

Systemy zabezpieczeń przeciwpożarowych Fire protection systems "MERCOR" S.A.

ul. Grzegorza z Sanoka 2, 80-408 GDAŃSK, Polska

tel. (+48 58) 341 42 45, fax (+48 58) 341 39 85

e-mail: mercor@mercor.com.pl www.mercor.com.pl

# **Technical and Operating Documentation**

**User Instruction Manual** 



# mcr 0204 **Smoke and Heat Exhaust Control Unit** for Smoke Curtains mcr PROSMOKE FS CE







#### **Table of Contents**

Ι.	USER INFORMATION
2.	INTRODUCTION
3.	BASIC INFORMATION ABOUT THE UNIT
4.	OPERATION
5.	ASSEMBLY AND START UP
6.	INSTRUCTION MANUAL FOR CHECKING CONNECTION AND PERFORMANCE OF THE MCR 0204 CONTROL UNIT .
7.	TYPICAL CONNECTION DIAGRAMS
8.	SERVICE AND MAINTENANCE
9.	WARRANTY TERMS AND CONDITIONS
10.	TECHNICAL SPECIFICATIONS
11.	DECLARATION OF PERFORMANCE
12.	CERTIFICATE OF CONSTANCY OF PERFORMANCE 1

We recommend keeping this Instruction Manual inside the control unit, so that the information is always available when required!

#### 1. USER INFORMATION

The mcr 0204 control unit meets the requirements of the National Technical Assessment CNBOP-PIB-KOT-2017/0014-1009 issue 2 and the essential requirements of EU directives:

- 2014/35/EU (LVD) regarding electrical equipment provided for use within certain voltage limits;
- ➤ 2014/30/EU (EMC) regarding electromagnetic compatibility.

#### **RELATED DOCUMENTS:**

European certification of constancy of performance of construction products CNBOP-PIB No.1438-CPR-0583 and The Declaration of Performance No. 092/HO/2018 of 07/03/2018 confirming the compliance of the power supply with the requirements of EN 12101-10: 2007.



- EU Declaration of Conformity No. 087/HO/2018 dated 07/03/2018.

The above documents can be downloaded from the "MERCOR" S.A company website - www.mercor.com.pl

Thank you for choosing the mcr 0204 control unit. We recommend you to read this User Manual with attention and to apply the recommendations therein. This will ensure smooth and reliable operation of the equipment.

"MERCOR" S.A reserves the right to modify the product or documentation without notice.

We wish to ensure your full satisfaction with our products and we will be glad to provide professional service and assistance to you, should such a need arise.

"MERCOR" S.A.

 $\label{thm:continuous} \textbf{Electrical and electronic equipment should be disposed of and collected separately.}$ 



#### 2. INTRODUCTION

The mcr 0204 control unit is used in smoke exhaust systems to control the operation of electrical actuators, in particular the actuators of smoke curtains mcr PROSMOKE FS CE.

The control panel mcr 0204 should be installed near a controllable smoke-exhausting device or in the facility monitoring room. The control panel is supplied with 230V alternating voltage and working voltage 24V constant voltage at output to which electrical devices controlling the fire-exhausting system are connected. The control panel is fitted with the batteries which let the system work in the case of mains power supply decay. The time of supporting the control panel operation with smoke curtains PROSMOKE FS CE depends on the number of smoke curtains connected.

Control panel mcr 0204 has the following functions:

- alarm triggering by hand from alarm pushbuttons,
- automatic alarm triggering from smoke sensors,
- automatic alarm triggering from fire-signaling control panel,
- informing about alarm (NO/NC signal),
- informing about system damage (NO/NC signal),
- remote alarm reset and roll-up of curtains,

The mcr 0204 unit features visual indicators of its operating status, repeated on alarm pushbuttons, which allows easy identification of alarm status or a system defect.

Connecting the fire-exhausting pushbutton mcr RPO-1 allows for remote operation of the control panel (signaling damage or alarm, remote alarm reset or rolling-up curtains after alarm).

# 3. BASIC INFORMATION ABOUT THE UNIT



Fig. 1 Front panel of the unit.

On the front panel there are diode indicators which inform the user about the unit's status.

No.	Description	Colour	ur Function	
1	POWER	green	presence of both sources of supply	
2	ALARM	red	visual alarm notification	
3	FAIL	yellow	general system defect/failure signal	

The FAIL diode is blinking when mains voltage 230 V is not present.

The front panel of unit is attached by means of six screws, which can be released using a special screwdriver.

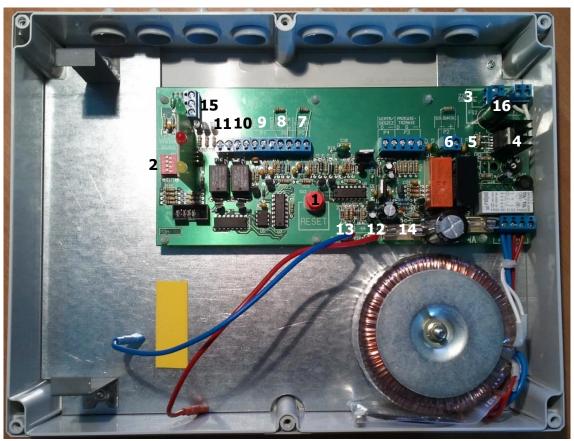


Fig. 2 View of the unit's interior.

On the unit module's PCB there is a RESET (1) pushbutton. It allows to cancel the alarm after the original cause of the alarm has been eliminated. **Press and hold down the button for at least one second!** 

In the left part of the unit module's PCB there is a four-position switch SW1 (2), designed to set the operation mode:

Switch position	Function	
SW1-1	OFF – do not use	
	ON – FS curtains control mode	
SW1-2	In the FS curtains control	
	mode:	
	OFF - Automatic reset of	
	control panel in the alarm	
	state	
	ON – Hand reset of control panel	
	in the alarm state	
SW1-3	Do not use	
SW1-4	Do not use	

Note: the default setting SW1-2 through SW1-4 — OFF position.

Along the top edge of the module's PCB there are terminal strips which are used for connecting the elements of the system:

No.	Description	Function	
3	P1	power input 230 V, 50 Hz	
4	P2	output to actuators (-,+)	
5	P3	ventilation input (G-top, D-bottom, $^{oldsymbol{\perp}}$ - joint, closing contacts)	
6	P4	input for wind/rain controls (closing contact)	
7	P5	sensors line (+,-)	
8	P6	push-buttons line (+,-)	
9	P7	auxiliary power/ alarm reset input (+,-, reset)	
10	P8	defect indication output - relay contact	
11	P9	alarm indication output - relay contact	
15	P14	RPO-1 indication output (1, 2, 3)	

#### Moreover, in the bottom part of the PCB:

12	P10	positive end of battery	
13	P11	negative end of battery	

Fuse on the PCB (14) FS1 - batteries protection (4 A quick).

Fuse on the PCB (16) FS2 - mains line 230 V protection (125 mA quick).

## 4. OPERATION

# 4.1 Normal operation

On the front panel (Fig. 1) the green diode indicator for POWER is on. Description of diode indicators on the front panel:

POWER	ALARM	FAIL	UNIT STATUS
	+		ALARM
+	-	1	NORMAL OPERATION
-		+	BATTERY FAILURE
-		В	MAINS FAILURE
+		+	DEFECT

- ANY STATUS
- + ON
- OFF
- B BLINKING

The mcr 0204 control unit is a maintenance-free device. It requires uninterrupted 230 V mains power supply. In the case of main power supply shortage, the batteries provide emergency power supply for the period depending on the number of curtains to roll-up (see: OMM for curtains mcr PROSMOKE FS CE). Any power outage exceeding 72 hours can result in permanent damage to the batteries.

# 4.2 Emergency alarm

If the status of the unit is 'alarm', the red ALARM diode on the front panel will light up. Alarm release methods:

Manual - break the glass of the emergency pushbutton and press the button

**Automatic** – depending on the type of sensors, the sensors will be automatically activated when the temperature rises or in smoke conditions.

Control panel mcr 0204 is also able to receive alarm signal from an external source, e.g. fire alarm control panel through the RPO pushbuttons line.

In the alarm state, the control panel lowers down connected curtains FS CE to the operational position.

# 4.3 Deleting the alarm

To delete the alarm status, determine the source of the alarm first. Then remove its cause and reset the alarm:

**Alarm indicated by the pushbutton** (the RPO line) - open emergency pushbutton housing, unlock the button using the lever and delete the alarm using RESET button inside the housing. The red ALARM diode will go out. The glass also needs to be replaced.

Alarm indicated by a smoke sensor (the sensors line) - delete the alarm using the RESET button, either in the RPO emergency pushbutton housing or in the control unit. The sensor will not activate the alarm again if there's no longer excessive smoke/temperature. The red ALARM diode will go out.

If the cause of the alarm can't be removed (for example, when there's an alarm source failure), disconnect the line corresponding to a particular alarm source. Delete the alarm using the RESET button. The red ALARM diode will go out. The FAULT diode will light up.

#### In this case CALL THE SERVICE!

# 4.4 Rolling-up curtains after alarm release

Resetting with the mcr RPO-1 casing button rolls-up the curtains automatically.

Alarm resetting depends on the settings of SW1-2. In the case the autoreset function is on, the alarm is reset automatically; if the autoreset function is off, do as above.

#### 4.5 Diagnosing defects

Visual signal (Fig. 1) on the unit's front panel informs about a system defect. The signal is repeated in mcr RPO-1 emergency pushbutton.

When only the FAIL diode is on, the batteries have failed. In this case you should check battery connections and the condition of FS1 fuse (see page 6).

When the FAIL diode blinks, this means that there is no mains power supply. In this case you should check the status of FS2 fuse (see page 6) and if the 230 V voltage is present on the unit's terminals.

The default factory settings for the battery voltage control potentiometer must not be changed!

# In case of a system defect CALL THE SERVICE!

# 4.6 Curtain control – extra information.

The control panel mcr 0204 operating in the curtain automatics mode may have a service button for temporary lowering of curtains connected to the P4 terminal.

The time of supporting the control panel operation with smoke curtains PROSMOKE FS CE depends on the number of smoke curtains connected – more details in OMM of smoke curtains mcr PROSMOKE FS CF.

#### 5. ASSEMBLY AND START UP

- 1. Mount the unit near the devices which are meant to be controlled by the unit, using appropriate metal connectors selected in accordance with the substrate material. Note: do not drill through the unit's housing in the case of damage to electronic components caused by dust/debris, any complaint will be disregarded.
- Sensors line 2 leads (YnTKSY) from P5 terminals.

End resistor 10 k $\Omega$  in the base of the last sensor.

The maximum number of sensors in accordance with the technical parameters.

3. <u>Emergency pushbuttons line (RPO)</u> - 7 conductors from P6, P7 and P14 terminals. End resistor 10  $k\Omega$  in the last pushbutton.

The maximum number of pushbuttons in accordance with the technical parameters.

- 4. <u>Actuators line</u> 2 leads (feature PH30, for example HLGs), from P2 terminals. The end terminal in the last assembly box. The maximum number of actuators in accordance with the technical parameters.
- 5. <u>Auxiliary voltage</u> P7 terminal. The auxiliary voltage output P7 is short-circuit resistant and may carry a load of maximum two relays.
- 6. No-voltage output NC (or NO) for information about alarm 2 leads (YnTKSY) from P9 terminals. The jumper H1 allows to select NC output (default) or NO output.
- 7. No-voltage output NC (or NO) for information about defect 2 leads (YnTKSY) from P8 terminals. The jumper H2 allows to select NC output (default) or NO output.
- 8. <u>Main supply 230 V, 50 Hz</u> should be connected to the terminal strip P1 on the unit module's PCB. The power supply for the unit should be separate (units only on the mains line), properly protected by means of an overload circuit breaker in the switching station.

Do not protect the line by means of a GFCI (RCCB) circuit breaker.

- 9. **24 V power supply from batteries** (P10, P11). The batteries should be connected in series, taking polarity into account.
- 10. **Start-up**. Before switching on the power supply, check if the leads are connected properly.

<u>Note:</u> the leads should be placed and connected in accordance with relevant standards and basic rules for wiring.

In a correctly operating unit the POWER diode indicator is on.

In order to check the operation of ventilation, the weather monitoring unit should be disconnected. The weather monitoring unit blocks ventilation for several minutes after the wind has ceased, and in the case of rain the sensor needs to get dry, which takes even more time.

<u>Note:</u> in order to connect the unit you should use leads which satisfy the requirements of current regulations.

<u>Note:</u> conduct and connect the cables according to the binding standards and basic rules of installation assembling.

# 6. INSTRUCTION MANUAL FOR CHECKING CONNECTION AND PERFORMANCE OF THE MCR 0204 CONTROL UNIT

For reasons of operational safety and reliability of the fire protection system, after installing the control panel, check the device by following instructions.

- 1. Check the correctness and reliability of connection of all cables (main power, input and output lines, line continuity resistors) in accordance with Operation Manual and the installation design.
- 2. Check the value of the power supply voltage of the control unit it should be 230 V  $_{-15\%}^{+10\%}$  , 50 Hz.

- 3. Perform the control panel start-up in accordance with the Operation Manual (chapter 4.6).
- 4. Check whether the control panel remains in the normal operating state (chapter 4.1).
- 5. After min. 12 hours of charging the batteries, check the voltage at the battery terminals. The measurement must be carried out in the normal operating state (chapter 4.1). The voltage at the battery terminals should be in the range of  $26.5 \div 28 \text{ V} =$ .
- 6. Check the correctness of fault detection by the control unit (paragraph 0): damage to the detector line (e.g. take out the last detector from the socket), damage to the RPO button line (e.g. to open the RPO line, P6 terminal), damage to the actuator lines (e.g. open the actuators line, the control panel in mode smoke exhaust), power supply damage (e.g. 230 V disconnect), battery detection (e.g. disconnect the batteries). Tests should be performed in a normal operating state for any potential damage. In each test case, the fault condition should be detected and signalled on the front panel of the control unit, on the service panel for selected faults, by means of the mcr RPO-1 emergency pushbutton (if connected) and on the fault indication output (by ohmmeter control).
- 7. Check whether the control panel is correctly detecting alarms. Check all connected alarm sources:
  - a) alarm from the RPO line (press the mcr RPO-1 emergency pushbutton),
  - b) alarm from the detector line (activate the detector),
  - c) alarm from the external alarm line (activate external device or open the line).
  - Tests should be performed in the normal operating state independently for each connected alarm source. In any case, the alarm condition should be detected and signaled by the control unit (chapter 4.2) on the front panel, on the service panel with the diode of the proper alarm source, with the diode of the mcr RPO-1 (if connected) and on the alarm signal output (ohmmeter control), and all connected fire devices controlled by the control panel should be controlled.
- 8. Check whether the control unit remains in the normal operating state after all tests have been performed (chapter 4.1).
- 9. The control panel can be put into operation if all tests have been completed correctly. Only an efficient and properly connected control unit can work in fire protection systems. In the event that at least one result of the above tests is not correct, the control panel cannot be used in security systems and should be restored for proper operation.

After checking the above points, make a record in all fields of the table below.

Date of control	Result: Working/not working	Name and surname	Name of enterprise:	"MERCOR" S.A's authorization no:

#### 7. TYPICAL CONNECTION DIAGRAMS

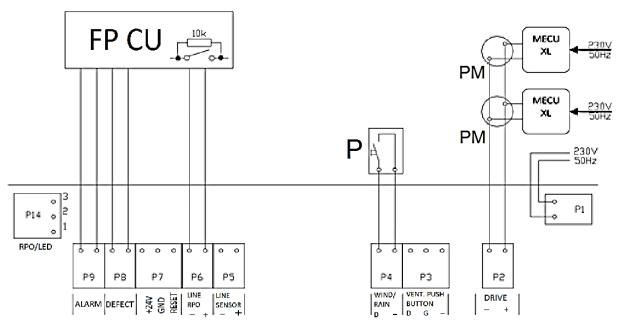


Fig. 3 Typical configuration of smoke exhaust system with mcr 0204 unit.

FP CU - fire protection control unit
OCD - optical smoke sensor (KL731)
RPO - mcr RPO-1 emergency pushbutton

PM - assembly box

MECU XL - controller of mcr PROSMOKE FS CE smoke curtain

P - service button

<u>Note:</u> Not all the elements of the system (in particular the connection with fire protection control unit and weather monitoring unit) must be present in the smoke exhaust system.

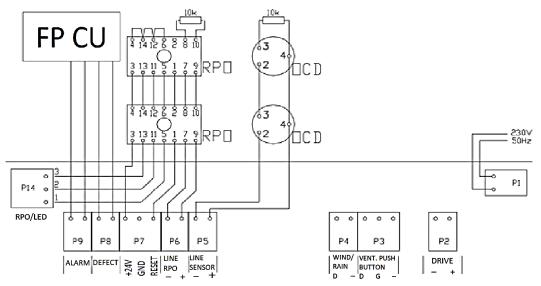


Fig. 4 Alternative connection diagram with mcr RPO-1 emergency pushbuttons and optical smoke sensors.

#### 8. SERVICE AND MAINTENANCE

The technical condition of fire protection devices installed in the facility is of key importance to ensure the safety of users of this facility. The guarantee of reliable operation of the devices can only be obtained by providing regular and professional service care.

Devices produced by "MERCOR" S.A. should be subjected to periodical technical inspections and maintenance operations every six months during the entire period of operation, i.e. during the warranty period, as well as after the warranty period. Inspections and maintenance should be carried out by the manufacturer or by companies having valid authorization for the service of devices "MERCOR" S.A.

The service carried out in accordance with the above recommendations is one of the basic conditions of preservation of rights arising from the guarantee and the obligation of the users / owners or managers of the resulting facilities from the law.

In order to be able to perform activities included in the scope of service inspections, as well as service and warranty activities such as visual inspection or repair, it is necessary to provide physical access to the devices.

It is recommended to perform those check-ups in between of inspections:

- 1. Checking the status of signaling of control diodes.
- 2. Checking the condition of electrical connections paying special attention to looseness and mechanical damage.

In matters related to technical inspections, maintenance and repairs of devices, you can contact representatives of "MERCOR" S.A., tel. 58/341 42 45 during operating hours 8 - 16 (Mon-Fri), e-mail: <a href="mailto:serwis@mercor.com.pl">serwis@mercor.com.pl</a>.

# 9. WARRANTY TERMS AND CONDITIONS

- 1. "MERCOR" S.A. grants a 12-month quality guarantee for equipment, starting from the date of purchase, unless the agreement provides otherwise.
- 2. If during the term of guarantee any physical defects of the equipment become evident, "MERCOR" S.A. shall remove them within 21 days of the written notification, subject to paragraph 6.
- "MERCOR" S.A. reserves the right to lengthen the repair time in the event of complicated repairs or those that require non-standard sub-assemblies [elements] or spare parts to be purchased.
- 4. Liability under the Guarantee covers only defects resulting from causes inherent in the equipment sold.
- 5. In the event of defects resulting from inappropriate operation of the equipment or due to other reasons stated in par. 6, the Buyer/Guarantee Holder shall bear the costs of their removal.
- 6. The guarantee does not cover:
  - damages and breakdowns of the equipment due to inappropriate operation, user's interference, lack of maintenance or periodic servicing;
  - equipment damages resulting from causes other than those that "MERCOR" S.A. is
    responsible for, in particular: acts of God such as torrential rainfall, flood, hurricane,
    flooding, stroke of thunder, overvoltage in the mains, explosion, hail, fall of aircraft, fire,
    avalanche, landslide and secondary damages due to the above-listed causes. Torrential
    rain is defined as rain with an efficiency index of at least 4 (or 5 in Chomicz scale or

torrential rain grade IV ( $A_4$ )). Should it be impossible to determine the index mentioned in the previous sentence, the actual condition and the degree of damage at the place of its origin proving that it is the consequence of torrential rain will be considered. Hurricane is defined as wind blowing at the speed of at least 17.5 m/s (damages are deemed to have been caused by hurricane if the effects of hurricane have been found in the immediate neighborhood);

- damages due to failure to immediately report the defect discovered;
- worsened quality of coating due to the natural ageing process (fading, oxidation);
- defects due to using abrasive or aggressive cleaning products;
- parts liable to natural wear and tear during operation (e.g. seals) unless a manufacturing fault has occurred;
- damages due to aggressive external factors, especially chemical and biological ones.
- 7. Each defect under guarantee should be reported to a local representative of "MERCOR" S.A. immediately, i.e. within 7 days of its discovery.
- 8. Applications can be made by phone at +48/ 58 341 42 45, by email to <a href="mailto:claim@mercor.com.pl">claim@mercor.com.pl</a> or by sending a letter to: "MERCOR" S.A. 80-408 Gdańsk, Grzegorza z Sanoka 2.
- 9. The Buyer/Guarantee Holder is responsible for proper operation and maintenance of the equipment and for regular (min. twice a year) servicing.
- 10. The Guarantee shall expire forthwith if:
  - The Buyer/Guarantee Holder makes design modifications on his own without consulting "MERCOR" S.A.,
  - Maintenance or periodic servicing are not done in due time or are performed by unauthorized persons or a service center not authorized by "MERCOR" S.A., or the equipment is operated in the wrong way,
  - Any interference of unauthorized persons except activities connected with normal operation of the equipment.
- 11. Moreover, in the cases specified in par. 10, "MERCOR" S.A. has no warranty obligations.

# **10.TECHNICAL SPECIFICATIONS**

Item	Value
Central type	conventional
Power supply voltage - basic	230 V (-15%, +10%) 50 Hz
Rated power	100 VA
Output voltage (power supply for actuators)	24 V=, max. 4 A
Stand-by power supply	2 batteries HP2-12 (12 V, 2
	Ah) or similar connected in
	series max. 2,3 Ah
Charging voltage for set of batteries	27.5 V ± 0.2 V at 20°C
Working temperature range	-5°C ÷ 40°C
Maximum number of sensors in line:	15 pcs*
Maximum number of push-buttons of type:	
mcr RPO-1	4 pcs.
ROP	10 pcs.
Maximum number of modules (curtain units)	
Mcr PROSMOKE FS CE	8 pcs.
Maximum wire size	2.5 mm <sup>2</sup> **
Operation time without mains voltage, in READY mode	minimum 72 hours
Load for relay outputs	max. 100 mA, 24 V
Environmental class acc. to KOT	I
Environmental class acc. to EN 12101-10	I
Functionality class	A
Protection level for housing	IP 54
Insulation grade	II
Dimensions (H x W x D)	230 x 300 x 86 mm

<sup>\*</sup> In standby mode, the current consumption of 1 sensor cannot exceed 80  $\mu A!$ 

<sup>\*\*</sup> Larger diameters are permissible for the actuators line, provided that the cable ends with pin with the diameter of that pin up to 2.5 mm<sup>2</sup>.

#### 11.DECLARATION OF PERFORMANCE



# 12.CERTIFICATE OF CONSTANCY OF PERFORMANCE



#### JEDNOSTKA NOTYFIKOWANA / NOTIFIED BODY 1438

Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej

im. Józefa Tuliszkowskiego

#### Państwowy Instytut Badawczy

ul. Nadwiślańska 213, 05-420 Józefów

Polska / Poland



# CERTYFIKAT STAŁOŚCI WŁAŚCIWOŚCI UŻYTKOWYCH CERTIFICATE OF CONSTANCY OF PERFORMANCE 1438-CPR-0583

Zgodnie z Rozporządzeniem Parlamentu Europejskiego i Rady (UE) 305/2011 z dnia 9 marca 2011 r. (Rozporządzenie CPR), niniejszy certyfikat odnosi się do wyrobu budowlanego:

Zasilacz do systemów kontroli rozprzestrzeniania dymu i ciepła – centrala sterowania oddymieniem i wentylacją typu mcr 0204 <Opis wyrobu, zamierzone zastosowanie, właściwości użytkowe patrz kolejne strony certyfikatu>

wprowadzanego do obrotu pod nazwą handlową lub znakiem firmowym producenta:

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product:

Power supply
for smoke and heat control systems
— control panel for smoke exhaust
and ventilation type mcr 0204
<Product description, intended use,
performances see the following pages of the certificate>
placed on the market under the name or trade mark of:

"MERCOR" S.A. ul. Grzegorza z Sanoka 2 80-408 Gdańsk

i wytwarzanego w zakładzie produkcyjnym:

and produced in the manufacturing plant:

GAL – Stanisław Chamski ul. Polna 11 80-209 Tuchom

Niniejszy certyfikat potwierdza, że wszystkie postanowienia dotyczące oceny i weryfikacji stałości właściwości użytkowych określone w załącznikach ZA norm: This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annexes ZA of the standards:

#### EN 12101-10:2005 Smoke and heat control systems - Part 10: Power supplies EN 12101-10:2005/AC:2007

w ramach systemu 1 w odniesieniu do właściwości użytkowych określonych w niniejszym certyfikacie są stosowane oraz że producent wdrożył zakładową kontrolę produkcji, która jest oceniana w celu zapewnienia stałości właściwości użytkowych wyrobu budowlanego.

Niniejszy certyfikat został wydany po raz pierwszy w dniu 20.02.2018 i pozostaje waźny, zgodnie z umową nr 10/DC/CPR/2018, do dnia 19.02.2028 dopóki nie zmienią się normy zharmonizowane, sam wyrób budowlany, metody OIW SWU i warunki jego wytwarzania nie ulegną istotnej zmianie oraz pod warunkiem, że nie zostanie zawieszony, cofniety lub nie nastapi zakończenie certyfikacji przez notyfikowaną jednostkę certyfikującą wyrób.

under system 1 in relation to the performance set out in this certificate are applied and that the manufacturer has implemented factory production control, which is assessed to ensure constancy of performance of the construction product.

This certificate was first issued on 20.02.2018 and will remain valid, in accordance with the agreement no 10/DC/CPR/2018, until 19.02.2028 as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended, withdrawn or terminated by the notified product certification body.

Nr wydania certyfikatu: 1
Certificate issue no:

Data wydania: Issue date: 20.02.2018

DYREKTOR CNBOP-PIB DIRECTOR of CNBOP-PIB

bryg, dr hab inż. Dariusz Wróblewski

DC/CPR-13/12.09.2016

Strona / Page 1 / 4