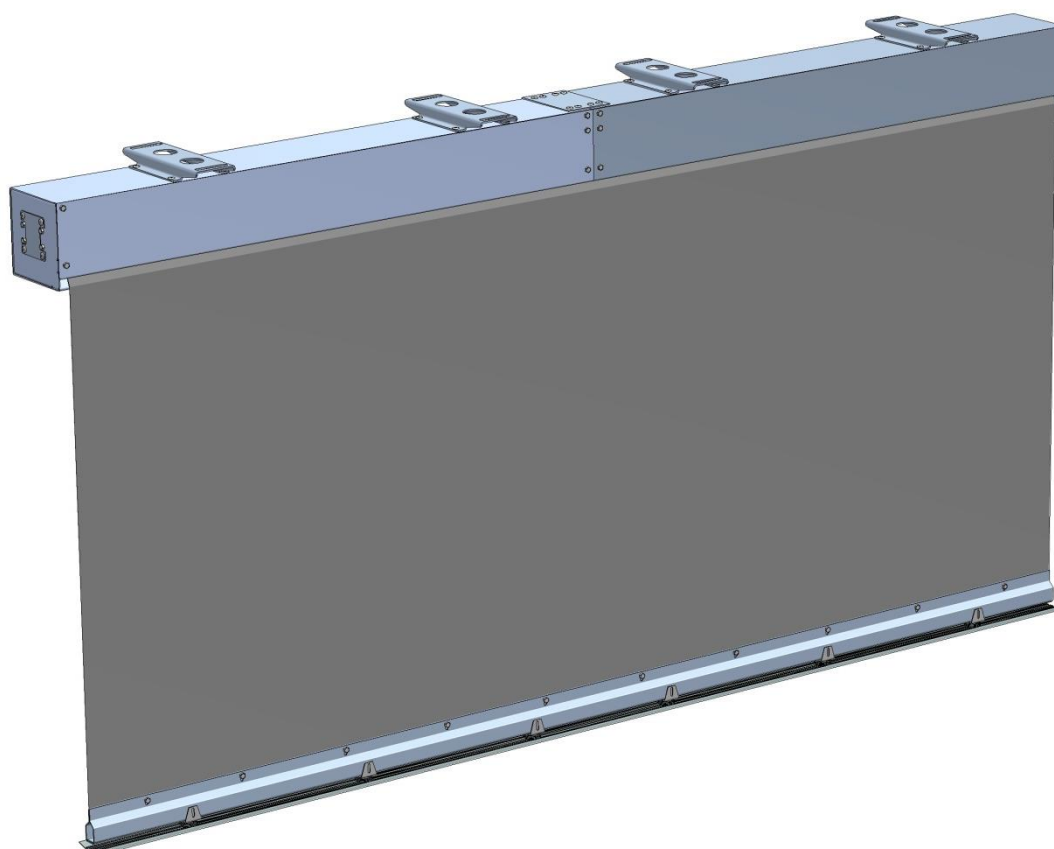




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## OPERATION AND MAINTENANCE MANUAL (OMM)

### Automatic rolling curtain mcr PROSMOKE FS CE



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## 1. INTRODUCTION

The aim of this Operation and Maintenance Manual is to make the user familiar with the intended use, design, operating principle, correct installation and operation of *mcr PROSMOKE FS CE* automatic rolling curtains. The OMM also contains additional information on the conditions of use, maintenance and warranty of the product.

Complying with the recommendations included in the OMM will ensure proper functioning of the smoke venting systems as well as the safety of their users.


MERCOR SA reserves the right to make changes to the product or to this document without prior notice.

The Operation and Maintenance Manual applies to *mcr PROSMOKE FS CE* curtains with a limit switch for a smooth adjustment of the upper position (by using the XL40/17M drive supplied by BECKER – Antriebe GmbH), the so-called *mcr PROSMOKE FS CE* version 2.

## 2. INTENDED USE OF THE AUTOMATIC ROLLING CURTAIN

*mcr PROSMOKE FS CE* automatic rolling curtains are part of the smoke control system which includes other MERCOR SA products as well, such as for example *mcr PROLIGHT PLUS* and *mcr PROLIGHT* spot smoke vents, smoke vents built into the *mcr PROLIGHT* system continuous skylights and skylights, MCR9705 and MCR0204 smoke vent control panels and others.

*mcr PROSMOKE FS CE* rolling curtains are used to section off smoke reservoirs under ceilings in natural smoke and heat clearance systems. The smoke produced in the event of a fire is collected in smoke reservoirs and then removed through smoke vents, e.g. *mcr PROLIGHT PLUS*. By sectioning off smoke reservoirs under ceilings, the curtains limit the smoke spreading and cooling, and form a smoke layer of design height, thus ensuring proper working conditions for *PROLIGHT PLUS* and *mcr PROLIGHT* smoke vents.

*mcr PROSMOKE FS CE* smoke curtains have a  certificate of conformity (No. 1396-CPD-0033) with the requirements of the EN 12101-1:2007 standard, issued by a notified certification body No. 1396.

The building designer is responsible for a proper design of the venting system and for the selection of appropriate curtains for a specific application. *mcr PROSMOKE FS CE* curtains are not intended to be used as smoke control doors. The curtains are fire protection devices. They cannot function as gates or anything similar and they are not designed to be activated/used every day for other purposes.

### 3. DESIGN OF CURTAINS

Rolling curtains consist of a casing, a roller with smoke-proof fabric (with a bottom bar) wound onto it and a drive system (fig. 1).

The casing is composed of two elements – a fixed part and an access cover type K, C, L, K-T (fig. 2, 3).

The roller is mounted inside the casing by means of a bearing unit with a pivot on the one side and on the motor spindle on the other. In specific cases, a second drive system can be applied instead of a bearing unit.

The drive system mounted in the roller consists of a 230 V~ motor, a 24 V~ brake keeping the fabric rolled up, and an additional brake limiting the rate of dropping down.

The smoke-proof fabric has a bottom bar ensuring correct rolling out and rolling up and minimising the risk of bending and lifting the fabric when affected by the pressure of fire gases. The bottom bar may be optionally equipped with a masking strip (fig. 5).

The masking strip is an 80 mm wide aluminium profile painted to order in any RAL colour.

The smoke-proof fabric used in *mcr PROSMOKE FS CE* curtains is not trimmed at the edges. Slight edge fraying is natural and does not affect the operation and product quality.

The curtain casing houses the MECU XL control system ensuring correct operation of the curtain.

Single curtains are up to 6 m long. If longer curtains are needed, a proper number of shorter curtains are put together to form a unit of the desired length.

**The curtain may be optionally equipped with gap-reducing guides**

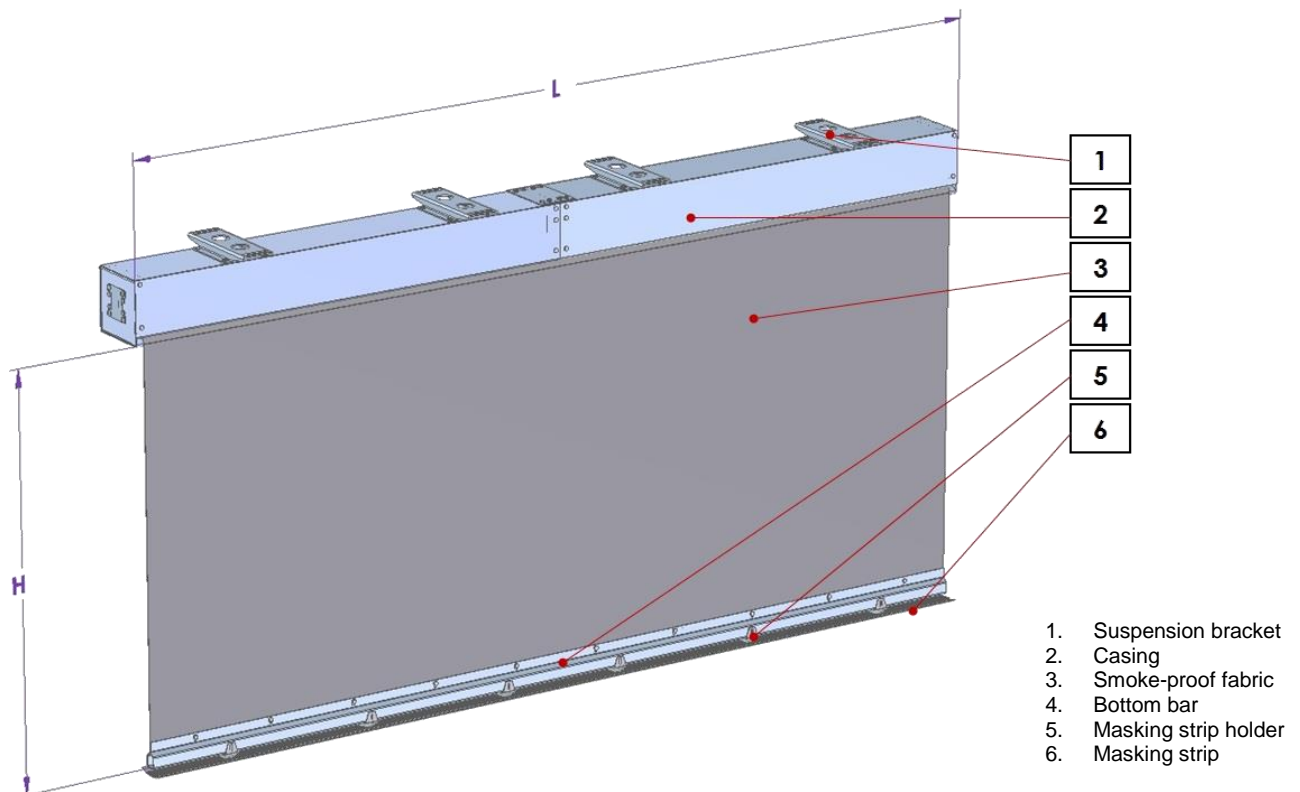
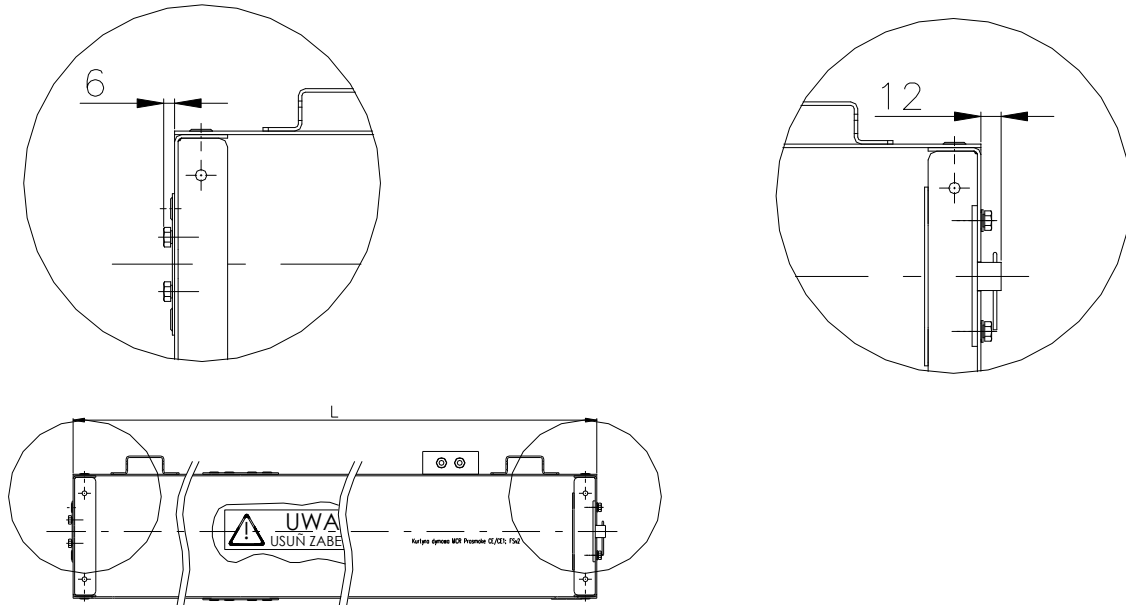


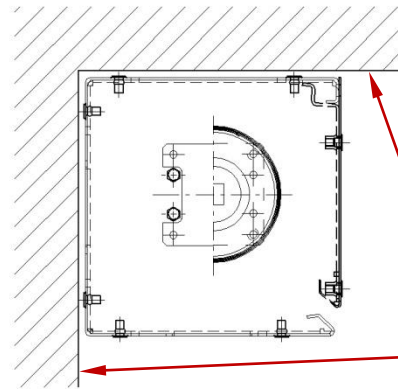
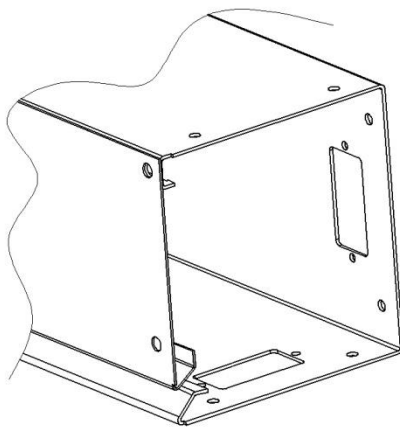
Fig. 1. *mcr PROSMOKE FS CE* rolling smoke curtain – design

**NOTE**

When planning the curtain installation, the presence of any elements projecting beyond the casing outline should be taken into account:

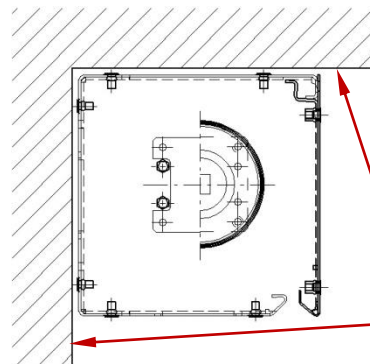
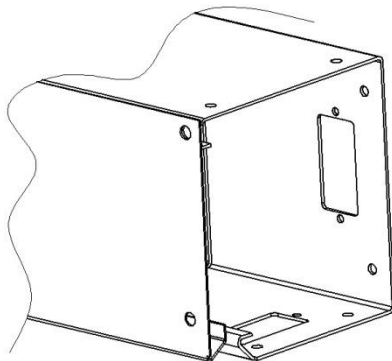


**Fig. 1.1. Lengths of elements projecting beyond the *mcr PROSMOKE FS CE* curtain casing outline**



Mounting surface

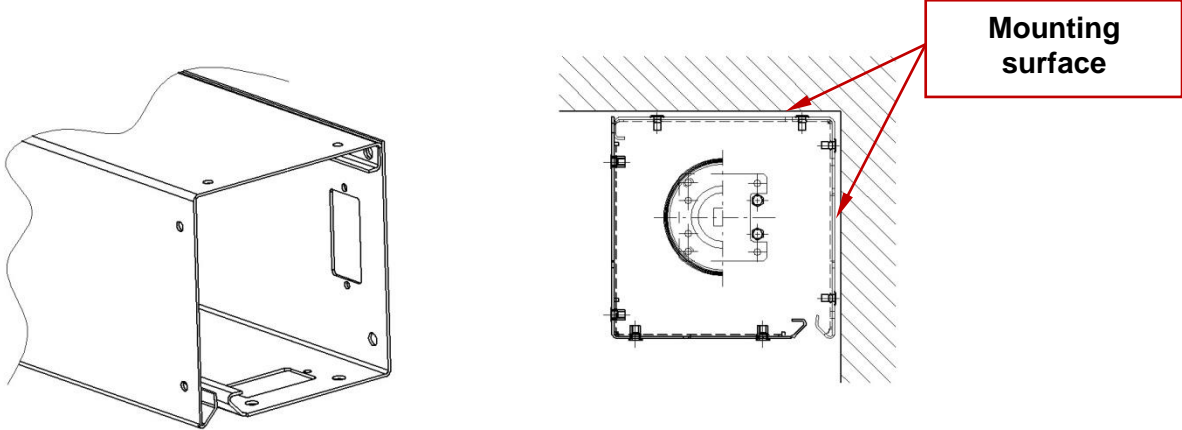
**TYPE K CASING**



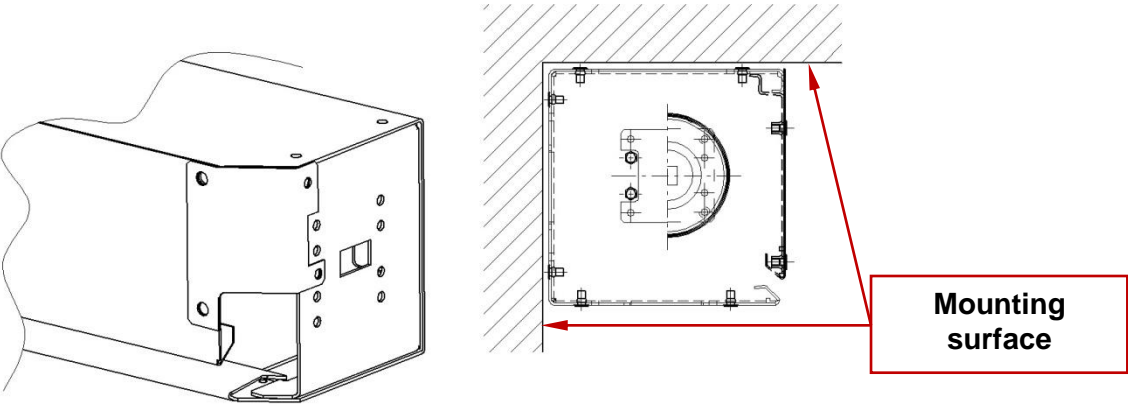
Mounting surface

**TYPE C CASING**

**Fig. 2. Curtain casing types – K, C**

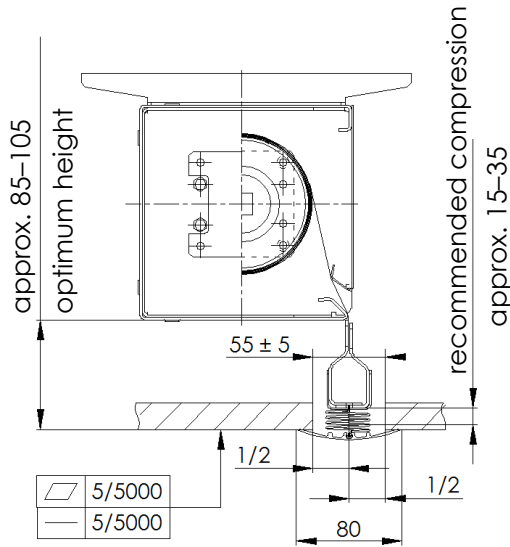


**TYPE L CASING**



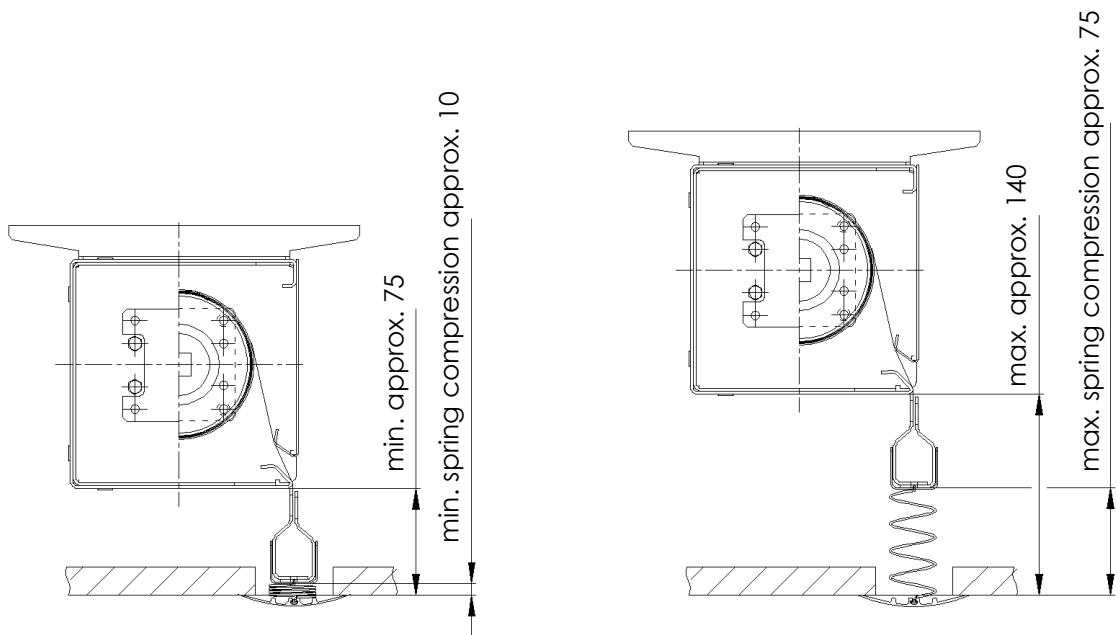
**TYPE K-T CASING**

**Fig. 3. Curtain casing types – L, K-T**



**Note:** ensure straightness and flatness (5 mm/5000 mm) of the drop ceiling surface around the gap

Fig. 4. Recommended position of casings relative to the ceiling. Gap width



**Note:** Observe the minimum and maximum spring compression values. The distance between the casing and the ceiling is approximate.

Fig. 5. The maximum and minimum distance between the casing and the ceiling and the minimum spring compression

## 4. OPERATING PRINCIPLE OF mcr PROSMOKE FS CE CURTAINS

When in standby mode, *PROSMOKE FS CE* rolling curtains are hidden in casings. In case of fire, they automatically roll out to the predetermined height.

In order to function properly, a *mcr PROSMOKE FS CE* rolling curtain must be connected to a MCR9705-5A or MCR0204 smoke vent control panel. In order to keep the *mcr PROSMOKE FS CE* curtain rolled up, a non-interrupted power supply from the MCR9705 or MCR0204 smoke vent control panel is required. If the power supply from the control panel to the curtain is interrupted for one of the following reasons:

- alarm signal,
- disconnection or breakage (including burning out in case of fire) of the circuit connecting the MCR9705 or MCR0204 control panel with the MECU XL motor control system,
- failure of 230 V~ power supply to the MCR9705 or MCR0204 and discharged control panel batteries – the brake is released and the curtain fabric drops down in a controlled manner to the required height (until it is fully rolled out).

The MCR9705-5A control panel interacting with the curtain should be set to the door control mode, while the MCR0204 control panel should be set to the curtain mode.

After the MCR9705 or MCR0204 control panel is returned to the standby mode, the curtain fabric rolls up using a 230 V motor. The fabric rolls up until it reaches the height set by the motor limit switch. When it does, the curtain goes into the mode of keeping the fabric rolled up.

## 5. TRANSPORT AND DELIVERY

Curtains are generally supplied pre-assembled. Unloading must be carried out under the supervision of a person authorised by the manufacturer, using generally available means of handling (e.g. forklift trucks, cranes equipped with spreader boom slings) or manually, paying special attention to the protection of curtains against damage.

## 6. INSTALLATION OF CURTAINS

**Do not disassemble and do not disconnect the MECU motor control system from the motor.**

**Each curtain model requires a 230 V supply voltage.**

**Curtains should be installed in civil structures in accordance with their respective construction designs, in order to ensure the design gap sizes.**

Curtains should be fixed under the ceiling, to lintels, prepared structures or other building features intended for this purpose as per the construction design. The structural component should be made of concrete or steel. When designing the structural component, the device weight should be taken into account: approx. 200 ÷ 300 N/m, depending on the curtain height. For curtains without clamps, the mounting surface should be vertical or horizontal, with a flatness deviation of up to 5 mm along the curtain length.

Curtains mounted on suspension brackets of more than 0.5 m in length should be strengthened by attaching the casing e.g. to a reinforced concrete wall, a girder, etc. As to multi-modular casings, they should be fastened together as shown in fig. 9 by means of self-drilling screws or rivets not longer than 20 mm, so that uncontrolled movements of casings relative to each other are eliminated.



## Curtain installation should be carried out as follows:

### Curtains with clamps:

1. Mount M10 or M12 threaded rods of suitable length in the structural component to match the arrangement of clamps (**fig. 7**).  
To mount the threaded rods, use fasteners suitable for the structural component material (e.g. HK8 HILTI anchors).
2. Screw M10 or M12 nuts onto the rods.
3. Hang the curtain on the rods using a M10 or M12 rough finish washer and a nut with protection cap.
4. Using the nuts, adjust the horizontal position of the curtain casing.
5. Tighten the nuts driven according to item 2, check if the fastenings are secure.
6. Connect the free terminals of MECU XL (**fig. 12**) to the control device, i.e. the MCR9705 or MCR0204 control panel, and to the 230 V power supply. Observe polarity (+ to +, - to -). The MCR9507 control panel should be set to the door control mode or the MCR0204 control panel should be set to the curtain control mode.
7. Install the guides, if ordered, using steel fasteners.
8. Make sure that there are no obstacles under the curtain and check if the curtain rolls out to the desired height and rolls up properly. Adjust the length of the fabric feed, if required (see: Limit switch adjustment – page 11).
9. Check the system operation by triggering the alarm from all available sources.

### Curtains without clamps:

1. Unscrew the access cover.
2. Remove the roller with fabric, i.e.:
  - a. Remove the pin locking the motor.
  - b. Unscrew the four screws securing the plate protecting the drive.
  - c. Unscrew the four screws securing the roller support located on the opposite side of the motor.
  - d. Pull out the shaft end with a plug (opposite the motor).
  - e. Remove the roller from the casing.
3. Make mounting holes in the casing.
4. Mount the curtain housing using steel fasteners adequate for the substrate material and for the position of the mounting surface (ceiling/wall): fasteners with a joining element of at least Ø10 in diameter are recommended, e.g. M10 (such as HK8 HILTI anchors). Note the length of the fastener inside the casing as it cannot damage the fabric.
5. When the casing has been installed, put the roller with fabric inside. Follow the above steps in reverse order. Make sure that the position of the roller is the same as before removing it.
6. Secure the roller by locking pins at both ends.
7. Install the guides, if ordered, using steel fasteners.  
Connect the free terminals of MECU XL (**fig. 12**) to the control device, i.e. the MCR9705 or MCR0204 control panel, and to the 230 V power supply. Observe polarity (+ to +, - to -). The MCR9507 control panel should be set to the door control mode (see the OMM of the smoke vent control panel) or the MCR0204 control panel should be set to the curtain control mode.
8. Make sure that there are no obstacles under the curtain and check if the curtain rolls out to the desired height and rolls up properly. Adjust the length of the fabric feed, if required (see: Limit switch adjustment – page 11).
9. Having checked and adjusted it, close the access cover.
10. Check the system operation by triggering the alarm from all available sources.

#### Curtains with a bottom bar masking strip:

Masking strips are supplied separately. They are suitable for installation at the already mounted and adjusted curtains.

1. Before installing the masking strip, attach the clamp to a spring which is attached to the masking strip by default. The installation takes place on site by putting the spring in the prepared slot in the clamp.
2. The masking strip with the bottom bar clamp is to be attached using 4.8 x13 buttonhead self-drilling screws.
3. Restrictions on the use of the masking strip with holders **(fig. 4, 5)**.

Multi-modular curtains should be installed following the order of modules (first the edge module, then the central one and then the edge one again) and design sizes of material overlaps in the individual modules.

For a group of curtains with a common bottom bar, all curtain modules should be powered by the same source, i.e. by a single MCR9705 or MCR0204 control panel. Electrical connections should be as specified in the OMM of the control panels.

The installation of a single bottom bar for a group of curtains and/or the masking strip should be as specified in a separate manual.

#### **NOTE:**

In the case of curtains longer than 4 m, there is foam padding inside the casing. Make sure to remove it before powering the curtains.

Failure to remove the foam padding may result in damage to the drive or fabric.

#### **Number of modules connected to the panels:**

1. Maximum number of modules:
  - mcr PROSMOKE FS CE* modules in the MCR9705 control panel – 12 modules
  - mcr PROSMOKE FS CE* modules in the MCR0204 control panel – 8 modules.If a group of curtains with a higher number of modules is necessary, they should be divided into sections or an extension module should be used to power them.
2. The time of keeping the curtain rolled up by the control unit if there is no primary power supply:
  - MCR0204 – up to 12 hours for 1 pc. (2 pcs. – 6 hours; 3 pcs. – 4 hours, etc.).
  - MCR0204 – up to 20 hours for 1 pc. (2 pcs. – 10 hours; 3 pcs. – 6.5 hours, etc.).
3. The control unit and each curtain module requires a 230 V power supply.
4. The maximum power of a 230 V motor in a single module is 270 W.

## Limit switch adjustment:

The *mcr PROSMOKE FS CE* only has the upper position limit switch. The lower position limit switch is blanked off (photo 1) – the curtain drops until it is fully rolled out.

1. The limit switch is marked with up/down arrows which correspond to the direction of the motor rotation. +/- symbols indicate the change in range.
2. The switch trigger point can be moved as indicated by the arrow by rotating the adjustment screw towards + or in the opposite direction by rotating the adjustment screw towards -.
3. One turn of the adjustment screw changes the rotation of the motor shaft by approx.  $10^\circ$  (which translates into approx. 1 cm of the curtain fabric).
4. To set the limit switch precisely and to check if it functions correctly, trigger the switch, having first changed its setting by reducing the value by at least  $\frac{1}{4}$  turn.

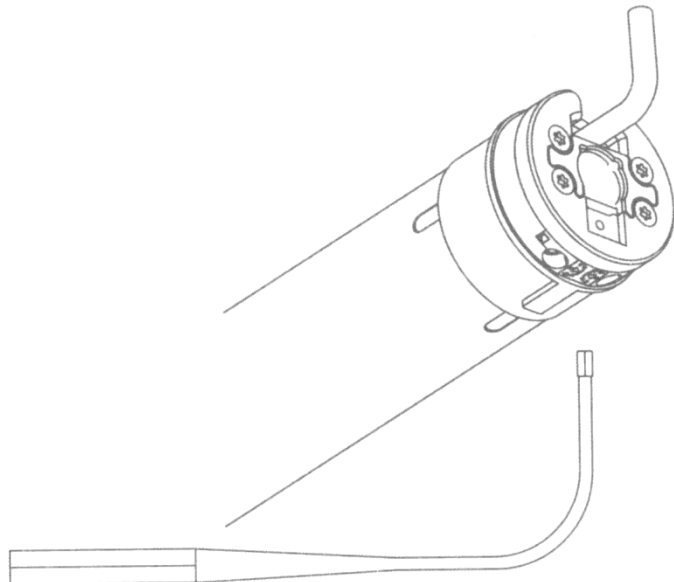
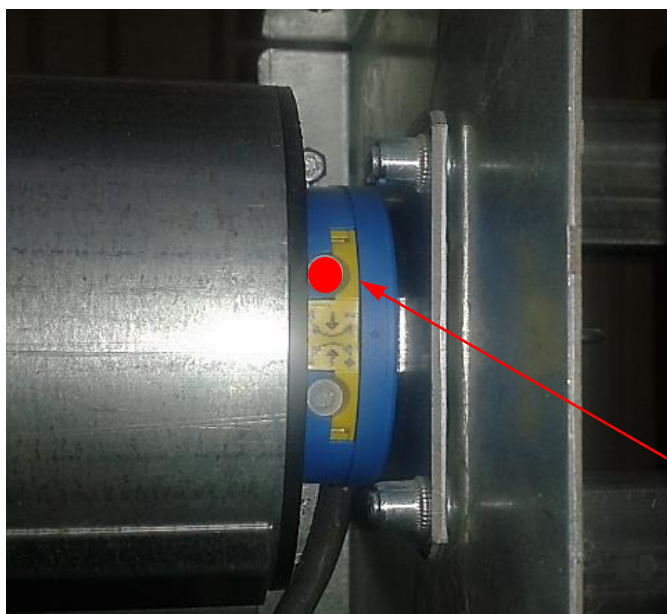


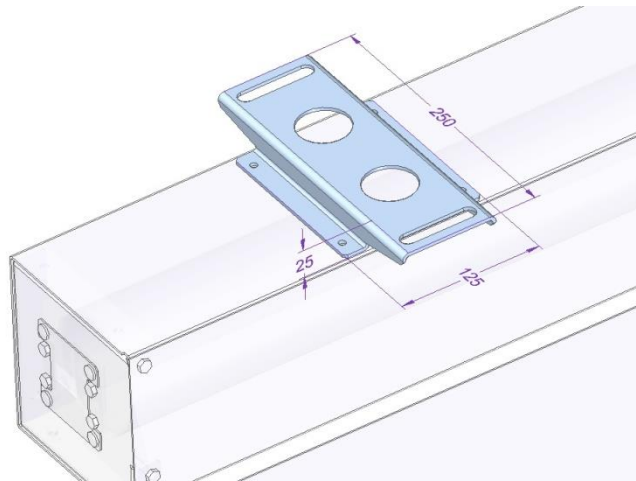
Fig. 6. Curtain limit switch adjustment



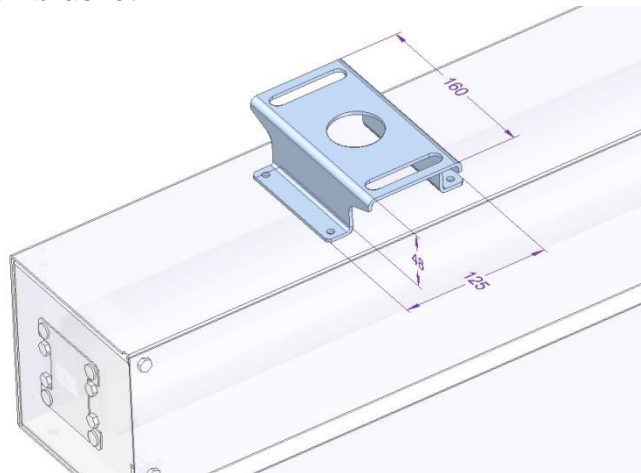
Blanking plug!

Photo 1. Curtain motor limit switches

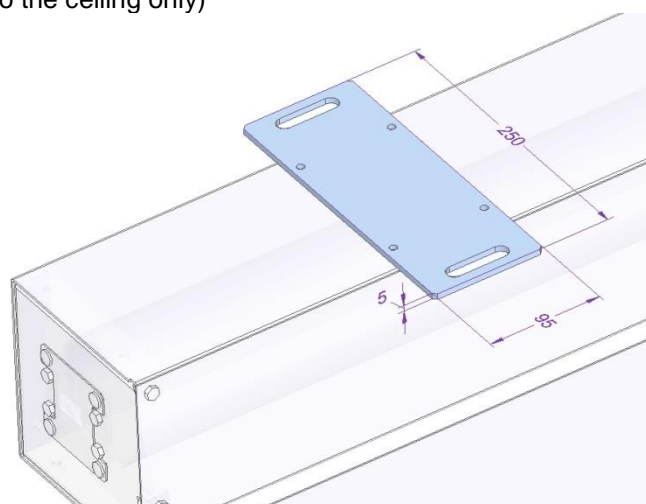
**Wide suspension bracket – TYPE A**



**Narrow suspension bracket – TYPE B**



**Flat suspension bracket – TYPE C**  
(installation directly to the ceiling only)



**Fig. 7. Suspension bracket types**

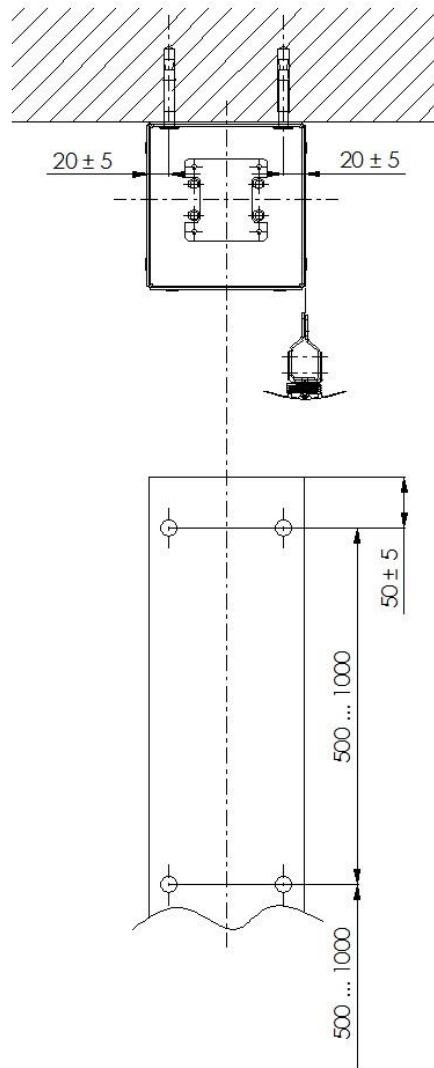


Fig. 8. Installation of a curtain without a suspension bracket

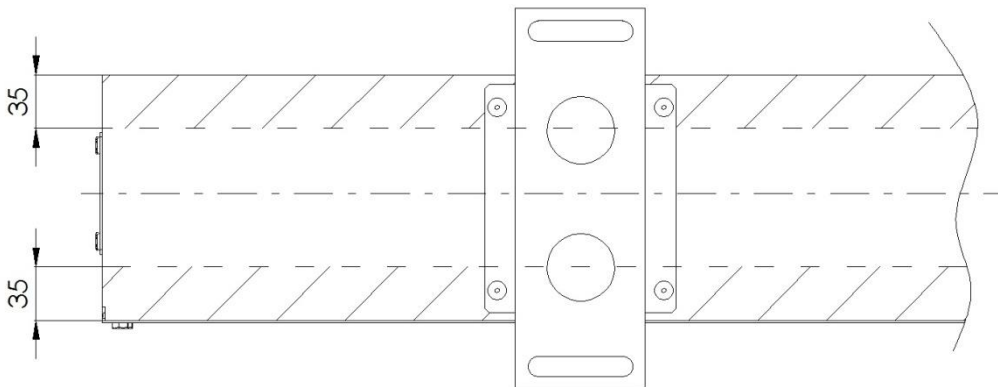


Fig. 9. A spot in the casing designed for connecting curtain modules

**CABLES**

Regular cable 2 x 1.5 mm (2.5 mm)

**NOTE**

In the case of multi-modular curtains, cables of the same length must be used to ensure the same supply voltage drop

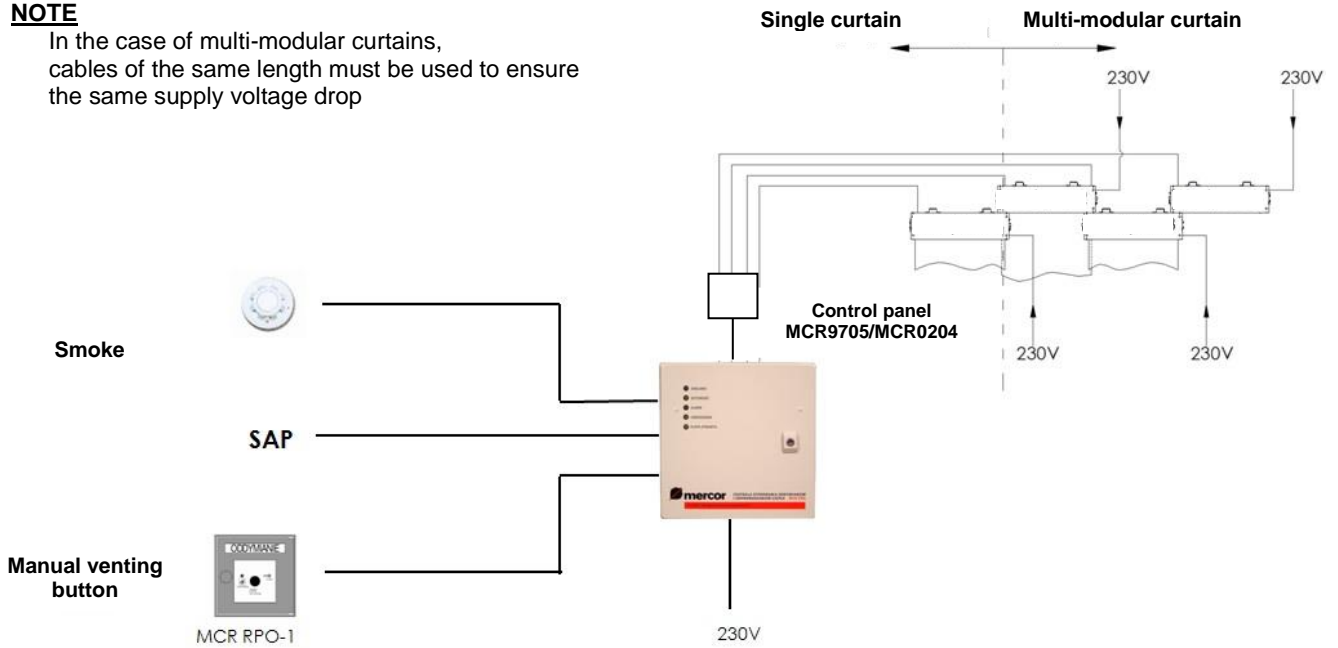
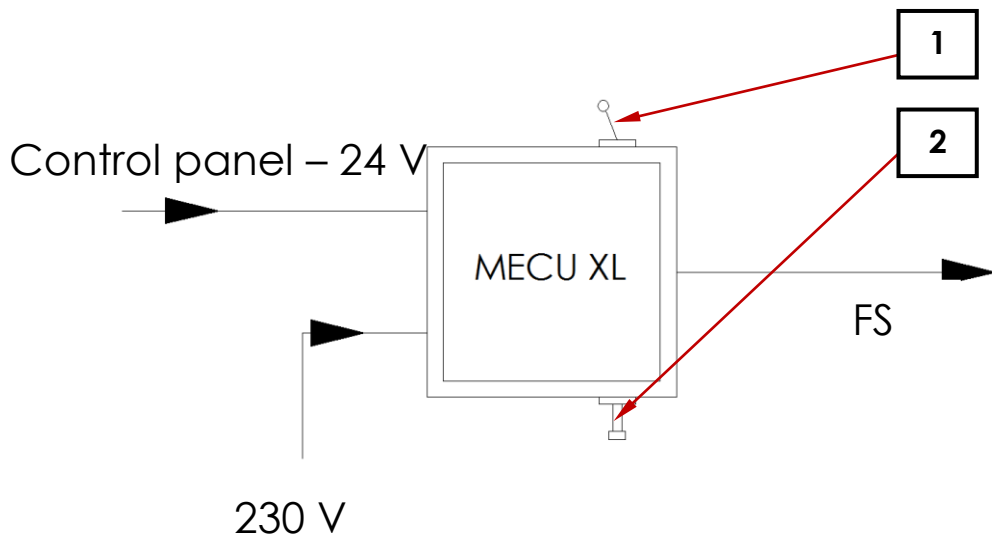
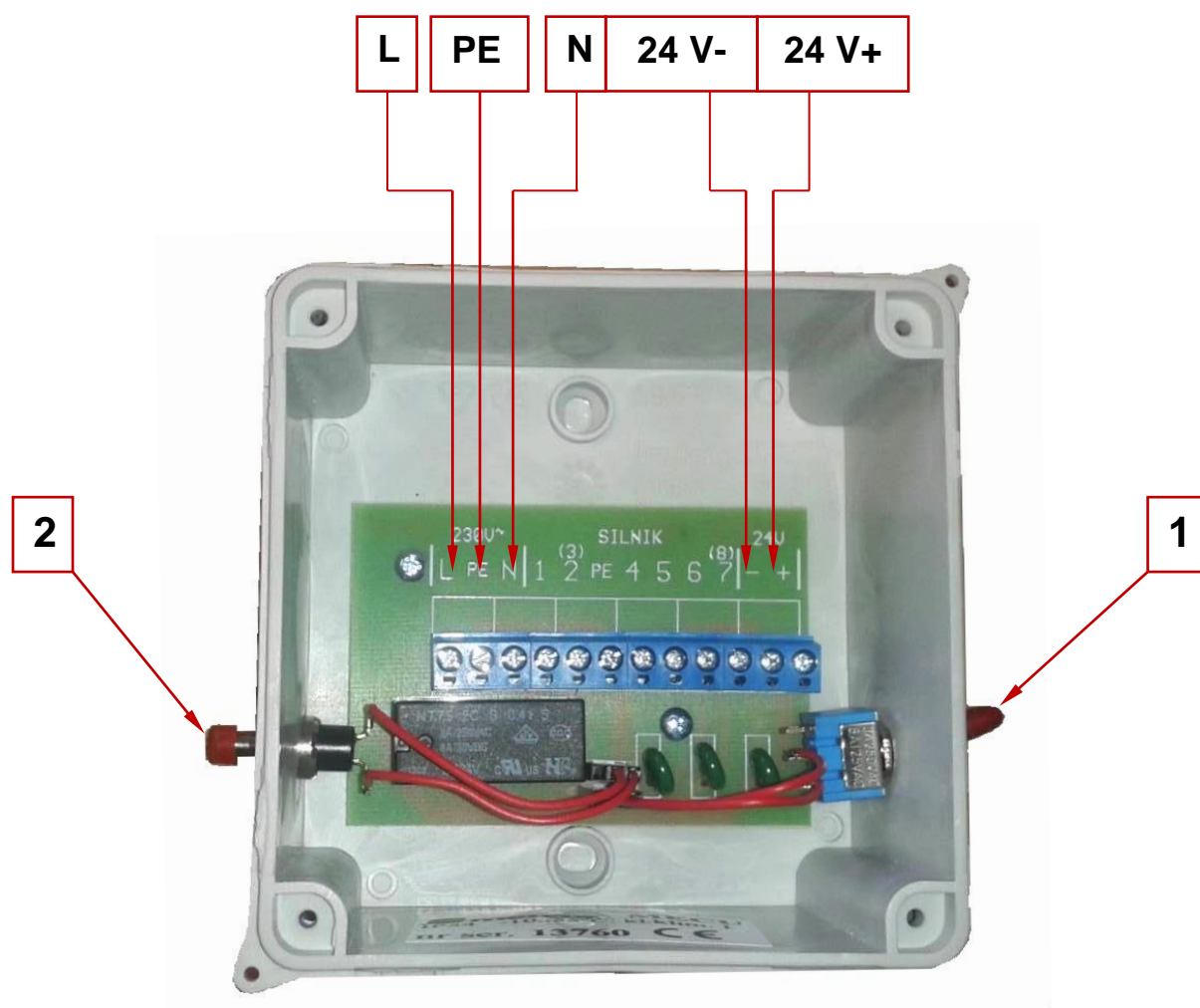


Fig. 10. Schematic diagram of the curtain connections with a common bottom bar



1. 230 V supply cut-off – curtain rollup not possible
2. 24 V brake release – curtain drop

Fig. 11. MECU XL service functions



1. 230 V supply cut-off – curtain rollup not possible
2. 24 V brake release – curtain drop

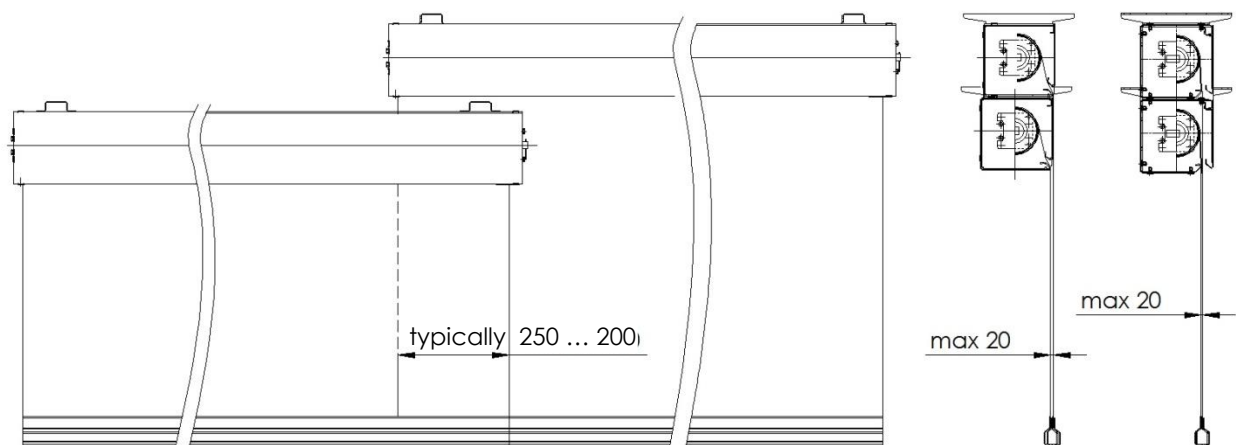
#### Description of wire terminals inside MECU XL

<b>1, 2, 3, 4, 5, 6, 7, 8, PE</b>	Numbers of motor wires
<b>230 V~ L</b>	Mains
<b>230 V~ PE</b>	
<b>230 V~ N</b>	
<b>24 V –</b>	MCR9705/MCR0204 control panel – P8 and P11 terminals (brake control) – <u>observe polarity!</u>
<b>24 V +</b>	

Fig. 12. MECU XL connections

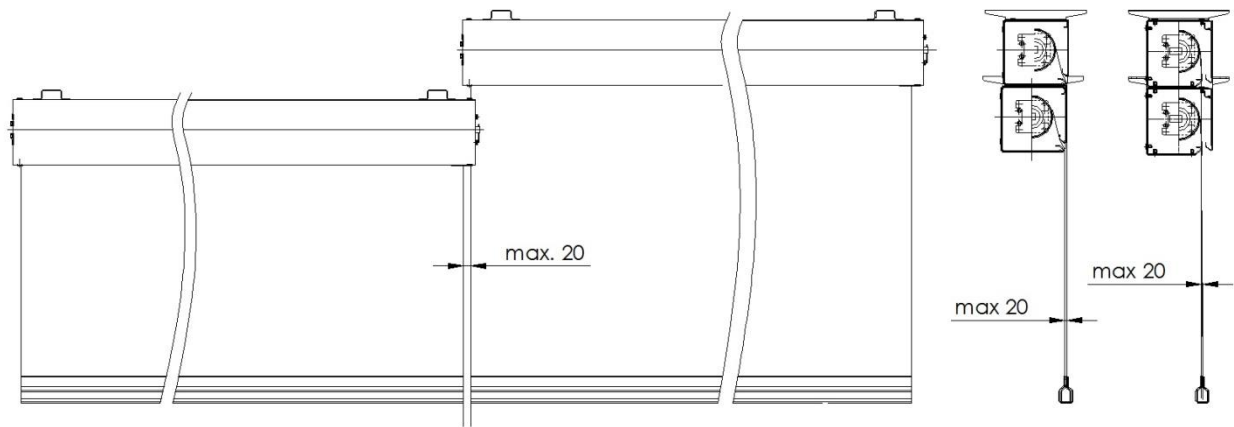
**NOTICE:**

1. Any decorative or covering elements (e.g. drop ceilings, wall lining) installed later on must not prevent the curtain from dropping freely and must not block possible access to the curtain mechanisms.
2. In the case of fixing curtains with masking strips to a drop ceiling, proper gaps and tolerances should be ensured (fig. 4, 5), matching a given curtain width.
3. Do not disconnect the MECU motor control system from the motor!!! Disconnection or damage to the connection between the MECU system and the motor may result in the rolling out of the fabric. If disconnection is necessary, the curtain should be protected against rolling out.

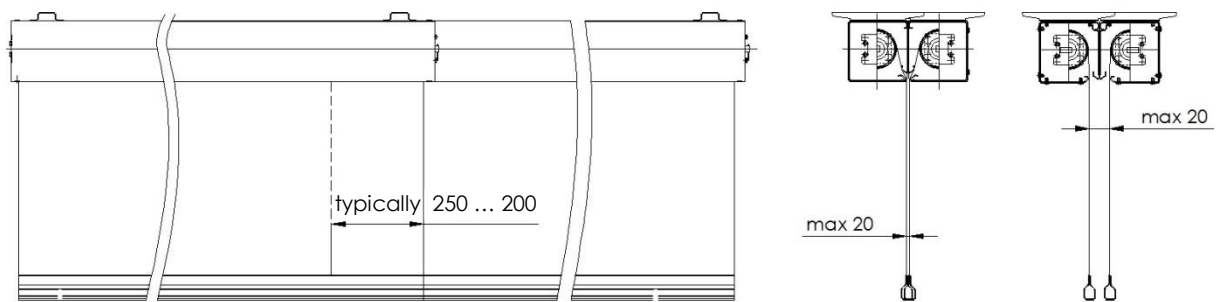


**Fig. 13. Typical gap sizes in the transverse direction in the case of vertical arrangement of curtain modules with fabrics overlapping**





**Fig. 14. Typical gap sizes in the transverse direction in the case of vertical arrangement of curtain modules without fabrics overlapping**



**Fig. 15. Typical gap sizes in the transverse direction in the case of butt arrangement of curtain modules with type K, C and L casings and with fabrics overlapping**

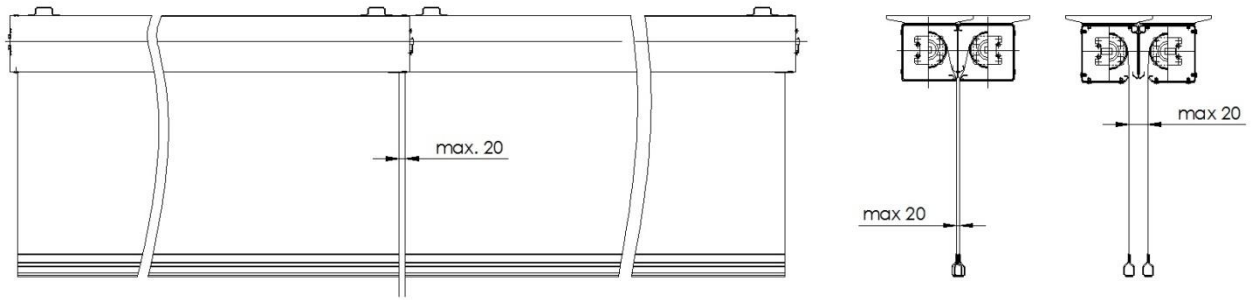


Fig. 16. Typical gap sizes in the transverse direction in the case of butt arrangement of curtain modules with type K, C and L casings and without fabrics overlapping

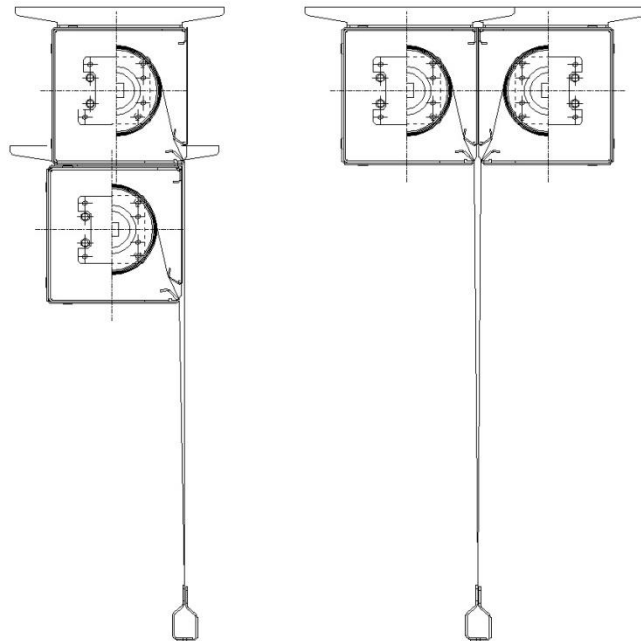


Fig. 17. Reduction in gaps in a group of curtains by using a common bottom bar – type F casings arranged vertically and horizontally

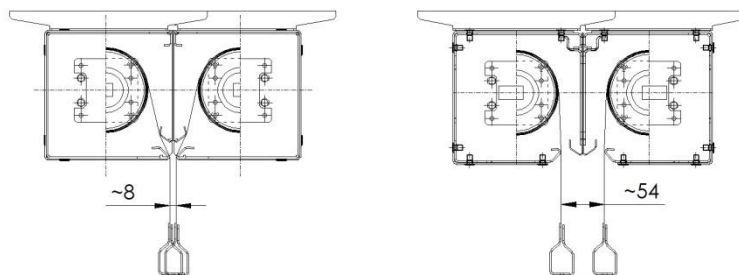
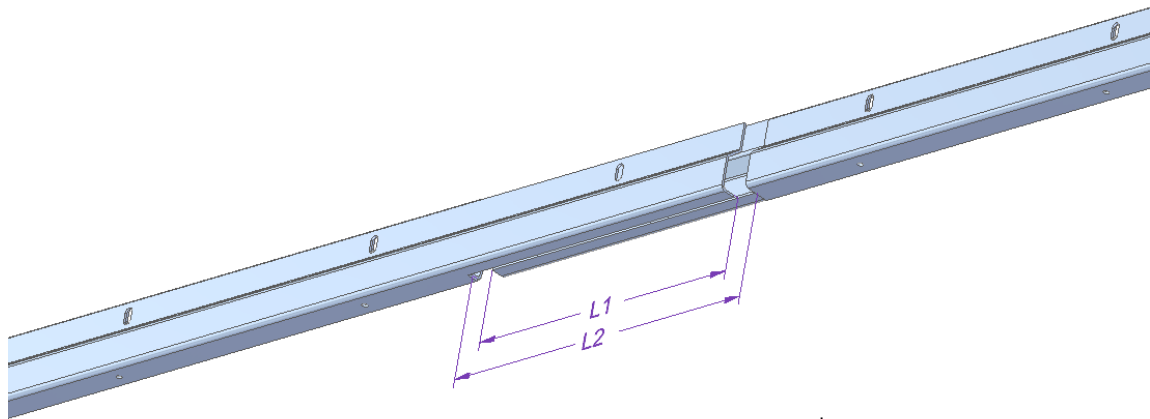
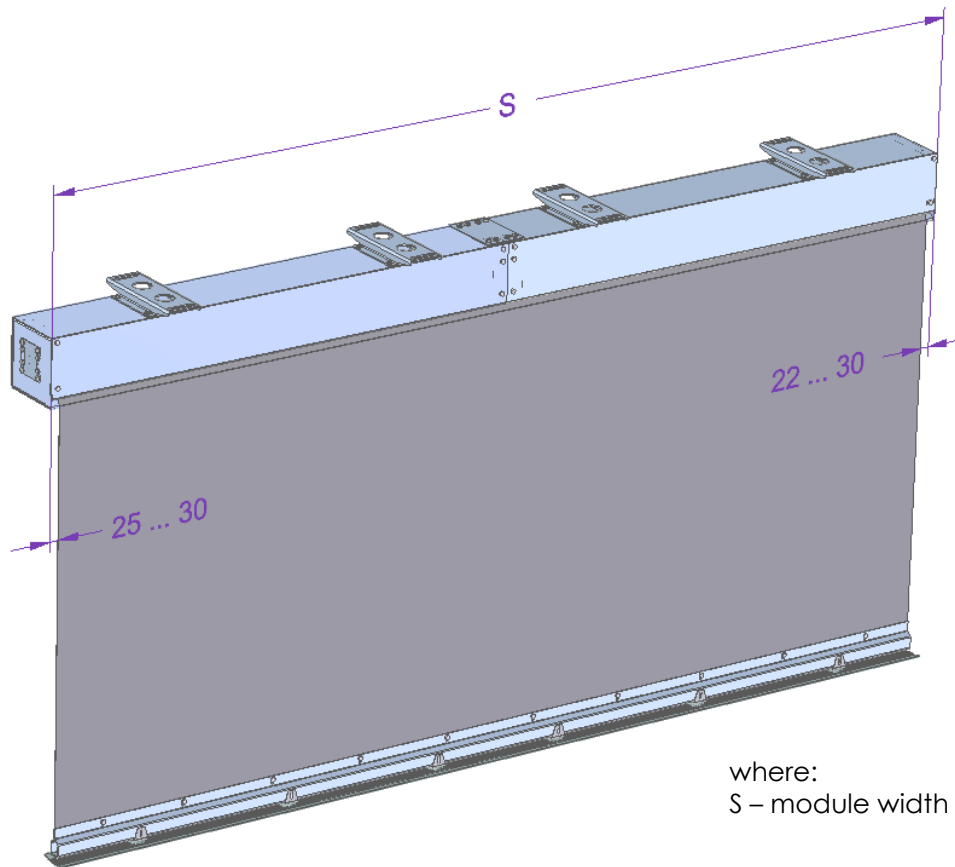


Fig. 18. Typical gap sizes in the transverse direction in the case of butt arrangement of curtains, type K, C and L casings



where:  
 L1 – fabric lap  
 L2 – bottom bar lap

Fig. 19. Overlapping bottom bar – no connection of curtains by means of a common bottom bar



where:  
 S – module width

Fig. 20. Lengths of gaps in the longitudinal direction of *mcr PROSMOKE FS CE* curtains

Fig. 21. Curtain ready to be fitted with guides

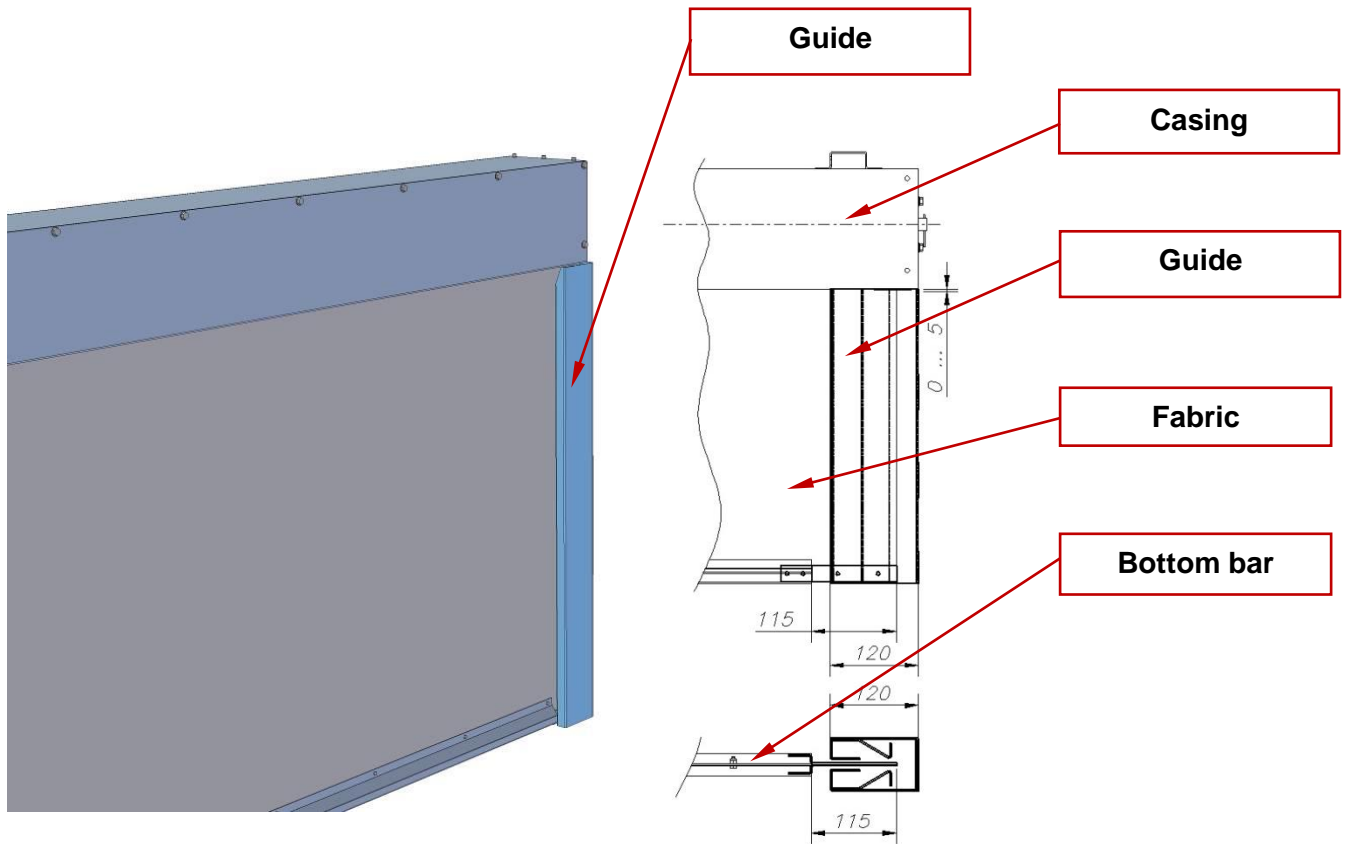
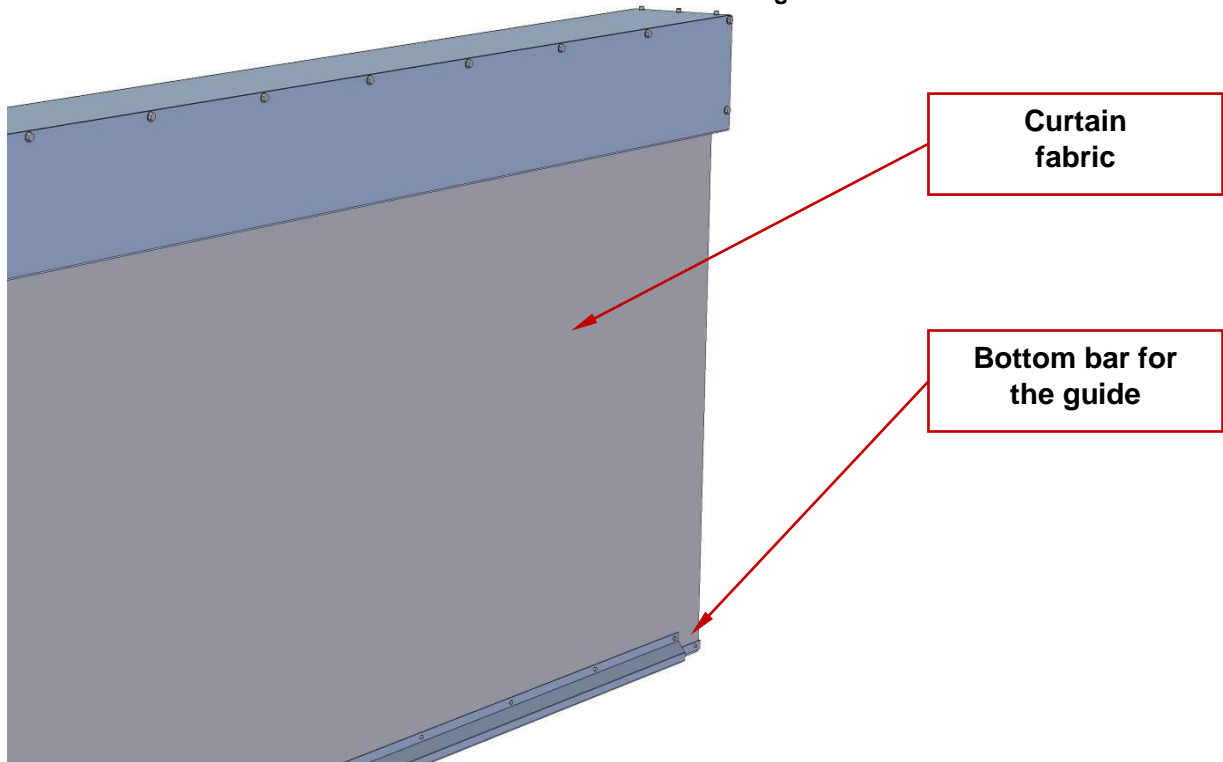


Fig. 22. Method of installing guides

## 7. OPERATION

In order to drop the curtains, trigger the alarm in the curtain control panel (MCR9705 and MCR0204).

In order to raise the curtains after the alarm, delete the alarm, cancel the alarm status in the control panel (see Operation and Maintenance Manual of the MCR9705 and MCR0204 control panel).

mcr PROSMOKE FS CE rolling curtains need electricity to keep the fabric rolled up. If there is no primary 230 V~ power supply, the MCR9705 or MCR0204 control panel ensures standby for the time specified in item 6. After that time, the batteries go flat and the curtains are dropped automatically in a controlled manner down to the operating position.

Should such a situation take place, the primary power supply should be recovered as soon as possible due to the risk of excessive discharge and damage to the batteries. If it lasted longer than 1 hour, the manufacturer's service team or the authorised Mercor SA service team should be called to check the battery condition.

## 8. MAINTENANCE AND SERVICE (REPAIRS)

Products manufactured by MERCOR SA should undergo **periodic technical inspections** and maintenance every 6 months throughout their service life, i.e. in the warranty period and later. Inspections and maintenance should be carried out **by the manufacturer** or by companies authorised to service MERCOR SA's products.

The obligation to conduct regular inspections of fire equipment is stipulated in § 3 section 3 of the Regulation of Minister of Internal Affairs and Administration dated 7 June 2010 on the fire protection of buildings, other structures and areas (Dz. U. [Journal of Laws] 2010 No. 109, item 719).

To enable full service inspections as well as servicing, including servicing under the warranty, such as visual inspections and repairs, the user has to ensure **physical access to the products**. The user is obliged to provide access to the curtains and to make it possible to remove access covers for the purpose of periodic service inspections.

The recommended operations to be carried out between the inspections are as follows:

1. Checking the mains supply of control panels. The MCR9705 control panel should signal "readiness" and "power". The MCR0204 control panel should signal "power".
2. Visual inspection of the curtain, making sure that there are no obstacles on the walls, in the guides, in the gap, in the ceiling, etc. preventing the proper rollout of the curtain.
3. Triggering the alarm and checking whether the curtain rolls out to the predetermined height.
4. Deleting the alarm and checking whether the curtain rolls up properly and completely.

**For matters relating to technical inspections, maintenance and service of our products, please contact the Mercor SA service centre at [serwis@merc.com.pl](mailto:serwis@merc.com.pl), phone 058/ 341 42 45 (extension number 174), fax 058/341 39 85, 8 am–4 pm (Mon–Fri).**

## 9. WARRANTY TERMS AND CONDITIONS

1. MERCOR SA gives a 12-month quality warranty for the products and, unless an agreement provides otherwise, the warranty period begins on the day of purchase.
2. Should physical defects be identified in the warranty period, MERCOR SA undertakes to rectify them no later than 21 days from the receipt of a written complaint and a proof of purchase or agreement, subject to item 5.
3. MERCOR SA reserves the right to extend the repair time in the case of complex repairs or those necessitating a purchase of non-standard components [elements] or spare parts.
4. Liability in respect of warranty shall only cover defects arising from causes originating in the sold products themselves.
5. In the event of defects due to improper operation of products or other reasons indicated in item 6, the purchaser/warranty holder shall bear the cost of removing such defects.
6. The warranty shall not cover any of the following:
  - Damage and failures of products caused by improper use, user's tampering with product and lack of technical inspections/maintenance described in this document in item 8 – "MAINTENANCE AND SERVICE (REPAIRS)".
  - Damage of products due to other causes than those attributable to MERCOR SA, in particular fortuitous events such as torrential rain, flood, hurricane, flooding, strike of lightning, mains overvoltage, explosion, hail, aircraft crash, fire, avalanche, landslide and secondary damage resulting from the above causes. Torrential rain shall mean rain with rainfall intensity of at least 4, as determined by IMiGW [Institute of Meteorology and Water Management]. If rainfall intensity cannot be determined, the actual conditions and extent of damage at the place of damage, proving the event of torrential rain, shall be taken into consideration. Hurricane shall mean wind speed of at least 17.5 m/s (damage shall be deemed to be caused by a hurricane if hurricane is proven to have occurred in the proximity).
  - Damage caused as a result of failing to report immediately a discovered defect.
  - Deterioration of the quality of coating caused by natural ageing processes (fading, oxidation);
  - Defects caused by the use of abrasive or corrosive cleaning agents.
  - Parts subject to normal wear and tear during operation (e.g. seals) unless they are found to have manufacturing defects.
  - Damage caused by aggressive external factors, chemical and biological in particular.
7. Any defect covered by the warranty must be reported to MERCOR SA immediately, that is within 7 days after its discovery.
8. The buyer/warranty holder shall use the product as instructed and carry out periodic technical inspections and maintenance in accordance with the rules set out in this document in item 8 – "MAINTENANCE AND SERVICE (REPAIRS)".
9. The warranty shall become void immediately in the following cases:
  - If the buyer/warranty holder makes any modifications to the original design on their own, i.e. without consulting MERCOR SA beforehand.
  - If the periodic technical inspections and maintenance are not carried out in time or are carried out by unauthorised persons or personnel of service stations not authorised by MERCOR SA, or if the product has been used improperly.
  - If any tampering by unauthorised persons has been performed, except for the normal course of use of the products.

In the cases referred to in item 10, the liability of MERCOR SA under statutory warranty shall also be excluded. Relevant provisions of the Polish Civil Code shall apply to matters not governed by these warranty terms and conditions.

## 10. CERTIFICATE

		NOTIFIED BODY No. 1396 Osloboditeľov 282, 059 35 Batizovce, Slovakia tel. +421 52 7752298 fax. +421 52 7881412 http://www.fires.sk	
Product Certification Body accredited by Slovak national accreditation service			

**ES – CERTIFICATE OF CONFORMITY**

**1396 – CPD – 0033**

In compliance with the Directive 89/106/EEC of the Council of European Communities of 21 December 1988 on approximation of laws, regulations and administrative provisions of the member states relating to the construction products (Construction Products Directive – CPD), amended by the Directive 93/68/EEC of the Council of European Communities of 22 July 1993, it has been stated that the construction product

**ACTIVE SMOKE BARRIERS (ASB1, ABS 3); MCR PROSMOKE FS CE**

having the performances and used in conditions given by initial type testing report No.: C1396/09/0001/5004/SC, issued by FIRES s.r.o., NB 1396, Slovakia, on 10. 06. 2009,

placed on the market by

**MERCOR SA, ul. Grzegorza z Sanoka 2, 80-408 Gdańsk, Poland**

and produced in the factory

**MERCOR SA, Zakład Produkcyjny, ul. Kwarcowa 3A,  
Cieplewo, 83 031 Łęgowo, PL**

is submitted by the manufacturer to a factory production control and to the further testing of samples taken at the factory in accordance with a prescribed test plan and that the notified body - FIRES, s.r.o. - has performed the initial type-testing for the relevant characteristics of the product, the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.

This certificate attests that all provisions concerning the attestation of conformity and the performances described in the Annex ZA of the standard

**EN 12101-1: 2005, EN 12101-1:2005/A1: 2006**

were applied and that the product fulfils all the prescribed requirements.

This certificate was first issued on the 10<sup>th</sup> June 2009 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.

Batizovce, 10<sup>th</sup> June 2009



  
 Ing. Mária Gasperova  
 Head of Product Certification Body

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