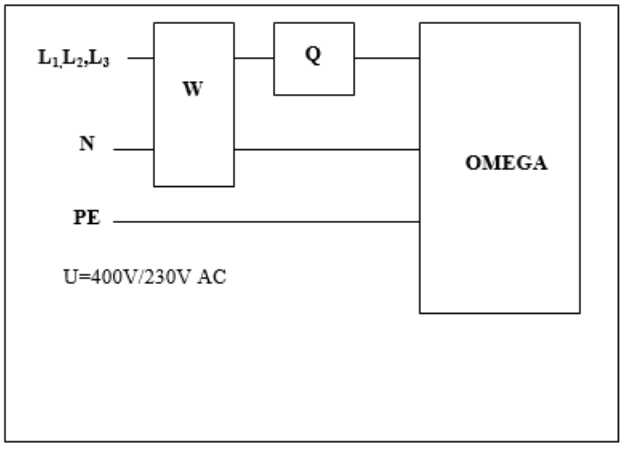


The power supply module allows continuous power supply for MMS and MZK control modules. This module includes a transformer, filters, overcurrent fuses. The microprocessor modules power supply can include a buffer power supply with batteries for continuous power supply to the control system of mcr OMEGA panel.

Q – overcurrent protection
Fl – filters
T – transformer 230/24 V AC, 50Hz

The power supply module maintains 24VAC voltage for microprocessor modules. This voltage is supplied to L1 and L2 terminals on each MMS and MZK module. The overcurrent protection uses C characteristics S301 fuse type. The size of the fuse is adjusted to the number of control modules used in each control panel.

3.4. MAINS SUPPLY MODULE

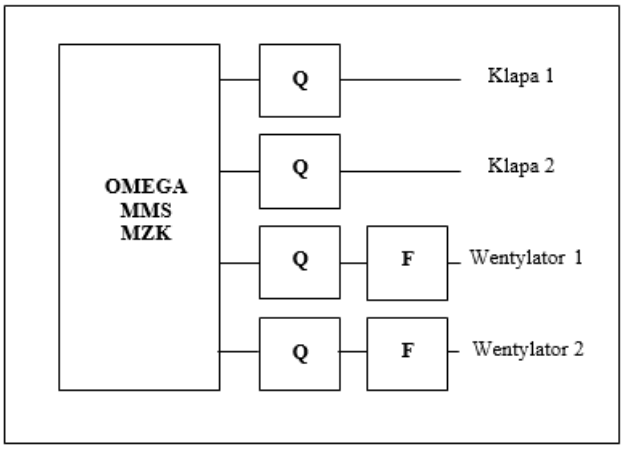


Mains supply module is used for supplying electric energy to connected devices and to the control modules power supply module. The mains supply module includes a mains switch, overcurrent protection fuse, connectors with screw terminals.

W – mains switch i.e. FR302s
Q – overcurrent protection.

The mains supply module provides specific voltage for every connected to the control panel device. The power is supplied to L1, L2 ,L3 terminals. The size of overcurrent fuse is dependent on the amount and size of connected devices.

3.5. POWER SUPPLY AND OUTPUT CIRCUITS OVERCURRENT PROTECTION MODULE



Power supply and output circuits overcurrent protection module is intended for supplying power and protecting of control panel output circuits (actuators, door release, dampers etc.) This module includes overcurrent protection fuses or fuse-switch, relays, connectors, transformers and stabilized power supplies.

Q – fuses
F – relays

The power supply and automation overcurrent protection unit is intended to protect the external devices connected to the power and control panel and supplies voltage at specific parameter values to that equipment. The voltage is supplied to the successive terminal strip outputs as specified. The supply voltage is, depending on requirements: 3x400 VAC, 230 VAC, 24 VAC, 24 VDC.

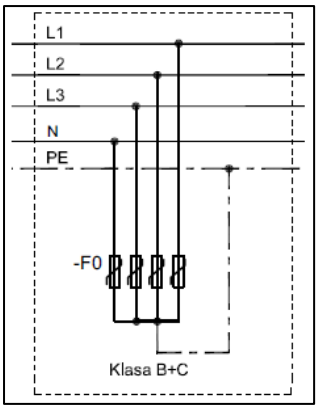
The power supply and output circuits overcurrent protection module includes ventilator control and power supply devices. The mcr OMEGA control panel control ventilators:

- One-way;
- reversible;
- single-speed;
- multi-speed;

using following startup methods:

- direct;
- star-delta;
- Dahlander;
- Frequency inverter.

3.6. SURGE PROTECTOR MODULE (optional)



Surge protector module is used for protection against surge bursts in building grounding circuits. It can be installed in the control panel if required. The position of installation is marked in the electrical diagram which is attached to the control panel when shipped.

3.7. VENTING AND HEATING MODULE (optional)

The venting and heating module is used when the control panel is designed for outdoor use or in case of indoor use and a frequency inverter option. Inside the enclosure a thermostat with a heater module is installed which is switched on when the temperature inside is too low. For cooling a thermostat with a venting fan is installed which pushes the hot air outside the cabinet if the temperature inside is too high. Both the fan and heater have overcurrent protection fuses. The heater power and fan size are adjusted to the power installed in the control panel.

4. OPERATING PRINCIPLE

The mcr OMEGA control panel operating principle depends on the building fire scenario, design and programming for each application. Exact electric diagrams, sizes, number of installed devices are adjusted to the destination building and project requirements. These are attached as the final documentation of the control panel shipped together with this Technical Manual.

The alarm procedure is triggered when a special FACP alarm hardwire signal is present on the designated alarm input on the MMS modules. These inputs are specially programmed to initiate the alarm procedure for designated zones. The FACP signal must be a potential free (relay type), **normal closed** (NC when no alarm) type signal. This signal has to be bridged with an end of line (EOL) **10 kΩ** resistor, which enables line continuity control. In surveillance mode the MMS module reads 0**Ω** resistance on the designated alarm input which is treated as a no alarm situation. In case the contact opens, caused by line break or opening of the relay signal, the module will run the procedure stored in the program memory. If the resistance on the designated input rise to infinity, that would mean a line discontinuity in the input circuit and this is a Fault situation. The control panel will show each state using signal LEDs on the front door.

The actuator power supply lines, FACP alarm signals connected to the OMEGA control panel are controlled continuously by the control modules. Feedback signal lines to other systems from the control panel have to be monitored by these systems.

5. NETWORK

mcr OMEGA control panels can be connected in a network and communicate using their own data transmission protocol. This enables to separate zones or operate devices on long distances. The MZK 2001 modules have designated connectors for network connections to RS485 Modbus RTU communication. The exact signals exchanged between control panels are programmed when the panel is assembled according to fire scenario requirements.

Network technical data:
- Maximum number of connected panels: - 32 pcs,
- Maximum distance between panels – 1000 m,
- Star topology.

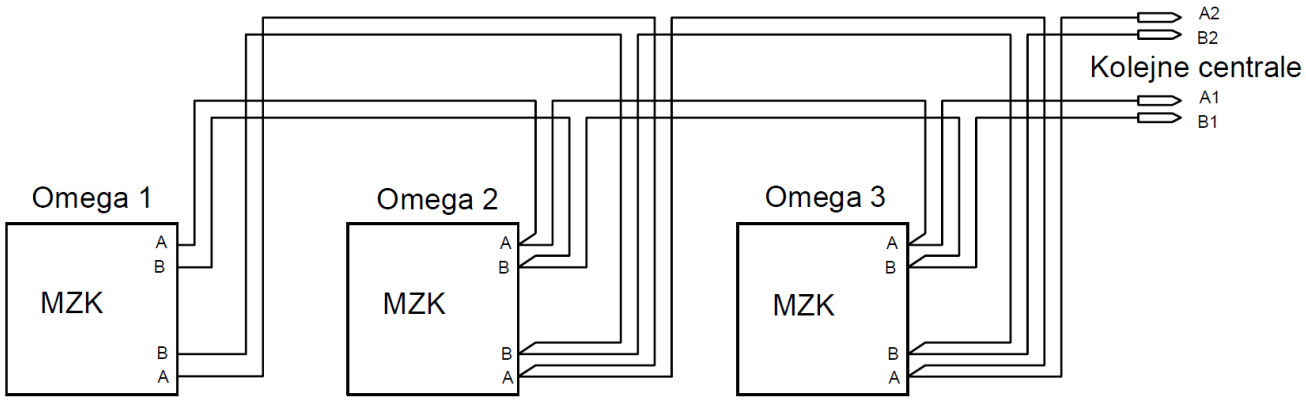


Fig. 5 Network connection diagram between OMEGA panels.

Communication parameters:
- RS485, connectors A,B
- Modbus RTU protocol, READ code 04 word address=module number from Master side
  Slave address defined by dip switches 1 to 4:
  slave address=dip4*4+dip3*4+dip2*2+dip1*1+1 E.g. if Address=4 set dip1 and dip2 ON
  Baud rate: 9600, 8 bit, 1 stop bit, no parity
- MMS 2063 module (6 inputs, 3 outputs)

Bit	Terminal	Status
5	Out3	0=relay open, 1=relay active
6	Out2	0=relay open, 1=relay active
7	Out1	0=relay open, 1=relay active
8	InA	0=terminator or interruption, 1=closed
9	InB	0=terminator or interruption, 1=closed
10	InC	0=terminator or interruption, 1=closed
11	InD	0=terminator or interruption, 1=closed
12	InE	0=terminator or interruption, 1=closed
13	InF	0=terminator or interruption, 1=closed

- MMS 2081 module (8 inputs, 1 output)

Bit	Terminal	Status
0	Inputs	0=OK, 1=at least one input is open
7	Out1	0=relay open, 1=relay active
8	InA	0=terminator or interruption, 1=closed
9	InB	0=terminator or interruption, 1=closed
10	InC	0=terminator or interruption, 1=closed
11	InD	0=terminator or interruption, 1=closed
12	InE	0=terminator or interruption, 1=closed
13	InF	0=terminator or interruption, 1=closed
14	InG	0=terminator or interruption, 1=closed
15	InH	0=terminator or interruption, 1=closed

6. TECHNICAL DATA

PARAMETER	mcr Omega C2100c	mcr Omega C2300c	Power Supply mcr Omega
Primary supply voltage	230/3x400 VAC +10/–15%	230 VAC +10/-15%	230/3x400 VAC +10/-15%
Panel operating voltage	24 VDC		
Backup power source*	On-site backup power supply [ref. z PN-EN 12101-10]		Batteries with uninterrupted power supply
mcr MMS 2063 monitoring inputs [interruption and closing detection; line continuity monitoring]	24 VAC with optoelectronic separation [6 inputs per mcr MMS 2063]		
mcr MMS 2063 power and control outputs	Relay-type, I_o=4 A , 250 VAC/25 VDC [3 outputs per mcr MMS 2063]		
mcr MMS 2081 monitoring inputs [interruption and closing detection; line continuity monitoring]	24 VAC with optoelectronic separation [8 inputs per mcr MMS 2081]		
mcr MMS 2081 power and control outputs	Relay-type, I_o=4 A , 250 VAC/25 VDC [1 output per mcr MMS 2081]		
Serial RS485 communication protocol	Modbus RTU		
Power outputs [ventilators, venting panels etc.]	230/3x400 VAC	230 VAC	230/3x400 VAC
Alarm signal arrangement	1-stage (level 2)		
IP rating	IP 55		
Operating temperature	-10 °C ÷ +55°C		-10 °C ÷ +75°C
Climate class ref. PN-EN 12101-10	Cl. I		Cl. III
Compatible actuator types	Certified fire damper actuators with 2 or 3 wire power supply, voltage pause or impulse control. Certified door holders		
Operating principle	Adaptable, depending on the buildings fire scenario		

* - applies to the power and control for smoke venting devices and fire partitions which require a backup power supply for proper operation, ref. regulations and standards.

7. MOUNTING AND CONNECTIONS

The mcr OMEGA panel should be installed in designated areas where service access is guaranteed. If possible the panel should be installed in electrical low voltage rooms (switchboards, venting shafts switchboards). The panel should be installed at least 15 cm from high voltage cables and at least 1m from lightning conductors. The panel should be installed in non-explosive and ,if possible, fire separated areas. The place of installation should not exceed the allowed operating temperatures and climate conditions.
The control panel enclosure should be installed on a vertical flat surface using metal fittings adequate for its weight and surface material.
Panels which have output devices connected should be installed relatively close to the panel, because of high voltage drops on long distance wiring.

Warning, electrical connections must:

- be done exactly according to the attached electric diagram,
- only by qualified personnel, according to local regulations,
- have cables diameter and fire resistance parameter matching the electric installation project of the building installed and complying with local regulations,
- have proper cable gland tightening after installation of wires for maintaining the panels IP parameter.

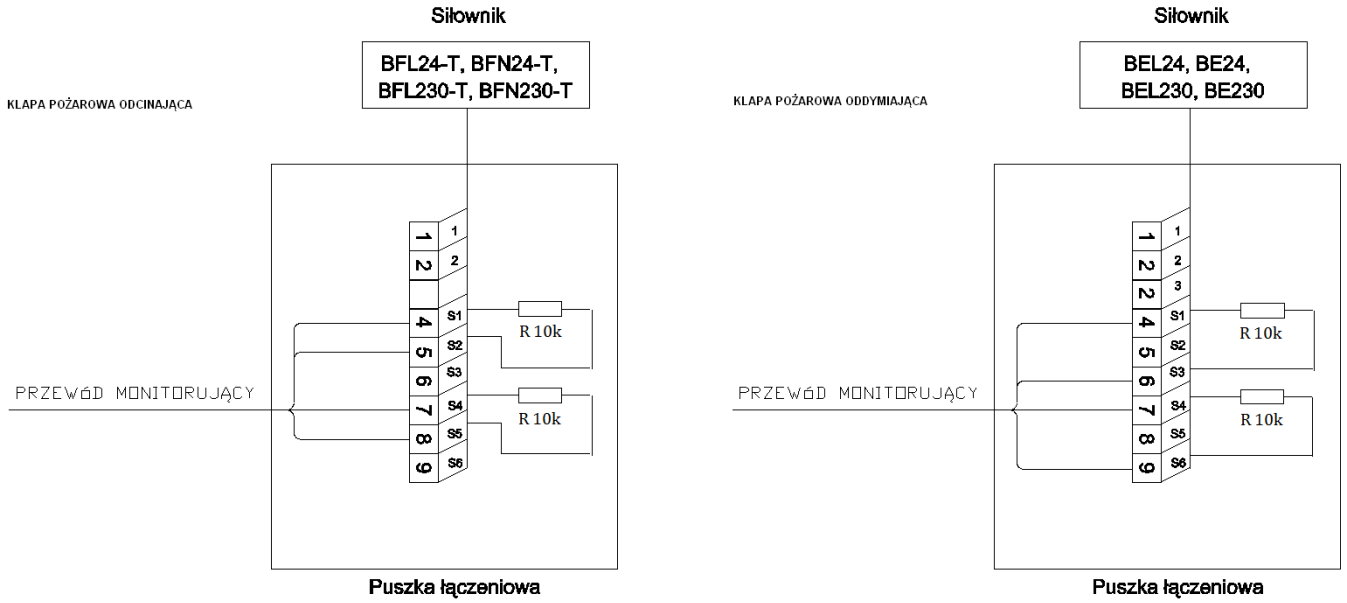


Fig. 6 Example of actuator connections in installation boxes.

8. OPERATION

Due to the modular design of the mcr OMEGA control panels, the operating program and requirements are custom to the specific application site, fire scenario, fire protection and user requirements. The signal LEDs on the front door signal the panels operating state.

LED	ON	OFF
Power – Green	Power supply correct	No power supply
Fault – Yellow	Panel or connected device fault check input signals	Panel working correct
Alarm - Red	FACP Alarm, alarm procedure active	Surveillance mode

FAULT

The control panel can signal fault conditions whether it is an internal panel fault or a connected device is not working properly.

Example of internal fault:
- phase sequence incorrect;
- overcurrent fuse of output device fault;
- controller fault;
- battery or uninterrupted power supply converter fault.

Examples of output devices faults:
- line discontinuity in a connected protection device,
- no EOL resistor,
- no actuator reaction – input time elapsed.

ALARM RESET

After an FACP alarm is present it is signaled until the ALARM RESET button is not pressed for 5 s. Alarm reset procedure returns all of the connected devices to the surveillance position if there is no FACP alarm signal present on any of the designated controller inputs.

PRODUCT DISPOSAL

Do not dispose of the waste product with normal domestic and other wastes at the end of its service life. Take it to the collection center for the recycling of electrical and electronic equipment. Please consult your local authorities to learn about these collection centers.

9. TESTING

The mcr OMEGA panels are equipped with “Test” switches inside the enclosure, which enables testing of every zone alarm procedure. While the alarm procedure is running, the control panel operates by the algorithm stored in program memory according to the fire scenario. After the procedure is finished, the panel regardless of the result, will return to surveillance mode and set the outputs to previous state – awaiting for FACP alarm. If there is more than one alarm zone each FACP signal has its own “Test” switch.

10. STORAGE AND TRANSPORT

Every mcr OMEGA panel is packed separately in a carton case with protections against damage. In case of big size enclosure it is placed and mounted on a transport pallet with the front panel facing upward.

The mcr OMEGA panel can be transported with various means of transport, considering it is protected from mechanical damage and maintained in temperatures not lower than **-20°C** and not higher than **+80°C** and humidity lower than **93% at +40°C**. The transported panel must be put on the mounting plate (back), it should not be placed on the front door due to signal panel damage possibility. After each transport, a visual control of the enclosure should be conducted. During transport, batteries are not connected to not discharge or damage them.

The mcr OMEGA panel should be stored inside in temperatures between **0°C and 40°C** and relative humidity level of **80% at 35 °C**, free from volatile Sulphur compounds or acidic and base fumes. The panel should not be exposed to direct UV radiation or heating devices. If possible separation from the ground should be installed.

11. MAINTENANCE AND SERVICING

The equipment from “MERCOR” S.A. requires periodic technical inspection and maintenance at least every 12 months throughout its operating life, i.e. during the warranty and post-warranty period. Inspection and maintenance may only be carried out by the manufacturer or contractors authorized by “MERCOR” S.A. to service its products. The obligation to carry our regular service inspections of fire protection devices results from the Art. 3(3) of the Regulation by the Minister of Internal Affairs and Administration of 7 June 2010 on fire protection of buildings, other civil structures and areas (Journal of Laws 2010 no. 109 item 719):

Do the following recommended actions in the inspection intervals:

- Check the electrical connections, especially for all mechanical damage.
- Check the equipment casing, especially for all mechanical damage.
- Check for any obstructions to proper performance of the equipment.

To facilitate the activities under service inspection, servicing and warranty claim response, e.g. visual inspection or repairs, the equipment user/operator shall provide physical access to the equipment by removing thermal insulation, suspended ceiling, and other installations, as required and applicable to warrant unobstructed access. Inspection ports, e.g. type mcr KRW are recommended for equipment installed in ducts. In the case of roof mounted equipment, provide access to the area (via ladders or elevated platforms). Refer all matters related to technical inspection, maintenance and servicing of this equipment to the “MERCOR” S.A. Service Department, serwis@mercor.com.pl, tel. +48 58 341 42 45 ext. 170, fax: +48 58 341 39 85, from 8 AM to 4 PM (Mo-Fri).

12. WARRANTY

1. “MERCOR” S.A. grants 12 months of warranty for the equipment quality from the date of purchase, unless the sales contract states otherwise.
2. If physical defects of equipment are found during the warranty period, “MERCOR” S.A. warrants and represents to remove them in 21 days from serving the written warranty claim with the proof of purchase or sales contract, subject to Item 6.
3. “MERCOR” S.A. has the right to extend the time of repair if the defect removal is complicated or requires purchase of custom components or spare parts.
4. The warranty liability only covers all defects arising from causes present in the equipment at the date of sale.
5. Defects caused by improper operation or otherwise as listed in Item 6 herein, the buyer / warranty beneficiary will be charged with the costs of their removal.
6. The warranty does not cover:

- Any damage or failure of the equipment caused by improper operation, tampering, failure to conduct periodic technical inspection and/or maintenance established in the Technical Manual “Servicing and Maintenance”.
- Any damage beyond reasonable control of “MERCOR” S.A., and specifically: caused by force majeure, such as torrential rainfall, flooding, hurricanes, inundation, lightning strike, power grid overvoltage, explosion, hail, collision with aircraft, fire, avalanche, landslide and indirect damage due to those causes. Torrential rainfall is understood as any rainfall with the effectiveness factor of 4 or higher according to the definition of the Polish Institute of Meteorology and Water Management - National Research Institute (IMGW-PIB). If the effectiveness factor value specified in the preceding sentence cannot be reasonably established, the actual condition and extent of damage shall be considered at the site of their origin as the action of torrential rain. Hurricane is understood as any wind with a minimum speed of 17.5 m/s (and damage shall be recognized as caused by hurricanes if the action of such weather phenomenon has been found in the direct vicinity of the damaged property).
- Damage due to failure to immediately report any defect found.
- Deterioration in the quality of coatings due to natural weathering/ageing.
- Defects caused by abrasive or aggressive cleaning agents.
- Damage caused by aggressive external influence, specifically chemical or biological in nature, or when the origin of which is related to the production processing or activity carried out within the facility protected by the equipment or in its direct vicinity.

- Wearing parts and consumables (e.g. gaskets/seals), unless they have defects of workmanship and/or material.
- Damage caused by improper transport, handling, unloading and/or storage of the equipment.
- Damage caused by installation of the equipment in violation of this Technical Manual and/or good construction practice.
- The equipment and/or parts thereof with removed or damaged nameplate (rating plate) and/or warranty seals.

7. Submit each warranty claim to “MERCOR” S.A. in 7 days from the date of discovery of a warranty eligible defect.
8. Submit warranty claims by calling at: tel. +48 58 341 42 45, by fax: +48 58 341 39 85, by email: reklamacje@mercor.com.pl or by traditional mail: “MERCOR” S.A. , ul. Grzegorza z Sanoka 2, 80-408 Gdańsk, Poland.
9. The buyer/warranty rights holder is required to operate the equipment properly and carry out technical inspection and maintenance according to the Technical Manual "Maintenance and Servicing".
10. This warranty shall be made immediately void and null if:

- The buyer/warranty rights holder modifies the product design without prior authorization from “MERCOR” S.A..
- Periodic technical inspection and/or maintenance is not carried out per schedule and/or is carried out by unauthorized personnel or service providers not authorized to do so by “MERCOR” S.A. and/or the equipment has not been properly operated.
- Unauthorized personnel attempts any intervention in the product outside of the normal operation and maintenance of this equipment.

11. Any circumstances listed in Item 10 will relieve “MERCOR” S.A. from the obligation of surety.
12. The defects may be removed if the warranty claimant provides free access to facilitate this, especially to the rooms where the equipment has been installed, and provides the necessary inspection access, removal of thermal insulation systems, suspended ceiling, and any other installations which obstruct access to the equipment, etc.

The relevant provisions of the Polish Civil Code shall apply to all matters not regulated in these Warranty Terms & Conditions. .

ul. Grzegorza z Sanoka 2
80-408 Gdańsk
phone (58) 341 42 45
phone/fax (58) 341 39 85