

Purpose: FM-I fire curtains are used where, if there is a fire, it is necessary to create a temporary barrier within an opening which seals off the area on fire. The curtain descends automatically and prevents fire and smoke from spreading from one area to another, and also allows people access to protected escape routes without any loss of fire resistance.

Applications: FM-I fire curtains can be installed in nearly every kind of building, from residential to retail to industrial.

Features: FM-I fire curtains are lightweight and compact, which enables them to be installed easily in a place with space constraints such as a false ceiling. They have been tested as fire barriers in accordance with EN 1634-1, providing protection for a defined period and at a defined maximum temperature.

Its features and benefits are described overleaf.

SOME FEATURES OF FM-I FIRE CURTAINS

Testing

Fire resistance test according to EN 1634-1
Continuous performance test (10,000 cycles)
in accordance with DIN 4102-18

Performance classes

Classified to EN 13501-2.

Fire resistance + integrity:

- E60-C
- E120-C
- E180-C

Limitation of heat radiation: EW30-C

Self-closing feature: C2

Fabric

1000°C glass fibre fabric with a fire-retardant aluminium-filled polyurethane coating. **1200°C** stainless steel-reinforced glass fibre fabric with a fire-retardant aluminium-filled polyurethane coating. Both curtains achieve class:A2-s1,d0.

Design

- Stable headbox
- Invisible once installed
- Variable headbox sizes and versions
- Alternative roller and rod guide systems
- Side guide roller system ensures that the curtain will close under air pressures
- **ID** bottom bar with fabric loop closure to ensure a tight seal with the floor
- **U** angle section bottom bar
- **UK** sprung bottom bar to accommodate any unevenness in the soffit

Controls

- Easy to use controls
- 48V DC gravity fall motor
- Intelligent electronics
- Speed of descent limited to 0.15 m/s
- Option of an emergency opening button for personnel leaving an area
- Option of a fireman's override button
- Option of a safety bottom bar to retract curtain if there is an obstruction
- Option for intermediate stop
- Option for multi-tone siren and strobe light

Manufactured to **ISO 9001:2008** by Colt.

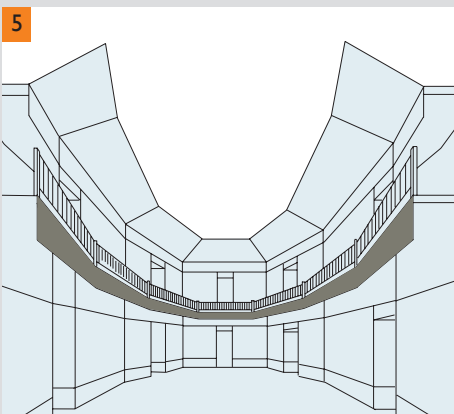
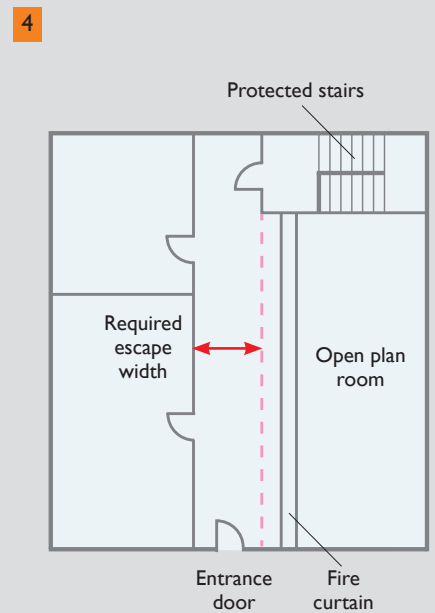
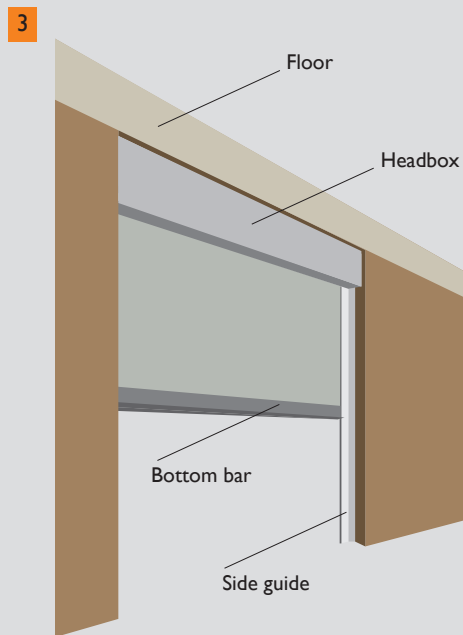
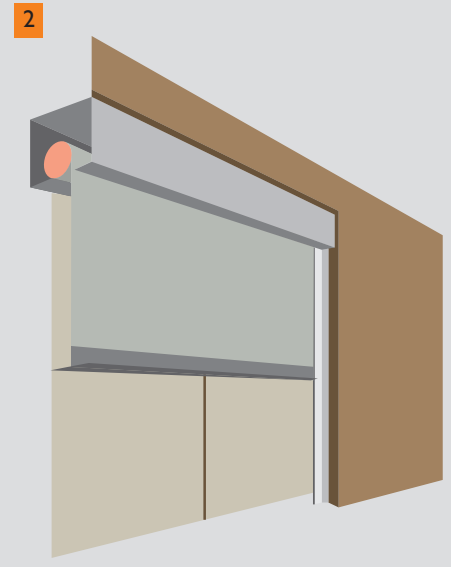
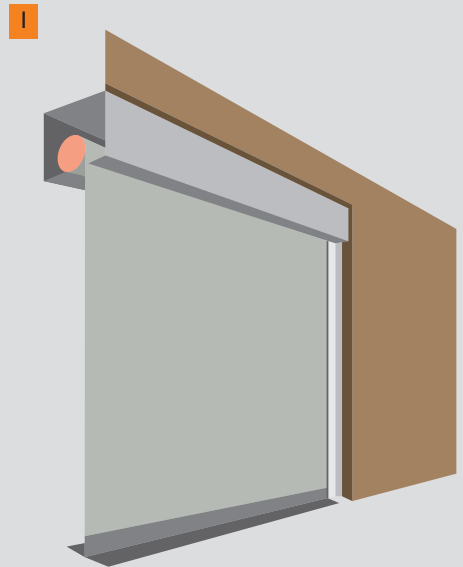
Applications for fire curtains

There are five typical applications that a fire curtain is used for:

- (1) The obvious application for a fire curtain is as a direct replacement for a fire door or a fire shutter. It doesn't mean to say that the curtain will be used as a door in everyday use, but it would normally be intended to keep it open most of the time and just to close it in emergency or under test conditions.
- (2) Fire curtains are also quite often used to protect lift doors. There is an application where the lift doors themselves are not fire rated but a fire rating is needed at that location, then simply dropping in a fire curtain in front of the lift doors is a common way of providing this.
- (3) Where there is a relatively large void being used as a smoke shaft, then that void can be closed off using a fire curtain. In normal circumstances such a shaft would be closed off using a damper or ventilator of some

type, if the opening is too big for a ventilator or damper, a fire curtain could be employed to close off the shaft on the levels where there is no fire.

- (4) Another common application is in an open plan dwelling. If in the case of a fire people are trying to escape from the upper floors, then they might well have to pass by the fire to get to an exit. In such circumstances it is quite common to have fire curtains which will drop in case of fire to provide a protected route through from the upper floors to the final exit. Another common use is just as small curtains, basically replacing fire shutters across counters, serveries, service shafts and so on. The main reason that people would use a fire curtain rather than a fire shutter is simply that it tends to be smaller and neater and less expensive.
- (5) If there is a narrow atrium balcony then it is quite common to be required to use a fire curtain rather than a smoke curtain for that particular application.

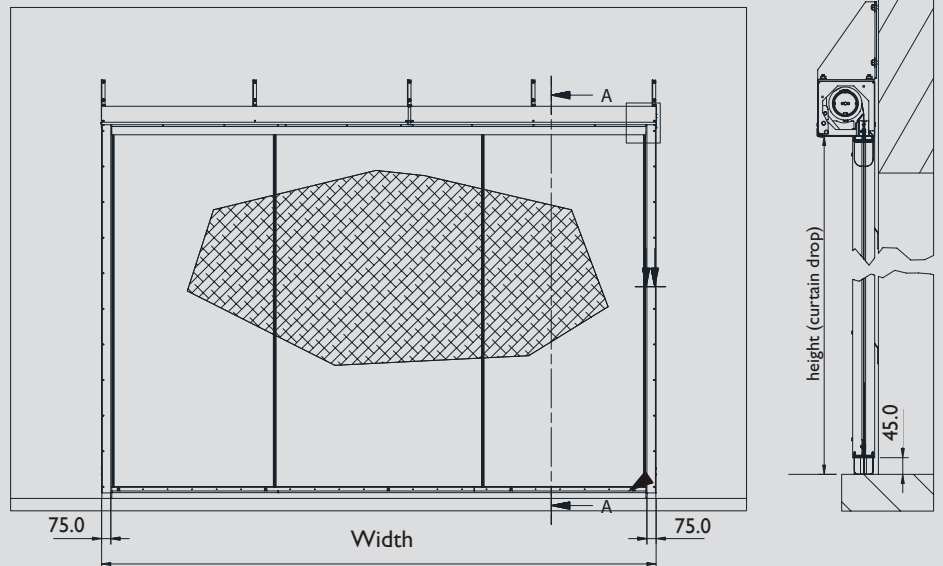


Note: the above schematics show the curtain part-deployed for clarity. Of course they normally drop right down to the floor.

FM-I excellent fire protection

A FM-I fire curtain is lightweight and compact, which enables it to be installed easily in a place with space constraints such as a false ceiling. It is classified as a fire barrier in accordance with EN 1634-1, providing protection for a defined period and at a defined maximum temperature.

A FM-I fire curtain comprises a flexible fire-resistant fabric which is wound around a circular tube. Upon receiving a signal from the fire alarm system or on loss of power, the curtain automatically unwinds to its operational position.



Features and benefits

High and certified performance - FM-I fire curtains have been tested as fire barriers for either 60, 120 or 180 minutes resistance, in accordance with EN 1634-1. It has a E60-C, E120-C and E180-C rating in accordance with EN 13501-2, thereby achieving an integrity rating for either 60, 120 or 180 minutes.

The E 60, E 120 and E 180 fabrics achieve the building class A2 S1 d0 to EN 13501-1.

The E120-C and E180-C versions also have class EW 30 in accordance with EN 13501-2, which demonstrates that the fabric re-radiates only a limited amount of heat.

A FM-I fire curtain has achieved a successful a continuous life cycle test (10,000 cycles) in accordance with DIN 4102-18.



FM-I under test

No power needed to operate it – A FM-I fire curtain unwinds to its operational position under the influence of gravity in a “gravity fail-safe” manner even if power is lost.

Compact and low in weight – A FM-I fire curtain is lightweight and compact, which enables it to be installed easily in a place with space constraints such as a false ceiling. Such a roller fire curtain is much less obtrusive than a roller shutter with a comparable performance.

A wide range of options – A FM-I fire curtain can easily be adapted to the physical constraints of the building. All system components – headboxes, fabric, bottom bars, drive systems – can be customised to your needs.

Easy to install and maintain - A FM-I fire curtain is delivered in modular form and as such is easy to install. The bottom of the headbox is closed off with a panel which also allows the entire length of the system to be accessed for servicing.

Virtually invisible when rolled up – There are no visible fixings either on the underside of the headbox or on the bottom bars. The headbox, the bottom bar and the side guides can be powder-coated to a RAL colour to blend in with the building.

Can accommodate thermal movement – All major components are fitted with expansion joints, which results in a high temperature resistance of the product.

Robust manufacture – FM-I fire curtains are manufactured under the ISO 9001 quality standard by Colt.

Configuration and sizes

A FM-I fire curtain is available as:

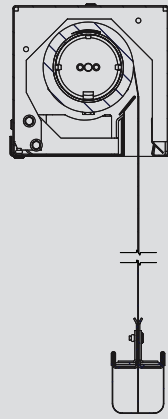
- A single (type SI) unit, where a limited size of barrier is required (e.g. a fire door or shutter)
- A double vertical (type DV) unit, where continuous runs with overlapped fabric to form a continuous barrier are required.
- A double horizontal (type DH) unit, where continuous runs with overlapped fabric to form a continuous barrier are required and where there is a premium on space under the ceiling.

Overall curtain lengths for single units are available from 1000 mm to 5000mm, and drops are available from 500 mm to 6000mm.

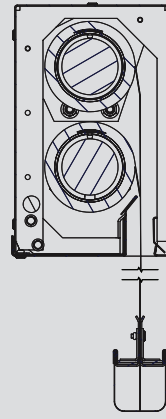
Double vertical and double horizontal units are unlimited in length and drops are available from 500 mm to 6000mm provided that curtains overlap.

The size of the drop determines the width of the overlap.

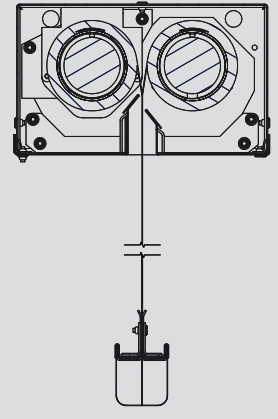
SI-x Single headbox



DV-x Double vertical headbox



DH-x Double horizontal headbox



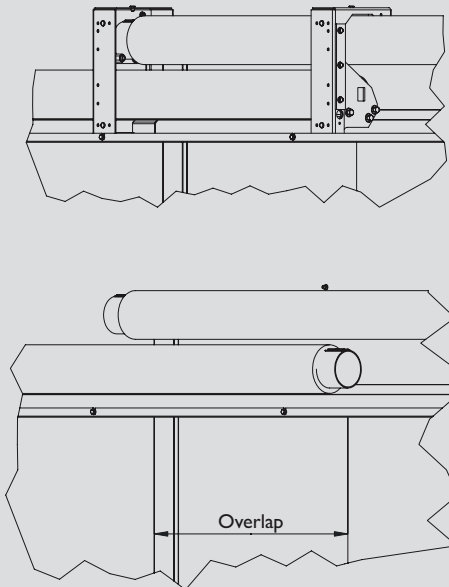
Headbox dimensions (mm)

	Width	Height
SI-N	155	150
SI-L	180	185

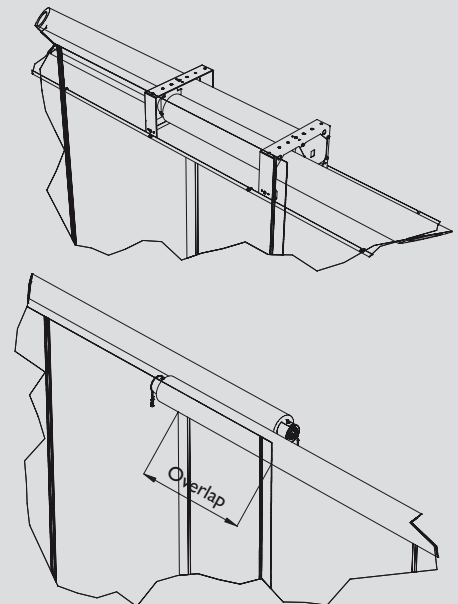
	Width	Height
DV-N	155	250
DV-L	180	300

	Width	Height
DH-N	250	150
DH-L	300	185

Overlap for DV type curtains



Overlap for DH type curtains



Maximum dimensions

Fire resistance tests were performed on a sample measuring 3 x 3 metres. Larger dimensions have been approved following an expert report from the Exova Warrington fire test house.

Headbox	Classification	Maximum overall width (mm)	Maximum overall height (mm)	Headbox size W X H (mm)
SI-N Single unit	E 60	5000	3750	155 x 150
SI-L Single unit	E 180 + EW 30	5000	5500	180 x 185
DH-N Multiple unit (double horizontal)	E 60	5000 - 99000	3750	155 x 150
DH-L Multiple unit (double horizontal)	E 180 + EW 30	5000 - 99000	5500	180 x 185
DV-N Multiple unit (double vertical)	E 60	5000 - 99000	3750	155 x 150
DV-L Multiple unit (double vertical)	E 180 + EW 30	5000 - 99000	5500	180 x 185

Minimum dimensions are 1m x 1m.

The curtain fabric

The fabric is fire-resistant and comprises one of the following options:

- E 60 heat-stabilised fabric achieving 60 minutes fire integrity.
- E 120 heat-stabilised fabric with a stainless steel inlay achieving 120 minutes fire integrity, with a EW 30 reduced radiation class to EN 1363-2, limiting the radiation of heat for a period of 30 minutes to prevent a fire being transferred to an adjacent area by radiation.
- E 180 heat-stabilised fabric with a stainless steel inlay, achieving 180 minutes fire integrity and 30 minutes limitation of the radiation of heat, as E 120 above.

A specification document in Word may be downloaded from <http://www.coltinfo.co.uk/fire-resistant-curtains.html> which gives additional information relating to these tests.



E60 material



E 120 and E180 material

The bottom bar

It is essential that the bottom bar will descend right down to floor level so as to provide a seal. Because it may bow under the heat, there is often some sort of mechanism within the bar to ensure that a reasonable seal is achieved at floor level, even if there is a rough floor surface.

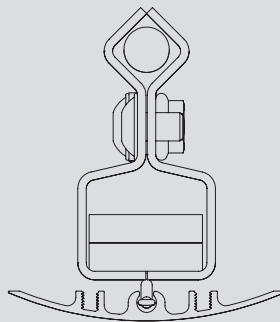
There are three bottom bar options. All are unobtrusive when the curtain is rolled up.

- **UK “universal with spring”** type, designed for commercial applications, comprising steel angle with an additional aluminium profile connected to a spring in order to accommodate any unevenness in the soffit when the curtain is rolled up. In this instance the customer needs to ensure that the floor is completely flat in order to minimise any smoke leakage.

- **U “universal”** type, designed for commercial or industrial applications, comprising steel angle. In this instance the customer needs to ensure that the floor is completely flat in order to minimise any smoke leakage.

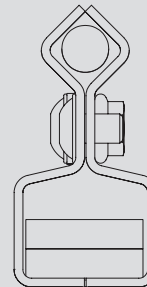
- **ID “industrial”** type, designed for industrial applications, comprising a fabric loop closure arrangement to ensure a tight seal against an uneven floor. It is especially useful if the floor is uneven.

UK bottom bar profile



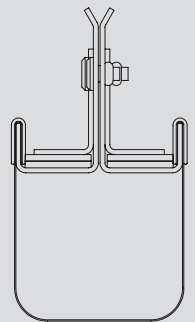
Spring closure

U bottom bar profile



Channel

ID z bottom bar profile



Fabric loop closure

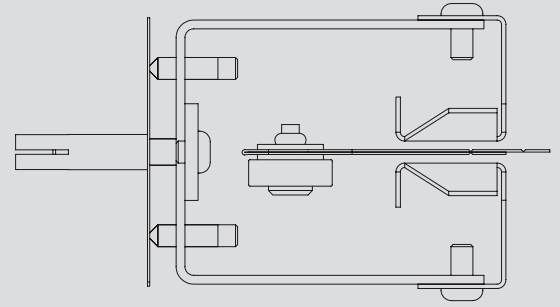
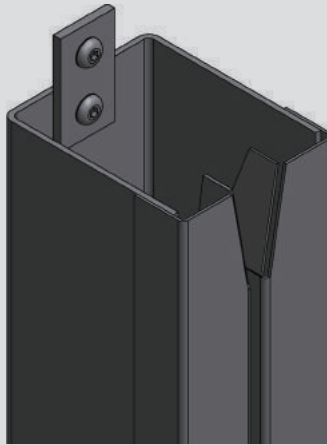


An ID bottom bar with loop

The side guide system

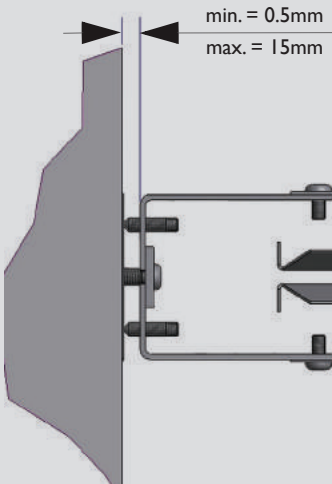
A side guide system is always fitted and provides a seal between the sides of the curtain fabric and the walls, ensuring that any positive or negative pressures created by a fire will be resisted by the curtain and so that it won't deflect significantly. Side guides can be integrated either into or onto a wall / soffit or into a recess / niche. The FM-I side guide roller system has been designed to ensure that the curtain will move to its closed position easily even when there are significant air velocities around the curtain.

Roller side guide system with either UK or U bottom bar

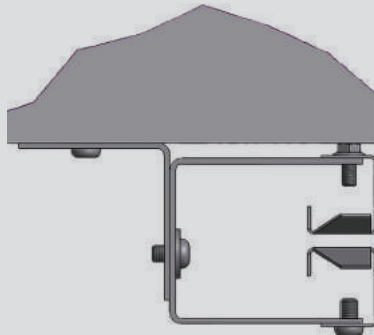


Side guide assembly options

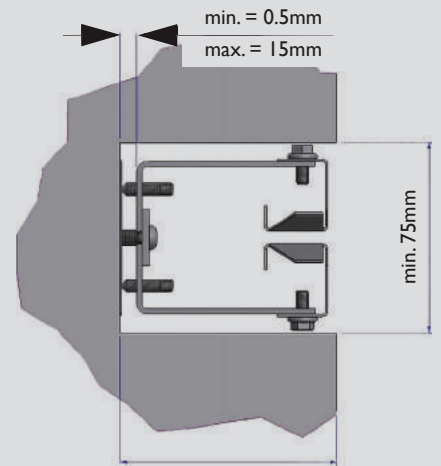
Onto soffit



Onto wall



Into niche



Side guide system into a niche



Side guides (1) and headbox (2). All unit components have been completely polyester powder coated

Controls and operation

There are 2 control options.

Option 1

The curtain installation is fully protected and fail-safe to avoid the need for fire rated cabling. The control system maintains the curtains in the raised position in the event of a temporary interruption to the power supply if an optional uninterruptible power supply (UPS) has been supplied and connected. If power is not returned, the curtains will descend to the down / default position a predetermined period (nominally 30 minutes) in a controlled fashion.

If signalled to descend during this period, the curtains drop under the force of gravity in a controlled manner to its fire operational position in a fail-safe manner. Once the curtains have descended it can then be driven up.

A FM-1 fire curtain can be made capable of operation as an integrated part of a smoke control and fire management scheme, with emergency power units and the facility to interface directly with a fire control system.

The panel also has a maintenance switch for service and maintenance purposes, so that the installation can be individually checked without having to interfere with the FAS.

Option 2

The panel is as described above, but has additional features and functions. It has been tested to BS 8524. The control panel is designed to meet the requirements of the pr I2101-9 product standard. It has a local power supply system to maintain all control functions over a period of at least 72 hours, meeting the requirements of EN I2101-10.

The panel is modular and can be configured to provide any of the necessary functions needed for a project.

It monitors cables for wire-break and short circuit in accordance with EN I2101-9. It can function as a standalone system when connected to smoke/heat detectors and break glass push buttons. It has 3 indication lights and a buzzer and push buttons for manual operation.

The panel also can include various options such as:

- An emergency opening button for personnel leaving an area to be able to open the curtain once it has descended so that they can escape.
- A fire-fighter's override button to raise the curtain in order to allow fire-fighter access to the space on the other side which is on fire.
- A safety bottom bar to stop the curtain when it is descending if there is an obstruction.

- A beam detector to monitor the opening for obstructions.
- Multiple position deployment: this could involve a curtain which would drop part-way, perhaps to provide smoke control in the early stages of the fire, hold at that for a set period and then dropped to provide fire protection at a later stage.
- Combination multi-tone siren and strobe light including the option of a voice warning system.



Set up for Option 1 controls (showing them installed on a project)



Set up for Option 2 controls (showing them installed onto a demonstrator panel)

Applications



Retail - fire curtain lowered



Retail - fire curtain in mid position



Retail



Headbox and local control boxes



Warehouse



Warehouse



Warehouse



Factory



Basement