Technical Data Sheet FSC-M240-MX

Fire & Smoke Control

Smart Matrix Controller FSC-M240-MX for fire safety and smoke extraction application with matrix set up. To control and monitor up to 240 motorized fire or smoke extraction dampers, 60 scenarios and up to 35 ventilators. Integration into a Building Automation System via BACnet IP; MS/TP and Modbus possible.

Content

Section (continuation)	Page	Section (continuation)	Page
Technical Data	1	Communication Layout	9
Cable Specification	3	Online Matrix-Tool	10
Functionalities / Dimensions	6	Matrix Expample	10
Electrical Installation	7	Remote Access through Cloud (available free of charge)	11
Functionality Dip Switches	8	User Manual	11

Technical Data

Electrical Data	Operating Voltage	5 V DC (Power supply for 230 V AC included in delivery)
	Power Consumption	< 10 W
	Electric Current	3 A
	Connections	Quick connection terminals
Communication / Modbus	Functionality	Line 3 on the FSC-M240-MX controller works as Modbus slave port. For easy integration into any Modbus network. Any Modbus master can be connected to this port and access all devices connected to the FSC-M240-MX.
	Protocol	Modbus RTU
	Medium	RS-485, not electrically isolated
	Transmission Formats	Specified by Modbus RTU standards
	Baud Rate	9.600 bps
	Modbus Dedicated Port	Connect any Modbus system to the dedicated port of the FSC-M240-MX to monitor or access the parameters in the connected FSC-UFC24, FSC-UFC24-2, FSC-UFC230-2, FSC-UFC24-230, FSC-A-IOM24-MX.

	Addresses	Modbus addresses 121 (line 1), 122 (line 2) and 123 (line 4) for the FSC-M240-MX
	Termination	120Ω line termination. Jumper available on extra pin on PCB for each line. Position of jumper if FSC-M240-MX is last Modbus device in line, see page 7
	Typical Response Time	< 500 ms
Communication / BACnet	Functionality	For 3 lines: 2 lines (number 1 and 2) with max 60 FSC-UFC devices per line and up to 3 FSC-A-IOM24-MX on line 4. For easy integration into any superior BACnet system. The FSC-M240-MX takes over the controls function of the participants of the 3 lines.
	Protocol	BACnet MS/TP
	Medium	RS-485, not electrically isolated
	Number of Devices per Line	For max. 60 FSC-UFC... devices without repeater on both, line 1 and line 2. Max 3 FSC-A-IOM24-MX connected to line 4.
	Baud Rates	Auto detect. 9.600, 19.200, 38.400, 76.800 bps. Default 38.400 bps
	Device Instant Adresses	Line 1: 804121; line 2: 804122 FSC-UFC… addresses from 1-60 (line 1) and 61-120 (line 2), FSC-A-IOM24-MX addresses 124,125,126 (line 4).
	Termination	120Ω line termination. Jumper available on extra pin on PCB for each zone. Position of jumper if FSC-M240-MX is last BACnet device in line, see page 7
	Typical Response Time	< 100 ms
Safety	Protection Class	III
	Protection Degree	IP42, housing of non-flammable polycarbonate
	EMC Correlation Emission	EN61000-6-3 and EN55022
	EMC Correlation Immunity	EN50130-4 and EN55024
	Electrical Safety	EN60950-1
	Ambient Temperature	10° C to +30° C
	Storage Temperature	0° C to +40° C
	Maintenance	Maintenance free

Mechanical Data (Dimensions / Weight)	Width	136 mm
	Height	77 mm (with bracket 80 mm)
	Length	188 mm
	Weight	approx. 1 kg
	See drawing page 6.	
Installation	Mounted on DIN Rail, mounting bracket or screw fixed.	
Electrical Installation	See details page 7.	
Safety Notes	The FSC-M240-MX is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport. The company buying and / or mounting the FSC-M240-MX on site bears full responsibility for the proper functioning of the whole system. Only authorized specialists may carry out the installation. All applicable legal or institutional installation regulations must be complied with during installation. The device contains electrical and electronic components and is not allowed to be disposed of as domestic refuse. All locally valid regulations and requirements must be observed.	
Product Features / Application	The FSC-M240-MX is a Smart Matrix Controller for fire safety and smoke extraction application with matrix set up. Integrated software for configuration of the controls. It monitors and controls up to 240 fire and/or smoke extraction dampers and up to 35 ventilators. Up to 60 scenarios can be covered by the FSC-M240-MX. It is mounted in the control room or according to customer's need. Integrated real time clock, touch screen. Internet access via Wifi and W-LAN. Cloud access is an integrated part of the solution. It can work stand-alone, via cloud access or can be implemented into any Building Automation System by BACnet IP; MS/TP or Modbus.	
Power Supply	The FSC-M240-MX needs to be powered up with 5 V DC (Power supply for 230 V AC included in delivery).	

Cable Specification

For the connection of the FSC-M240-MX with the FSC-UFC… devices the following cable specifications apply:
120Ω with 1 Mhz. Made of 24 # flexible twisted pairs overall foil + braidshielded and overall jacketed with a flexible compound for indoor use, or similar. Cable type: Belden 3105a or equivalent.

IMPORTANT: SMT takes no responsibility of the functionality of the units/network if a different cable is used to the one specified here.

Communication

Modbus RTU (RS-485) or BACnet MS/TP (RS-485).
Remote control via WiFi or W-LAN connection possible.
Cloud access available free of charge.

Connection Field Devices

Up to 120 pcs. (2 x 60) FSC-UFC24, FSC-UFC24-2, FSC-UFC230-2, FSC-UFC24-230 as well as 3 pcs. FSC-A-IOM24-MX can be connected to the FSC-M240-MX. The FSC-M240-MX automatically recognizes the connected FSC-UFC... (automatic recognition of the addresses, subject to correct addressing through the dip switches). The addressing of the FSC-UFC... is recommended to be done in consecutive order.

Additional Connections

Input and Output Modules
Total 60 DI and 35 DO are available.
I/O connections for 6 x DI and 6 x DO integrated (1 DO for monitoring the power) in the FSC-M240-MX. Additional 24 x DI and 30 x DO connections on max 3 pcs FSC-A-IOM24-MX. Additional 30 DI in connected UFC-Devices.

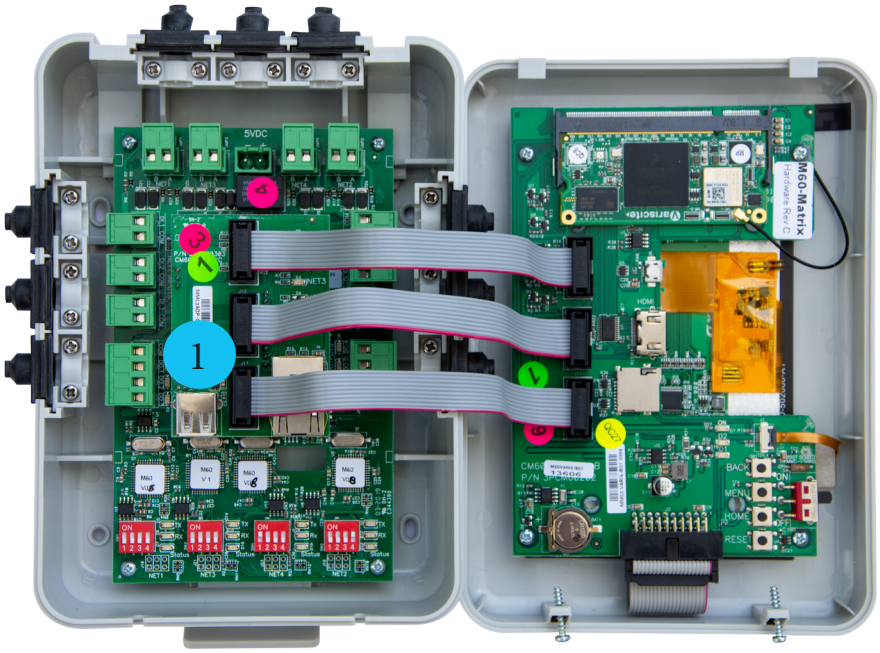
Important Information

Basically, the commands for controlling the scenarios should come via the hardware = the digital inputs. NOT via bus commands!
Fans in particular MUST be connected to the outputs of the FSC-M240-MX! SMT AG is the supplier of the components and is not the system integrator! The responsibilty of the functioning of the complete system, in case of the integration of the M240-MX into the building automation, is at the customer who is taking the whole system into operation. It's neither the task of SMT nor is it included in the scope of delivery that SMT makes network optimization. Should this be required, this is optional and will be offered separately.

PROPER HANDLING

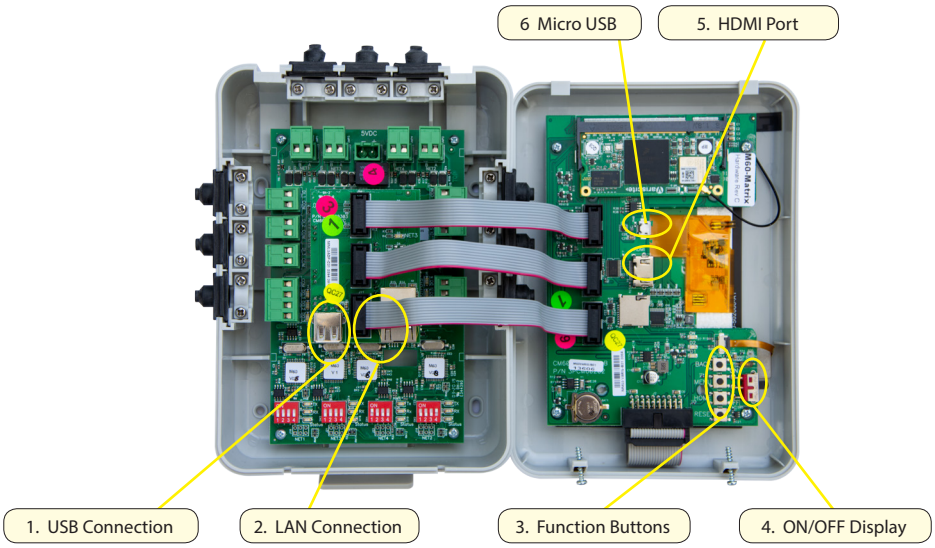
The screen is connected to the body / IO unit with 3 cables.These cables should NOT be removed from the terminals. Should the screen unit still have to be separated from the body, the power supply from the controller MUST first be disconnected! Then carefully remove the 3 plugs from the PC board in the body / IO unit of the controller. The power supply MUST be disconnected before the plugs are re-fitted. 1

IMPORTANT: Please do not touch the electronics in the screen unit. A careful handling of the controller is the condition for a proper functioning. During commissioning, the screen unit must be attached by any kind of bracket to the body part of the controller. Do not leave it hanging on the flat cables only.



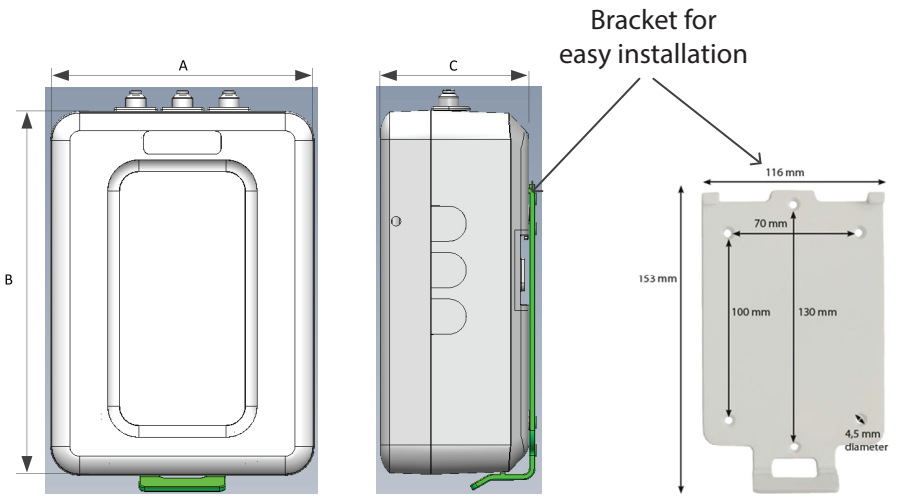
Functionalities / Dimensions

Functionalities



1.	USB Connection	USB Socket, for uploading Matrix to the controller.
2.	LAN connection	Socket for a LAN cable to connect the controller to the internet.
3.	Function Buttons	For internal use only.
4.	ON/OFF Display	The switch needs to be in ON position.
5.	HDMI Port	HDMI Socket, not in use.
6.	Micro USB	Micro USB Socket, for internal use only.

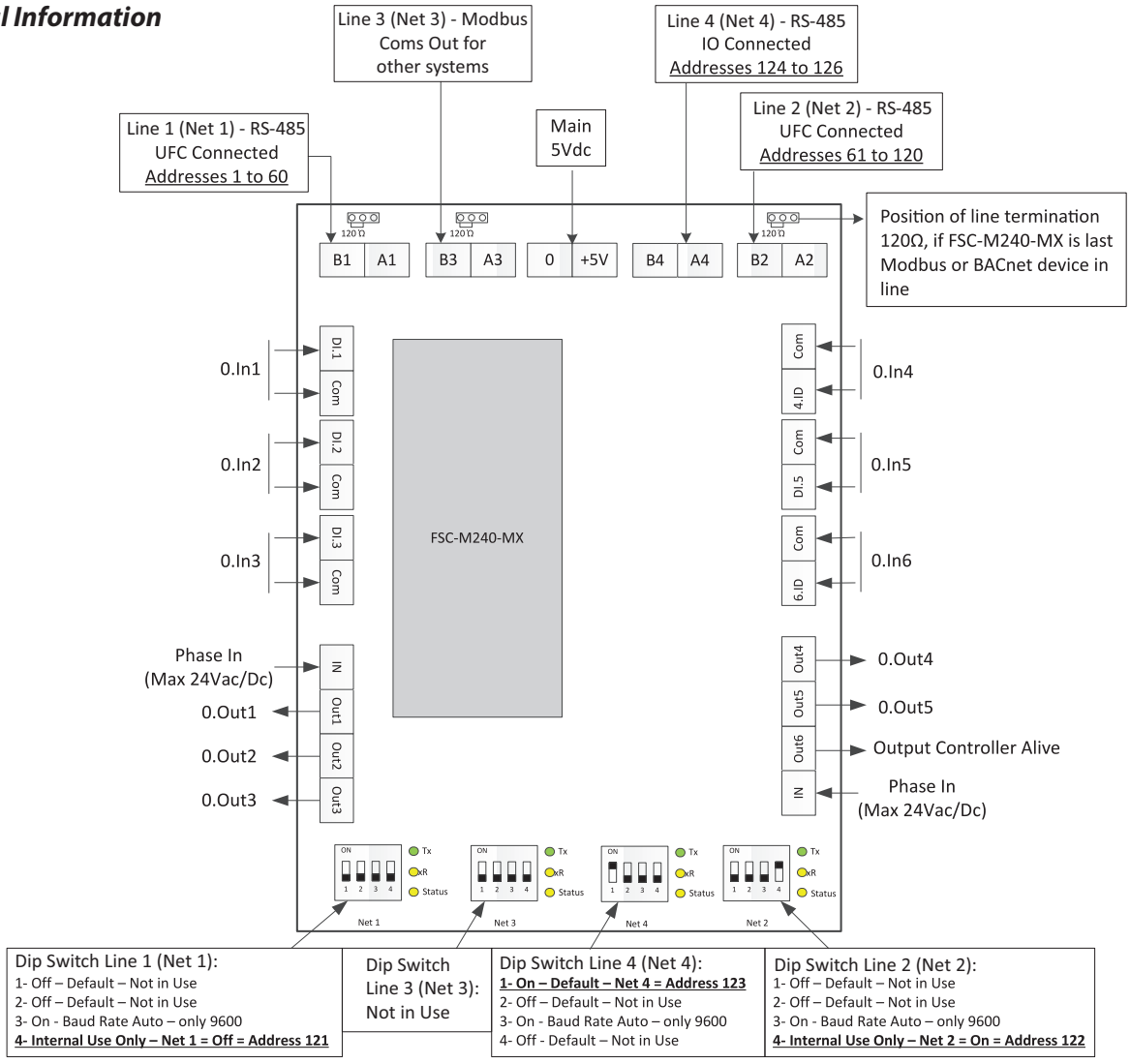
Dimensions



Dimension	mm
A	136
B	188
C	77 (with bracket 80)

Electrical Installation

General Information



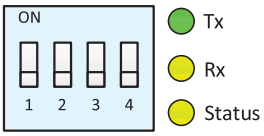
Modbus Slave Line 3 (Net 3):
Line 3 on the FSC-M240-MX controller works as Modbus slave port. For easy integration into any Modbus network. Any Modbus master can be connected to this port and access all devices connected to the FSC-M240-MX.

Digital Inputs
DI.1 - DI.6 are scenario (alarm) inputs. The logic of the corresponding scenario is running in the FSC-M240-MX controller.

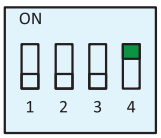
Digital Outputs
Out.1 - Out.5 are outputs which are activated by the alarm scenarios. They are used to activate/deactivate external units as for example ventilators.
Out.6 is the "Controller Alive Output". As soon as power of the FSC-M240-MX is ON, this output is active. In case of power loss the output signal is interrupted. It does not follow any logic of the matrix.

Functionality Dip Switches

Default setting Line 1 (Net 1):



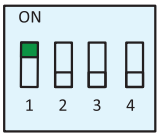
Default setting Line 2 (Net 2):
For the correct operation of the FSC-M240-MX, dip switch no 4 of net 2 needs ALWAYS to be on ON.



Pin	Off (Default)	On
1	Not in use	Not in use
2	Not in use	Not in use
3	Auto Baudrate	Baudrate 9600
4	For Internal Use Only	

Line 3 (Net 3)
Modbus Port: Fixed baud rate 9'600 bps.

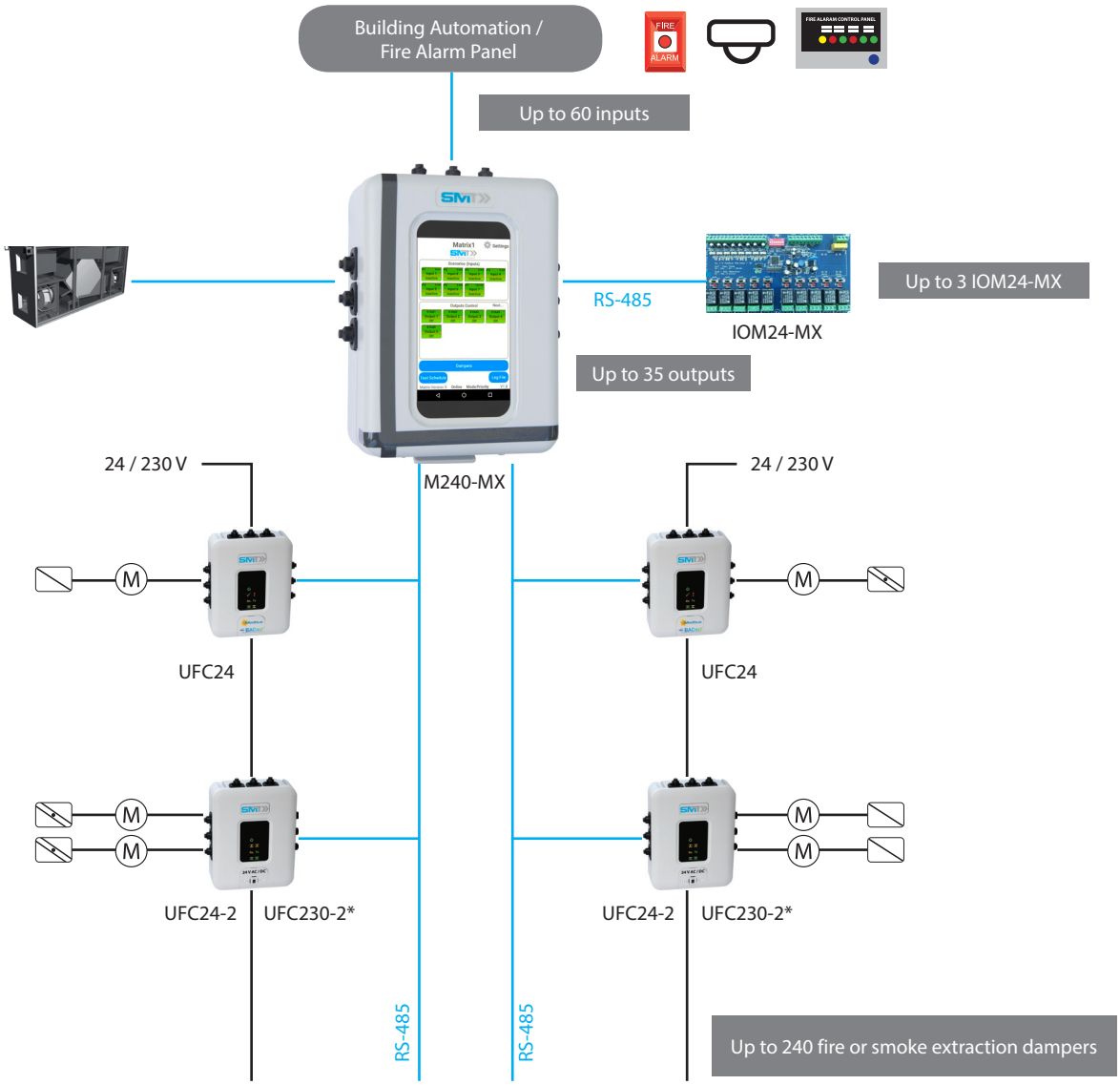
Default setting Line 4 (Net 4):



Pin	Off (Default)	On
1	Not in use	Address 123
2	Not in use	Not in use
3	Auto Baudrate	Baudrate 9600
4	For Internal Use Only	

Communication Layout

BACnet MS/TP, Modbus RTU



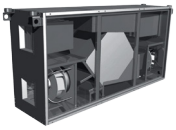
Summary:

- Up to 60 inputs / scenarios
- Up to 35 outputs (e.g. ventilators)
- Up to 240 fire or smoke extraction dampers
- 3 lines (lines 1 and 2: up to 60 UFC devices / line. Line 4: up to 3 IOM24-MX)
- Modular expansion of I/O's based on project size (via up to 3 IOM24-MX)
- Individual control of 2 dampers together with the UFC24-2 / UFC230-2
- UFC devices are available for the connection of 24 V and 230 V actuators (24 V: UFC24, UFC24-2, 230 V: UFC230-2)
- UFC24 and UFC24-2 for fire and smoke extraction dampers. *UFC230-2 for fire dampers only

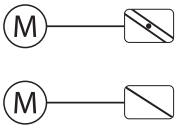
Online Matrix-Tool

- The configuration of the matrix is done via the Internet based, easy to handle and intuitive online tool. The matrix configuration and possible adaptations can be made anytime and independently of the FSC-M240-MX controller
- The uploading can be done anytime in the project via Internet or USB device
- Project adaptations and new matrix versions can be created anytime, independent of the running application, and uploaded to the controller
- Up to 10 people can work on the same matrix
- Only confirmed and signed versions can be uploaded to the controller
- Several features as scenario testing (auto and manual), priority damper settings, delays settings for outputs etc. are included features of the system
- For more information about the details of the application and the several options (i.e. priority settings, alarm outputs etc.) we refer to the separate user manual

Matrix Expample



Outputs / Ventilators (up to 35)	Inputs / Scenarios (up to 60)									
	Idle (0)	1	2	3	4	5	.	.	.	60
1	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
2	Off	On	Off	Off	Off	Off	On	Off	Off	On
3	Off	Off	On	Off	Off	Off	On	Off	Off	Off
4	On	Off	On	Off	Off	Off	Off	Off	On	Off
5	Off	Off	Off	On	Off	Off	Off	Off	On	On
.	On	Off	Off	On	Off	Off	Off	On	On	On
.	On	On	Off	Off	On	Off	Off	On	On	Off
.	Off	Off	Off	Off	On	Off	Off	Off	Off	On
35	Off	On	Off	Off	Off	On	Off	Off	Off	On



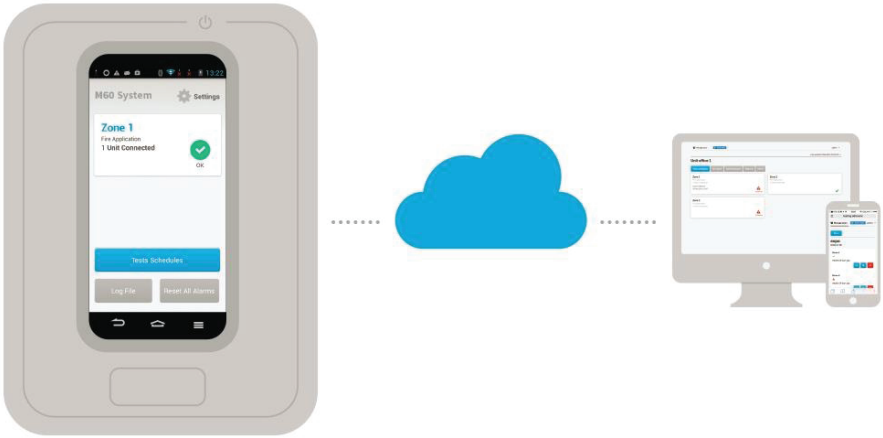
Fire and Smoke Extraction Dampers (up to 240)																			
1	Open	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Closed	Priority
2	Open	Closed	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority
3	Open	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority
4	Closed	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority
5	Open	Closed	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority
.	Closed	Closed	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority
.	Closed	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority
.	Open	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority
240	Open	Open	Priority	Open	Priority	Open	Priority	Open	Priority	Closed	Priority	Open	Priority	Closed	Priority	Open	Priority	Open	Priority

Remote Access through Cloud (available free of charge)

There is the possibility to access the FSC-M240-MX remotely via a Cloud (free of charge).

- Access to each project/device anytime possible without having to go there physically => complaints, service calls
- Test reports and alarm messages (alerts) can be automatically sent to registered e-mail addresses
- Possibility to add ‚tool view' into BAS system
- For testing of the dampers only one person is needed (confirmation during physical inspection via mobile phone => automatic logging)
- The integrated service app allows remote access for service and analysis purpose

Please contact us for more details.



User Manual

For more information regarding the configuration of the FSC-M240-MX or the setting up of the matrix etc. please refer to the user manual or to the data sheets of the specific FSC-UFC...

Systems & Modules Technology AG
Bachtelstrasse 32
CH-8636 Wald
Switzerland
Phone: +41 55 241 10 20
Mail: info@smtec-ag.ch