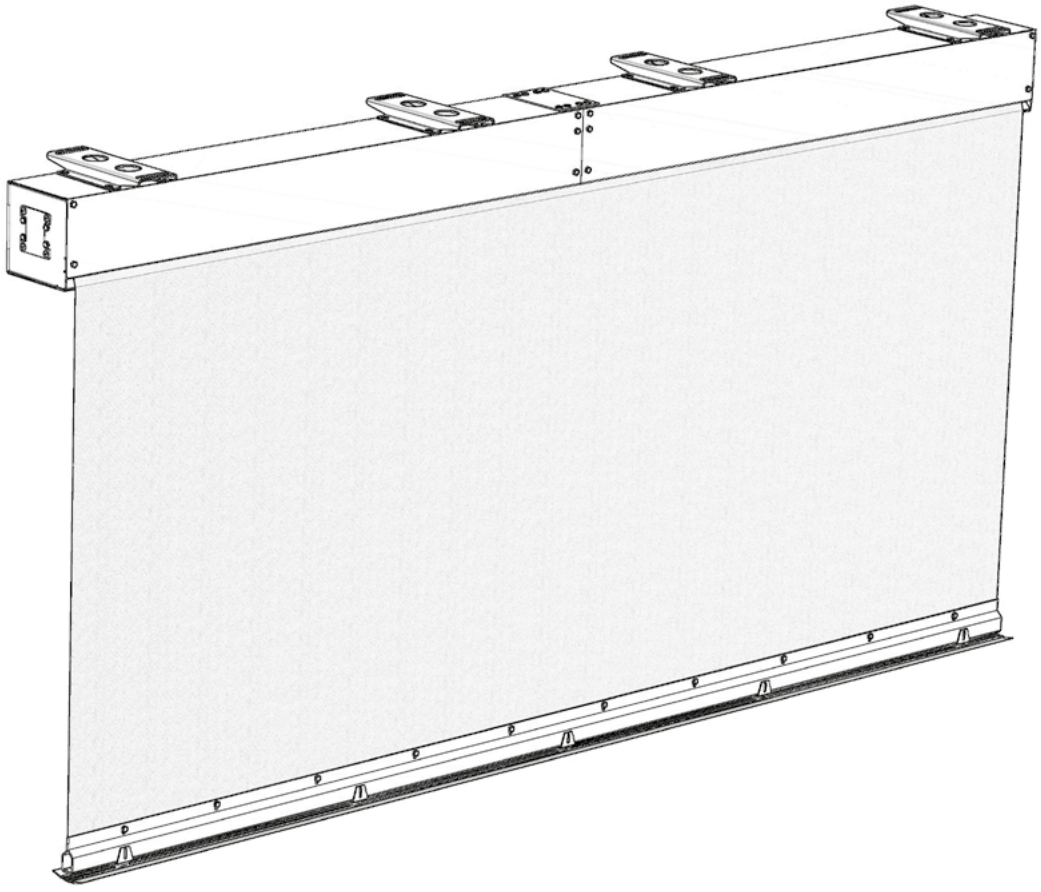
2022

Technical catalogue



mcr PROSMOKE

SMOKE CURTAINS

Smoke exhaust, heat removal and skylight systems
Technical Catalogue 2022

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Technical catalogue

2022

Dear Clients,

We are pleased to present to you our technical catalogue for smoke exhaust, heat removal and skylight systems. This publication presents in detail „MERCOR" S.A. products, starting from smoke vents and skylights, through smoke curtains, new generation roof hatches, all the way to the comprehensive review of our control systems. We believe the form in which we present our offer facilitates finding all the necessary information on the individual product series, their components, as well as detailed specifications for the elements of each product offered.

Every merchandise delivered from „MERCOR" S.A. to the Client is meticulously controlled in accordance with the highest quality assurance standards, and undergoes a number of approval tests. We take pride in providing safety through our business.

We invite you to see the full extent of our offer.

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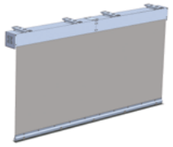
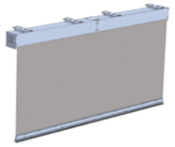
1.| Smoke curtains

Smoke curtains are one of the important elements of natural smoke exhaust system. Due to their basic function - separation of smoke zones within a building, they allow to:
» stop the spreading of smoke within the building
» direct smoke flow towards smoke exhaust devices installed in the building.

Depending on the characteristics of the building, natural smoke exhaust systems comprise:
» fixed smoke curtains (fabric or steel)
» automatic smoke curtains

Parameters		**FS smoke curtain automatic** – gravitational drop	**CE smoke curtain automatic** – extended by motor	**S smoke curtain** fixed, fabric	**ST smoke curtain** fixed, steel
					
Classification (as per Certificate of Conformity according to EN 12101-1)		Certificate of Performance 1396-CPR-033	Certificate of Performance 1396-CPR-021	Certificate of Performance 1396-CPR-022	Certificate of Performance 1396-CPR-0037
Curtain type (as per standard EN 12101-1)		ASB 3 ASB 1	ASB 2 ASB 4	SSB	SSB
Fire resistance class		D30÷D180	D30 ÷ D60 DH30 ÷ DH60	D180 DH60	DH120
Reliability		1000 cycles	1000 cycles	-	-
Response time		max. 60s	max. 60s (max. high 4,8m) max. 85s (max. high 6,5m)	-	-
Air permeability of barrier		max. 9,4 m^3/h	max. 9,4 m^3/h	max. 9,4 m^3/h	obtained
Material		smoke-tight fabric	smoke-tight fabric	smoke-tight fabric	trapezoidal metal sheet
Minimum dimensions	height	0,5 m	0,5 m	0,5 m	0,5 m
	length	2,0 m	0,8 m	0,8 m	0,5 m
Maximum dimensions	height	6,5 m	6,5 m	6,5 m	4,5 m
	length	unlimited	unlimited	unlimited	unlimited
Max. number of modules per single control unit mcr 9705 - 5A		12	10(*)	-	-
Max. number of modules per single control unit mcr 0204		8	-	-	-
Approximate weight		~ 21 kg/mb	~ 21 kg/mb	~ 10 kg/m^2	~ 7 kg/m^2

(*) with extension module mcr R0448

1.1.| Automatic smoke curtains - FS and CE type

1.1.1 | Technical description of standard

» classification as per EN 12101-1 and EN 12101-1,
» automatic smoke curtains are responsible for separation of smoke zones within the building, and stop smoke from spreading within passages, on staircases or escalators,
» automatic smoke curtains are used in buildings where the visual aspect of building plays an important role,
» the casing of standard dimensions 163x163 mm, made of galvanized steel sheet, comprises two elements: fixed part and inspection cover, allowing to perform service actions;
» the casing is a housing for the roller with smoke-tight fabric with weight, and for the curtain drive system,
» MECU XL motor control unit, installed on casing, allows lowering of curtain for service purposes (FS curtains),
» handles made of galvanized steel sheet, allow fixing the curtain to the ceiling or bearing structure using slings in the form of galvanized steel rods with a set of nuts,
» smoke-tight fabric made of glass fiber, double-coated with polyurethane, sewn horizontally,
» width of the material used in the curtain: 1.6 m or 2.0 m,
» a bottom balast is installed in the bottom part of the fabric, for proper unrolling and rolling of curtain,
» the bottom balast is made of galvanized steel sheet of standard dimensions 29x66 mm,
» bottom balast made of 3 m long profiles,
» curtain height range is 0.5 ÷ 6.5 m,
» maximum length of a single curtain 6.0 m; longer curtains are made in modular configuration,
» control: electric 24V- (additional 230V supply for FS curtains).

1.1.2 | Single, automatic smoke curtain design

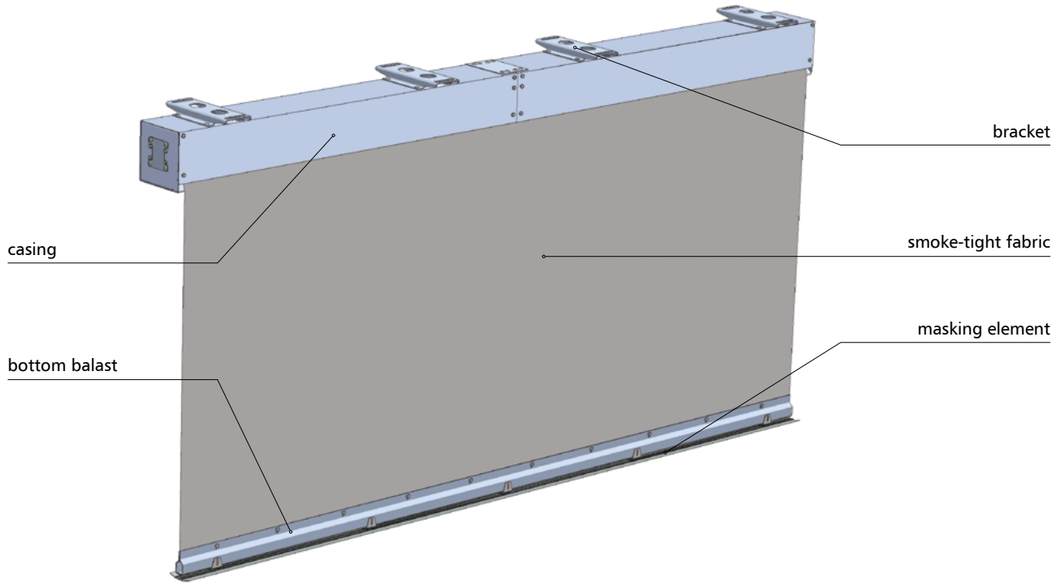


Fig. 1 Design of single, automatic mcr PROSMOKE FS/ CE smoke curtain

1.1.3 | Technical drawings - single, automatic smoke curtain

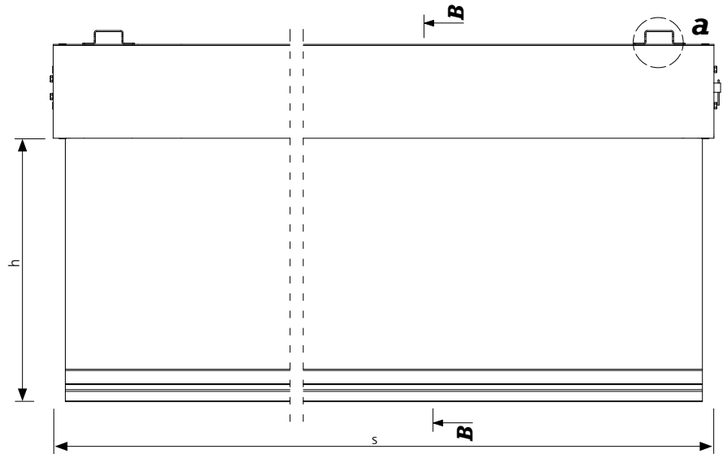


Fig. 2 Single, automatic mcr PROSMOKE FS/ CE smoke curtain

h – curtain modules height [m]
s – curtain modules length [m]

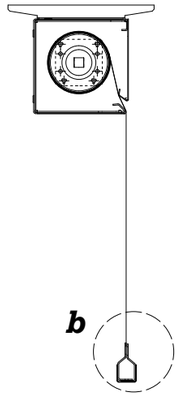
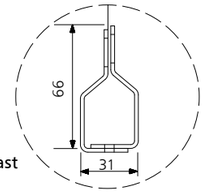


*Fig. 3 Section **B-B** of single FS CE smoke curtain*



Detail **b** – Bottom balast

1.1.4 | Technical drawings - types of mounting brackets (detail a)

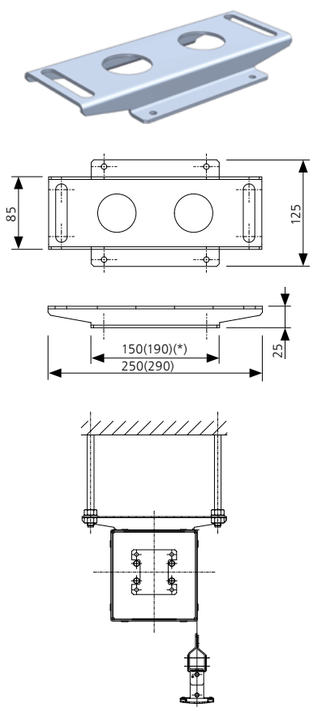


Fig. 4 Wide bracket

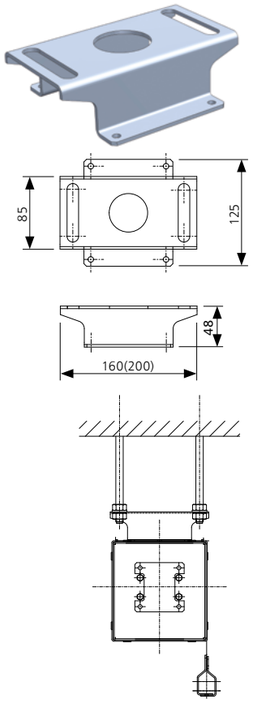


Fig. 5 Narrow bracket

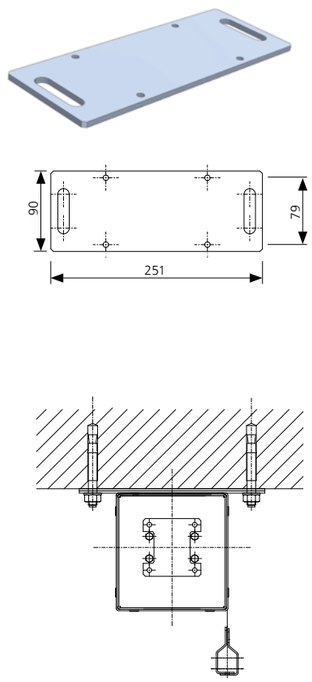


Fig. 6 Flat bracket (**)

(*) Dimensions on drawings in mm
(**) not available for mcr Prosmoke One smoke curtain

1.1.5 | Technical drawings - casing types

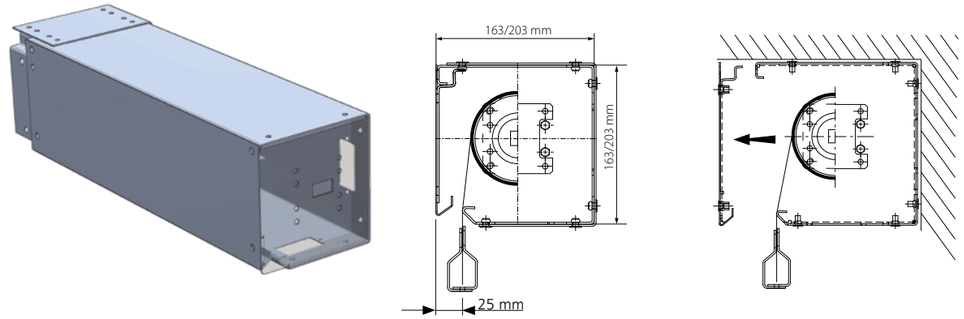


Fig. 7 C casing - curtain rolls down 25 mm from casing edge

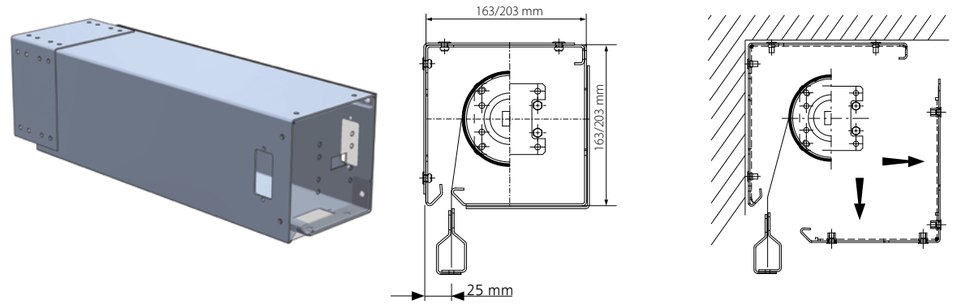


Fig. 8 L casing - curtain rolls down 25 mm from casing edge, allowing to fix curtain directly to the wall

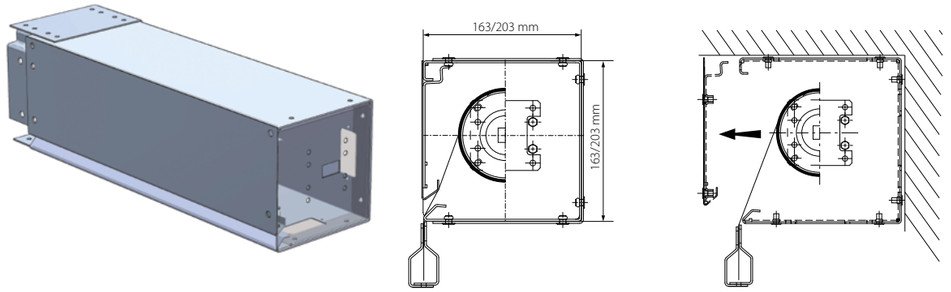


Fig. 9 K(*) casing - curtain rolls down directly by casing edge

(*) K casing also available in K-T version, used for curtains with angular connections

1.1.6 | Technical drawings - modular automatic smoke curtain in vertical layout

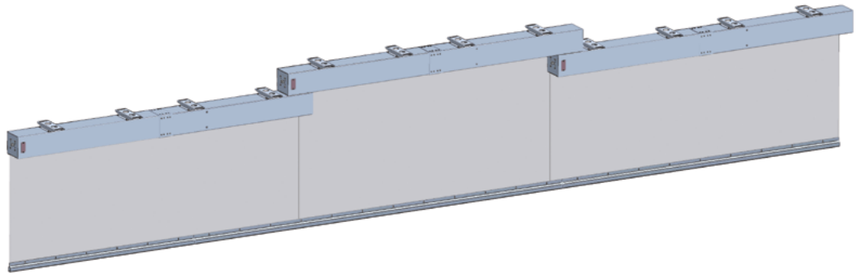


Fig. 10 mcr PROSMOKE FS/ CE modular smoke curtain in vertical layout

Fig. 11 Top view of mcr PROSMOKE FS/ CE modular smoke curtain in vertical layout

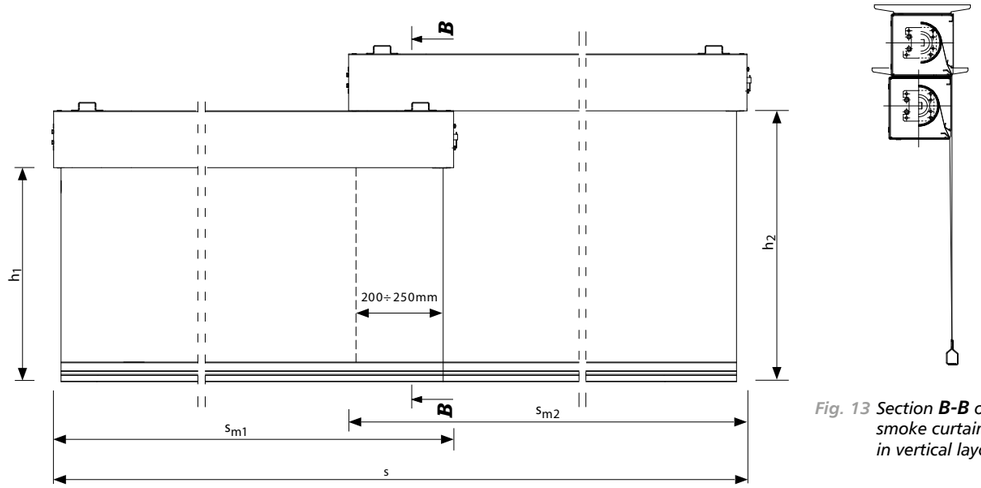


Fig. 12 mcr PROSMOKE FS/ CE modular curtain in vertical layout, with overlap of material

*Fig. 13 Section **B-B** of modular smoke curtain in vertical layout.*

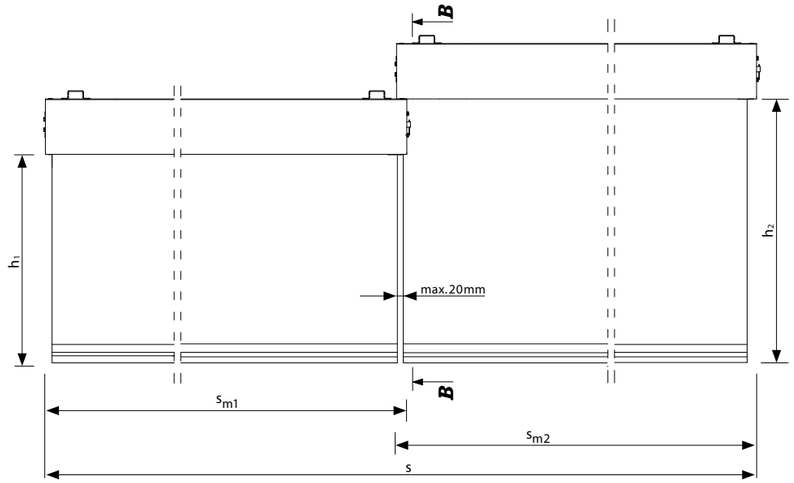


Fig. 14 mcr PROSMOKE FS/ CE modular curtain in vertical layout, without overlap of material

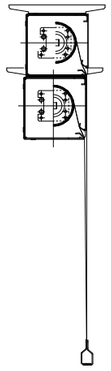


*Fig. 15 Section **B-B** of modular smoke curtain in vertical layout.*

h_1, h_2 – curtain modules height [m]
s_{m1}, s_{m2} – curtain modules length [m]

1.1.7 | Technical drawings - modular automatic smoke curtain in horizontal layout

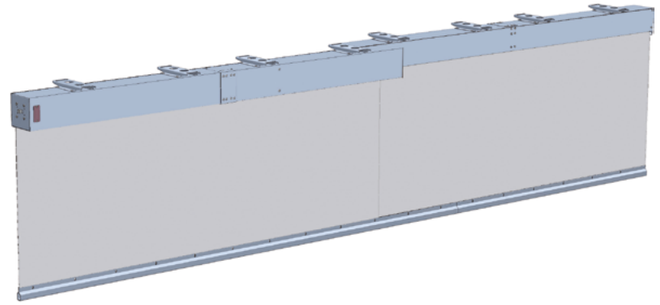


Fig. 16 mcr PROSMOKE FS/ CE modular smoke curtain in horizontal layout

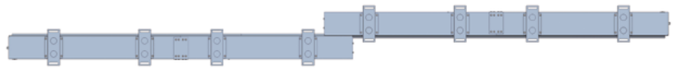


Fig. 17 Top view of mcr PROSMOKE FS/ CE modular smoke curtain in horizontal layout

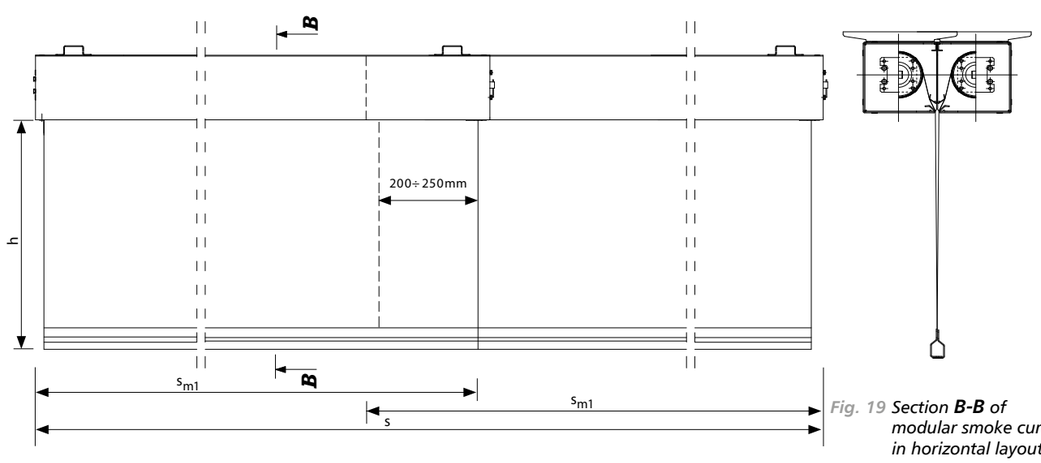


Fig. 18 mcr PROSMOKE FS/ CE modular curtain in horizontal layout, with overlap of material

*Fig. 19 Section **B-B** of modular smoke curtain in horizontal layout.*

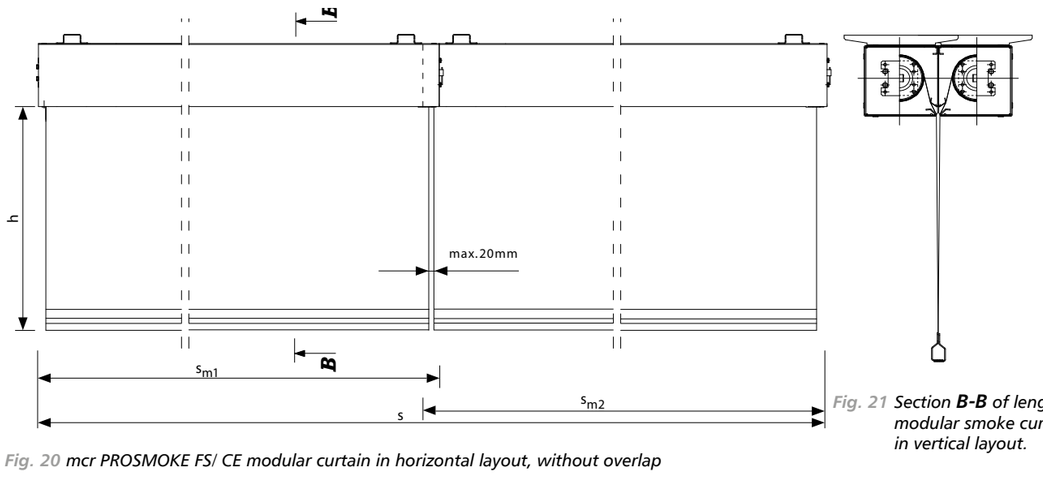


Fig. 20 mcr PROSMOKE FS/ CE modular curtain in horizontal layout, without overlap

*Fig. 21 Section **B-B** of length [m] modular smoke curtain in vertical layout.*

h – curtain modules height [m]
s_{m1}, s_{m2} – curtain modules length [m]

1.1.8 | Technical drawings - modular automatic smoke curtain in one casing

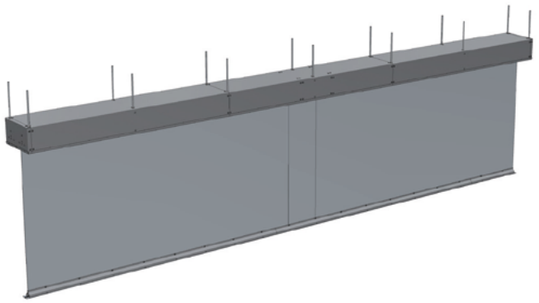


Fig. 22 mcr PROSMOKE ONE modular automatic smoke curtain in one casing

Fig. 23 Top view of mcr PROSMOKE ONE modular automatic smoke curtain in one casing

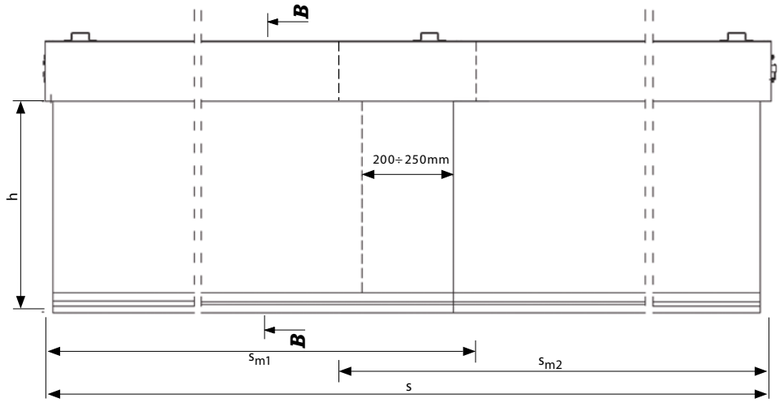


Fig. 24 mcr PROSMOKE ONE modular automatic smoke curtain in one casing H

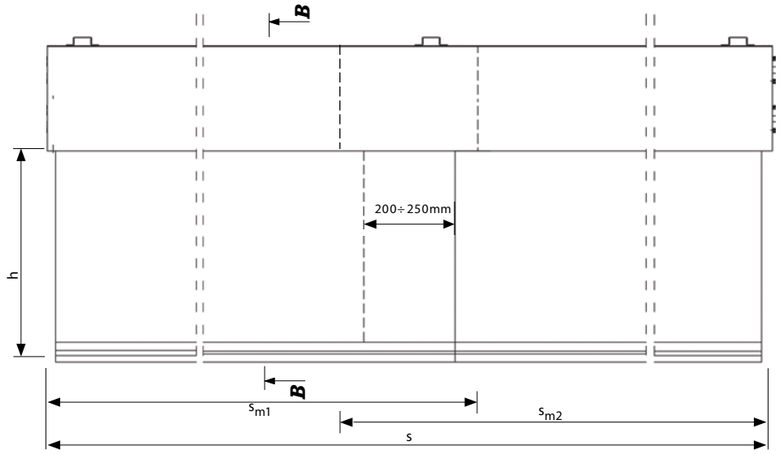


Fig. 26 mcr PROSMOKE ONE modular automatic smoke curtain in one casing V

h – curtain modules height [m]
s_{m1}, s_{m2} – curtain modules length [m]

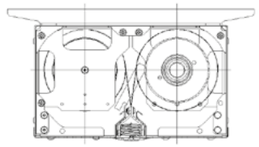


*Fig. 25 Section **B-B** of mcr PROSMOKE ONE H modular automatic smoke curtain in one casing*

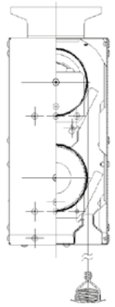


*Fig. 27 Section **B-B** of mcr PROSMOKE ONE V modular automatic smoke curtain in one casing*

1.1.9 | Non-standard options of automatic smoke curtains

» curtain elements painted to any RAL color (applies to casing, bottom balast, side guides and masking element),
» casing dimensions: 203 x 203 mm (external dimensions) for curtains in higher fire resistance class,
» optional common casing for curtains in case of lack of suspended ceilings.

» Angular connections (*)

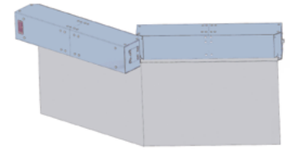


Fig. 28 Curtains connection at obtuse angle

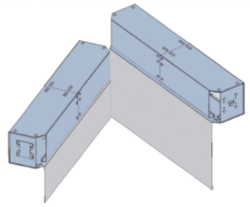
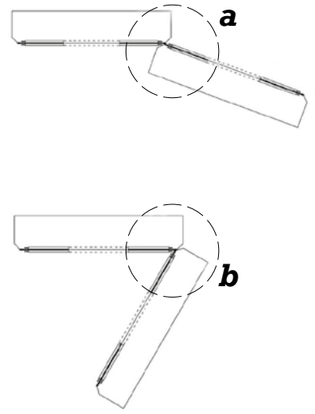


Fig. 29 Curtains connection at acute angle



» Bottom ballast (*)

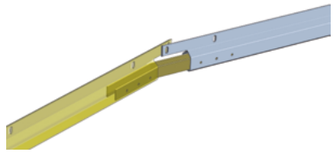
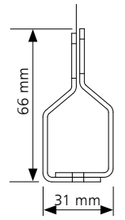


Fig. 30 Bottom balast for curtains joined at angle



» Masking element (cover) for mcr Prosmoke CE/FS (*)

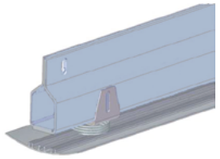
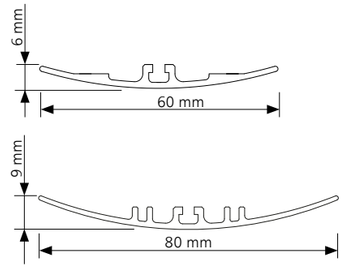


Fig. 31 Masking element with spring and bottom balast



» Curtain with side guides

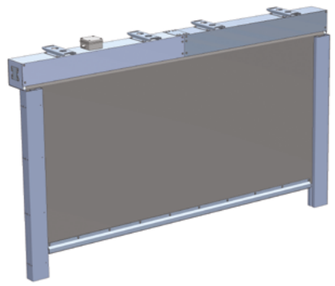


Fig. 32 Side guides installed at both sides of curtain

1.1.10 | mcr PROSMOKE FS smoke curtains control

mcr PROSMOKE FS automatic smoke curtains remain in stand-by position at continuous power supply from mcr 0204 or mcr 9705 control unit. In case of interrupting the supply, which may happen as a result of:

1. alarm signal,
2. failure of 230V~ power to mcr 0204/ mcr 9705 control unit, or discharging of batteries in the control unit,
3. interruption of circuit between mcr 0204/ mcr 9705 control unit and MECU XL motor control system,
4. smoke curtain rolls down by gravity force to designed height.

Restoring of the curtain to stand-by position is performed by an actuator:

5. after resetting fire alarm signal,
6. after deleting alarm in mcr 0204/ mcr 9705 control unit
7. by pressing RPO-1 emergency pushbutton.

mcr PROSMOKE FS drive system comprises BEcKER motor integrated into the curtain casing.

XL40 motor parameters:

» torque - 40 Nm
» power 230V / 265 W ~ (motor)
» control 24V, 0,25 A - (brake)
» work mode – max. 8 minutes
» installed horizontally
» working speed 8 min-1
» thermal protection of engine by built-in Thermo switch
» powder painted motor casing
» performance efficiency: 1000 cycles

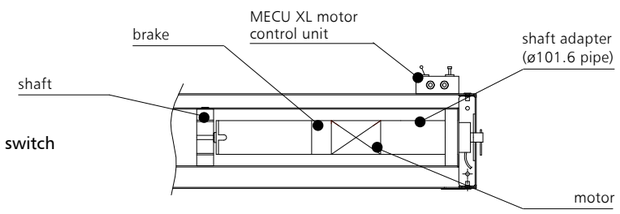


Fig. 33 mcr PROSMOKE FS curtain drive

1.1.11 | Cabling installation diagram - mcr PROSMOKE FS single curtain

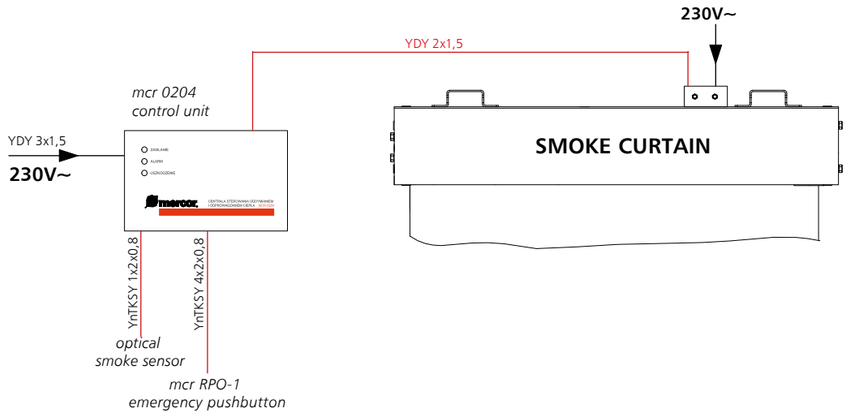


Fig. 34 Cabling diagram of PROSMOKE FS single curtain

1.1.12 | Cabling diagram - mcr PROSMOKE FS modular curtains

» mcr 0204 control unit - possible connection of up to 8 curtain modules

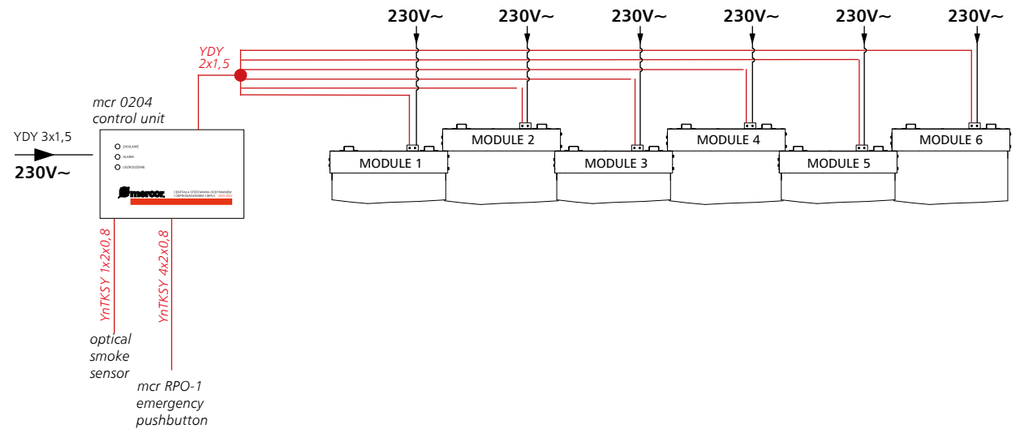


Fig. 35 Connection diagram of maximum number of mcr PROSMOKE FS curtain modules to mcr 0204 control unit

» mcr 9705-5A control unit - possible connection of up to 12 curtain modules

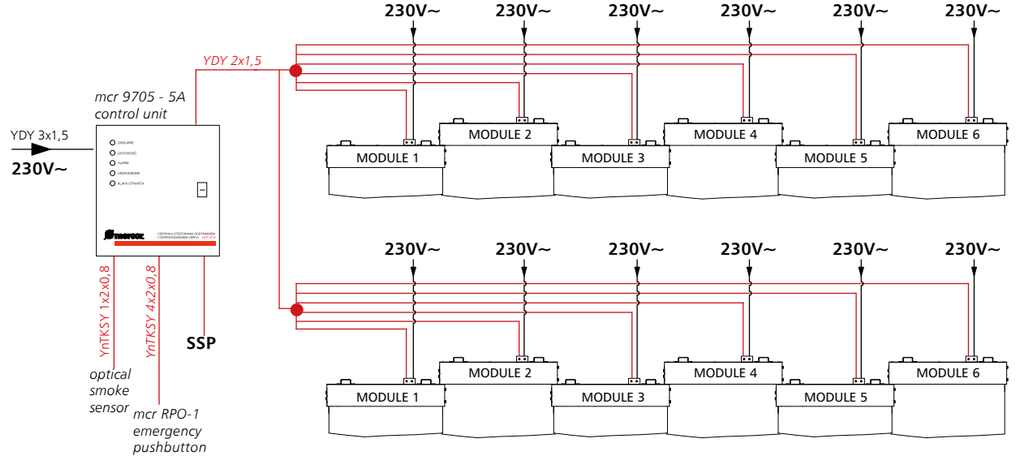


Fig. 36 Connection diagram of maximum number of mcr PROSMOKE FS curtain modules to mcr 9705 control unit

TIME OF HOLDING THE CURTAIN IN STAND-BY POSITION BY MCR CONTROL UNIT AT BASIC POWER FAILURE			
mcr 9705 - 5A control unit	1 curtain – up to 20 h	2 curtains – 10 h	3 curtains – 6.5 h etc.
mcr 0204 control unit	1 curtain – up to 12 h	2 curtains – 6 h	3 curtains – 4 h etc.

1.1.13 | mcr PROSMOKE CE curtains control

In case of fire, mcr PROSMOKE CE automatic smoke curtains roll down::
1. automatically, after signal from fire signaling system,
2. automatically, through the fuseing of optical smoke sensors (or thermal sensors) as a result of increase in smoking (temperature),
3. manually, by pressing of RPO-1 emergency pushbutton.

Alarm signal is given to mcr 9705 control unit. The signal is then transmitted to the curtain actuator, which rolls it down to an appropriate, designed height.

Restoring of the curtain to stand-by position is performed by an actuator:
4. after resetting fire alarm signal,
5. after deleting alarm in mcr 9705 control unit,
6. by pressing RPO-1 emergency pushbutton.

mcr PROSMOKE cE curtain drive system comprises BECKER motor, integrated in the curtain casing.

R60/8G motor parameters:
» torque - 60 Nm
» power: 24V- (max. 6,3 A)
» work mode – max. 4 minutes
» installed horizontally
» working speed 8 min^{-1}
» electromagnetic brake in closed circuit
» powder painted motor casing
» performance efficiency: 1000 cycles

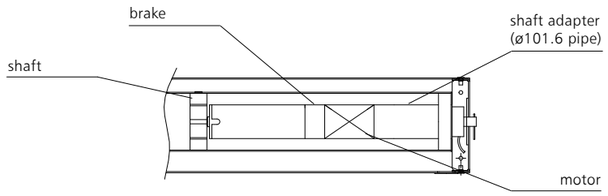


Fig. 37 Cabling diagram of PROSMOKE CE single curtain

1.1.14 | Cabling diagram - mcr PROSMOKE CE single curtain

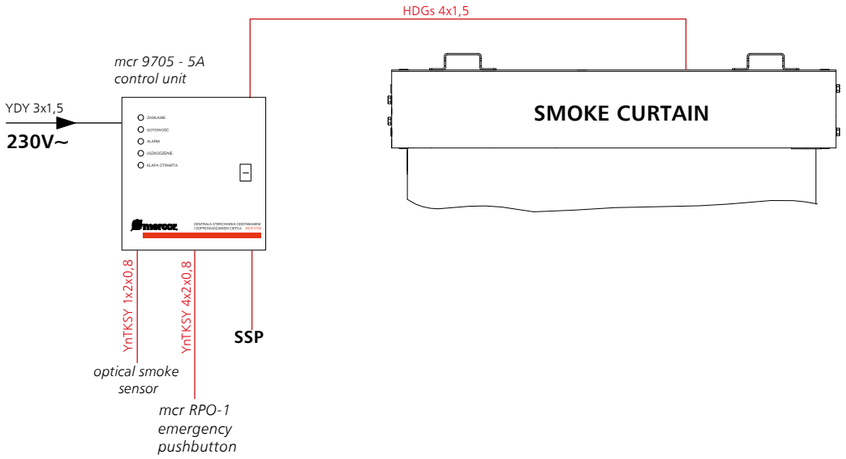


Fig. 38 PROSMOKE CE curtains drive

1.1.15 | Cabling diagram - mcr PROSMOKE CE modular curtains

» mcr 9705 - 5A control unit - possible connection of up to 2 curtain modules

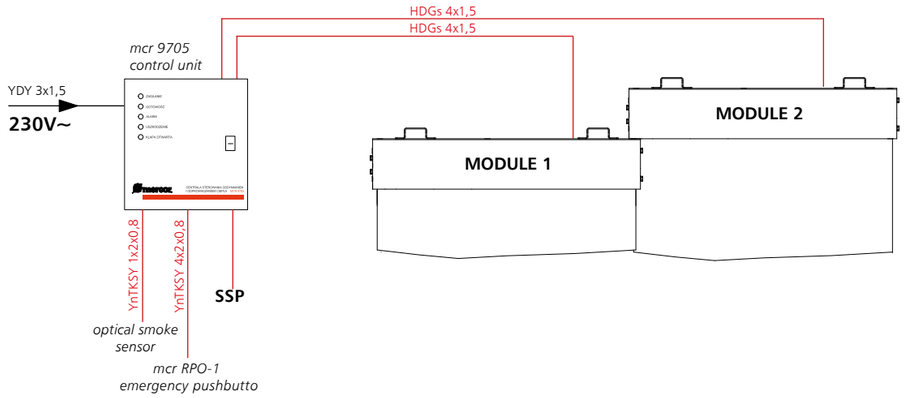


Fig. 39 Connection diagram of maximum number of mcr PROSMOKE CE curtain modules to mcr 9705 control unit

» mcr 9705 - 5A control unit with mcr R0424 extension module - possible connection of up to 4(*) curtain modules

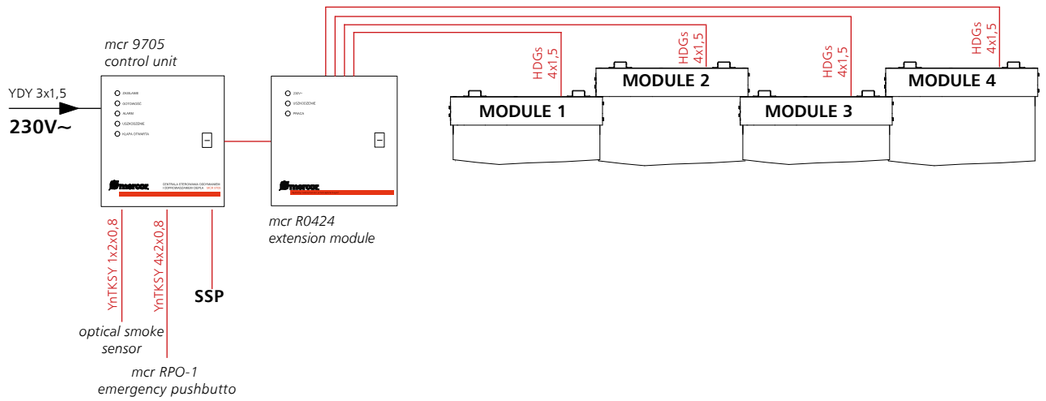


Fig. 40 Connection diagram of maximum number of mcr PROSMOKE CE curtain modules to mcr 9705 control unit with mcr R0424 extension module

» mcr 9705 - 5A control unit with mcr R0424 extension module - possible connection of up to 5 (**) curtain modules

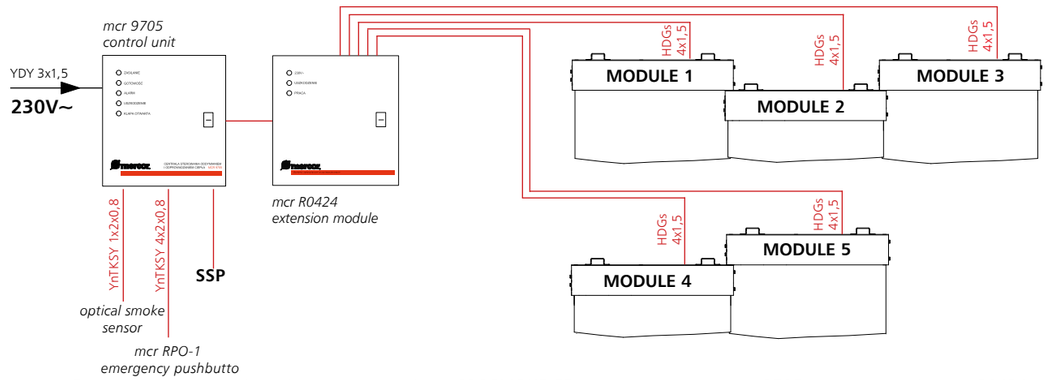


Fig. 41 Connection diagram of maximum number of mcr PROSMOKE CE curtain modules to mcr 9705 control unit with mcr R0424 extension module

(*) Maximum curtain module width 4 ÷ 6 m
(**) Curtain module width 3.99 m

» **mcr 9705 - 5A control unit with mcr R0448 extension module - possible connection of up to 8 (*) curtain modules**

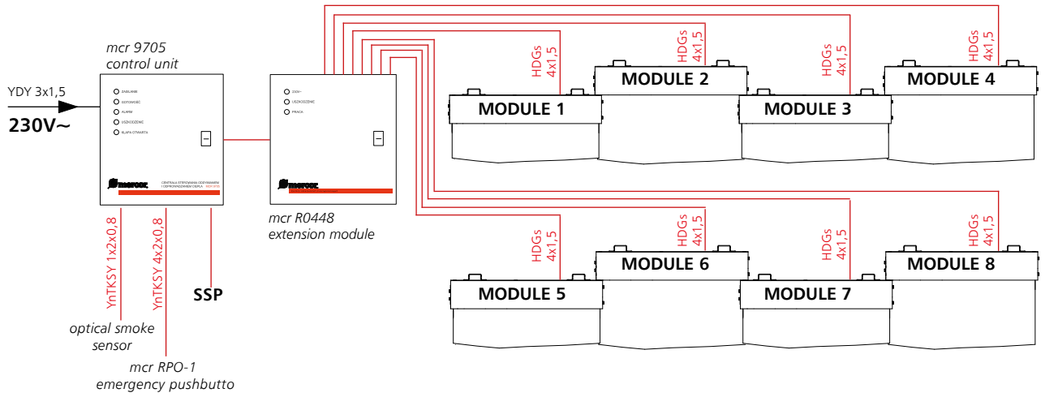


Fig. 42 Connection diagram of maximum number of mcr PROSMOKE CE curtain modules to mcr 9705 control unit with mcr R0448 extension module

» **mcr 9705 - 5A control unit with mcr R0448 extension module - possible connection of up to 10 (**) curtain modules**

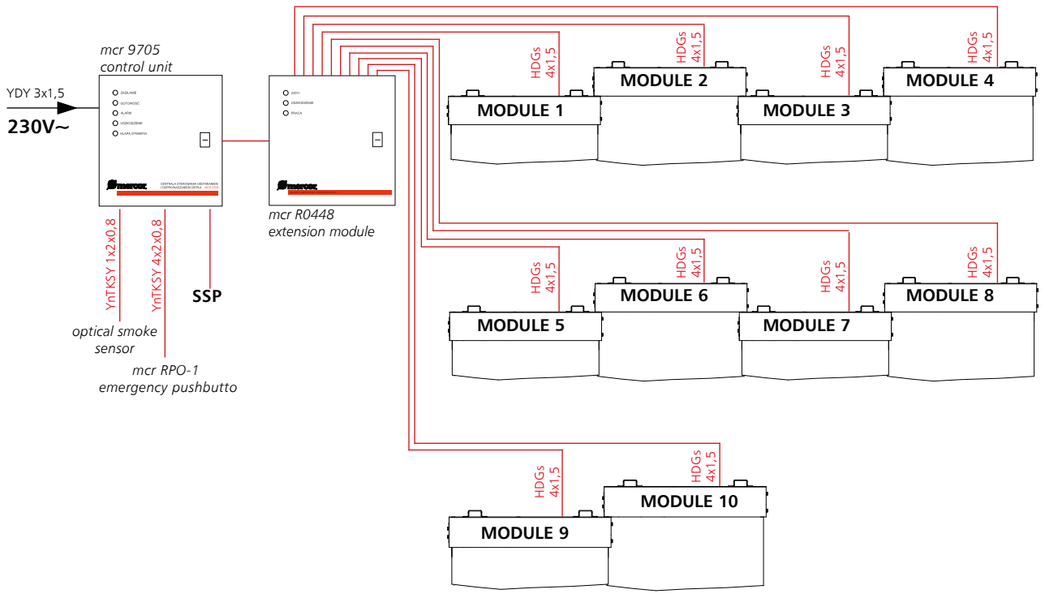


Fig. 43 Connection diagram of maximum number of mcr PROSMOKE CE curtain modules to mcr 9705 control unit with mcr R0448 extension module

(*) Maximum curtain module width 4 ÷ 6 m
(**) Curtain module width 3.99 m

The time of keeping the curtain in stand-by position by mcr 9705 control unit at basic power failure is 72 hours.

1.1.16 | Installation

» smoke curtains must be installed in accordance with the construction design, while maintaining all designed gap dimensions, as specified in PN-EN 12101-5, with maximum values as follows:
- 20 mm for curtains of height up to 2 m
- 40 mm for curtains of height 2 - 6 m
- 60 mm for curtains of height above 6 m

» when designing the load bearing element, curtain weight of about 250-300 N/mb must be taken into consideration; different types of handles and curtain casings must be used depending on curtain height and installation place

» the use of masking element allows to completely hide the curtain in the under-ceiling space when installing modular curtains; observe the order of installation of individual modules as follows: end module, middle modules, far-end module

» when installing modular curtains it is necessary keep the required overlapping dimensions of smoke-tight fabric of individual modules.

» Automatic smoke curtain order of installation:
1. casing with the use of handles with steel rods to the building's bearing structure
2. curtain weight
3. masking element

» **Installing automatic curtains to ceiling**

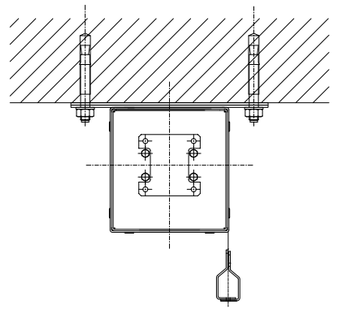


Fig. 44 Fixing curtain directly to ceiling using flat handle

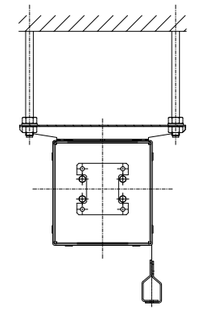


Fig. 45 Fixing curtain directly to ceiling using wide handle

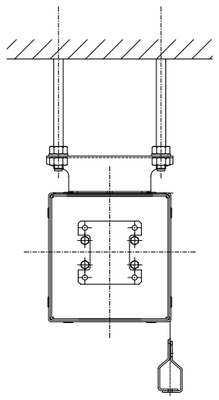


Fig. 46 Fixing curtain to rods using narrow handle

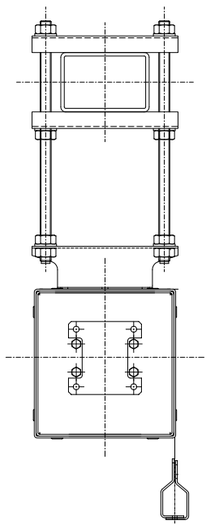


Fig. 47 Fixing curtain to section using narrow handle and clamp

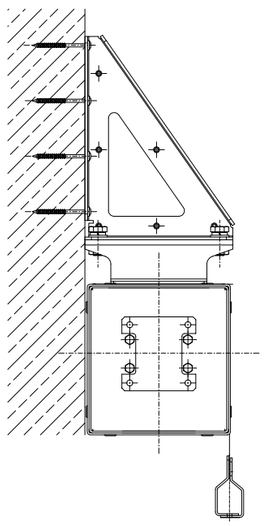


Fig. 48 Fixing curtain to wall using narrow handle

2.1.| Fixed smoke curtains - fabric, S type

2.1.1 | Technical description of standard

» Declaration of Conformity CE 1396-CPR-0022 as per EN 12101-1,
» S type fixed smoke curtains serve the purpose of separating smoke zones under the building ceiling, they are mainly used in large-area buildings, such as warehouses, production and sports halls or malls, where the use of light curtains of large size and guaranteed resistance to high temperature is necessary,
» smoke-tight fabric made of glass fibre double-coated with polyurethane,
» load bearing element made of galvanized or painted steel sheet in form of angle or flat profiles,
» pressing profile made of galvanized or painted steel sheet,
» bottom balast made of steel elements of maximum length 3 m.

2.1.2 | Design of fabric-made fixed smoke curtain

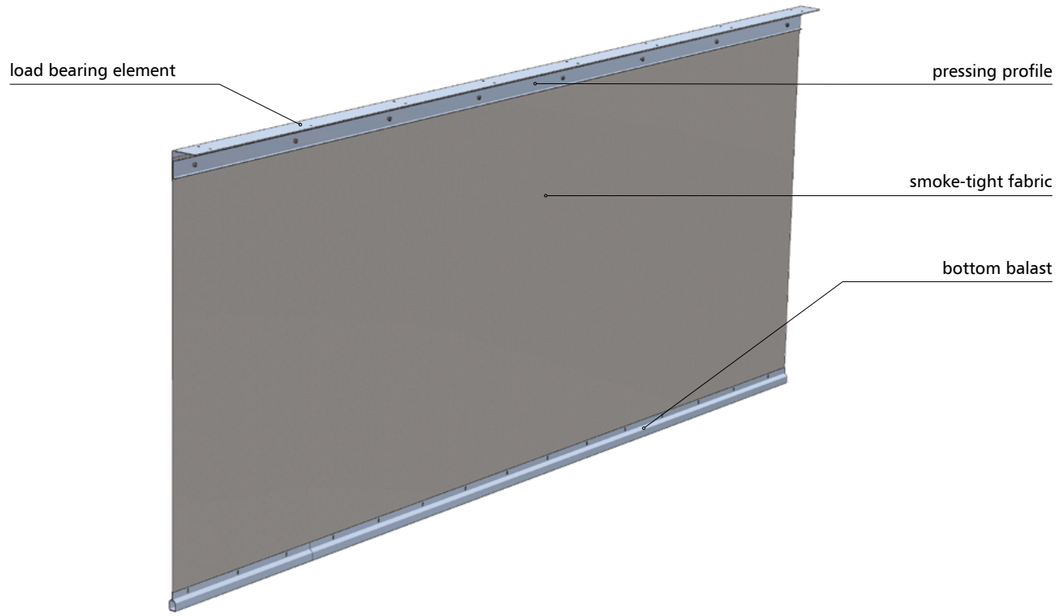


Fig. 49 Design of Prosmoke S fixed fabric-made smoke curtain

2.1.3 | Non-standard options

» optional holes in the fabric for technical routing,
» steel elements painted to any RAL color.

2.1.4 | Technical drawings

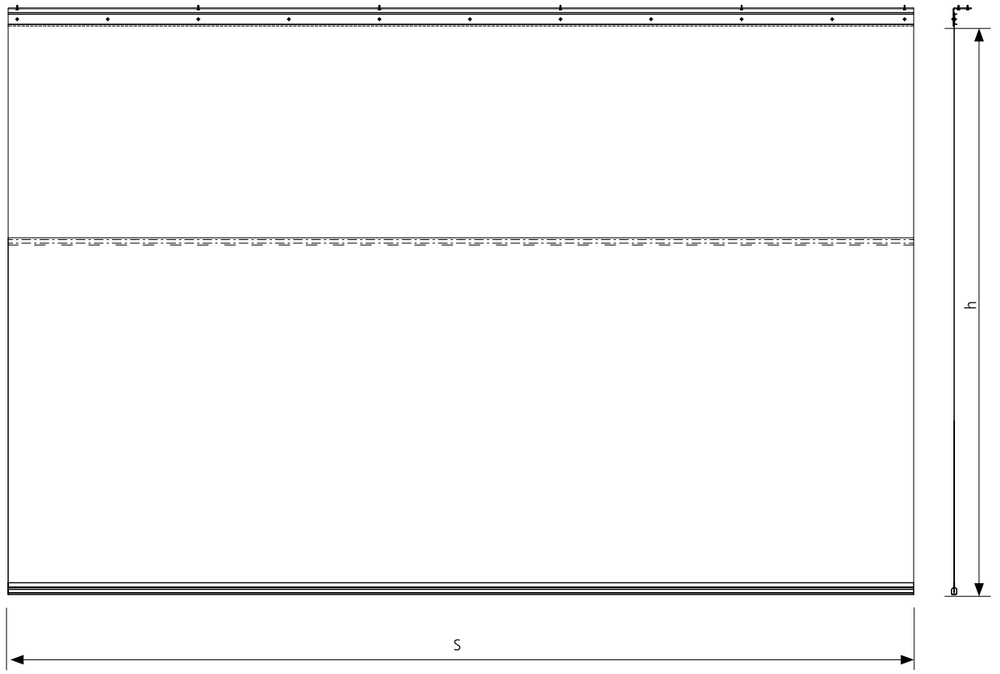


Fig. 50 mcr PROSMOKE S fixed smoke curtain

Fig. 51 side view smoke curtain

h – curtain height [m]
s – curtain length [m]

2.1.5 | Technical details

PARAMETERS	mcr PROSMOKE S CURTAINS
length	unlimited
height	min. 0.5 m max. 6,5 m
curtain type	SSB
classification	D180, DH60
air permeability	≤9,4 m³/h

2.1.6 | Installation

» installation of fixed curtains made of smoke-tight fabric should be made in accordance with the construction design,
» mcr PROSMOKE S smoke-tight fabric fixed curtains are fixed to permanent elements of the building (lintel, ceiling, wall, beam),
» curtain may be installed using metal joints (anchors, rods, screws), in intervals on the curtain's load bearing element of 1 m,
» space between the ceiling and curtain should be covered with a material of A1 non-flammability class (as per EN 13501).

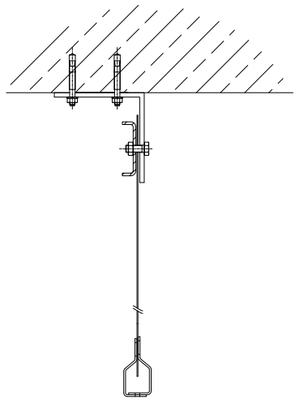


Fig. 52 S type curtain installation under lintel, using angle profile

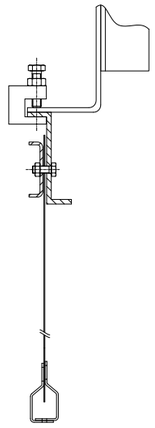


Fig. 53 Montaż kurtyny typu S do belki z wykorzystaniem imadełka

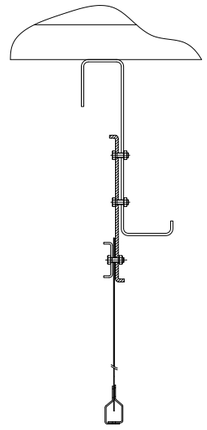
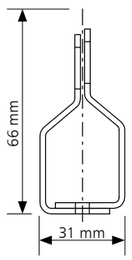


Fig. 54 Montaż kurtyny typu S do nadproża



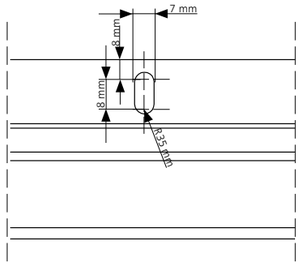


Fig. 55 Bottom balast kurtyny stałej typu S

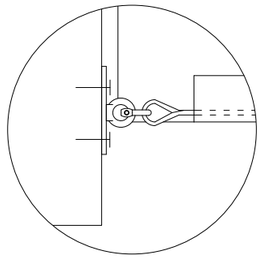


Fig. 56 Fixture of curtain bottom with cable

3.1.| Fixed smoke curtains - fabric, S type

3.1.1 | Technical description of standard

» Declaration of Conformity CE 1396-CPR-0037 as per EN 12101-1,
» mcr PROSMOKE ST fixed smoke curtains are used for separating smoke zones in large hall buildings, mainly production and storage halls, where no limitations to the loading of bearing structure of the building exist,
» made of TR35 trapezoidal steel sheet of 0.5 mm thickness, zinc coated, Al-Zn or polyester paint,
» bracing elements in the form of galvanized or painted square pipes,
» bracing profile in the shape of steel angle profile,
» covering profile made of galvanized or painted steel sheet,
» load bearing element of mcr PROSMOKE ST curtain shaped as angle or flat profile made of galvanized or painted steel sheet.

3.1.2 | Design of steel fixed smoke curtain

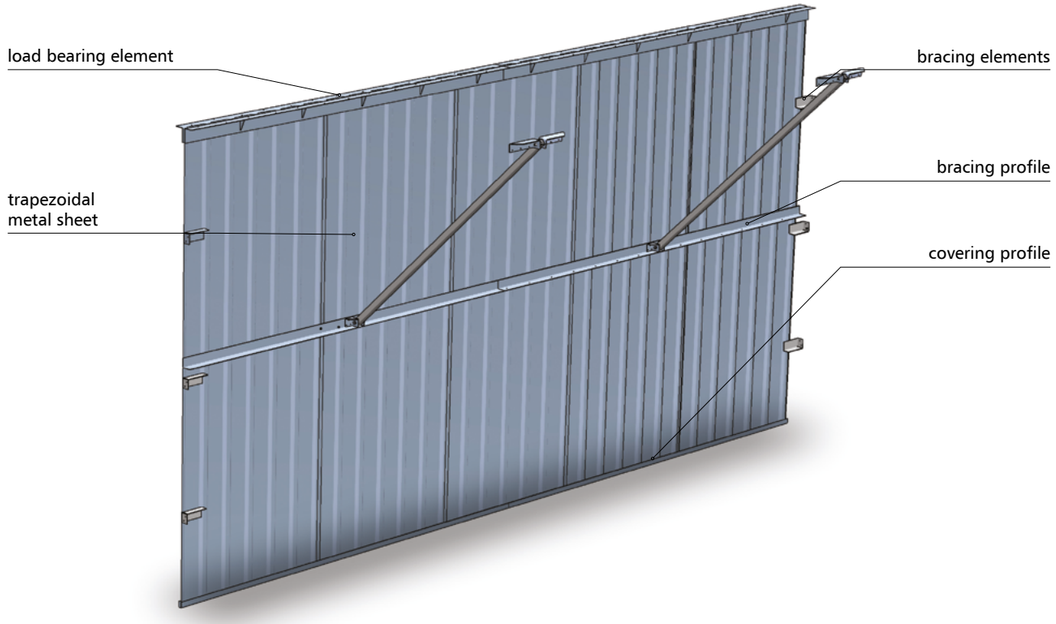


Fig. 57 Design of mcr PROSMOKE ST fixed smoke curtain

3.1.3 | Non-standard options

» additional bracing elements used for steel curtains of height ≥ 2.5 m:
  - steel angle along curtain, up to its mid-height,
  - angle profiles made of steel squared pipe, placed every 3 m,
» metal sheet painted on both sides to any RAL color.

3.1.4 | Technical drawings

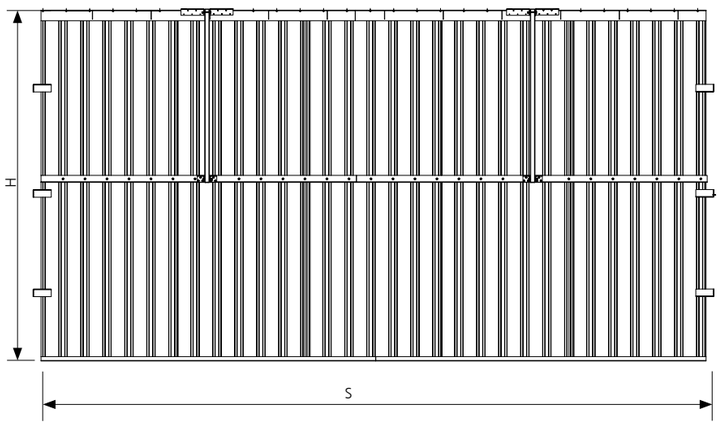


Fig. 58 mcr Prosmoke ST Steel sheet fixed curtain.

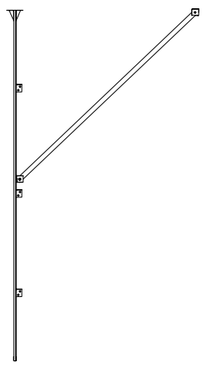


Fig. 59 Side view of steel sheet fixed curtain.

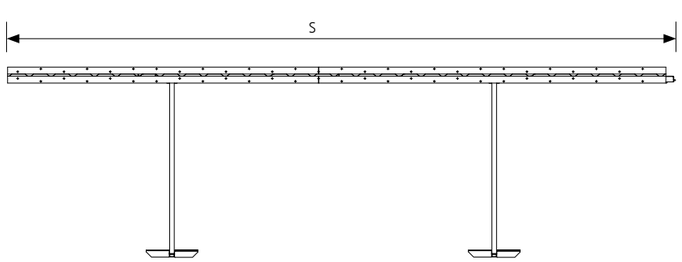


Fig. 60 Top view of steel sheet fixed curtain

H – curtain height [m]
s – curtain length [m]

3.1.5 | Technical details

PARAMETERS	mcr PROSMOKE ST CURTAINS
length	unlimited
height	min. 0.5 m max. 4,5 m
curtain type	SSB
classification	DH120
curtain sheet weight	4 kg/m²
standard elements weight	5÷6 kg /1 rm of curtain
bracing elements weight	2÷3 kg /1 rm of curtain

3.1.6 | Installation

» fixed smoke curtains made of steel sheet should be installed in accordance with the construction design, and in conformance with EN 12101-1 standard,
» steel curtains are fixed to structural elements of the building (lintels, beams, girder, etc.) using suitable steel joints,

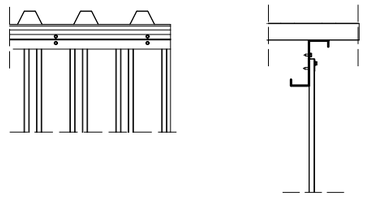


Fig. 61 Sample installation of mcr PROSMOKE ST steel curtain along beam

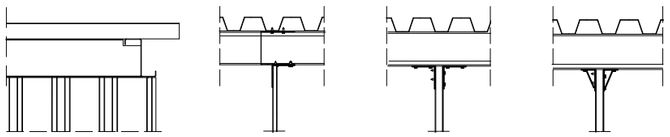


Fig. 62 Sample installation of mcr PROSMOKE ST steel curtain across beam

mcr PROSMOKE |Notes

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