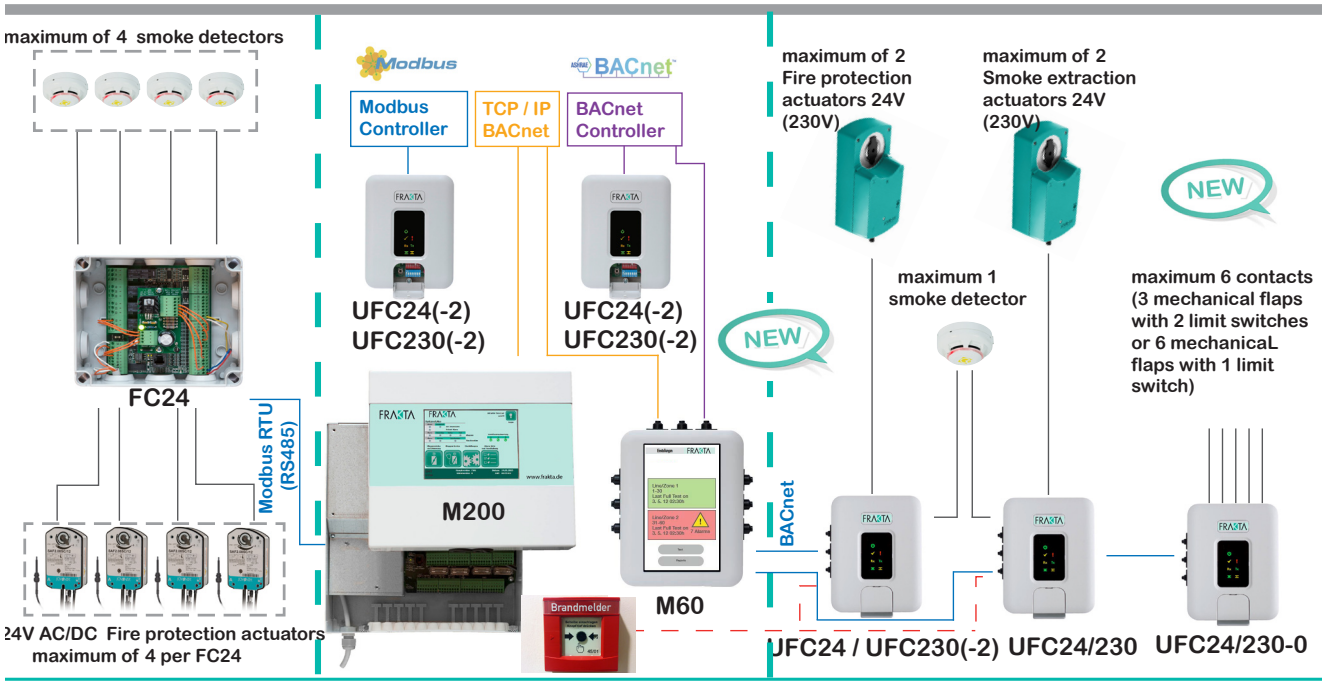
Technical data sheets for the control and monitoring of fire protection and smoke extraction dampers

Universal- control units for perfect connection in Modbus or BACnet systems



FSC-M200 Digital controller with touch screen and integrated software for up to 200 fire dampers and 200 smoke detectors, Communication via Modbus RTU (RS-485) Remote Access via TCP / IP (Ethernet RJ45) with BACnet MS/TP interface

FSC-M60 Digital controller with touch screen and integrated software for up to 120 fire protection or smoke extraction dampers and 120 thermoelectric trip units Communication via Modbus RTU (RS-485) or BACnet MS/TP System , Cloud function possible

FSC-UFC24 Universal control unit for the control and monitoring of
FSC-UFC24-230 2 parallel controlled 24 V / 230 V motorized fire protection or smoke dampers, 2 smoke detectors, 1 thermoelectric trip unit, Integration into a Modbus or BACnet MS/TP system possible or control by means of analogue signal, display with testroutine

FSC-UFC24-2 Universal control unit for the control and monitoring of
FSC-UFC230-2 2 separated controlled 24 V / 230 V motorized fire protection or, Integration into a Modbus or BACnet MS/TP system possible or control by means of analogue signal, display with testroutine

FSC-A-SRT1 Secure RS-485 Hub and Repeater Modul with conversion the standard bus topology in star or ring topology

Technical Data Sheet FSC-M200

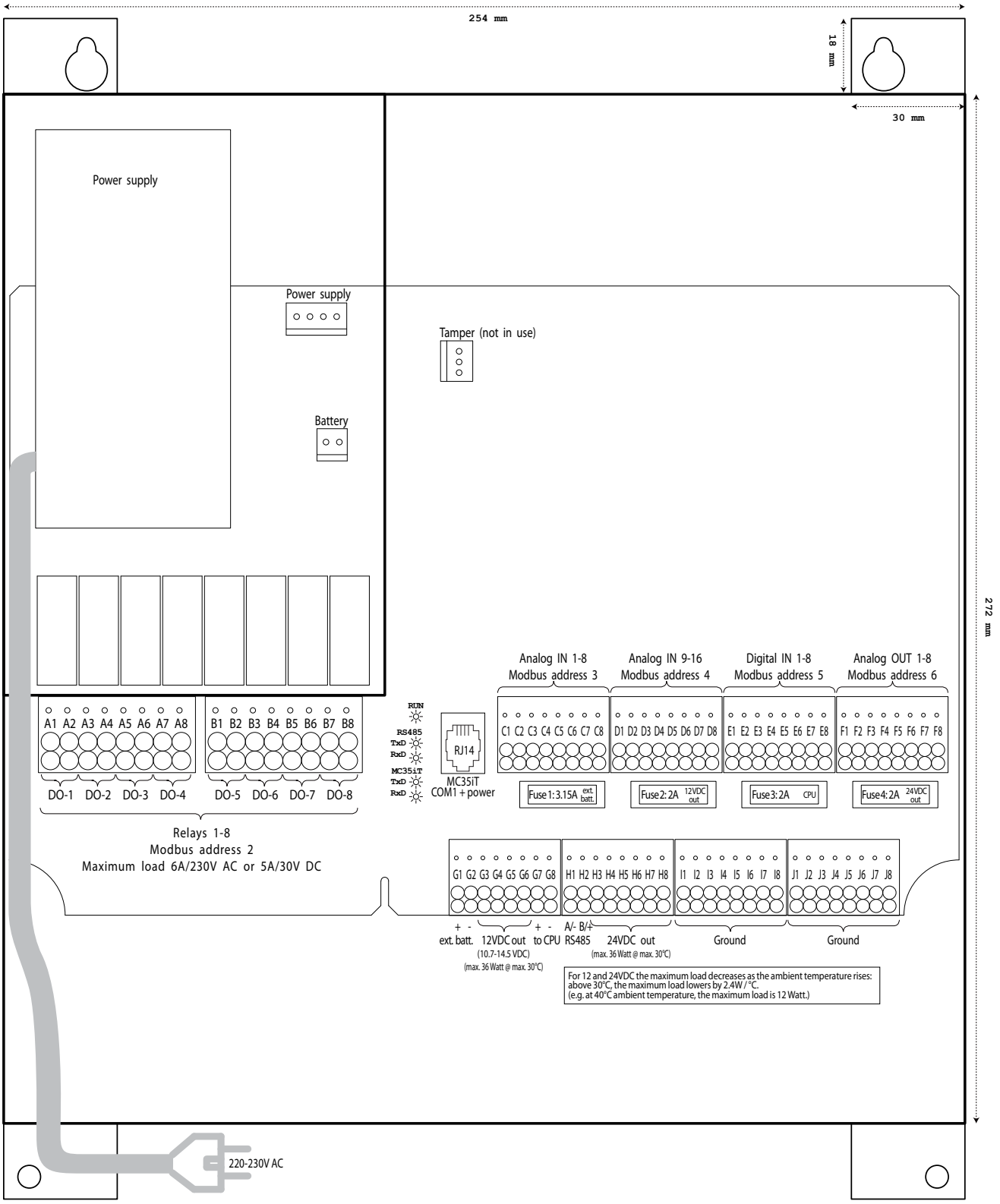
Digital controller M200 to control and monitor up to 200 motorized fire dampers and smoke detectors.

Technical Data

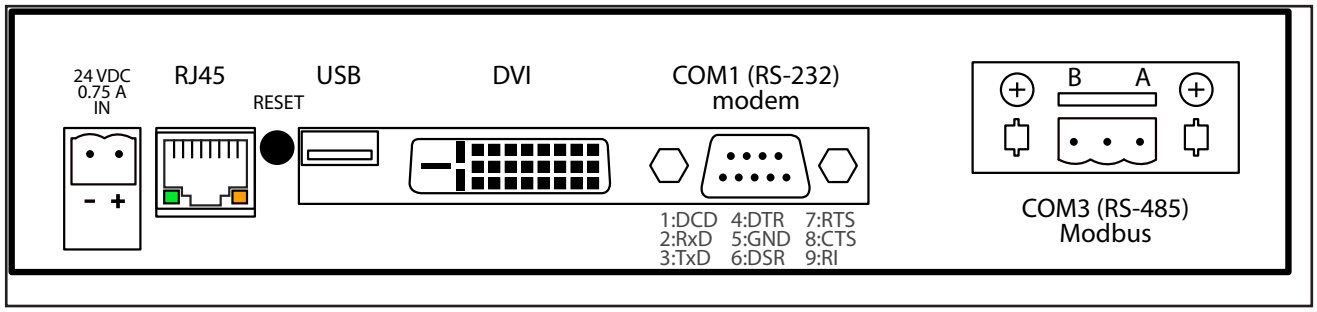
Electrical Data	Operating Voltage	100 - 240 V AC
	Power Consumption	< 10 W
	Connections	Spring cage terminals (Phoenix Contact)
Communication / Modbus	Protocol	Modbus RTU
	Medium	RS-485, not electrically isolated
	Transmission Formats	Specified by Modbus RTU standards
	Number of Joints	Max. 50 Modbus devices (FSC-FC24, FSC-UFC24), without repeater
	Baud Rates	9'600 to 57'600 bps for Modbus
	Address	Modbus addresses from 11-60 (1-10 reserved for the M200) (0 reserved for broadcast)
	Termination	120 ohm (physical resistor provided with each unit)
	Typical Response Time	< 200 ms
	I/O Ports	8 DO, 16 AI, 8 DI, 8 AO
	Maximum Load	6A @230 V AC or 5A @ 30 V DC
Safety	Protection Class	III (safety extra low voltage)
	Protection Degree	IP 54
	EMC Correlation Emission	EN61000-6-3 and EN55022
	EMC Correlation Immunity	EN50130-4 and EN55024
	Electrical Safety	EN60950-1
	Ambient Temperature	0 °C to +40 °C
	Storage Temperature	-25°C to +70 °C
	Humidity Test	95% RH, non-condensing (EN 60730-1)
	Maintenance	Maintenance Free
Mechanical Data Dimensions / Weight	Width	254 mm
	Height	144 mm
	Length	272 mm
	Weight	6.1 kg
	See drawings page 3 + 4	

Installation	Screw-mounted
Electrical Installation	Wiring diagram see separate page 5
Safety Notes	The FSC-M200 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-M200 on site bears full responsibility for the proper functioning of the whole system. Only authorized specialists may carry out 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-M200 is a digital controller to control and monitor up to 200 motorized fire dampers. It is mounted in the control room or according to customer's need. Integrated real time clock, touch screen and integrated IP address.
Power Supply	The FSC-M200 needs to be powered up with 230 V AC.
Communication	Digital through Modbus RTU (RS-485). TCP/IP through Ethernet (RJ45) for remote control.
Field Controller Connection	Up to 50 pcs Modbus devices (FCS-FC24, FSC-UFC24) can be connected to the FCS-M200.
Additional Connections	***Input Modules*** I/O ports 8 x DO, 16 x UI, 8 x AO, 8 x DI. Input for fire alarm system. ***Output Modules*** For any kind of Modbus modules.

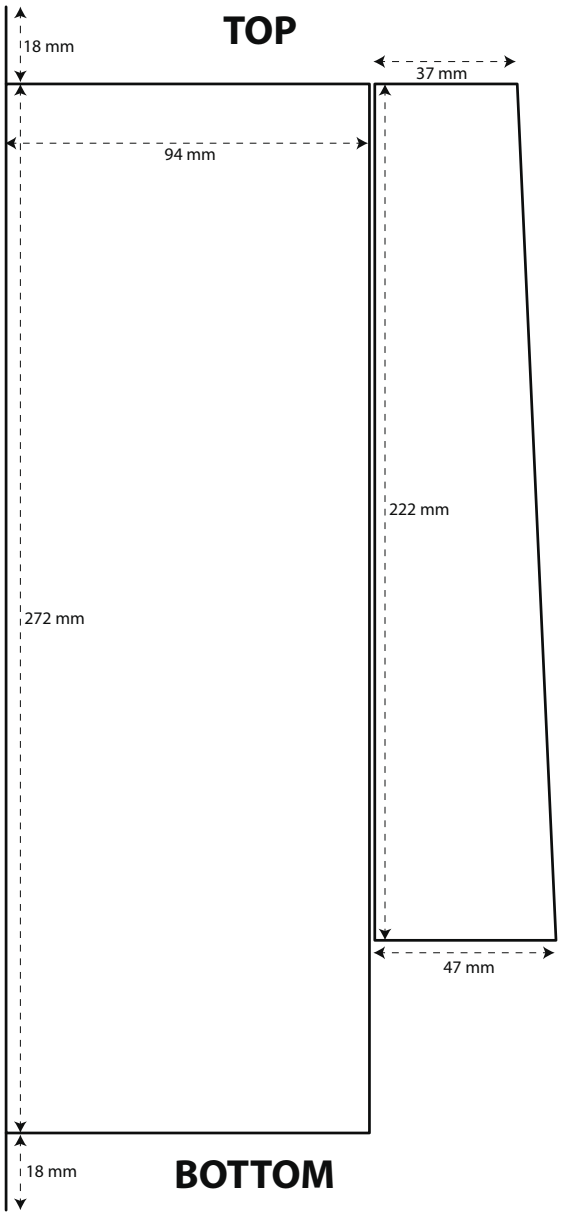
Layout Connection Panel (I/O Modules)



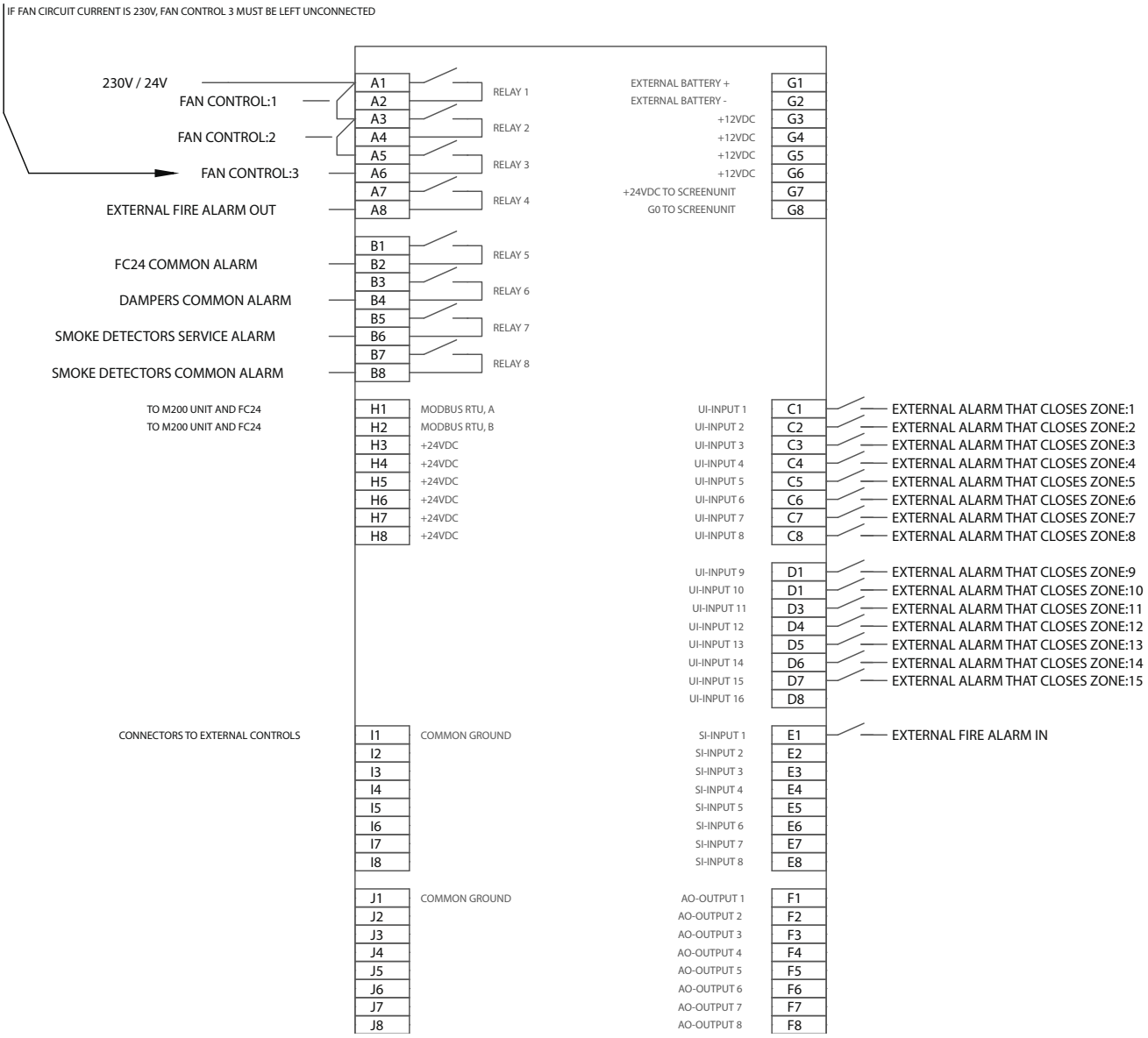
Layout Connections User Interface (CPU)



Dimensions



Wiring Diagram



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Technical Data Sheet FSC-M60

Smart controller M60 with high resolution touch screen to control and monitor up to 120 motorized fire or smoke extraction dampers and smoke detectors via BACnet or Modbus.

Content

Section	Page	Section (continuation)	Page
Technical Data	1	Explanation Application	7
Cable Specification	3	Functionality Dip Switches	8
Dimensions	5	Communication Layout	9
Electrical Installation	6	Remote Access through Cloud	10

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	For 2 zones with max. 60 FSC-UFC24 per zone. For easy integration into any superior Modbus system. Takes over the controls function for the participants of the 2 zones
	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-M60 to monitor or access the parameters in the connected FSC-UFC24.

	Addresses	Modbus addresses 121 (zone 1) and 122 (zone 2) for the FSC-M60
	Termination	120Ω line termination. Jumper available on extra pin on PCB for each zone. Position of jumper if FSC-M60 is last Modbus device in line, see page 6
	Typical Response Time	< 500 ms
Communication / BACnet	Functionality	For 2 zones with max. 60 BACnet devices per zone (FSC-UFC24). For easy integration into any superior BACnet system. Takes over the controls function for the participants of the 2 zones
	Protocol	BACnet MS/TP
	Medium	RS-485, not electrically isolated
	Number of Devices per Line	Max. 60 BACnet devices (FSC-UFC24) without repeater. Two lines with max. 60 devices each available
	Baud Rates	9.600, 19.200, 38.400, 76.800 bps (auto detect), default 38.400
	Device Instant	Zone 1: 804121; Zone 2: 804122
	Adresses	FSC-UFC24 addresses from 1-60 (zone 1) and 61-120 (zone 2)
	Termination	120Ω line termination. Jumper available on extra pin on PCB for each zone. Position of jumper if FSC-M60 is last BACnet device in line, see page 6
	Typical Response Time	< 100 ms
Safety	Protection Class	III (safety extra low voltage)
	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	135 mm
	Height	75 mm
	Length	185 mm
	Weight	approx. 1 kg
	See drawing page 5.	

Installation

Mounted on DIN Rail, mounting bracket or screw fixed.

Electrical Installation

See details page 6.

Safety Notes

The FSC-M60 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-M60 on site bears full responsibility for the proper functioning of the whole system. Only authorized specialist 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-M60 is a smart controller with a high resolution touch screen to control and monitor up to 120 motorized fire or smoke extraction dampers, 120 smoke detectors as well as 120 thermoelectric tripping devices. Two zones can be built with the FSC-M60: Either two fire or two smoke extraction zones or one fire and one smoke extraction zone. It is mounted in the cabinet or according to customer's need. Integrated real time clock, intuitive handling and remote control via WiFi or cellular connection possible. Optional: Cloud access.
Fully autonomous operation (Stand Alone Application) or Bus integration via BACnet or Modbus (RS-485) into a Building Automation System possible. Per zone: control of 1 ventilator (input/output), 1 alarm input (external alarm), 1 alarm output (internal alarm) and other inputs/outputs are integrated.

Power Supply

The FSC-M60 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-M60 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 cellular connection possible.
Optional: Cloud access.

Connection Field Devices

Up to 120 pcs. (2 x 60) FSC-UFC24 can be connected to the FSC-M60.
The FSC-M60 automatically recognizes the connected FSC-UFC24 (automatic recognition of the addresses, subject to correct addressing through the dip switches).
The addressing of the FSC-UFC24 needs to be in consecutive order.

Additional Connections

Input and Output Modules
I/O connections 6 x DO, 6 x DI
Input for Fire Alarm System is included in the 6 DI.

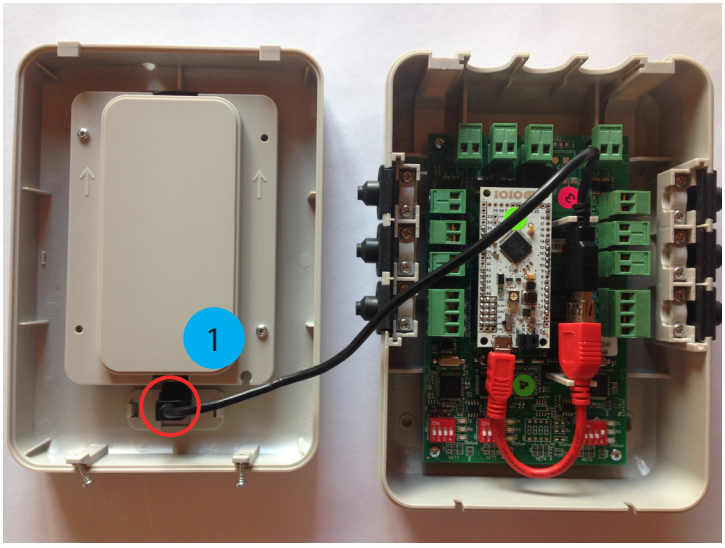
IMPORTANT NOTICE

Please be aware, that the M60 gives NO signal for the fans to be shut off when testing only single dampers. Depending on where the damper is located, a manual shut down of the fans has to be considered when testing a single damper (e.g. the one which is closest to the fan). This is in the responsibility of the person / company doing the tests. SMT AG will not take any liability in any such case.

PROPER HANDLING

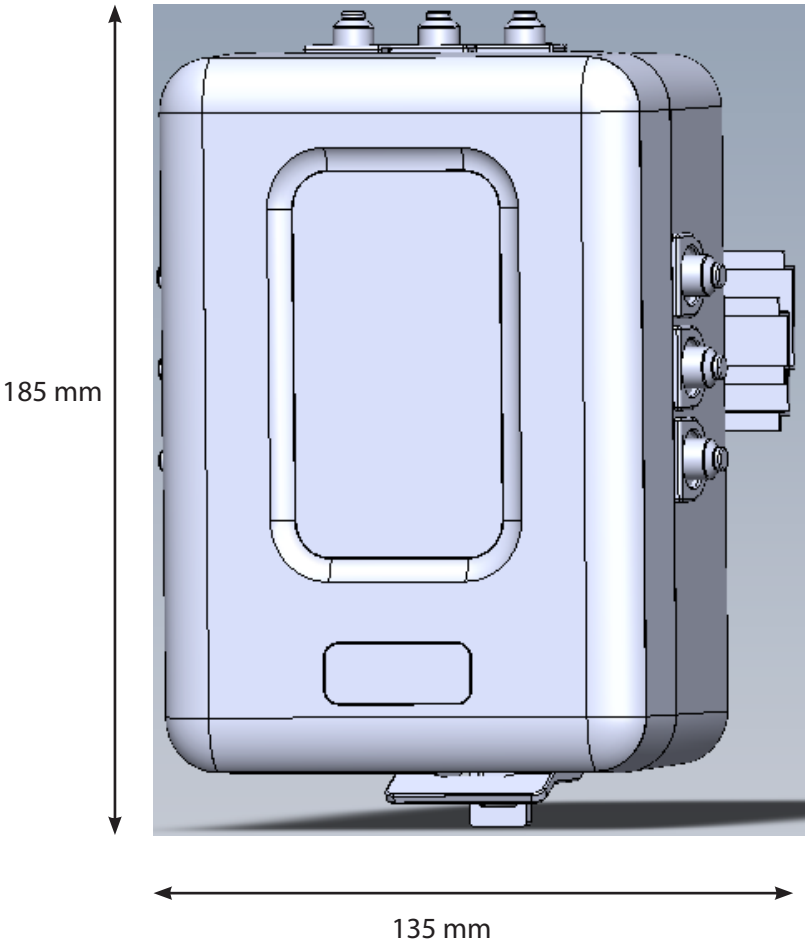
When the screen unit needs to be disconnected from the I/O unit, take out the plug (black USB cable) in the screen unit. 1

NEVER unplug the red USB cable (both plugs).



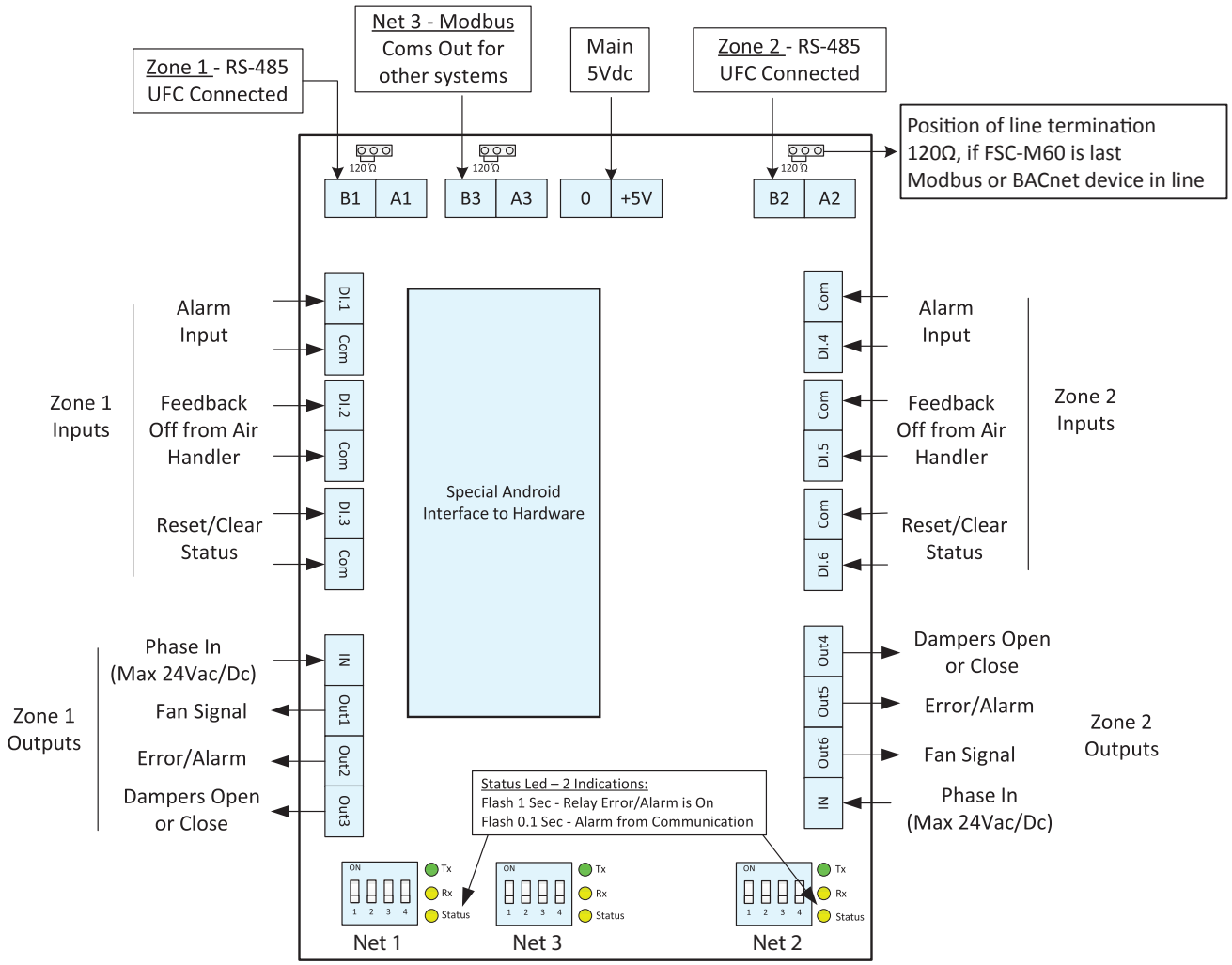
Dimensions

FSC-M60



Electrical Installation

General Information



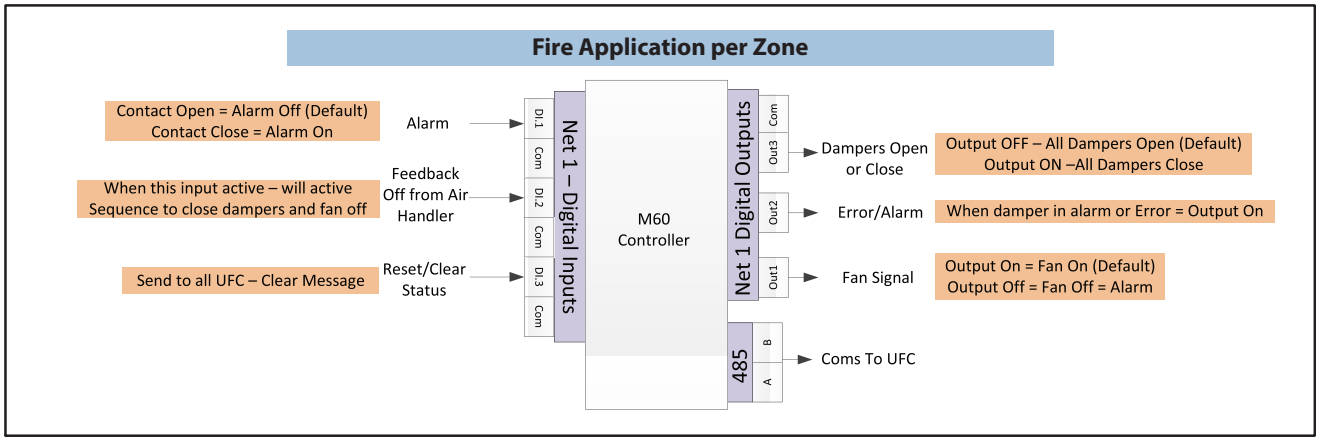
Modbus slave (Net 3):
The FSC-M60 can be used as slave for the integration into a Modbus network through Net 3. In this case the FSC-M60 operates at the same time as master of all connected devices in zones 1 and 2. Zone 1 has Modbus address 121 and zone 2 Modbus address 122 assigned.

Zone 1 – Inputs and outputs on FSC-M60 – device 121.
Zone 2 – Inputs and outputs on FSC-M60 – device 122.

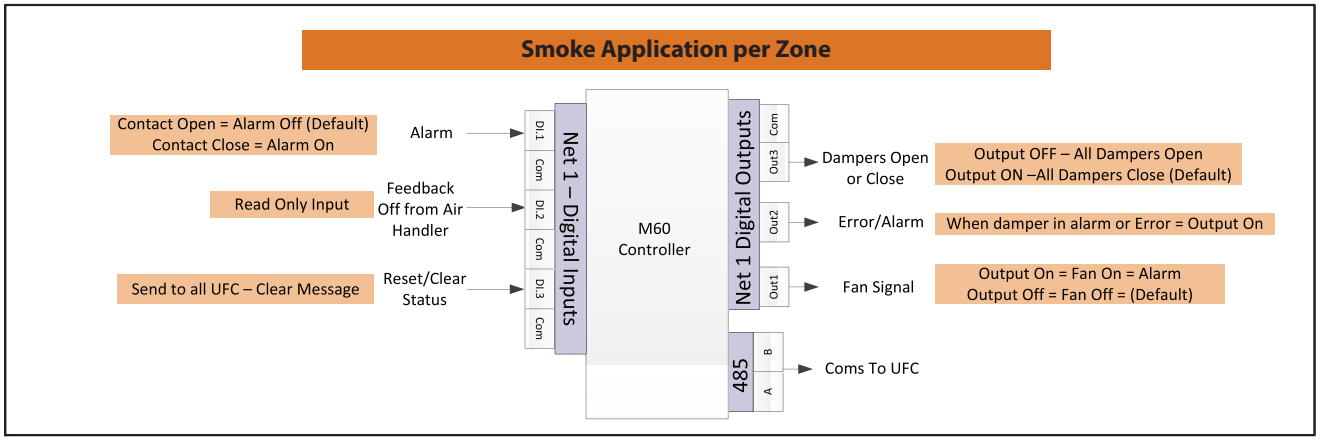
IMPORTANT: The fire and smoke extraction application cannot be combined within one zone! This means that the two available zones can either be used as two fire safety or two smoke extraction zones or one fire safety and one smoke extraction zone. The control mode is set through dip switch number 2 in the FSC-UFC24 (red dip switch terminal).

Explanation Application

Fire Damper Application:

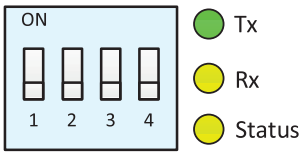


Smoke Extraction Application:



Functionality Dip Switches

Net 1 / Zone 1, Net 2 / Zone 2



Pin	On	Off (Default)
1	Alarm in Zone 1 or Zone 2*	Alarm in single FSC-UFC24**
2	Smoke Application	Fire Application
3	Baud Rate Auto (only 9600)	
4	Internal Use Only (Setting: Zone 1=Off = Address 121/ Zone 2 = On = Address 122)	

* Meaning: If pin 1 for zone 1 is ON and there is an alarm in this zone, all dampers will go to their safety position in zone 1. Same for zone 2 if pin 1 for zone 2 is ON.

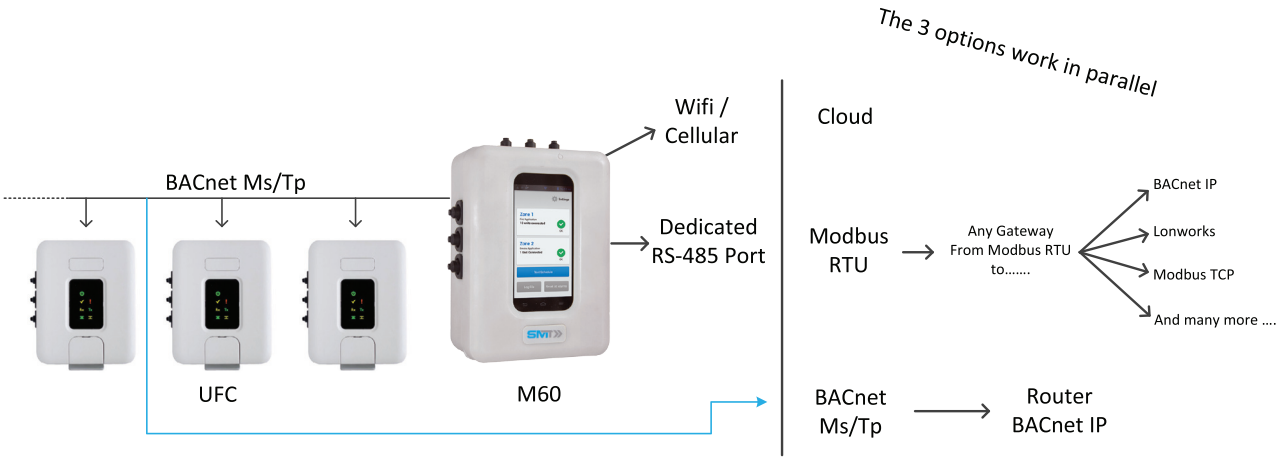
** Meaning: If pin 1 for zone 1 is OFF and there is an alarm only the damper connected to the FSC-UFC24 which detects an alarm will go to its safety position. All other dampers in this zone remain in the initial position. Same if pin 1 for zone 2 is OFF. The alarm signal will be visible on the controller.

Net 3

Modbus Port: Fixed baud rate 9'600.

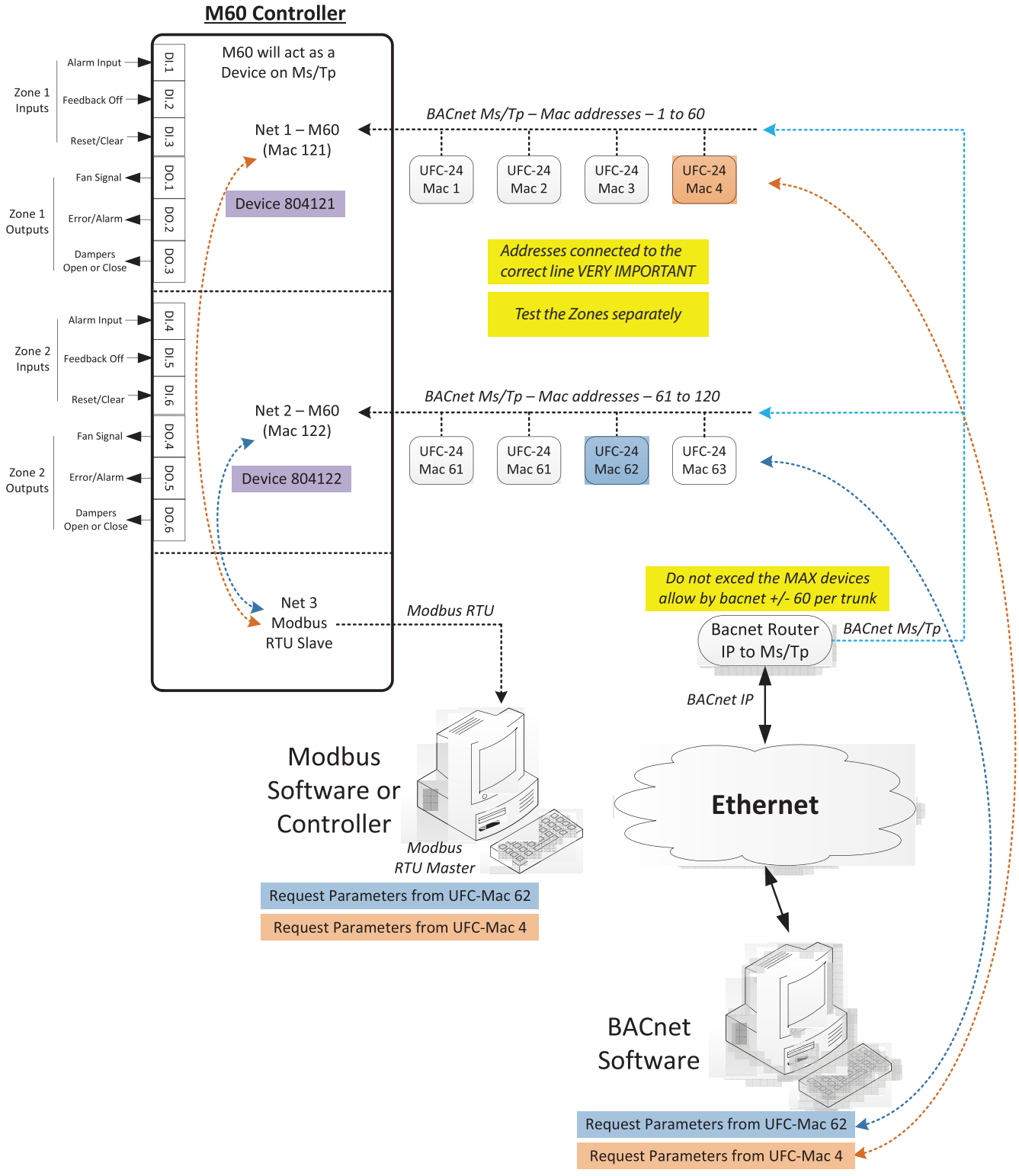
Communication / Integration in Superior Systems (Modbus / BACnet)

General information



Communication Layout

BACnet MS/TP, Modbus RTU



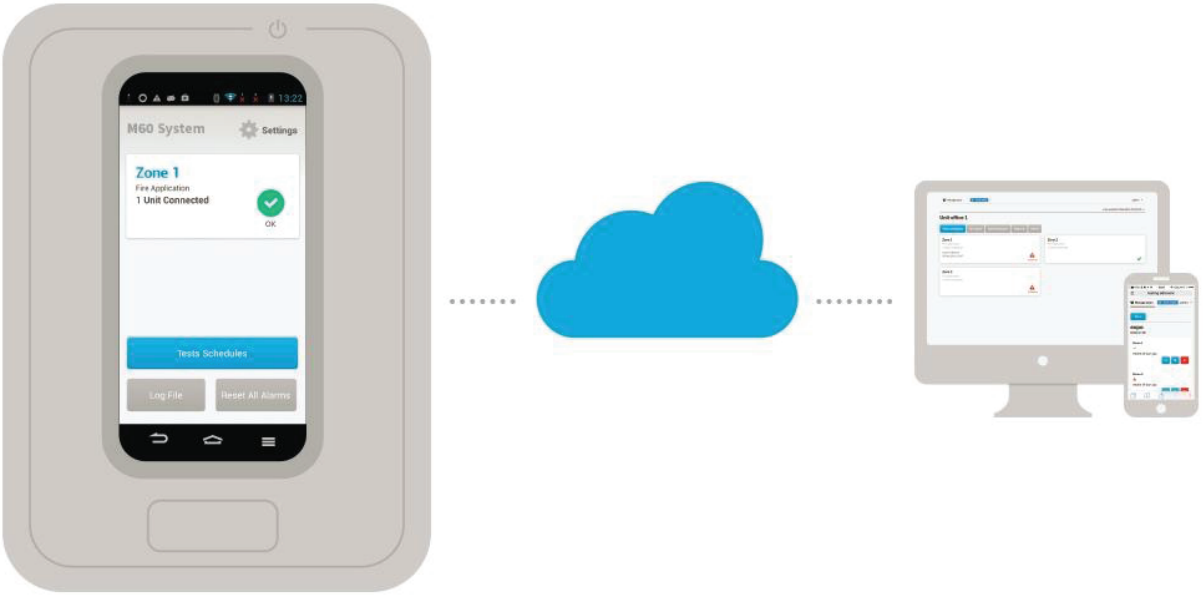
Remote Access through Cloud

There is the possibility to access the FSC-M60 remotely via a Cloud. This is an optional functionality against an annual fee.

Advantages of Cloud access:

- Access to each project anytime possible without having to go there physically
  => complaints, service calls
- Test reports and alarm messages (alerts) can be automatically sent to registered email addresses
- For the testing of the dampers only one person is needed (confirmation during physical inspection via mobile phone => automatic logging)

Please contact us for more details.



User Manual

For more information on the configuration of the FSC-M60 please refer to our user manual.

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Technical Data Sheet FSC-UFC24

Universal Field Controller for motorized fire and smoke extraction dampers.
For bus (Modbus or BACnet) or analog integration into a superior system.

Content

Section	Page
Technical Data	1
Cable Specification	4
Dimensions	5
Removing the Cover of the Housing	6
Electrical Installation	7
Modbus und BACnet Addressing	8
Configuration through Dip-Switch	9
Connection Details	10

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Electrical Installation for Analog Application	14
Explanation of LEDs	15
Functionality of Test Button	16
Run Time Monitoring of Actuator	17
Full Auto Test	17
Bus Monitoring	18

Technical Data

Electrical Data	Nominal Voltage	24 V AC / DC
	Nominal Voltage Range	-20%... + 20%
	Dimensioning	2 VA + damper actuator (max. 24 VA)
	Power Consumption	2 W + damper actuator
	Connections	AMP plug-in connections and quick connections (terminals)
Communication / Modbus	Protocol	Modbus RTU
	Medium	RS-485, not electrically isolated
	Transmission Formats	Specified by Modbus RTU Standards
	Number of Devices per Line	100 (without repeater)
	Baud Rates	9'600, 19'200, 38'400, 76'800 bps
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC24 is last Modbus device in line see electrical installation, page 7
	Typical Response Time	<200 ms

Communication / BACnet	Protocol	BACnet MS/TP
	Medium	RS-485, not electrically isolated
	Number of Devices per Line	65 (without repeater)
	Baud Rates	9'600, 19'200, 38'400, 76'800 (auto detect)
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC24 is last BACnet device in line see electrical installation, page 7
	Typical Response Time	<100 ms
	Device Instant	Automatically assigned by physical address, writable
Safety	Protection Class	III (safety extra low voltage)
	Protection Degree	IP42, housing of non-flammable polycarbonate
	Electromagnetic Tolerance	CE in accordance with 2004/108/EC
	Low Voltage Directive	CE in accordance with 2006/95/EC
	Mode of Operation	Type 1 (EN 60730-1)
	Rated Impulse Voltage	2.5 kV (EN 60730-1)
	Degree of Pollution of Environment	2 (EN 60730-1)
	Ambient Temperature	-20° C to + 50 °C
	Storage Temperature	-20° C to + 80 °C
	Humidity Test	95% RH, non-condensing (EN 60730-1)
	Maintenance	Maintenance free
Mechanical Data (Dimensions / Weight)	Width	120 mm
	Length	153 mm
	Height	57 mm (with bracket)
	Weight	ca. 415 g (with bracket)
	See drawings page 5	

Installation

The FSC-UFC24 is directly installed at or close to the fire or smoke extraction damper. The bracket can be pre-installed. The FSC-UFC24 can be snapped onto the bracket any time (at the damper manufacturer or at the job site).

Electrical Installation

See details page 7.

Safety Notes

The FSC-UFC24 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-UFC24 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-UFC24 is used together with a fire or smoke extraction damper actuator to control and monitor one fire or smoke extraction damper. It offers Modbus, BACnet or analog connection and is normally mounted at or close to the damper. Following control modes can be chosen through dip switch terminal:

- Fire or smoke extraction application
- Bus protocols: Modbus or BACnet

Conventional: Analog output and digital input signals for conventional application.

This digital input in the FSC-UFC24 always overrides the bus commands.

Universal System Link between fire or smoke extraction damper and any Modbus or BACnet system or analog control.

Power Supply

The FSC-UFC24 needs to be powered up with 24 V AC / DC. The FSC-UFC24 provides the power supply to the actuator and to other connected devices (e. g. smoke detector). For more details see page 7.

Control

Conventional

The FSC-UFC24 has the option to work without the bus communication connected.
There is one input to open or close the damper, depends on the fire or smoke extraction application. It is also possible to monitor the damper position conventional through a digital output signal.
There is one analog output to signalize the status of the FSC-UFC24 and the actuator.
This analog output can be read from any controller.

Communication

Serial Communication – RS-485

Through Modbus RTU (RS-485) or BACnet MS/TP (RS-485).

Actuator Connection

3-pole AMP plug and terminal connection for standard 24 V AC/DC fire or smoke extraction actuator.
6-pole AMP plug and terminal connection for 2 internal actuator end switches. Identification of the end position switches of the actuators.

Additional Connections

Input Modules

2-pole AMP plug and 3-pole connection (terminal) for thermoelectric tripping device. Dry contact input.
4-pole connection (terminal) for smoke detector (incl. power supply). Dry contact input. Digital input for analog application.

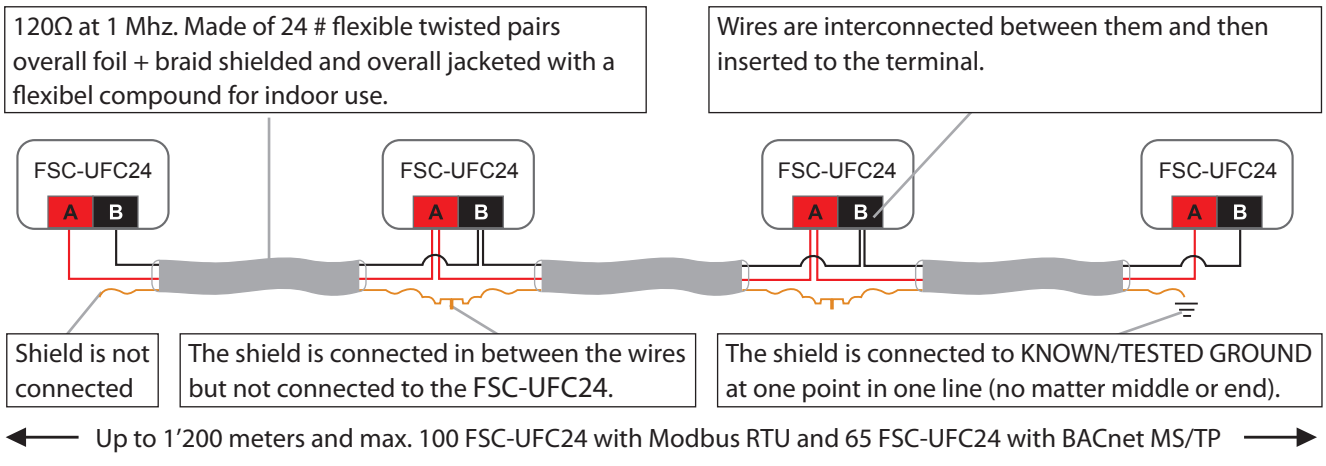
Output Module

1 analog output, indicates the status of the FSC-UFC24.

Cable Specification

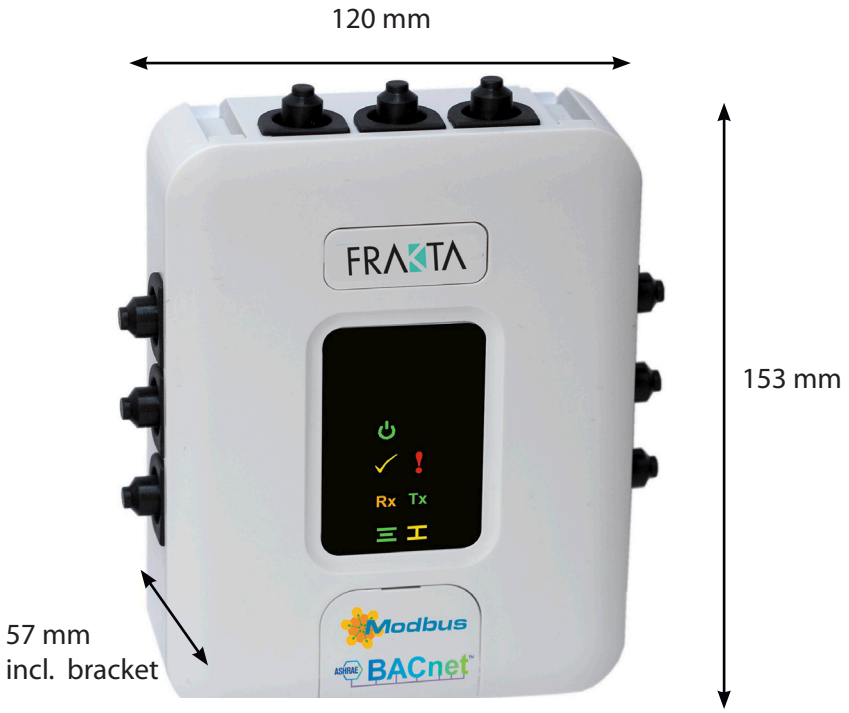
120Ω at 1 Mhz. Made of 24# flexible twisted pairs overall foil + braidshielded and overall jacketed with a flexible compound for indoor use, or similar. Cable type: Belden 3105a or equivalent.

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

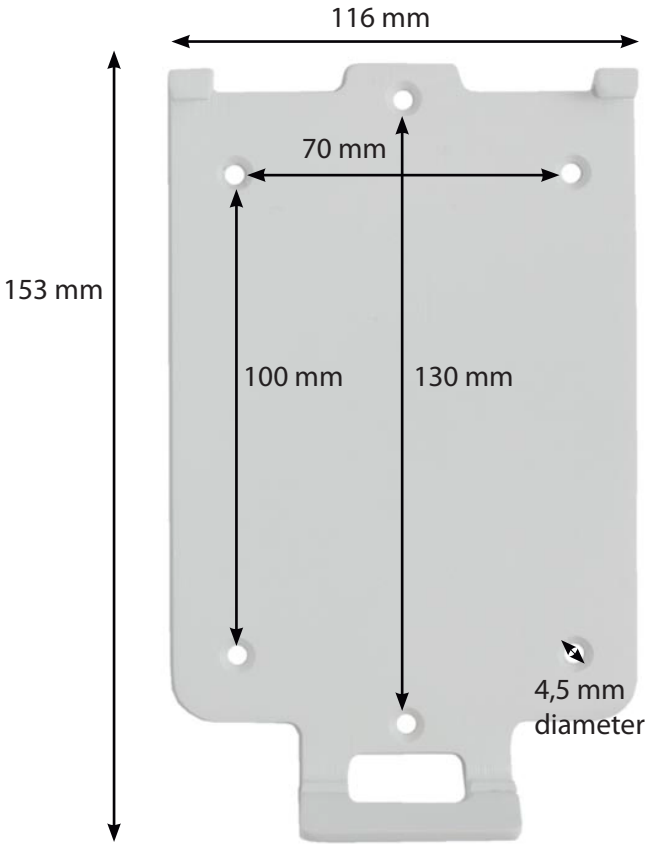


Dimensions

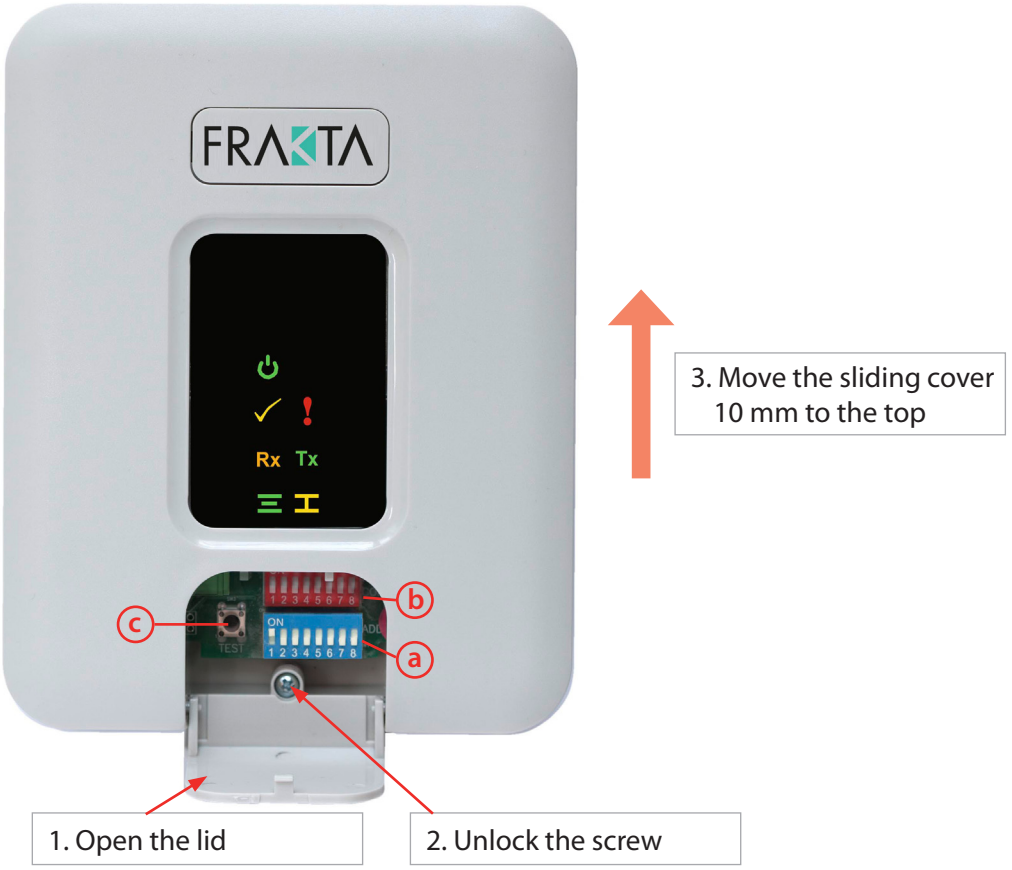
FSC-UFC24



Mounting Bracket



Removing the Cover of the Housing



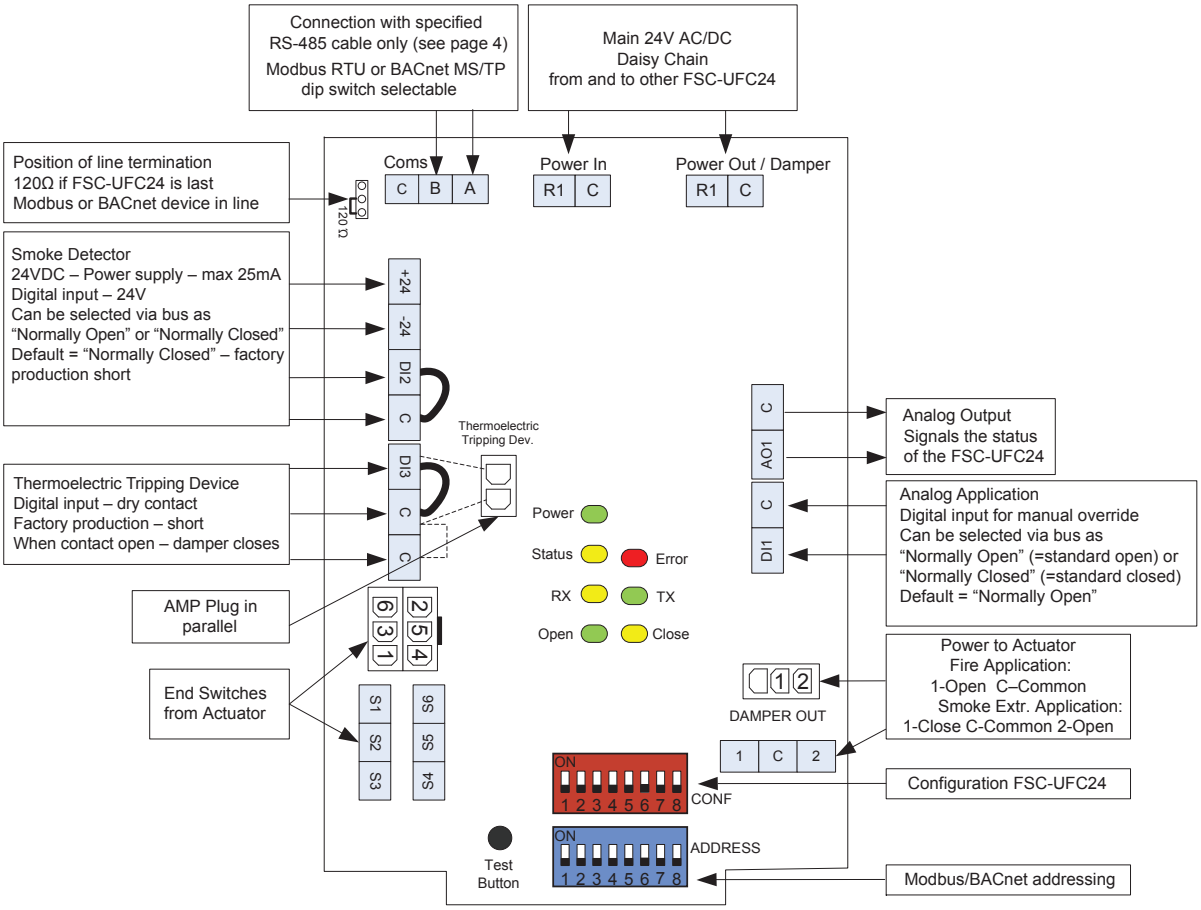
1. Open the small lid on the lower end of the housing by flapping up the cover
2. Unlock the screw which is placed on the lower end in the middle
3. Move the sliding cover 10 mm to the top
4. Remove the cover

Lid for Easy Access to Dip Switch Terminals (Configuration / Addressing) and Test Button

(a) The blue coloured dip switch terminal is for the Modbus or BACnet addressing.
(b) The red one for the configuration.
(c) Test button: For detailed explanation of the function of the test button see page 16.

Electrical Installation

General Information



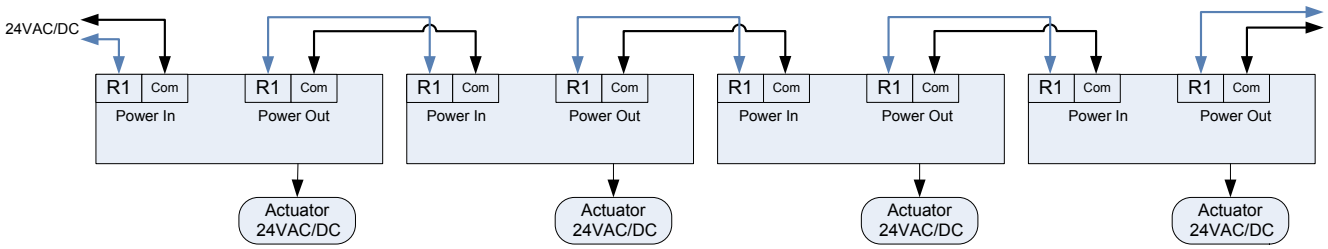
Power Supply:

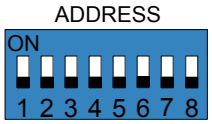
Main Power – FSC-UFC24

The FSC-UFC24 is dual power 24V AC/DC.

The actuator has to be 24V AC and/or DC. Meaning it has to operate with the same voltage (AC or DC) as the FSC-UFC24. There are 2 terminals for the power, in order to make the daisy chain connection for the installer easier.

The polarity must be respected when connecting multiple FSC-UFC24 to one power source (phase to phase, com to com)!





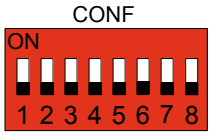
Modbus and BACnet Addressing

*Attention: If the FSC-UFC24 is used in combination with the FSC-M200 controller, Modbus addresses 1-10 are reserved for the FSC-M200. That means that the Modbus addressing of the FSC-UFC24 starts with Modbus address 11. Furthermore, the Baud Rate needs to be changed to 38'400 (PIN 5 to ON).
If the FSC-UFC24 is used in combination with the FSC-M60, the addressing needs to be done in consecutive order.

Address	Switches On	Address	Switches On	Address	Switches On	Address	Switches On
0*	Broadcast-not in use	33	1+6	66	2+7	99	1+2+6+7
1*	1	34	2+6	67	1+2+7	100	3+6+7
2*	2	35	1+2+6	68	3+7	101	1+3+6+7
3*	1+2	36	3+6	69	1+3+7	102	2+3+6+7
4*	3	37	1+3+6	70	2+3+7	103	1+2+3+6+7
5*	1+3	38	2+3+6	71	1+2+3+7	104	4+6+7
6*	2+3	39	1+2+3+6	72	4+7	105	1+4+6+7
7*	1+2+3	40	4+6	73	1+4+7	106	2+4+6+7
8*	4	41	1+4+6	74	2+4+7	107	1+2+4+6+7
9*	1+4	42	2+4+6	75	1+2+4+7	108	3+4+6+7
10*	2+4	43	1+2+4+6	76	3+4+7	109	1+3+4+6+7
11	1+2+4	44	3+4+6	77	1+3+4+7	110	2+3+4+6+7
12	3+4	45	1+3+4+6	78	2+3+4+7	111	1+2+3+4+6+7
13	1+3+4	46	2+3+4+6	79	1+2+3+4+7	112	5+6+7
14	2+3+4	47	1+2+3+4+6	80	5+7	113	1+5+6+7
15	1+2+3+4	48	5+6	81	1+5+7	114	2+5+6+7
16	5	49	1+5+6	82	2+5+7	115	1+2+5+6+7
17	1+5	50	2+5+6	83	1+2+5+7	116	3+5+6+7
18	2+5	51	1+2+5+6	84	3+5+7	117	1+3+5+6+7
19	1+2+5	52	3+5+6	85	1+3+5+7	118	2+3+5+6+7
20	3+5	53	1+3+5+6	86	2+3+5+7	119	1+2+3+5+6+7
21	1+3+5	54	2+3+5+6	87	1+2+3+5+7	120	4+5+6+7
22	2+3+5	55	1+2+3+5+6	88	4+5+7	121	1+4+5+6+7
23	1+2+3+5	56	4+5+6	89	1+4+5+7	122	2+4+5+6+7
24	4+5	57	1+4+5+6	90	2+4+5+7	123	1+2+4+5+6+7
25	1+4+5	58	2+4+5+6	91	1+2+4+5+7	124	3+4+5+6+7
26	2+4+5	59	1+2+4+5+6	92	3+4+5+7	125	1+3+4+5+6+7
27	1+2+4+5	60	3+4+5+6	93	1+3+4+5+7	126	2+3+4+5+6+7
28	3+4+5	61	1+3+4+5+6	94	2+3+4+5+7	127	Reserved factory defaults
29	1+3+4+5	62	2+3+4+5+6	95	1+2+3+4+5+7		
30	2+3+4+5	63	1+2+3+4+5+6	96	6+7		
31	1+2+3+4+5	64	7	97	1+6+7		
32	6	65	1+7	98	2+6+7		

Configuration through Dip-Switch

Default Dip Switch Position



Configuration Possibilities

Pin	Off (Default)	On
1	Bus	Analog
2	Fire Application	Smoke Extr. Application
3	Modbus RTU	BACnet MS/TP
4	Baud Rate (Off-Default)	
5	Baud Rate (Off-Default)	
6	Not In Use=Off	
7*	Smoke Detector Alarm "System"	Smoke Detector Alarm "Actuator"
8	Not In Use=Off	

Information Pin 3:
If the FSC-UFC24 is used in connection with the FSC-M60, Pin 3 has to be on ON (BACnet).

Information Pin 5:
If the FSC-UFC24 is used in connection with the FSC-M200, Pin 5 has to be on ON (Baud Rate 38 400).

***Explanation Pin 7:**
- Smoke Detector Alarm "System" = The signal of the smoke detector is transferred directly to the system and processed there.
- Smoke Detector Alarm "Actuator" = The signal of the smoke detector is directly linked with the actuator. In case of a smoke detector alarm the fire damper connected to the same FSC-UFC24 will be closed. The signal of the smoke detector is forwarded to the controller.

The above is only valid for the fire safety application. In the smoke extraction application the signal of the smoke detector has no direct influence to the actuator. The signal will be forwarded to the system in any case.

Baud Rate Selection Modbus
This has to be done when choosing Modbus only.

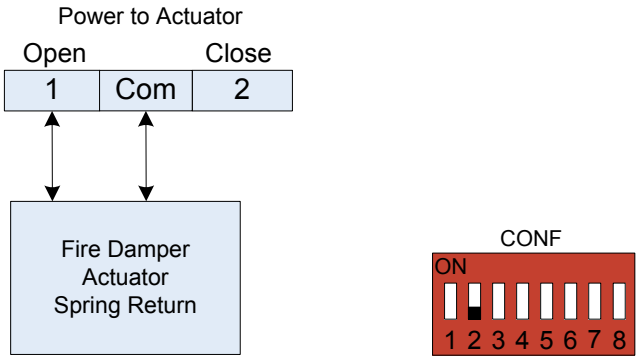
	9 600 (Default)	19 200	38 400	76 800
4	Off	On	Off	On
5	Off	Off	On	On

Baud Rate Selection BACnet
Baud rate in BACnet is automatically detected.

Connection Details

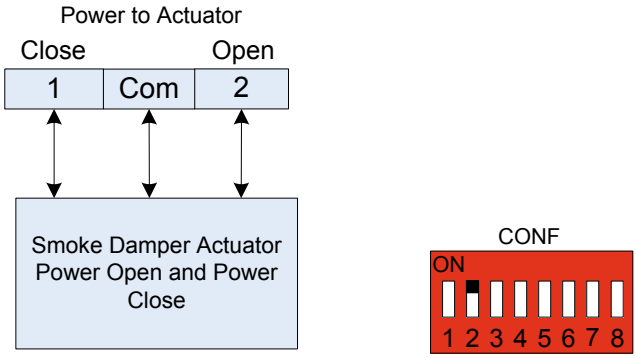
Fire Damper Actuator – Connections

Fire damper actuator (spring return). When the actuator has power it is open, when there is no power the actuator is closed with the spring.

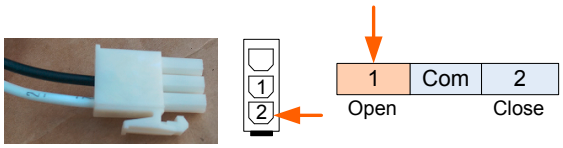


Smoke Extraction Damper Actuator – Connections

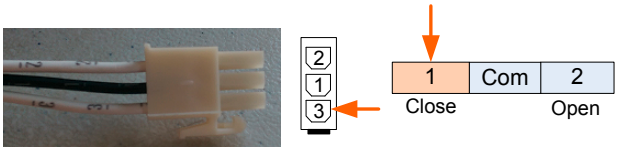
If the actuator is powered up the smoke extraction damper is either open or closed. If the FSC-UFC24 sends the smoke extraction damper actuator the open signal, pin OPEN is powered. If the FSC-UFC24 sends the smoke extraction damper actuator the close signal, pin CLOSE is powered.



Fire Damper



Smoke Extraction Damper



After Connection - Power Reset:

- ***Fire Damper Application*** will always go to OPEN.
- ***Smoke Extraction Damper Application*** will hold last command on memory.

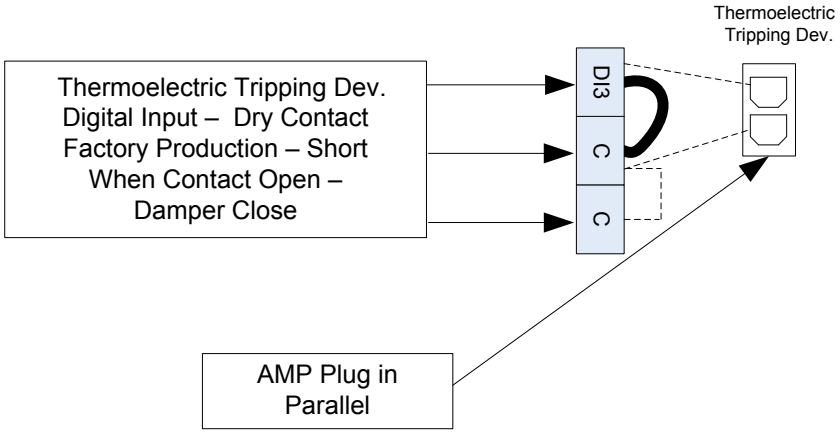
Thermoelectric Tripping Device - Connection

Digital input volt free, normally close as default (can be changed on bus). Factory shorted.
When this input is active the damper will close and you can override from the bus.
The 2 connections, the normal quick terminals and the AMP connector are in parallel.
AMP plug 2-pole. Quick connector 3-pole.

When a thermoelectric tripping device is mounted in the 2-pole AMP plug, the factory production mounted jumper between DI3 and C must be removed!

The above is only valid for the fire safety application.

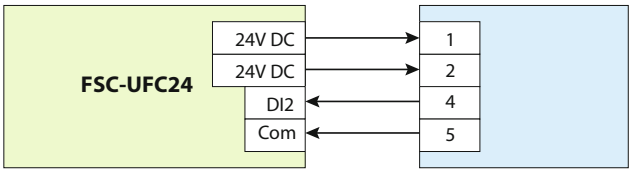
Electrical Installation Thermoelectric Tripping Device

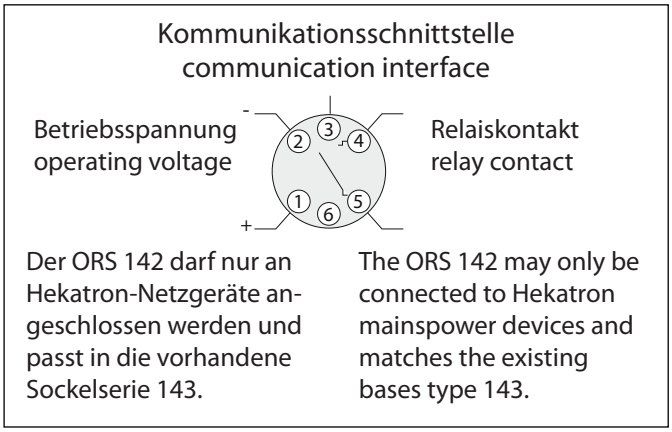


Smoke Detectors – Connections

Smoke detector connection Hekatron ORS 142

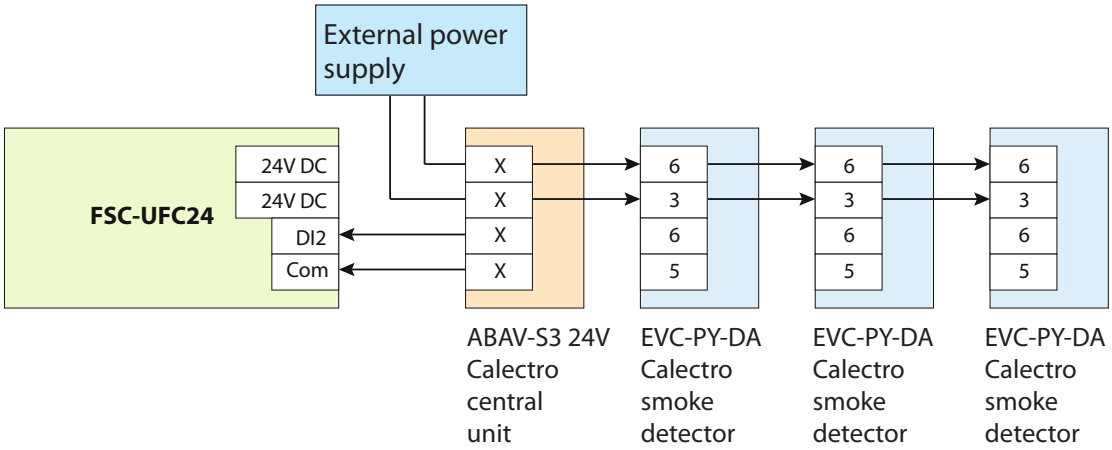
Possibility to connect one smoke detector





Smoke detector connection Calectro EVC-PY-DA

Multiple smoke detector connections possible with ABAV-S3 24V central unit from Calectro



Analog Application
The FSC-UFC24 has the option to work without the bus communication connected. There is one input to open or close the damper, depending on the fire or smoke extraction application. It is also possible to monitor the damper position conventionally through a digital output signal.

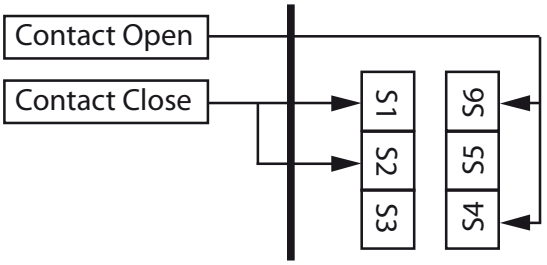
The analog output, signals the status of the FSC-UFC24:
- 0V – No Power to FSC-UFC24
- 2V – Damper Open
- 4V – Damper Close
- 6V – Smoke Detector Alarm
- 8V – Thermoel. Tripping Device Alarm
- 10V – More than one Alarm Condition

During normal operation this output will signalize the position of the damper (2V, 4V).
This output can be connected in parallel between the various FSC-UFC24 in order to monitor their status.
Current output max is 5mA.

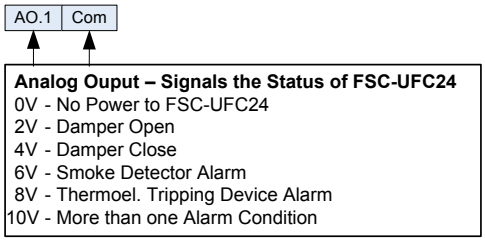
Digital input volt free, normally open as default (can be changed on bus).
The digital input allows to control the damper position through an external contact/device.
Selection of the analog settings by dip switch.

This digital input for the analog application in the FSC-UFC24 overrides always the bus commands.

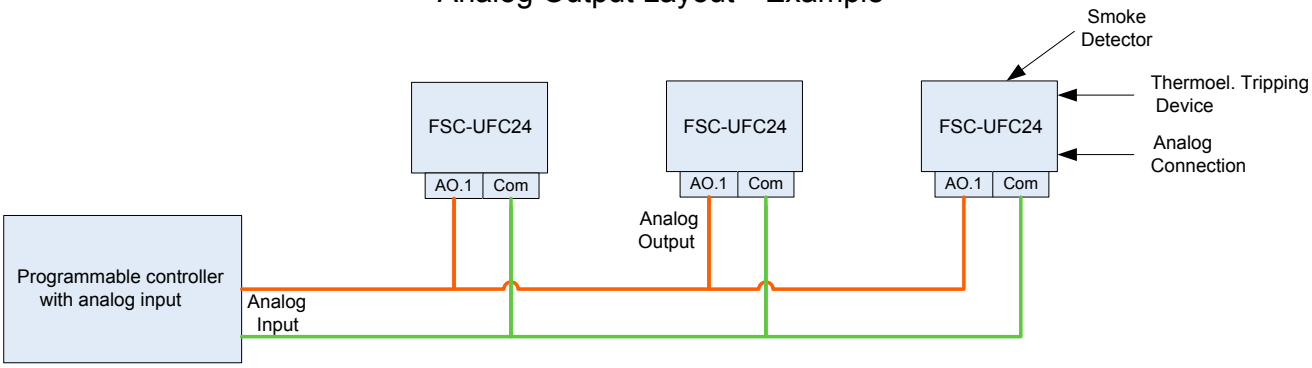
Electical Installation for Conventional Application
Feedback signals from the UFC:



Electrical Installation for Analog Application:

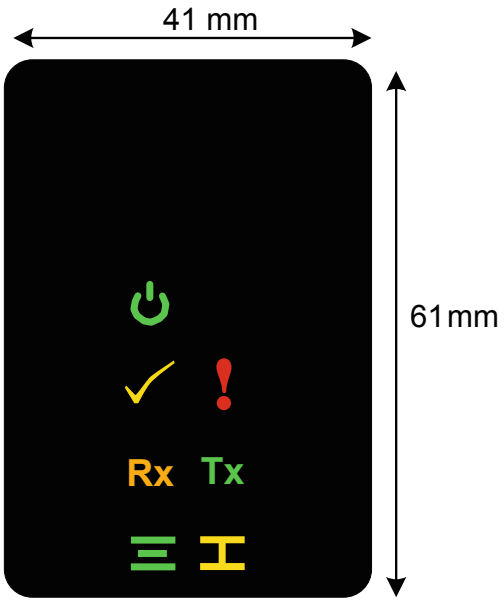


Analog Output Layout - Example



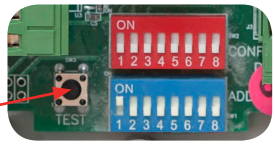
Explanation of LEDs

The LEDs are only visible if they are active. If not active the symbols will not appear.



Led	Color	Action	Description
Power	Green	On	Power is connected
Status	Yellow	Off	Bus operation
		On	Analog connection
Error	Red	Flash Interval 1 sec	Actuator did not reach end switch position within the set time
		Flash Interval 2 sec	Smoke detector alarm
		Flash Interval 3 sec	Thermoelectric tripping device alarm
		Flash Interval 0.3 sec	Error on 2 devices or more Error message test report
		Flash Interval 5 sec	General alarm
Rx	Yellow	Flash	Receive data
Tx	Green	Flash	Transmit data
Close	Yellow	On	Damper close
Open	Green	On	Damper open
Close + Open Flashing	Damper is moving		

Functionality of Test Button



Depending on the application (fire or smoke extraction) the test button creates different test scenarios.

Fire Application:

- Power on the FSC-UFC24: actuator (damper) opening until end position is reached
- Pushing test button will interrupt the power supply to the actuator. Spring is closing the actuator
- As soon as the test button is released the power comes back to the actuator and the damper will open again

Smoke Extraction Application:

- Power on: actuator makes self-test and remains in position defined by controls
- Pushing test button changes command of the actuator – actuator (damper) runs into opposite direction
- Release test button: actuator (damper) runs back into last defined position

Run Time Monitoring of Actuator
The FSC-UFC24 is equipped with an actuator run time monitoring function. This function monitors the time required by the actuator from leaving of the one and reaching of the other end switch. If the actuator does not reach the other end switch in the specified time an error message is sent.

The default value for the actuator run time is 90 seconds. This can be adapted via Modbus or BACnet from 0…360 seconds.

Full Auto Test Application
The FSC-UFC24 offers a 'Full Auto Test' function. This can be controlled through the Modbus or BACnet controller.

Basis of the Functionality
Basis for this function is the run time monitoring of the actuator.

Fire Damper
To start the full auto test functionality, the corresponding bus-register hast to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the fire damper actuator is closing (spring) and remains in the closed position until the timer of the set running time has reached the set time. Then the actuator will open again automatically until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'open' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC24 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Smoke Extraction Damper
To start the full auto test functionality, the corresponding bus-register has to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the smoke extraction damper actuator is moving to the opposite direction and remains in that position until the timer of the set running time has reached the set time. Then the actuator will automatically move back to the original position until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'opposite direction' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC24 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Bus Monitoring Application

The FSC-UFC24 is equipped with a Bus Monitoring Function. If the bus signal to the unit is interrupted the damper will move to the safety position after the defined period of time and remain there until the bus functionality is back to normal operation.

Objects
There are 2 objects which can be activated by Modbus or BACnet:
- Logic Alarm Communication
- Delay Alarm Communication

Default settings:
Logic Alarm Communication not active

Activation (via Bus):
- Logic Alarm Communication 1 (on)
- Delay Alarm Communication is activated, default delay time is 120 sec. Option to set the delay time via bus between 0…360 sec

Functionality
Fire Damper
After the defined period of time the fire damper will move to the closed position and remains closed until the bus functionality is back to normal operation.

Smoke Extraction Damper
If damper is closed:
After the defined period of time the fire damper will move to the open position and remains open unit the bus functionality is back to normal operation.

If damper is open:
Damper remains in open position

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Technical Data Sheet FSC-UFC24-230

Universal Field Controller for motorized fire and smoke extraction dampers.
For bus (Modbus or BACnet) or analog integration into a superior system.
To be used for the connection of 230 V actuators.

ATTENTION: 230 V Power Supply for Actuators

Content

Section	Page
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Dimensions	5
Removing the Cover of the Housing	6
Electrical Installation	7
Power Supply	8
Modbus and BACnet Addressing	9
Configuration through Dip-Switch	10

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Connection Details	11
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Functionality of Test Button	17
Run Time Monitoring of Actuator	18
Full Auto Test	18
Bus Monitoring Application	19

Technical Data

ATTENTION: 230 V Power Supply for Actuators

Electrical Data / FSC-UFC24-230, Control Unit	Nominal Voltage	24 V AC / DC
	Nominal Voltage Range	-20%... + 20%
	Dimensioning	2 VA + damper actuator (max 24 VA)
	Power Consumption	2 W + damper actuator
	Connections	AMP plug-in connections and quick connections (terminals)
Electrical Data / Actuators	Nominal Voltage	110 - 230 V AC
	Nominal Voltage Range	Acc. to manufacturer specifications
	Dimensioning	Acc. to manufacturer specifications
	Power Consumption	Acc. to manufacturer specifications
	Connections	AMP plug in connections and quick connections (terminals)

Communication / Modbus	Protocol	Modbus RTU
	Medium	RS-485, not electrically isolated
	Transmission Formats	Specified by Modbus RTU Standards
	Number of Devices per Line	100 (without repeater)
	Baud Rates	9'600, 19'200, 38'400, 76'800 bps
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC24-230 is last Modbus device in line see electrical installation, page 7
	Typical Response Time	<200 ms
Communication / BACnet	Protocol	BACnet MS/TP
	Medium	RS-485, not electrically isolated
	Number of Devices per Line	65 (without repeater)
	Baud Rates	9'600, 19'200, 38'400, 76'800 (auto detect)
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC24-230 is last BACnet device in line, see electrical installation, page 7
	Typical Response Time	<100 ms
	Device Instant	Automatically assigned by physical address, writable
Safety*	Protection Class	III (safety extra low voltage)
	Protection Degree	IP42, housing of non-flammable polycarbonate
	Electromagnetic Tolerance	CE in accordance with 2004/108/EC
	Low Voltage Directive	CE in accordance with 2006/95/EC
	Mode of Operation	Type 1 (EN 60730-1)
	Rated Impulse Voltage	2.5 kV (EN 60730-1)
	Degree of Pollution of Environment	2 (EN 60730-1)
	Ambient Temperature	-20 °C to + 50 °C
	Storage Temperature	-20 °C to + 80 °C
	Humidity Test	95% RH, non-condensing (EN 60730-1)
	Maintenance	Maintenance free
Mechanical Data (Dimensions / Weight)	Width	120 mm
	Length	153 mm
	Height	57 mm (with bracket)
	Weight	ca. 415 g (with bracket)
	See drawings page 5	

**Tests (CE, EMC etc.) in progress.*

Installation

The FSC-UFC24-230 is directly installed at or close to the fire or smoke extraction damper. The bracket can be pre-installed. The FSC-UFC24-230 can be snapped onto the bracket any time (at the damper manufacturer or at the job site).

Electrical Installation

See details page 7.

Safety Notes

The FSC-UFC24-230 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-UFC24-230 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-UFC24-230 is used together with a fire or smoke extraction damper actuator to control and monitor one fire or smoke extraction damper. It offers Modbus, BACnet or analog connection and is normally mounted at or close to the damper. Following control modes can be chosen through dip switch terminal:

- Fire or smoke extraction application
- Bus protocols: Modbus or BACnet

Conventional: Analog output and digital input signals for conventional application.

This digital input in the FSC-UFC24-230 always overrides the bus commands.

Universal System Link between fire or smoke extraction damper and any Modbus or BACnet system or analog control.

Power Supply

The FSC-UFC24-230 needs to be powered up with 24 V AC/DC for the controls device and 230 V AC for the connection of the actuator.
The FSC-UFC24-230 provides the power supply to the actuator and to other connected devices (e.g. smoke detector). For more details see page 7.

Control

Conventional
The FSC-UFC24-230 has the option to work without the bus communication connected.
There is one input to open or close the damper, depends on the fire or smoke extraction application.
There is one analog output to signalize the status of the FSC-UFC24-230 and the actuator.
This analog output can be read from any controller.

Communication

Serial Communication – RS-485
Through Modbus RTU (RS-485) or BACnet MS/TP (RS-485).

Actuator Connection

3-pole AMP plug and terminal connection for standard 230 V AC fire or smoke extraction actuator.
6-pole AMP plug and terminal connection for 2 internal actuator end switches. Identification of the end position switches of the actuators.

Additional Connections

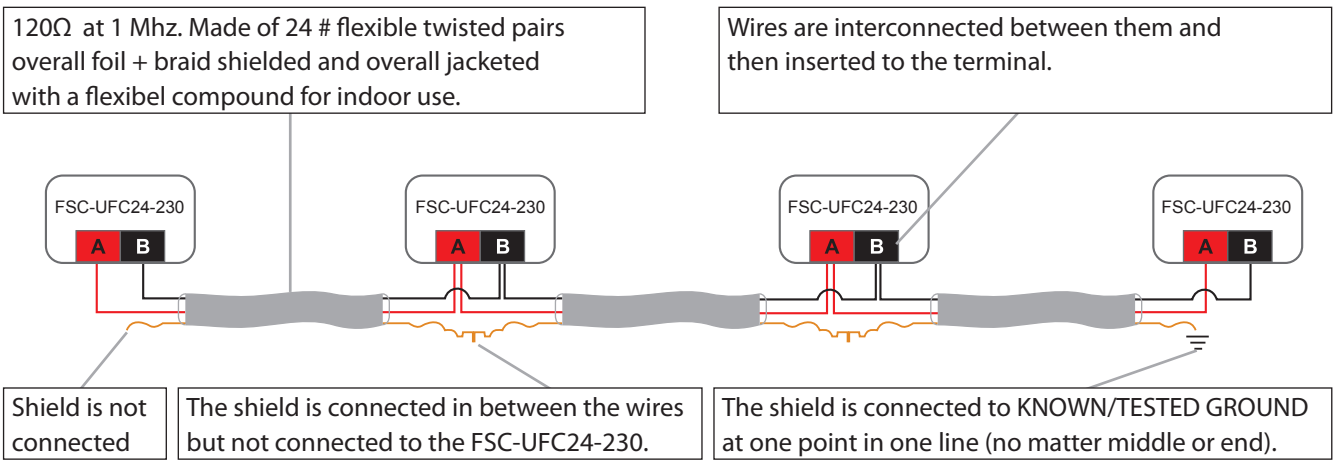
Input Modules
2-pole AMP plug and 3-pole connection (terminal) for thermoelectric tripping device. Dry contact input.
4-pole connection (terminal) for smoke detector (incl. power supply). Dry contact input. Digital input for analog application.

Output Module
1 analog output, indicates the status of the FSC-UFC24-230.

Cable Specification

120Ω at 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.

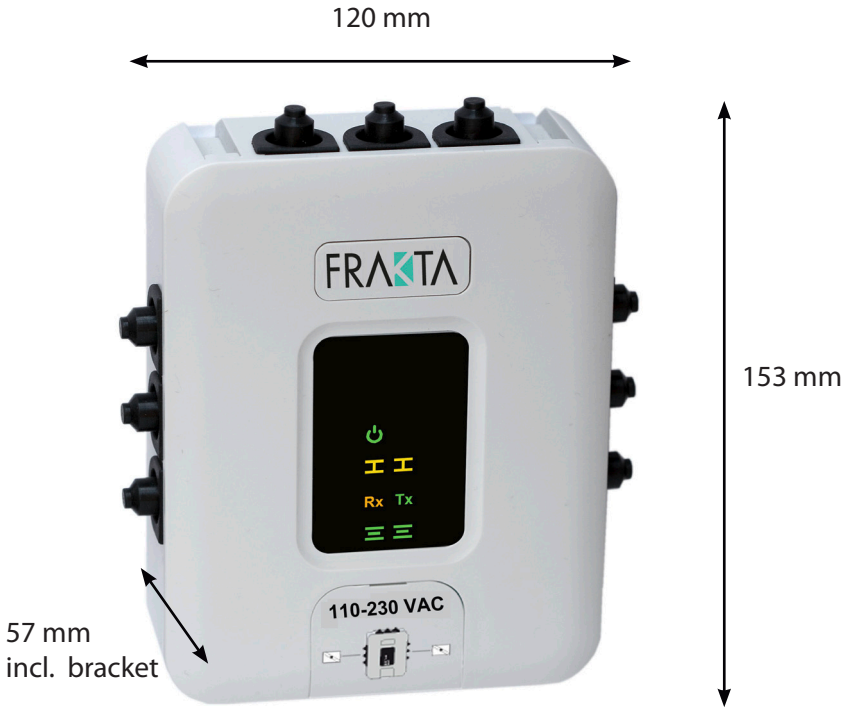
IMPORTANT: SMT takes no responsibility of the functionality of the units/ network if a different cable is used to the one specified here.



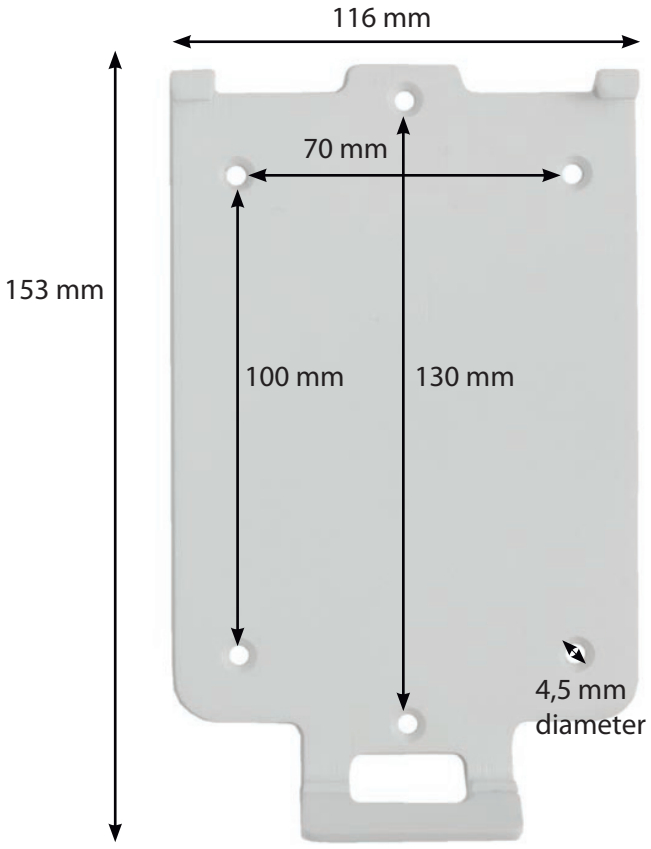
Up to 1'200 meters and max. 100 FSC-UFC24-230 with Modbus RTU and 65 FSC-UFC24-230 with BACnet MS/TP

Dimensions

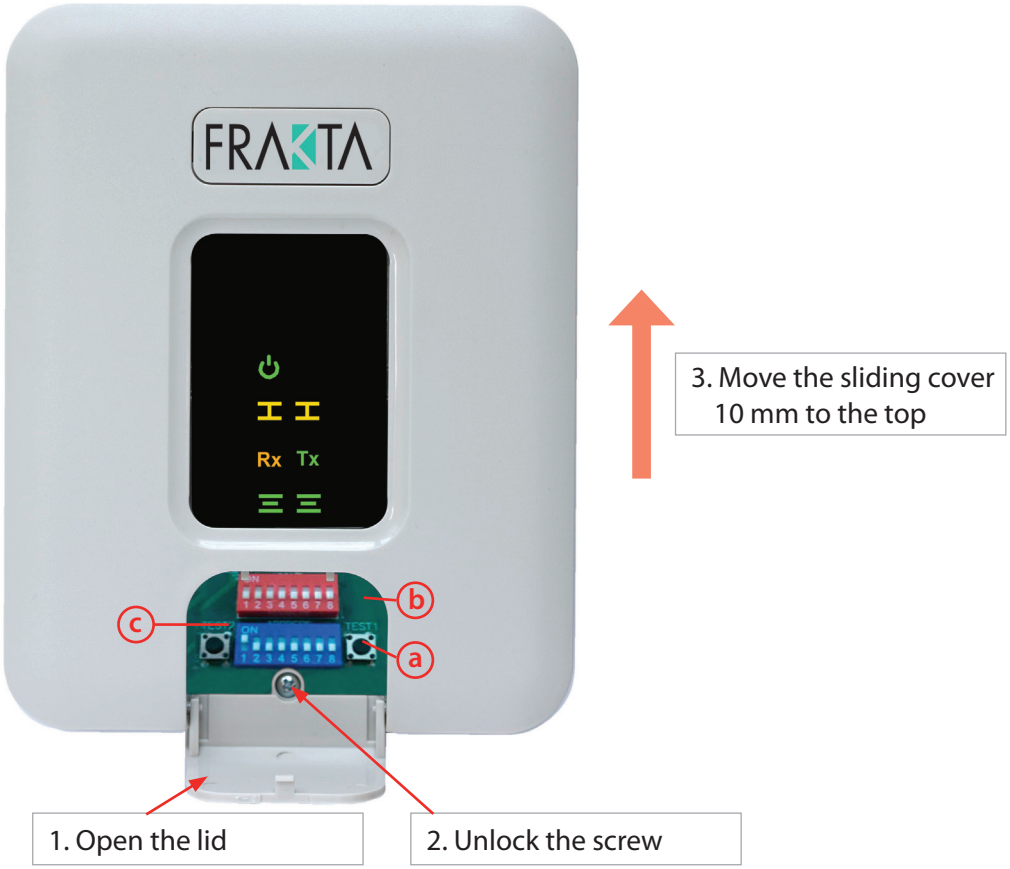
FSC-UFC24-230



Mounting Bracket



Removing the Cover of the Housing



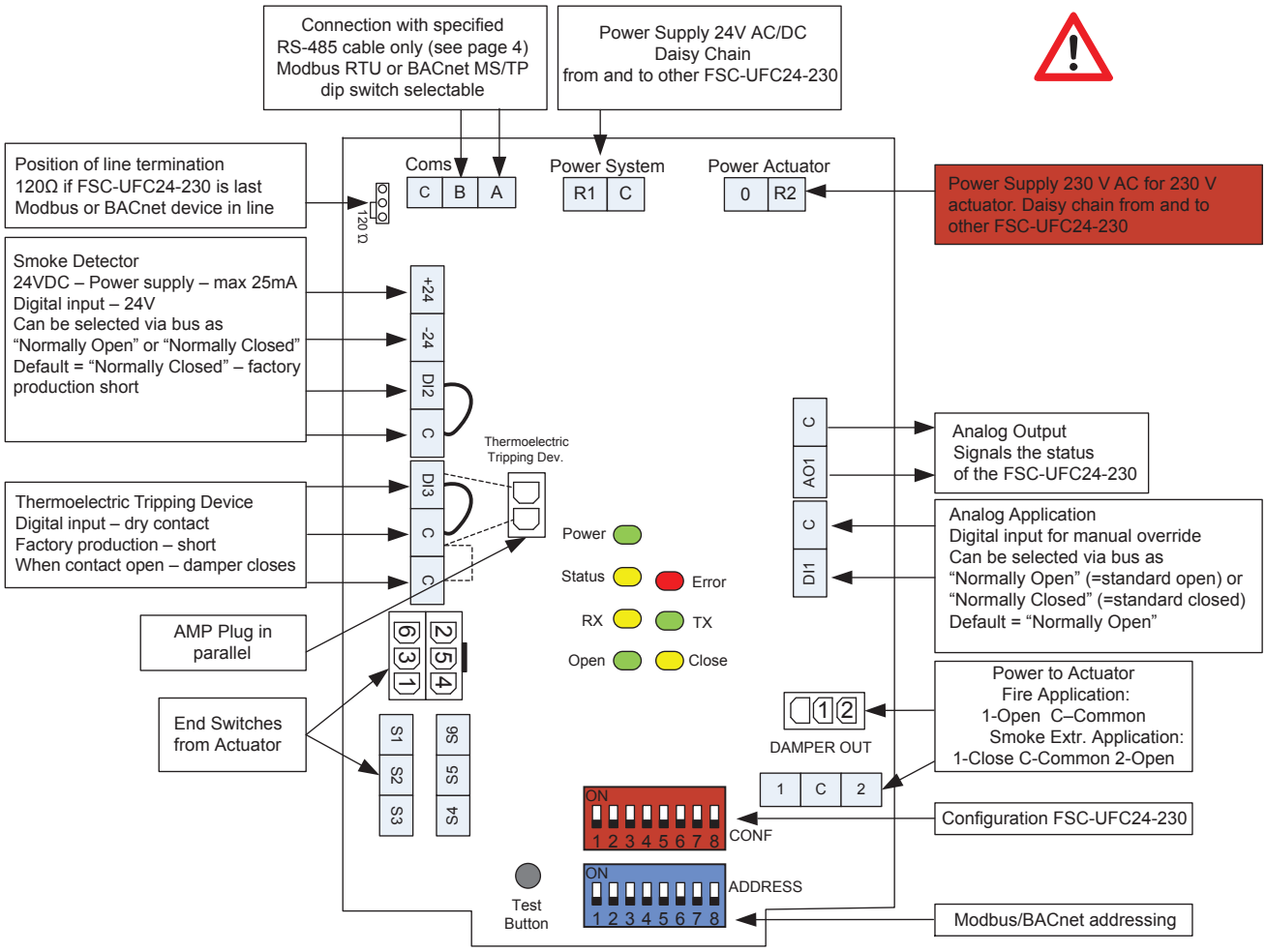
1. Open the small lid on the lower end of the housing by flapping up the cover
2. Unlock the screw which is placed on the lower end in the middle
3. Move the sliding cover 10 mm to the top
4. Remove the cover

Lid for Easy Access to Dip Switch Terminals (Configuration / Addressing) and Test Button

(a) The blue coloured dip switch terminal is for the Modbus or BACnet addressing.
(b) The red one for the configuration.
(c) Test button: For detailed explanation of the function of the test button see page 17.

Electrical Installation

General Information



Power Supply:

Fire or smoke extraction actuators with a power supply of 230 V AC can directly be connected to the FSC-UFC24-230.

Power Supply

Main Power ---FSC-UFC24-230

The FSC-UFC24-230 offers dual power supply of

- 24 V AC / DC for the system, smoke detector, thermoel. tripping device, end switches of the actuators
- 230V AC for the power supply of the fire or smoke extraction damper actuator.

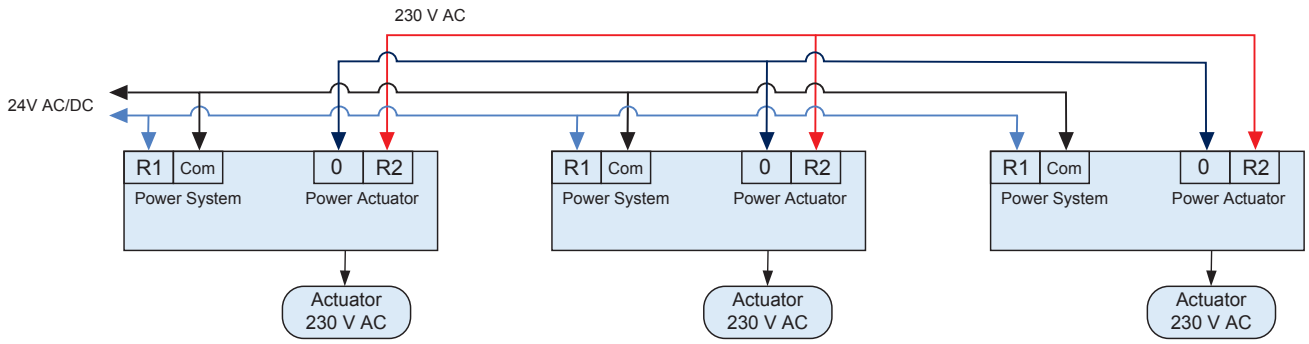
Serial power supply (daisy chain) of more than one FSC-UFC24-230 (24 V AC / DC and 230 V AC) is possible.

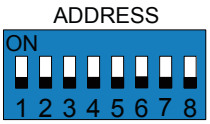
IMPORTANT:

- **The correct wiring is very important in regards to the 230 V power supply! The polarity, phase to phase and com to com, must be respected when connecting to the power supply network and also when connecting multiple FSC-UFC24-230!**

- The wiring of the actuator must be done in the correct way and according to the manufacturer's instructions. Especially when using actuators without plugs it is important to have a close focus on the polarity of the cable connection that means, to consider the correct allocation of phase and com!

- **All connections have to be fixed before putting power to the devices. Beside the risk of electrical shock, it is also possible to destroy the FSC-UFC24-230 when not proper handled.**





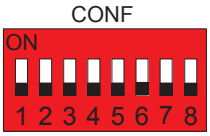
Modbus and BACnet Addressing

*Attention: If the FSC-UFC24-230 is used in combination with the FSC-M200 controller, Modbus addresses 1 – 10 are reserved for the FSC-M200. That means that the Modbus addressing of the FSC-UFC24-230 starts with Modbus address 11. Furthermore, the Baud Rate needs to be changed to 38'400 (PIN 5 to ON).
If the FSC-UFC24-230 is used in combination with the FSC-M60, the addressing needs to be done in consecutive order.

Address	Switches On	Address	Switches On	Address	Switches On	Address	Switches On
0*	Broadcast-not in use	33	1+6	66	2+7	99	1+2+6+7
1*	1	34	2+6	67	1+2+7	100	3+6+7
2*	2	35	1+2+6	68	3+7	101	1+3+6+7
3*	1+2	36	3+6	69	1+3+7	102	2+3+6+7
4*	3	37	1+3+6	70	2+3+7	103	1+2+3+6+7
5*	1+3	38	2+3+6	71	1+2+3+7	104	4+6+7
6*	2+3	39	1+2+3+6	72	4+7	105	1+4+6+7
7*	1+2+3	40	4+6	73	1+4+7	106	2+4+6+7
8*	4	41	1+4+6	74	2+4+7	107	1+2+4+6+7
9*	1+4	42	2+4+6	75	1+2+4+7	108	3+4+6+7
10*	2+4	43	1+2+4+6	76	3+4+7	109	1+3+4+6+7
11	1+2+4	44	3+4+6	77	1+3+4+7	110	2+3+4+6+7
12	3+4	45	1+3+4+6	78	2+3+4+7	111	1+2+3+4+6+7
13	1+3+4	46	2+3+4+6	79	1+2+3+4+7	112	5+6+7
14	2+3+4	47	1+2+3+4+6	80	5+7	113	1+5+6+7
15	1+2+3+4	48	5+6	81	1+5+7	114	2+5+6+7
16	5	49	1+5+6	82	2+5+7	115	1+2+5+6+7
17	1+5	50	2+5+6	83	1+2+5+7	116	3+5+6+7
18	2+5	51	1+2+5+6	84	3+5+7	117	1+3+5+6+7
19	1+2+5	52	3+5+6	85	1+3+5+7	118	2+3+5+6+7
20	3+5	53	1+3+5+6	86	2+3+5+7	119	1+2+3+5+6+7
21	1+3+5	54	2+3+5+6	87	1+2+3+5+7	120	4+5+6+7
22	2+3+5	55	1+2+3+5+6	88	4+5+7	121	1+4+5+6+7
23	1+2+3+5	56	4+5+6	89	1+4+5+7	122	2+4+5+6+7
24	4+5	57	1+4+5+6	90	2+4+5+7	123	1+2+4+5+6+7
25	1+4+5	58	2+4+5+6	91	1+2+4+5+7	124	3+4+5+6+7
26	2+4+5	59	1+2+4+5+6	92	3+4+5+7	125	1+3+4+5+6+7
27	1+2+4+5	60	3+4+5+6	93	1+3+4+5+7	126	2+3+4+5+6+7
28	3+4+5	61	1+3+4+5+6	94	2+3+4+5+7	127	Reserved factory defaults
29	1+3+4+5	62	2+3+4+5+6	95	1+2+3+4+5+7		
30	2+3+4+5	63	1+2+3+4+5+6	96	6+7		
31	1+2+3+4+5	64	7	97	1+6+7		
32	6	65	1+7	98	2+6+7		

Configuration through Dip-Switch

Default Dip Switch Position



Configuration Possibilities

Pin	Off (Default)	On
1	Bus	Analog
2	Fire Application	Smoke Extr. Application
3	Modbus RTU	BACnet MS/TP
4	Baud Rate (Off-Default)	
5	Baud Rate (Off-Default)	
6	Not In Use=Off	
7*	Smoke Detector Alarm "System"	Smoke Detector Alarm "Actuator"
8	Not In Use=Off	

Information Pin 3:
If the FSC-UFC24 is used in connection with the FSC-M60, Pin 3 has to be on ON (BACnet).

Information Pin 5:
If the FSC-UFC24-230 is used in connection with the FSC-M200, Pin 5 has to be on ON (Baud Rate 38 400).

***Explanation Pin 7:**
- Smoke Detector Alarm "System" = The signal of the smoke detector is transferred directly to the system and processed there.
- Smoke Detector Alarm "Actuator" = The signal of the smoke detector is directly linked with the actuator. In case of a smoke detector alarm the fire damper connected to the same FSC-UFC24-230 will be closed. The signal of the smoke detector is forwarded to the controller.

The above is only valid for the fire safety application. In the smoke extraction application the signal of the smoke detector has no direct influence to the actuator. The signal will be forwarded to the system in any case.

Baud Rate Selection Modbus

This has to be done when choosing Modbus only.

	9 600 (Default)	19 200	38 400	76 800
4	Off	On	Off	On
5	Off	Off	On	On

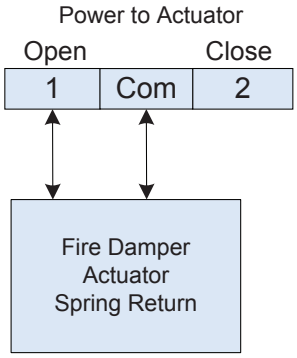
Baud Rate Selection BACnet

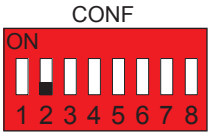
Baud rate in BACnet is automatically detected.

Connection Details

Fire Damper Actuator – Connections

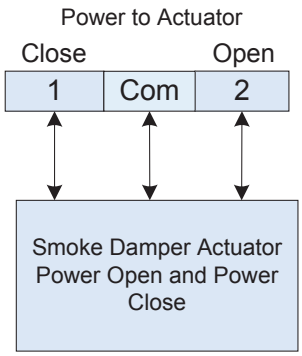
Fire damper actuator (spring return). When the actuator has power it is open, when there is no power the actuator is closed with the spring.

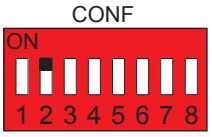




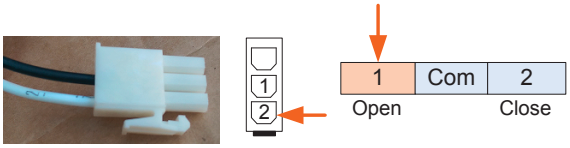
Smoke Extraction Damper Actuator – Connections

If the actuator is powered up the smoke extraction damper is either open or closed. If the FSC-UFC24-230 sends the smoke extraction damper actuator the open signal, pin OPEN is powered. If the FSC-UFC24-230 sends the smoke extraction damper actuator the close signal, pin CLOSE is powered.



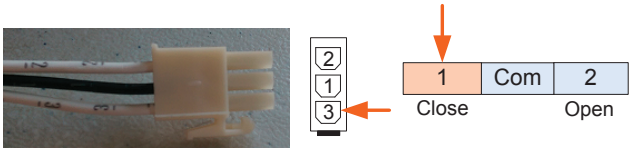


Fire Damper



When the FSC-UFC24-230 is powered up, the power to the actuator is on output 'open' (pin nr 1).

Smoke Extraction Damper



On power up the CLOSE output will be ON. During normal operation the FSC-UFC24-230 in this application ONLY, will hold the last command on memory

After Connection - Power Reset:

- ***Fire Damper Application*** will always go to OPEN.
- ***Smoke Extraction Damper Application*** will hold last command on memory.

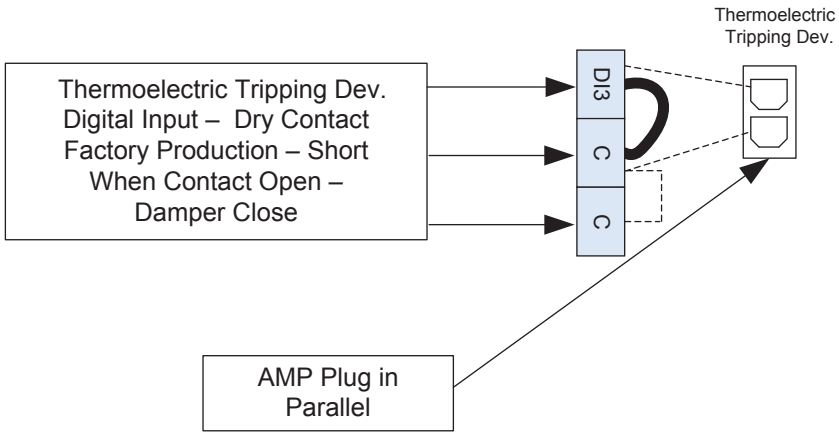
Thermoelectric Tripping Device - Connection

Digital input volt free, normally close as default (can be changed on bus). Factory shorted.
When this input is active the damper will close and you can override from the bus.
The 2 connections, the normal quick terminals and the AMP connector are in parallel.
AMP plug 2-pole. Quick connector 3-pole.

When a thermoelectric tripping device is mounted in the 2-pole AMP plug, the factory production mounted jumper between DI3 and C must be removed!

The above is only valid for the fire safety application.

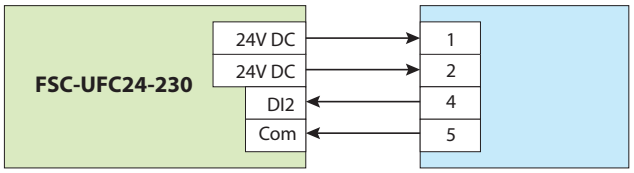
Electrical Installation Thermoelectric Tripping Device



Smoke Detectors – Connections

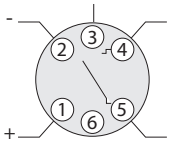
Smoke detector connection Hekatron ORS 142

Possibility to connect one smoke detector



Kommunikationsschnittstelle
communication interface

Betriebsspannung
operating voltage



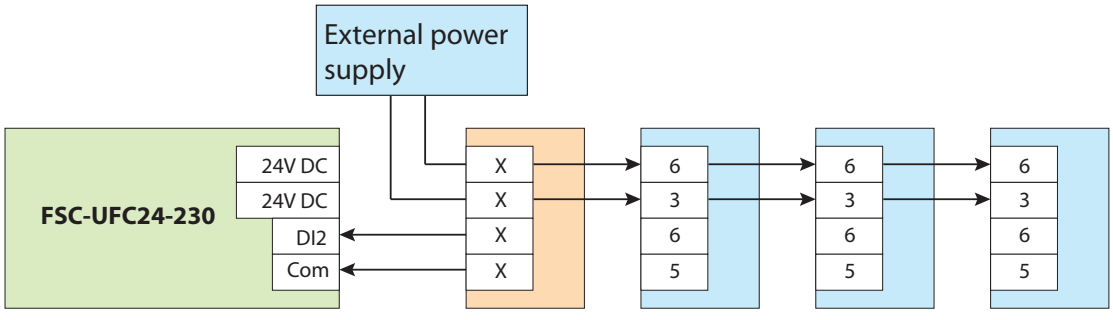
Relaiskontakt
relay contact

Der ORS 142 darf nur an Hekatron-Netzgeräte angeschlossen werden und passt in die vorhandene Sockelserie 143.

The ORS 142 may only be connected to Hekatron mainspower devices and matches the existing bases type 143.

Smoke detector connection Calectro EVC-PY-DA

Multiple smoke detector connections possible with ABAV-S3 24V central unit from Calectro



Analog Application
The FSC-UFC24-230 has the option to work without the bus communication connected. There is one input to open or close the damper, depending on the fire or smoke extraction application. It is also possible to monitor the damper position conventionally through a digital output signal.

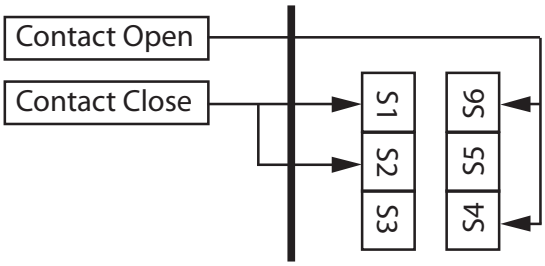
The analog output, signals the status of the FSC-UFC24-230:
- 0V – No Power to FSC-UFC24
- 2V – Damper Open
- 4V – Damper Close
- 6V – Smoke Detector Alarm
- 8V – Thermoel. Tripping Device Alarm
- 10V – More than one Alarm Condition

During normal operation this output will signalize the position of the damper (2V, 4V).
This output can be connected in parallel between the various FSC-UFC24-230 in order to monitor their status.
Current output max is 5mA.

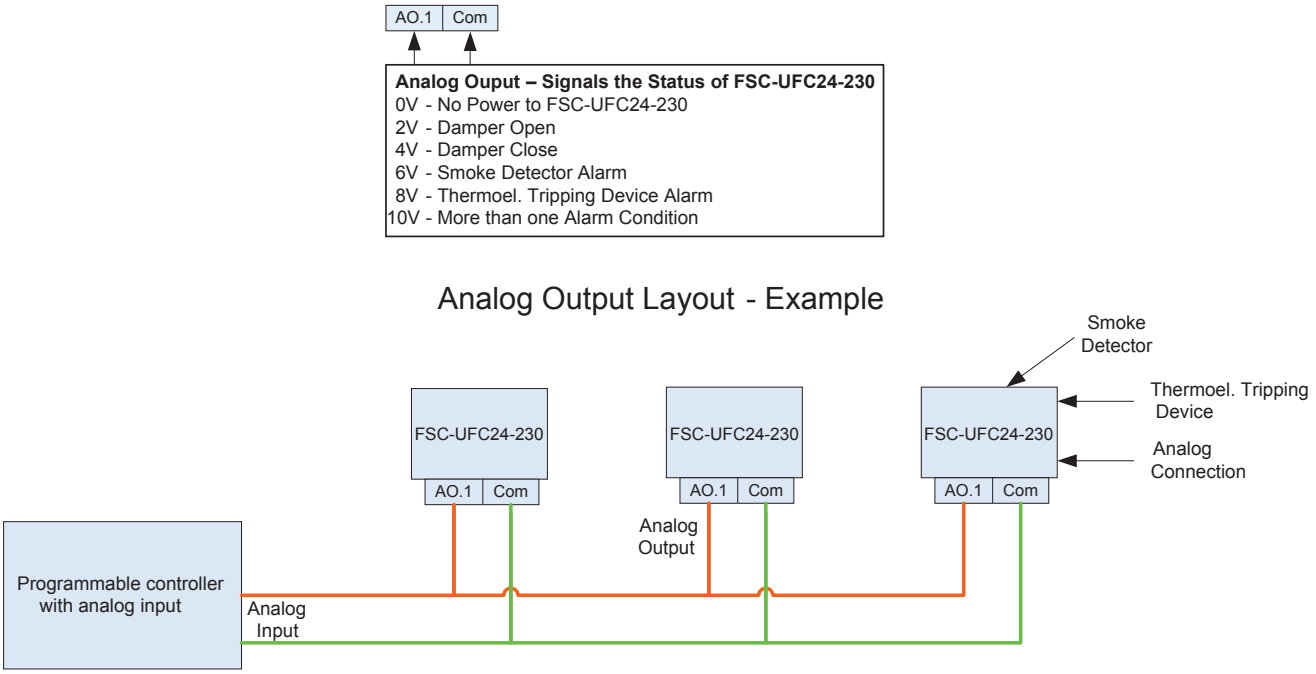
Digital input volt free, normally open as default (can be changed on bus).
The digital input allows to control the damper position through an external contact/device.
Selection of the analog settings by dip switch.

This digital input for the analog application in the FSC-UFC24-230 overrides always the bus commands.
Electical Installation for Conventional Application

Feedback signals from the UFC:

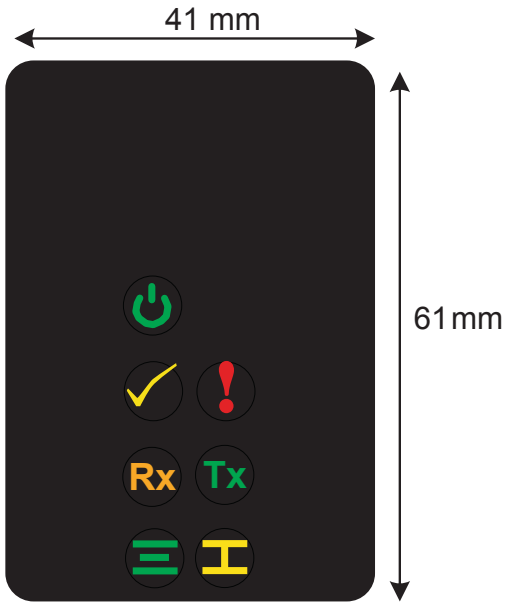


Electrical Installation for Analog Application:



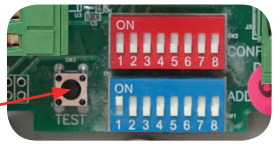
Explanation of LEDs

The LEDs are only visible if they are active. If not active the symbols will not appear.



Led	Color	Action	Description
Power	Green	On	Power is connected
Status	Yellow	Off	Bus operation
		On	Analog connection
Error	Red	Flash Interval 1 sec	Actuator did not reach end switch position within the set time
		Flash Interval 2 sec	Smoke detector alarm
		Flash Interval 3 sec	Thermoelectric tripping device alarm
		Flash Interval 0.3 sec	Error on 2 devices or more Error message test report
		Flash Interval 5 sec	General alarm
Rx	Yellow	Flash	Receive data
Tx	Green	Flash	Transmit data
Close	Yellow	On	Damper close
Open	Green	On	Damper open
Close + Open Flashing	Damper is moving		

Functionality of Test Button



Depending on the application (fire or smoke extraction) the test button creates different test scenarios.

Fire Application:

- Power on the FSC-UFC24-230: actuator (damper) opening until end position is reached
- Pushing test button will interrupt the power supply to the actuator. Spring is closing the actuator
- As soon as the test button is released the power comes back to the actuator and the damper will open again

Smoke Extraction Application:

- Power on: actuator makes self-test and remains in position defined by controls
- Pushing test button changes command of the actuator – actuator (damper) runs into opposite direction
- Release test button: actuator (damper) runs back into last defined position

Run Time Monitoring of Actuator

The FSC-UFC24-230 is equipped with an actuator run time monitoring function. This function monitors the time required by the actuator from leaving of the one and reaching of the other end switch. If the actuator does not reach the other end switch in the specified time an error message is sent.

The default value for the actuator run time is 90 seconds. This can be adapted via Modbus or BACnet from 0…360 seconds.

Full Auto Test

The FSC-UFC24-230 offers a 'Full Auto Test' function. This can be controlled through the Modbus or BACnet controller.

Function
Base for this function is the run time monitoring of the actuator.

Fire Damper
To start the full auto test functionality, the corresponding bus-register hast to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the fire damper actuator is closing (spring) and remains in the closed position until the timer of the set running time has reached the set time. Then the actuator will open again automatically until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'open' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC24-230 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Smoke Extraction Damper
To start the full auto test functionality, the corresponding bus-register has to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the smoke extraction damper actuator is moving to the opposite direction and remains in that position until the timer of the set running time has reached the set time. Then the actuator will automatically move back to the original position until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'opposite direction' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC24-230 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Bus Monitoring Application

The FSC-UFC24-230 is equipped with a Bus Monitoring Function. If the bus signal to the unit is interrupted the damper will move to the safety position after the defined period of time and remain there until the bus functionality is back to normal operation.

Objects
There are 2 objects which can be activated by Modbus or BACnet:
- Logic Alarm Communication
- Delay Alarm Communication

Default settings:
Logic Alarm Communication not active

Activation (via Bus):
- Logic Alarm Communication 1 (on)
- Delay Alarm Communication is activated, default delay time is 120 sec. Option to set the delay time via bus between 0…360 sec

Functionality

Fire Damper
After the defined period of time the fire damper will move to the closed position and remains closed until the bus functionality is back to normal operation.

Smoke Extraction Damper
If damper is closed:
After the defined period of time the fire damper will move to the open position and remains open unit the bus functionality is back to normal operation.

If damper is open:
Damper remains in open position

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Technical Data Sheet FSC-UFC24-2

Universal Field Controller to individually control up to 2 motorized fire or smoke extraction dampers. It is the perfect solution for bus (Modbus and BACnet) or conventional integration into a superior system.

Content

Section	Page
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Cable Specification	4
Dimensions	5
Removing the Cover of the Housing	6
Electrical Installation	7
Power Supply	8
Modbus and BACnet Addressing	9
Configuration through Dip Switch	10

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Connection Details	11
Conventional Application	12
Explanation of LEDs	13
Functionality of Test Buttons	14
Run Time Monitoring of Actuator	15
Full Auto Test	15
Bus Monitoring Application	16

Technical Data

Electrical Data	Nominal Voltage	24 V AC / DC
	Nominal Voltage Range	-20%... + 20%
	Dimensioning	2 VA + damper actuators (max 24 VA)
	Power Consumption	2 W + damper actuators
	Connections	AMP plug-in connections and quick connections (terminals)
Communication / Modbus	Protocol	Modbus RTU
	Medium	RS-485, not electrically isolated
	Transmission Formats	Specified by Modbus RTU Standards
	Number of Devices per Line	100 (without repeater)
	Baud Rates	9'600, 19'200, 38'400, 76'800 bps
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC24-2 is last Modbus device in line, see electrical installation, page 7
	Typical Response Time	<200 ms

Communication / BACnet	Protocol	BACnet MS/TP
	Medium	RS-485, not electrically isolated
	Number of Devices per Line	65 (without repeater)
	Baud Rates	9'600, 19'200, 38'400, 76'800 (auto detect)
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC24-2 is last BACnet device in line, see electrical installation, page 7
	Typical Response Time	<100 ms
	Device Instant	Automatically assigned by physical address, writable
Safety	Protection Class	III (safety extra low voltage)
	Protection Degree	IP42, housing of non-flammable polycarbonate
	Electromagnetic Tolerance	CE in accordance with 2004/108/EC
	Low Voltage Directive	CE in accordance with 2006/95/EC
	Mode of Operation	Type 1 (EN 60730-1)
	Rated Impulse Voltage	2.5 kV (EN 60730-1)
	Degree of Pollution of Environment	2 (EN 60730-1)
	Ambient Temperature	-20 °C to + 50 °C
	Storage Temperature	-20 °C to + 80 °C
	Humidity Test	95% RH, non-condensing (EN 60730-1)
	Maintenance	Maintenance free
Mechanical Data (Dimensions / Weight)	Width	120 mm
	Length	153 mm
	Height	57 mm (with bracket)
	Weight	ca. 415 g (with bracket)
	See drawings page 5.	

Installation

The FSC-UFC24-2 is directly installed at or close to the fire or smoke extraction damper. The bracket can be pre-installed. The FSC-UFC24-2 can be snapped onto the bracket any time (at the damper manufacturer or at the job site).

Electrical Installation

See details page 7.

Safety Notes

The FSC-UFC24-2 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-UFC24-2 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-UFC24-2 is used together with one or two fire or smoke extraction damper actuators to individually control and monitor one or two fire or smoke extraction dampers. This Universal Field Controller has one bus address which offers individual control and status messages for each of the two connected actuators. It provides Modbus, BACnet or conventional connection and is normally mounted at or close to the damper.
Following control modes can be chosen through dip switch terminal:

- Fire or smoke extraction application
- Bus protocols: Modbus or BACnet

Conventional: Digital input per damper for conventional application.

This digital input in the FSC-UFC24-2 always overrides the bus commands.

Universal System Link between one or two fire or smoke extraction dampers and any Modbus or BACnet system or conventional control.

Power Supply

The FSC-UFC24-2 needs to be powered up with 24 V AC / DC.
It provides the power supply to the actuators. For more details see page 8.

Control

Conventional
The FSC-UFC24-2 offers the option to work without bus communication (Modbus / BACnet) and can be controlled in a conventional way. There is one input to open or close the dampers. It is also possible to monitor the damper position conventional through a digital output signal.

Communication

Serial Communication – RS-485
Through Modbus RTU (RS-485) or BACnet MS/TP (RS-485).

Actuator Connection

3-pole AMP plug and terminal connections for 2 standard 24 V AC/DC fire or smoke extraction actuators.
6-pole AMP plug and terminal connections for 2 internal actuator end switches. Identification of the end position switches of the actuators.

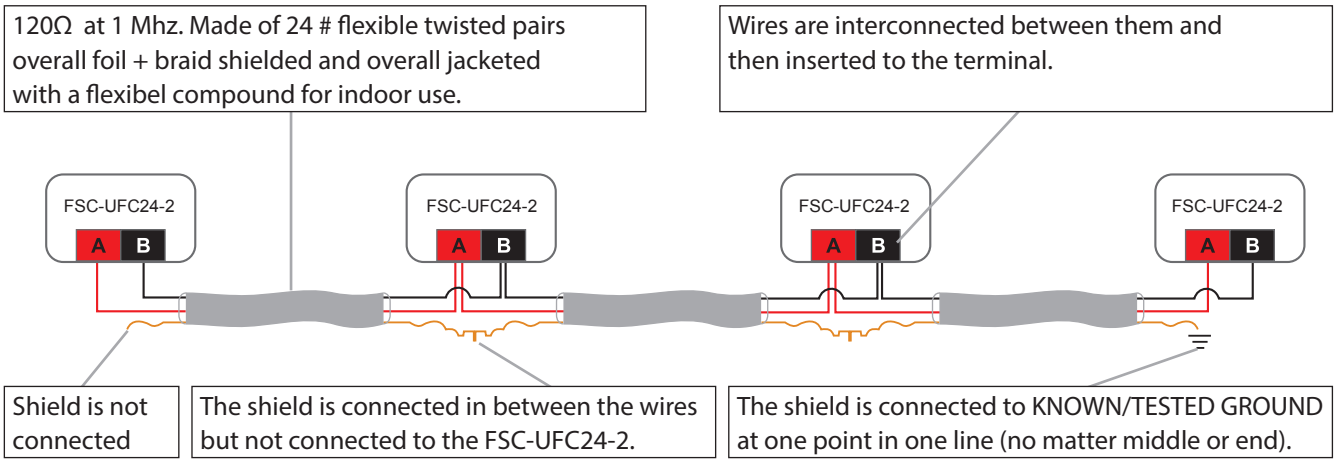
Additional Connections

Digital input for conventional application.

Cable Specification

120 Ω 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.

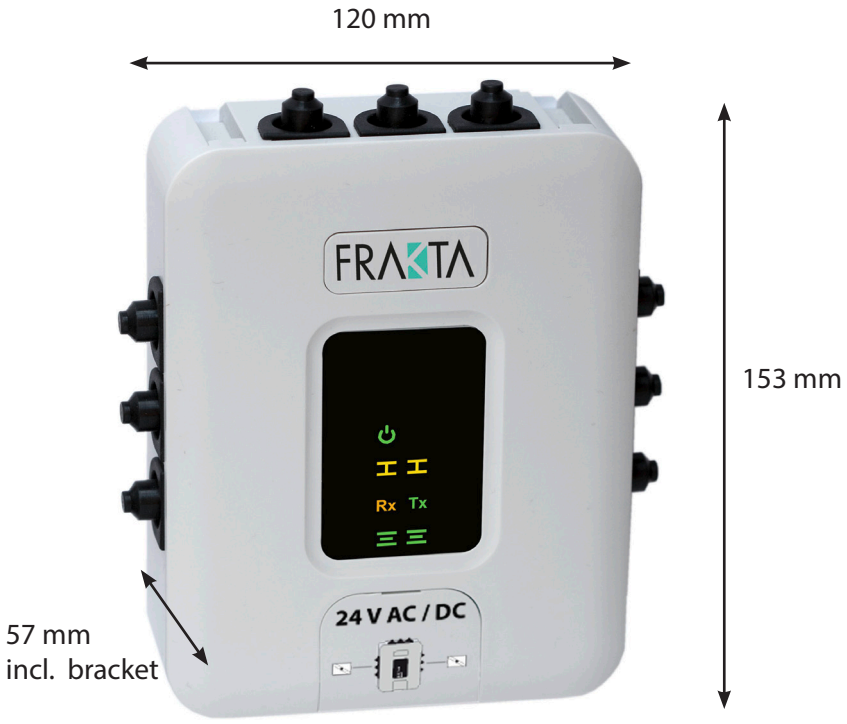
IMPORTANT: SMT takes no responsibility of the functionality of the units/ network if a different cable is used to the one specified here.



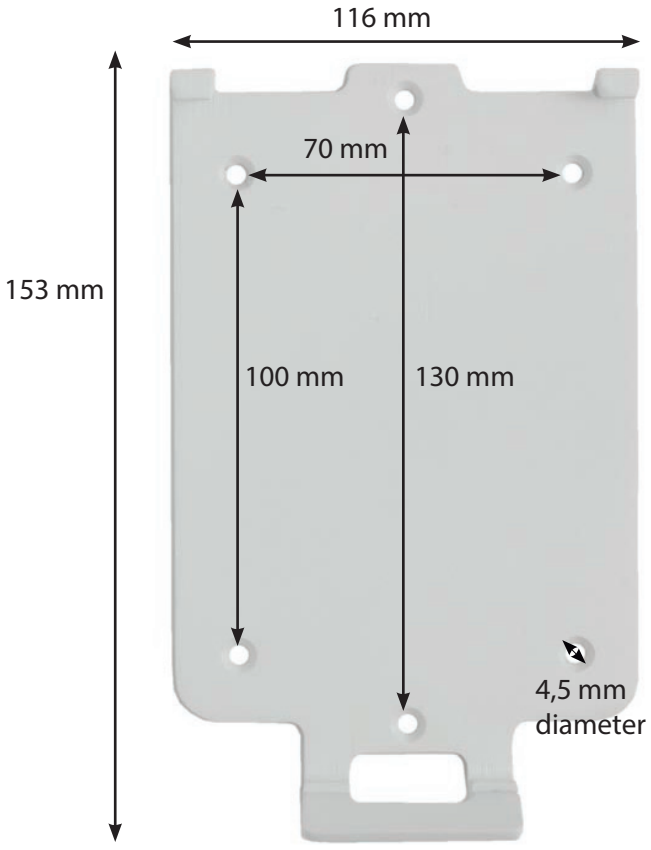
← Up to 1'200 meters and max. 100 FSC-UFC24-2 with Modbus RTU and 65 FSC-UFC24-2 with BACnet MS/TP →

Dimensions

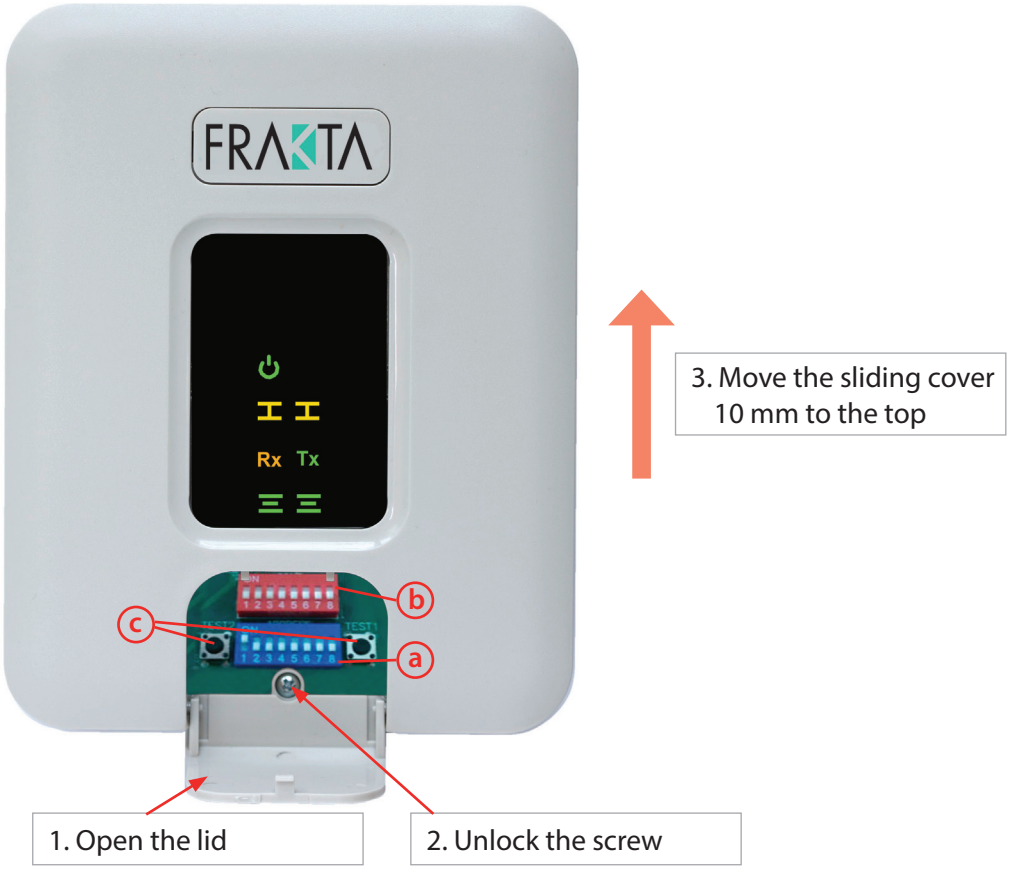
FSC-UFC24-2



Mounting Bracket



Removing the Cover of the Housing



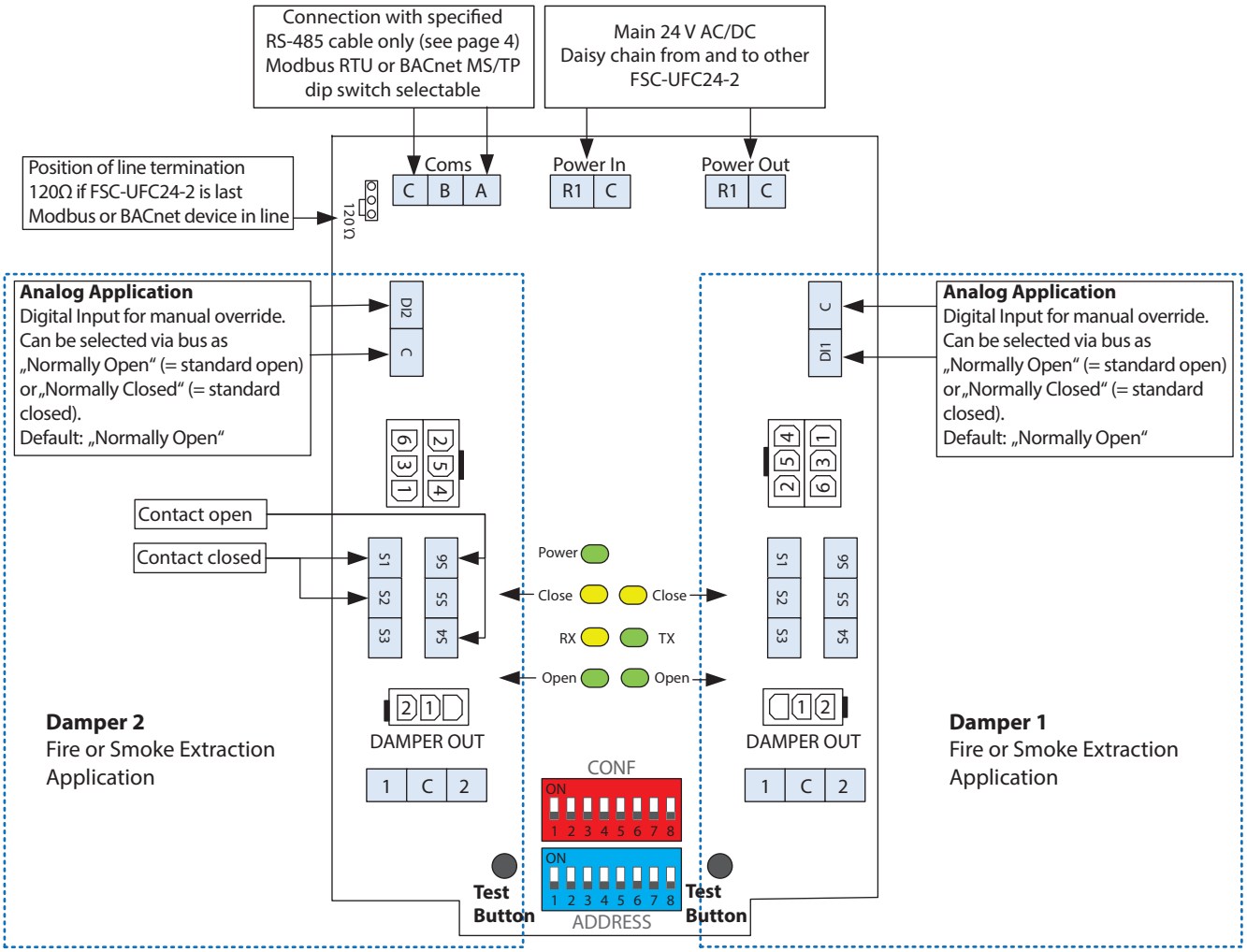
1. Open the small lid on the lower end of the housing by flapping up the cover
2. Unlock the screw which is placed on the lower end in the middle
3. Move the sliding cover 10 mm to the top
4. Remove the cover

Lid for Easy Access to Dip Switch Terminals (Configuration / Addressing) and Test Button

(a) The blue coloured dip switch terminal is for the Modbus or BACnet addressing.
(b) The red one for the configuration.
(c) **Test buttons: For detailed explanation of the function of the test button** **see page 14.**

Electrical Installation

General Information



Hybrid forms (fire and smoke extraction actuator) are possible.

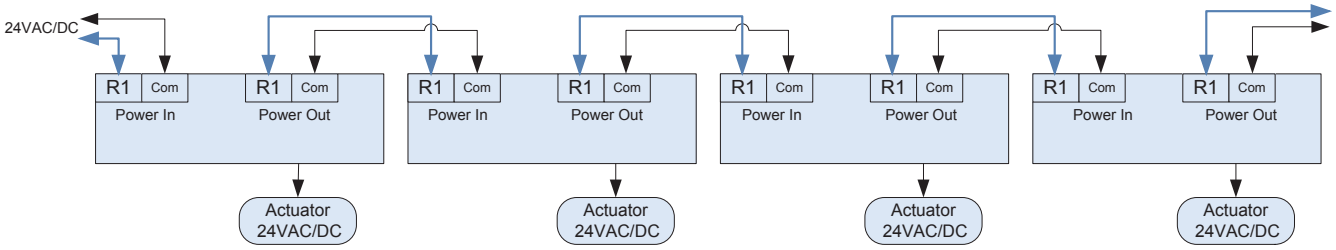
IMPORTANT:
If only one actuator is connected to the FSC-UFC24-2 the LEDs of the side where no actuator is connected indicate an alarm. A jumper has to be installed between S4 and S6 in the terminal where there is no actuator connected, to indicate an "opened" position in the LED. If the second connection is not activated via bus, there will be no alarm signal on the bus system.

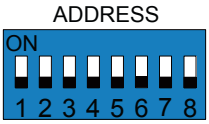
Power Supply

Main Power – FSC-UFC24-2

The FSC-UFC24-2 is dual power 24V AC/DC.
The actuator has to be 24V AC and/or DC. Meaning it has to operate with the same voltage (AC or DC) as the FSC-UFC24-2. There are 2 terminals for the power, in order to make the daisy chain connection for the installer easier.

The polarity must be respected when connecting multiple FSC-UFC24-2 to one power source (phase to phase, com to com)!





Modbus and BACnet Addressing

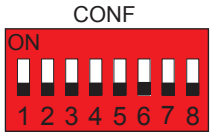
*Attention: If the FSC-UFC24-2 is used in combination with the FSC-M200 controller**, Modbus addresses 1 - 10 are reserved for the FSC-M200. That means that the Modbus addressing of the FSC-UFC24-2 starts with Modbus address 11. Furthermore, the Baud Rate needs to be changed to 38'400 (PIN 5 to ON).
If the FSC-UFC24-2 is used in combination with the FSC-M60, the addressing needs to be done in consecutive order. **Integration planned, not yet available

Address	Switches On	Address	Switches On	Address	Switches On	Address	Switches On
0*	Broadcast-not in use	33	1+6	66	2+7	99	1+2+6+7
1*	1	34	2+6	67	1+2+7	100	3+6+7
2*	2	35	1+2+6	68	3+7	101	1+3+6+7
3*	1+2	36	3+6	69	1+3+7	102	2+3+6+7
4*	3	37	1+3+6	70	2+3+7	103	1+2+3+6+7
5*	1+3	38	2+3+6	71	1+2+3+7	104	4+6+7
6*	2+3	39	1+2+3+6	72	4+7	105	1+4+6+7
7*	1+2+3	40	4+6	73	1+4+7	106	2+4+6+7
8*	4	41	1+4+6	74	2+4+7	107	1+2+4+6+7
9*	1+4	42	2+4+6	75	1+2+4+7	108	3+4+6+7
10*	2+4	43	1+2+4+6	76	3+4+7	109	1+3+4+6+7
11	1+2+4	44	3+4+6	77	1+3+4+7	110	2+3+4+6+7
12	3+4	45	1+3+4+6	78	2+3+4+7	111	1+2+3+4+6+7
13	1+3+4	46	2+3+4+6	79	1+2+3+4+7	112	5+6+7
14	2+3+4	47	1+2+3+4+6	80	5+7	113	1+5+6+7
15	1+2+3+4	48	5+6	81	1+5+7	114	2+5+6+7
16	5	49	1+5+6	82	2+5+7	115	1+2+5+6+7
17	1+5	50	2+5+6	83	1+2+5+7	116	3+5+6+7
18	2+5	51	1+2+5+6	84	3+5+7	117	1+3+5+6+7
19	1+2+5	52	3+5+6	85	1+3+5+7	118	2+3+5+6+7
20	3+5	53	1+3+5+6	86	2+3+5+7	119	1+2+3+5+6+7
21	1+3+5	54	2+3+5+6	87	1+2+3+5+7	120	4+5+6+7
22	2+3+5	55	1+2+3+5+6	88	4+5+7	121	1+4+5+6+7
23	1+2+3+5	56	4+5+6	89	1+4+5+7	122	2+4+5+6+7
24	4+5	57	1+4+5+6	90	2+4+5+7	123	1+2+4+5+6+7
25	1+4+5	58	2+4+5+6	91	1+2+4+5+7	124	3+4+5+6+7
26	2+4+5	59	1+2+4+5+6	92	3+4+5+7	125	1+3+4+5+6+7
27	1+2+4+5	60	3+4+5+6	93	1+3+4+5+7	126	2+3+4+5+6+7
28	3+4+5	61	1+3+4+5+6	94	2+3+4+5+7	127	Reserved factory defaults
29	1+3+4+5	62	2+3+4+5+6	95	1+2+3+4+5+7		
30	2+3+4+5	63	1+2+3+4+5+6	96	6+7		
31	1+2+3+4+5	64	7	97	1+6+7		
32	6	65	1+7	98	2+6+7		

Via each, per dip switch allocated Modbus or BACnet address, the second actuator can be individually controlled through the software (see Mobus Register or BACnet Object List).

Configuration through Dip Switch

Default Dip Switch Position



Configuration Possibilities

Pin	Off (Default)	On
1	Fire Damper 1	Smoke Extraction Damper 1
2	Fire Damper 2	Smoke Extraction Damper 2
3	Modbus RTU	BACnet MS/TP
4	Baud Rate (Off-Default)	
5	Baud Rate (Off-Default)	
6	Not In Use=Off	
7	Not In Use=Off	
8	Not In Use=Off	

Information Pin 3:
If the FSC-UFC24-2 is used in connection with the FSC-M60, Pin 3 has to be on ON (BACnet).

Information Pin 5:
If the FSC-UFC24-2 is used in connection with the FSC-M200*, Pin 5 has to be on ON (Baud Rate 38400).

*Integration planned.

Baud Rate Selection Modbus

This has to be done when choosing Modbus only.

	9 600 (Default)	19 200	38 400	76 800
4	Off	On	Off	On
5	Off	Off	On	On

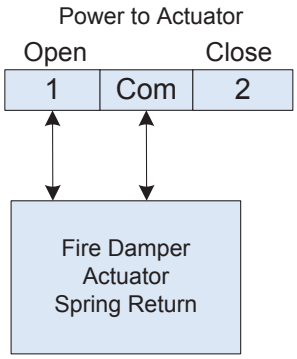
Baud Rate Selection BACnet

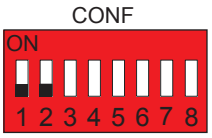
Baud rate in BACnet is automatically detected.

Connection Details

Fire Damper Actuator – Connections

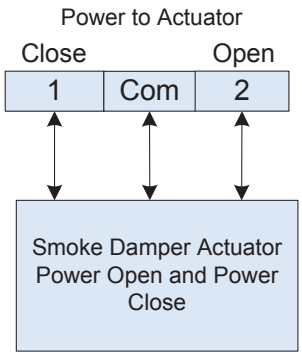
Fire damper actuator (spring return). When the actuator has power it is open, when there is no power the actuator is closed with the spring.

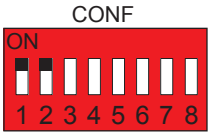




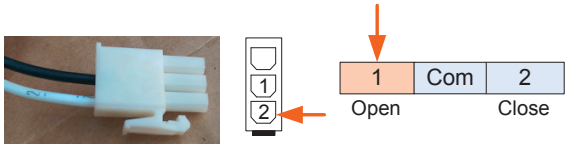
Smoke Extraction Damper Actuator – Connection

If the actuator is powered up the smoke extraction damper is either open or closed.
If the FSC-UFC24-2 sends the smoke extraction damper actuator the open signal, pin OPEN is powered. If the FSC-UFC24-2 sends the smoke extraction damper actuator the close signal, pin CLOSE is powered.



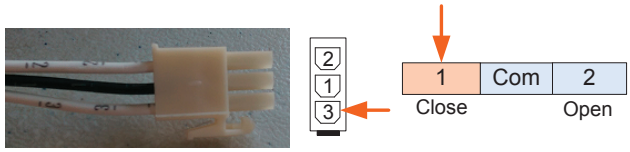


Fire Damper



When the FSC-UFC24-2 is powered up, the power to the actuator is on output 'open' (pin nr 1).

Smoke Extraction Damper



On power up the CLOSE output will be ON. During normal operation the FSC-UFC24-2 in this application ONLY, will hold the last command on memory.

After Connection - Power Reset:

- ***Fire Damper Application*** will always go to OPEN.
- ***Smoke Extraction Damper Application*** will hold last command on memory.

Conventional Application

Conventional connection is the application when the FSC-UFC24-2 is not connected to a bus network. No configuration settings are required. One digital input for conventional application is available for each of the two dampers. This is to open and close the damper. Digital output signals indicating the damper positions are available .

Digital Input: volt free, normally open as default (can be changed on bus).
The digital input allows to control the damper position through an external contact/device.

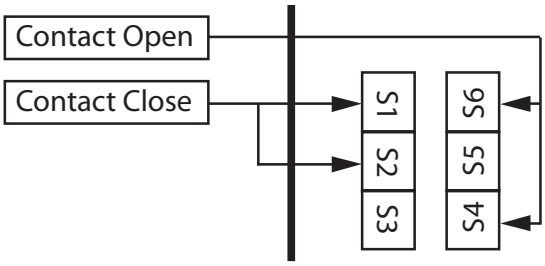
This digital input in the FSC-UFC24-2 always overrides the bus commands.

Digital Output: the feedback signals (on/off) of the actuator can be forwarded via the connections S1 and S2 (actuator/damper closed) and / or S4 and S6 (actuator/damper open) to any control or monitoring device.

These outputs can be connected in parallel between the different FSC-UFC24-2 to monitor their status.

Current output max is 5mA.

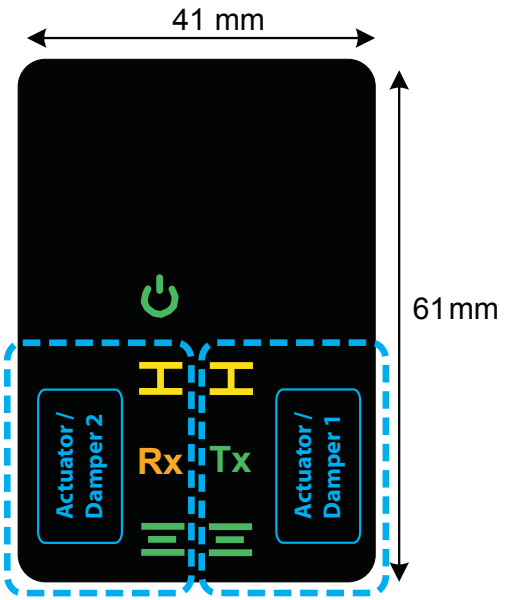
Electrical Installation for Conventional Application



Explanation of LEDs

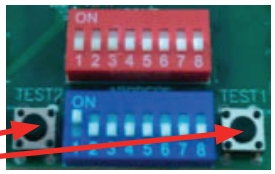
The LEDs are only visible if they are active. If not active the symbols will not appear.

IMPORTANT:
If only one actuator is connected to the FSC-UFC24-2 the LEDs of the side where no actuator is connected indicate an alarm. A jumper has to be installed between S4 and S6 in the terminal where there is no actuator connected, to indicate an "opened" position in the LED. If the second connection is not activated via bus, there will be no alarm signal on the bus system.



Led	Color	Action	Description
Power	Green	On	Power is connected
Alarm	Yellow or green per actuator / Dampers blinking alternately	Flash Interval 1 sec	Actuator did not reach end switch position within set time
Alarm	Both LED green (damper open) blinking alternately. Yellow (damper closed) = static	Flash Interval 3 sec	Alarm on 1 or more devices active (minimum 1 actuator in closed position). Bus-Command = open; Alarm = close all actuators
Rx	Yellow	Flash	Receive data
Tx	Green	Flash	Transmit data
Close	Yellow	On	Damper close
Open	Green	On	Damper open
Close + open	Yellow / Green	Flashing in parallel	Damper is moving

Functionality of Test Buttons



Two test buttons are available in the FSC-UFC24-2 (damper 1 and damper 2). Depending on the application (fire or smoke extraction) the test buttons create different test scenarios.

Fire Application:

- Power on the FSC-UFC24-2: actuator (damper) opening until end position is reached
- Pushing test button will interrupt the power supply to the actuator. Spring is closing the actuator
- As soon as the test button is released the power comes back to the actuator and the damper will open again

Smoke Extraction Application:

- Power on: actuator makes self-test and remains in position defined by controls
- Pushing test button changes command of the actuator – actuator (damper) runs into opposite direction
- Release test button: actuator (damper) runs back into last defined position

Run Time Monitoring of Actuator

The FSC-UFC24-2 is equipped with an actuator run time monitoring function for both actuators independently. This function monitors the time required by the actuator from leaving of the one and reaching of the other end switch. If the actuator does not reach the other end switch in the specified time an error message is sent.

The default value for the actuator run time is 90 seconds. This can be adapted via Modbus or BACnet from 0…360 seconds.

Full Auto Test

The FSC-UFC24-2 offers a 'Full Auto Test' function. This can be controlled through the Modbus or BACnet controller.

Function
Base for this function is the run time monitoring of the actuator.

Fire Damper
To start the full auto test functionality, the corresponding bus-register hast to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the fire damper actuator is closing (spring) and remains in the closed position until the timer of the set running time has reached the set time. Then the actuator will open again automatically until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'open' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC24-2 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Smoke Extraction Damper
To start the full auto test functionality, the corresponding bus-register has to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the smoke extraction damper actuator is moving to the opposite direction and remains in that position until the timer of the set running time has reached the set time. Then the actuator will automatically move back to the original position until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'opposite direction' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC24-2 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Bus Monitoring Application

The FSC-UFC24-2 is equipped with a Bus Monitoring Function. If the bus signal to the unit is interrupted the dampers will move to the safety position after the defined period of time and remain there until the bus functionality is back to normal operation.

Objects
There are 2 objects which can be activated by Modbus or BACnet:
- Logic Alarm Communication
- Delay Alarm Communication

Default settings:
Logic Alarm Communication not active

Activation (via Bus):
- Logic Alarm Communication 1 (on)
- Delay Alarm Communication is activated, default delay time is 120 sec. Option to set the delay time via bus between 0…360 sec

Functionality
Fire Damper
After the defined period of time the fire damper will move to the closed position and remains closed until the bus functionality is back to normal operation.

Smoke Extraction Damper
If damper is closed:
After the defined period of time the fire damper will move to the open position and remains open unit the bus functionality is back to normal operation.

If damper is open:
Damper remains in open position

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Technical Data Sheet FSC-UFC230-2

Universal Field Controller to individually control up to 2 motorized fire dampers. It is the perfect solution for bus (Modbus and BACnet) or conventional integration into a superior system.
To be used for the connection of 230 V actuators.

ATTENTION: 230 V POWER SUPPLY

Content

Section	Page
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Dimensions	5
Removing the Cover of the Housing	6
Electrical Installation	7
Power Supply	8
Modbus and BACnet Addressing	9
Configuration through Dip Switch	10

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Connection Details	11
Conventional Application	12
Explanation of LEDs	13
Functionality of Test Buttons	14
Run Time Monitoring of Actuator	15
Full Auto Test Application	15
Bus Monitoring Application	16

Technical Data

ATTENTION: 230 V POWER SUPPLY

Electrical Data	Nominal Voltage	230 V AC
	Nominal Voltage Range	-20%... + 20%
	Dimensioning	2 VA + damper actuators (max 24 VA)
	Power Consumption	2 W + damper actuators
	Connections	AMP plug-in connections and quick connections (terminals)
Communication / Modbus	Protocol	Modbus RTU
	Medium	RS-485, not electrically isolated
	Transmission Formats	Specified by Modbus RTU Standards
	Number of Devices per Line	100 (without repeater)
	Baud Rates	9.600, 19.200, 38.400, 76.800 bps
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC230-2 is last Modbus device in line, see electrical installation page 7
	Typical Response Time	<200 ms

Communication / BACnet	Protocol	BACnet MS/TP
	Medium	RS-485, not electrically isolated
	Number of Devices per Line	65 (without repeater)
	Baud Rates	9.600, 19.200, 38.400, 76.800 bps (auto detect)
	Address	1..127 (1-10 reserved for FSC-M200) (0 reserved for broadcast)
	Termination	120Ω line termination. Jumper available on extra pin on PCB. Position of jumper if FSC-UFC230-2 is last BACnet device in line, see electrical installation page 7
	Typical Response Time	<100 ms
	Device Instant	Automatically assigned by physical address, writable
Safety*	Protection Class	III
	Protection Degree	IP42, housing of non-flammable polycarbonate
	Electromagnetic Tolerance	CE in accordance with 2004/108/EC
	Low Voltage Directive	CE in accordance with 2006/95/EC
	Mode of Operation	Type 1 (EN 60730-1)
	Rated Impulse Voltage	2.5 kV (EN 60730-1)
	Degree of Pollution of Environment	2 (EN 60730-1)
	Ambient Temperature	-20° C to +50° C
	Storage Temperature	-20° C to +80° C
	Humidity Test	95% RH, non-condensing (EN 60730-1)
	Maintenance	Maintenance free
Mechanical Data (Dimensions / Weight)	Width	120 mm
	Length	153 mm
	Height	57 mm (with bracket)
	Weight	ca 415 g (with bracket)
	See drawings page 5.	

**Tests (CE, EMC etc.) in progress.*

Installation

The FSC-UFC230-2 is directly installed at or close to the fire damper. The bracket can be pre-installed. The FSC-UFC230-2 can be snapped onto the bracket any time (at the damper manufacturer or at the job site).

Electrical Installation

See details page 7.

Safety Notes

The FSC-UFC230-2 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-UFC230-2 on site bears full responsibility for the proper functioning of the whole system. Only authorized specialist 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-UFC230-2 is used together with one or two fire damper actuators to individually control and monitor one or two fire dampers. This Universal Field Controller has one bus address which offers individual control and status messages for each of the two connected actuators. It provides Modbus, BACnet or conventional connection and is normally mounted at or close to the damper.
Following control modes can be chosen through dip switch terminal:

- Bus protocols: Modbus or BACnet

Conventional: Digital input per damper for conventional application.

This digital input in the FSC-UFC230-2 always overrides the bus commands.

Universal System Link between one or two fire dampers and any Modbus or BACnet system or conventional control.

Power Supply

The FSC-UFC230-2 needs to be powered up with 230 V AC.
It provides the power supply to the actuators. For more details see page 8.

Control

Conventional
The FSC-UFC230-2 offers the option to work without bus communication (Modbus / BACnet) and can be controlled in a conventional way. There is one input to open or close the dampers. It is also possible to monitor the damper position conventional through a digital output signal.

Communication

Serial Communication – RS-485
Through Modbus RTU (RS-485) or BACnet MS/TP (RS-485).

Actuator Connection

3-pole AMP plug and terminal connection for standard 230 V AC fire damper actuator.
6-pole AMP plug and terminal connection for 2 internal actuator end switches. Identification of the end position switches of the actuators.

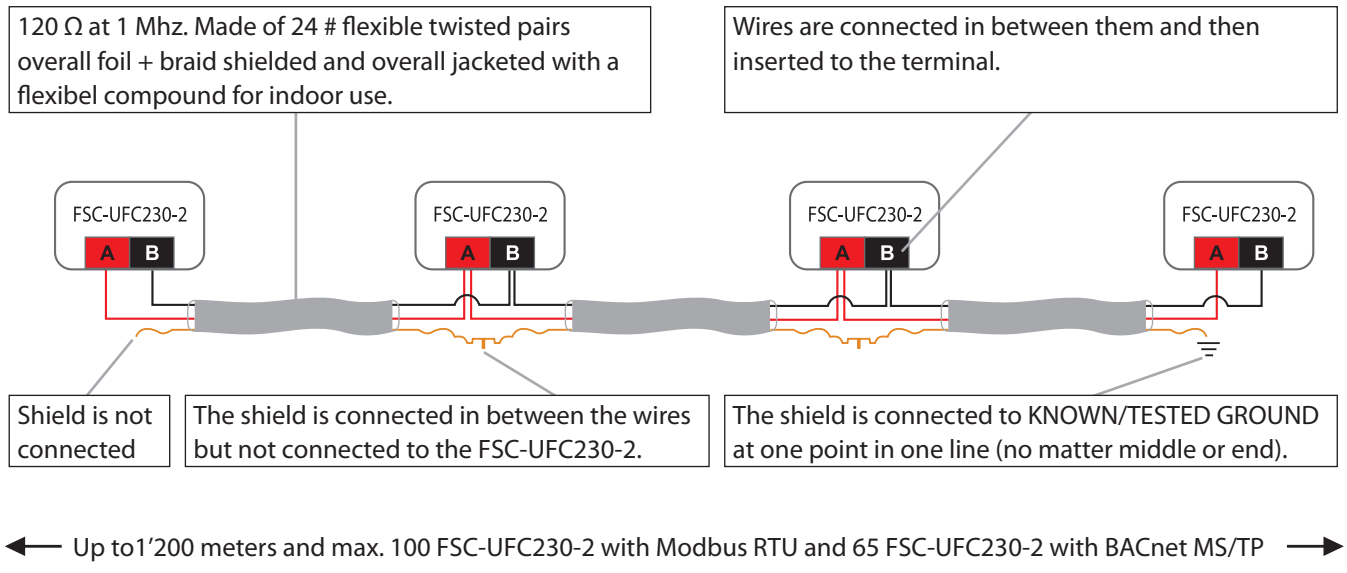
Additional Connections

Digital input for conventional application.

Cable Specification

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.

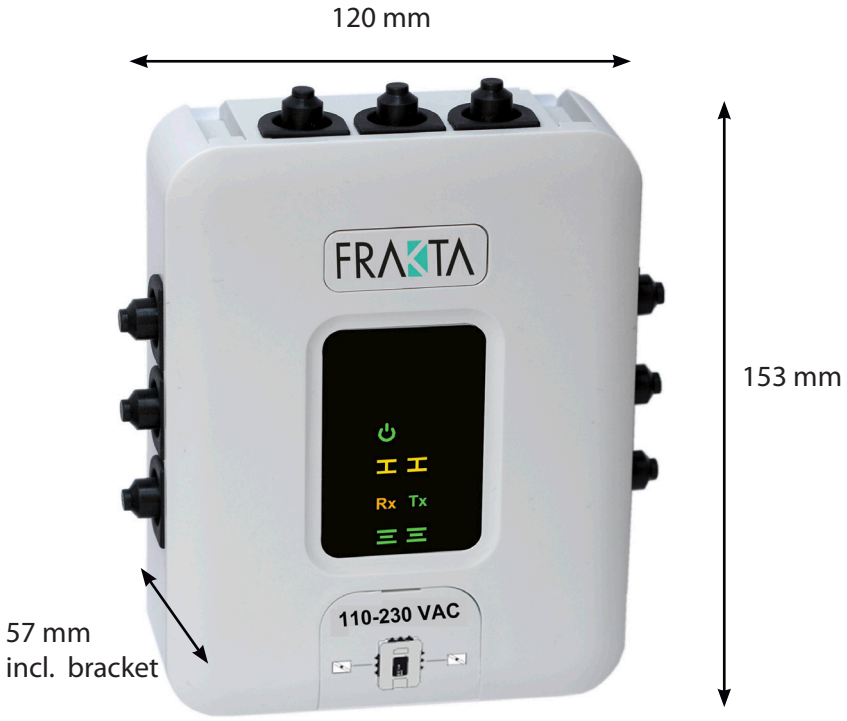
IMPORTANT: SMT takes no responsibility of the functionality of the units/network if a different cable is used to the one specified here.



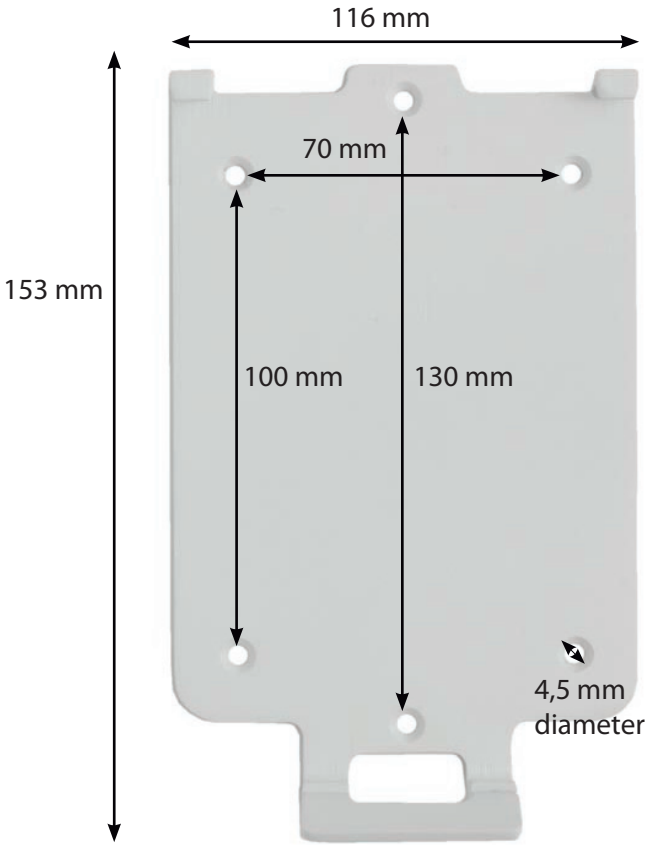
← Up to1'200 meters and max. 100 FSC-UFC230-2 with Modbus RTU and 65 FSC-UFC230-2 with BACnet MS/TP →

Dimensions

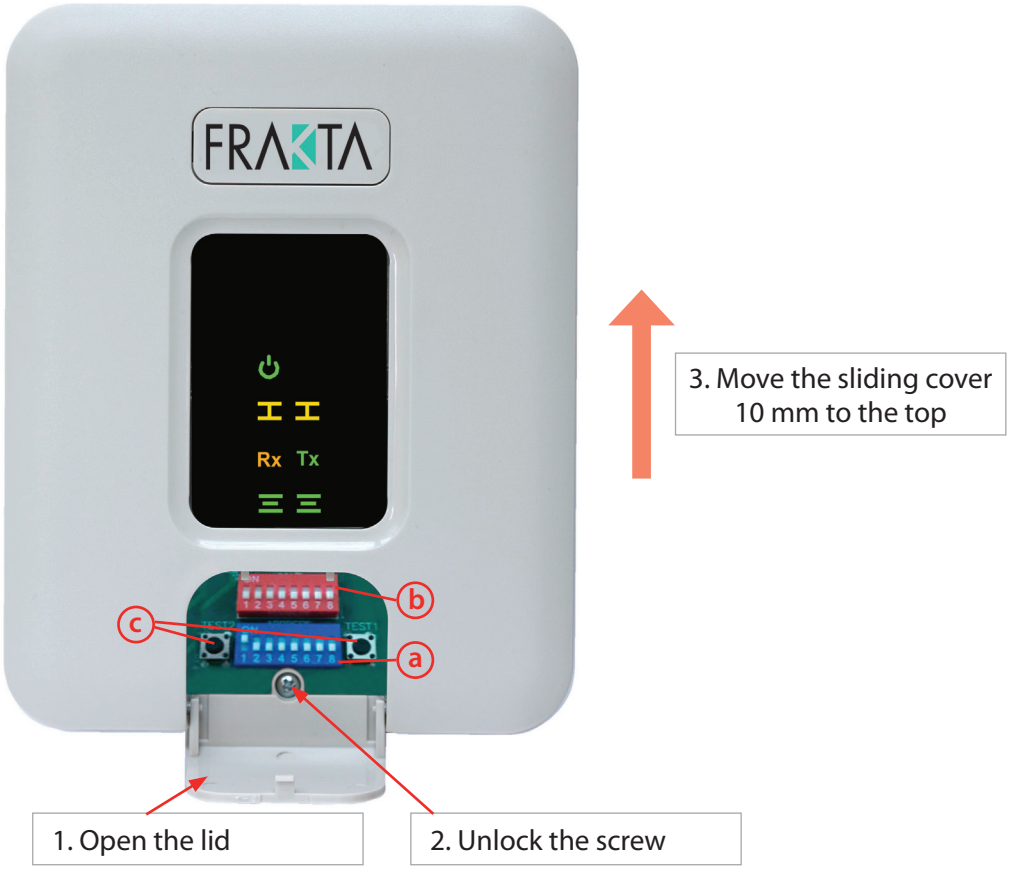
FSC-UFC230-2



Mounting Bracket



Removing the Cover of the Housing



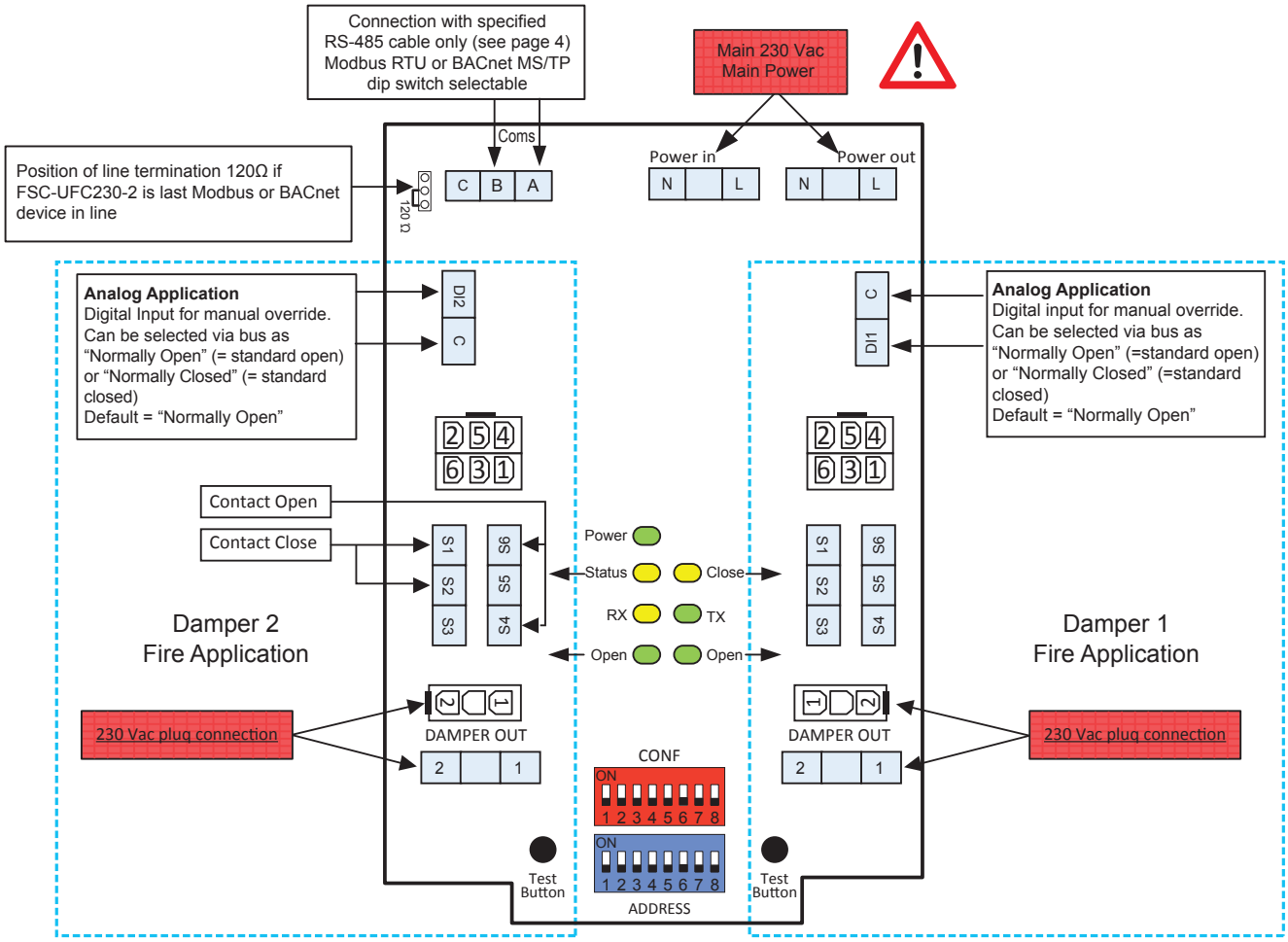
1. Open the small lid on the lower end of the housing by flapping up the cover
2. Unlock the screw which is placed on the lower end in the middle
3. Move the sliding cover 10 mm to the top
4. Remove the cover

Lid for Easy Access to Dip Switch Terminals (Configuration / Addressing) and Test Button

(a) The blue coloured dip switch terminal is for the Modbus or BACnet addressing.
(b) The red one for the configuration.
(c) Test buttons: For detailed explanation of the function of the test button see page 14.

Electrical Installation

General Information



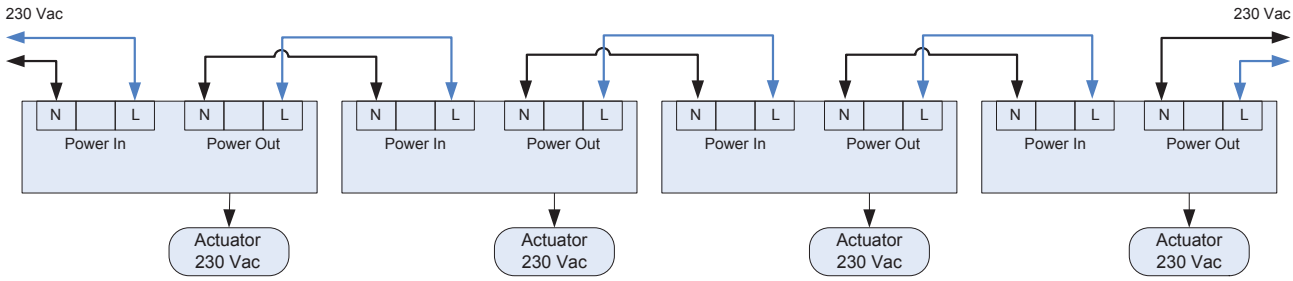
IMPORTANT: If only one actuator is connected to the FSC-UFC230-2 the LEDs of the side where no actuator is connected indicate an alarm. A jumper has to be installed between S4 and S6 in the terminal where there is no actuator connected, to indicate an "opened" position in the LED. If the second connection is not activated via bus, there will be no alarm signal on the bus system.

Power Supply

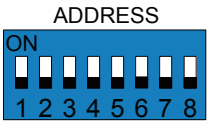
Main Power --- FSC-UFC230-2
The Power supply of the FSC-UFC230-2 is 230V AC.
The actuator has to be 230V AC. There are 2 terminals for the power, in order to make the daisy chain connection for the installer easier.

IMPORTANT:

- **The correct wiring is very important in regards to the 230 V power supply! The polarity, phase to phase and com to com, must be respected when connecting to the power supply network and also when connecting multiple FSC-UFC230-2!**
- The wiring of the actuator must be done in the correct way and according to the manufacturer's instructions. Especially when using actuators without plugs it is important to have a close focus on the polarity of the cable connection that means, to consider the correct allocation of phase and com!
- **All connections have to be fixed before putting power to the devices.**
  Beside the risk of electrical shock, it is also possible to destroy the FSC-UFC230-2 when not proper handled.



Modbus and BACnet Addressing



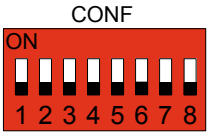
*Attention: If the FSC-UFC230-2 is used in combination with the FSC-M200 controller**, Modbus addresses 1–10 are reserved for the FSC-M200. That means that the Modbus addressing of the FSC-UFC230-2 starts with Modbus address 11. Furthermore, the Baud Rate needs to be changed to 38'400 (PIN 5 to ON).
If the FSC-UFC230-2 is used in combination with the FSC-M60, the addressing needs to be done in consecutive order. **Integration planned, not yet available.

Address	Switches On	Address	Switches On	Address	Switches On	Address	Switches On
0*	Broadcast-not in use	33	1+6	66	2+7	99	1+2+6+7
1*	1	34	2+6	67	1+2+7	100	3+6+7
2*	2	35	1+2+6	68	3+7	101	1+3+6+7
3*	1+2	36	3+6	69	1+3+7	102	2+3+6+7
4*	3	37	1+3+6	70	2+3+7	103	1+2+3+6+7
5*	1+3	38	2+3+6	71	1+2+3+7	104	4+6+7
6*	2+3	39	1+2+3+6	72	4+7	105	1+4+6+7
7*	1+2+3	40	4+6	73	1+4+7	106	2+4+6+7
8*	4	41	1+4+6	74	2+4+7	107	1+2+4+6+7
9*	1+4	42	2+4+6	75	1+2+4+7	108	3+4+6+7
10*	2+4	43	1+2+4+6	76	3+4+7	109	1+3+4+6+7
11	1+2+4	44	3+4+6	77	1+3+4+7	110	2+3+4+6+7
12	3+4	45	1+3+4+6	78	2+3+4+7	111	1+2+3+4+6+7
13	1+3+4	46	2+3+4+6	79	1+2+3+4+7	112	5+6+7
14	2+3+4	47	1+2+3+4+6	80	5+7	113	1+5+6+7
15	1+2+3+4	48	5+6	81	1+5+7	114	2+5+6+7
16	5	49	1+5+6	82	2+5+7	115	1+2+5+6+7
17	1+5	50	2+5+6	83	1+2+5+7	116	3+5+6+7
18	2+5	51	1+2+5+6	84	3+5+7	117	1+3+5+6+7
19	1+2+5	52	3+5+6	85	1+3+5+7	118	2+3+5+6+7
20	3+5	53	1+3+5+6	86	2+3+5+7	119	1+2+3+5+6+7
21	1+3+5	54	2+3+5+6	87	1+2+3+5+7	120	4+5+6+7
22	2+3+5	55	1+2+3+5+6	88	4+5+7	121	1+4+5+6+7
23	1+2+3+5	56	4+5+6	89	1+4+5+7	122	2+4+5+6+7
24	4+5	57	1+4+5+6	90	2+4+5+7	123	1+2+4+5+6+7
25	1+4+5	58	2+4+5+6	91	1+2+4+5+7	124	3+4+5+6+7
26	2+4+5	59	1+2+4+5+6	92	3+4+5+7	125	1+3+4+5+6+7
27	1+2+4+5	60	3+4+5+6	93	1+3+4+5+7	126	2+3+4+5+6+7
28	3+4+5	61	1+3+4+5+6	94	2+3+4+5+7	127	Reserved factory defaults
29	1+3+4+5	62	2+3+4+5+6	95	1+2+3+4+5+7		
30	2+3+4+5	63	1+2+3+4+5+6	96	6+7		
31	1+2+3+4+5	64	7	97	1+6+7		
32	6	65	1+7	98	2+6+7		

Via each, per dip switch allocated, Modbus or BACnet address, the second actuator can be individually controlled through the software (see Mobus Register or BACnet Object List).

Configuration through Dip Switch

Default Dip Switch Position



Configuration Possibilities

Pin	Off (Default)	On
1	Fire Damper 1	Not in Use
2	Fire Damper 2	Not in Use
3	Modbus RTU	BACnet MS/TP
4	Baud Rate (Off-Default)	
5	Baud Rate (Off-Default)	
6	Not In Use=Off	
7	Not In Use=Off	
8	Not In Use=Off	

Information Pin 3:
If the FSC-UFC230-2 is used in connection with the FSC-M60, Pin 3 has to be on ON (BACnet).

Information Pin 5:
If the FSC-UFC230-2 is used in connection with the FSC-M200*, Pin 5 has to be on ON (Baud Rate 38'400).

*Integration planned.

Baud Rate Selection Modbus

This has to be done when choosing Modbus only.

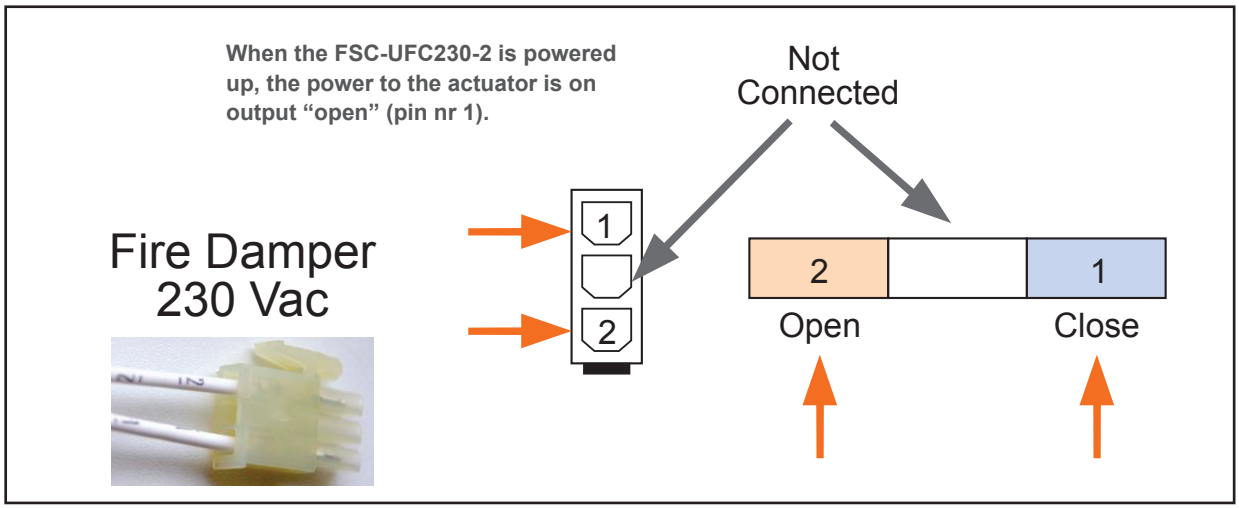
	9 600 (Default)	**19 200**	**38 400**	**76 800**
4	Off	On	Off	On
5	Off	Off	On	On

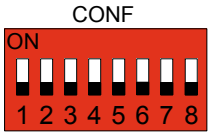
Baud Rate Selection BACnet
Baud rate in BACnet is automatically detected.

Connection Details

Fire Damper Actuator

Fire damper actuator (spring return). When the actuator has power it is open, when there is no power the actuator is closed with the spring.





After Connection --- Power Reset:

- Fire Damper Application will always go to OPEN.

Conventional Application

Conventional connection is the application when the FSC-UFC230-2 is not connected to a bus network. No configuration settings are required. One digital input for conventional application is available for each of the two dampers. This is to open and close the damper. Digital output signals indicating the damper positions are available .

Digital Input: volt free, normally open as default (can be changed on bus).
The digital input allows to control the damper position through an external contact/device.

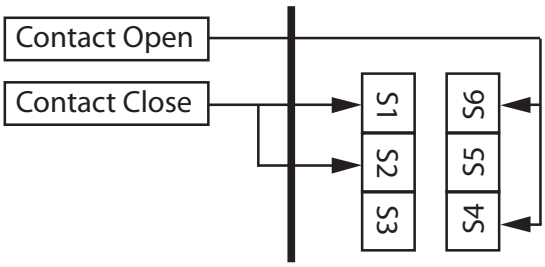
This digital input in the FSC-UFC230-2 always overrides the bus commands.

Digital Output: the feedback signals (on/off) of the actuator can be forwarded via the connections S1 and S2 (actuator/damper closed) and / or S4 and S6 (actuator/damper open) to any control or monitoring device.

These outputs can be connected in parallel between the different FSC-UFC230-2 to monitor their status.

Current output max is 5mA.

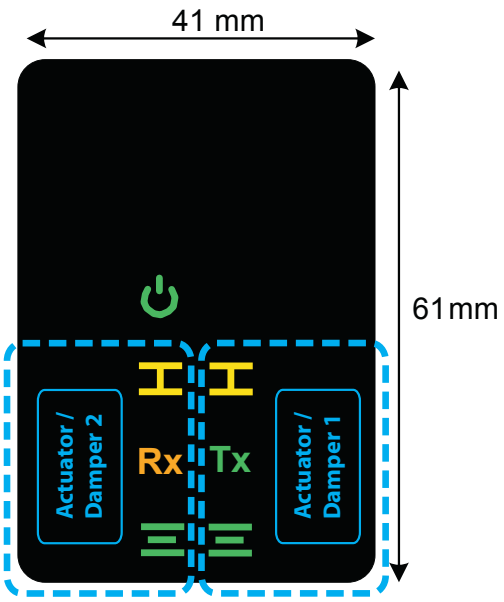
Electrical Installation for Conventional Application



Explanation of LEDs

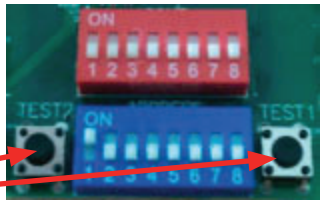
The LEDs are only visible if they are active. If not active the symbols will not appear.

IMPORTANT: If only one actuator is connected to the FSC-UFC230-2 the LEDs of the side where no actuator is connected indicate an alarm. A jumper has to be installed between S4 and S6 in the terminal where there is no actuator connected, to indicate an "opened" position in the LED. If the second connection is not activated via bus, there will be no alarm signal on the bus system.



Led	Color	Action	Description
Power	Green	On	Power is connected
Alarm	Yellow or green per actuator / Dampers blinking alternately	Flash Interval 1 sec	Actuator did not reach end switch position within set time
Alarm	Both LED green (damper open) blinking alternately. Yellow (damper closed) = static	Flash Interval 1 sec	Alarm on 1 or more devices active (minimum 1 actuator in closed position). Bus-Command = open; Alarm = close all actuators
Rx	Yellow	Flash	Receive data
Tx	Green	Flash	Transmit data
Close	Yellow	On	Damper close
Open	Green	On	Damper open
Close + open Flashing	Yellow / Green	Flash	Damper is moving

Functionality of Test Buttons



Two test buttons are available in the FSC-UFC230-2 (damper 1 and damper 2). The test buttons start the allocated test functions per damper.

Fire Application:

- Power on the FSC-UFC230-2: actuator (damper) opening until end position is reached
- Pushing test button will interrupt the power supply to the actuator. Spring is closing the actuator
- As soon as the test button is released the power comes back to the actuator and the damper will open again

Run Time Monitoring of Actuator
The FSC-UFC230-2 is equipped with an actuator run time monitoring function for both actuators independently. This function monitors the time required by the actuator from leaving of the one and reaching of the other end switch. If the actuator does not reach the other end switch in the specified time an error message is sent.

The default value for the actuator run time is 90 seconds. This can be adapted via Modbus or BACnet from 0…360 seconds.

Full Auto Test Application
The FSC-UFC230-2 offers a `Full Auto Test' function. This can be controlled through the Modbus or BACnet controller.

Basis of the Functionality
Basis for this function is the run time monitoring of the actuator.

Fire Damper
To start the full auto test functionality, the corresponding bus-register hast to be activated via bus. By starting the full auto test, the timer of the run time monitoring starts to count the time and the fire damper actuator is closing (spring) and remains in the closed position until the timer of the set running time has reached the set time. Then the actuator will open again automatically until the end switch has been reached. The timer of the run time monitoring starts to count again as soon as the command 'open' has been sent. Once the timer of the set running time has reached the set time, the FSC-UFC230-2 will go back into normal operation mode and a feedback "full auto test ok" is activated. If one of the end switches is not reached within the defined running time, an error message is activated.

Bus Monitoring Application

The FSC-UFC230-2 is equipped with a Bus Monitoring Function. If the bus signal to the unit is interrupted the dampers will move to the safety position after the defined period of time and remain there until the bus functionality is back to normal operation.

Objects
There are 2 objects which can be activated by Modbus or BACnet:
- Logic Alarm Communication
- Delay Alarm Communication

Default settings:
Logic Alarm Communication not active

Activation (via Bus):
- Logic Alarm Communication 1 (on)
- Delay Alarm Communication is activated, default delay time is 120 sec. Option to set the delay time via bus between 0…360 sec

Functionality
Fire Damper
After the defined period of time the fire damper will move to the closed position and remains closed until the bus functionality is back to normal operation.

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FSC-A-SRT1-Modul

Secure RS-485 Hub and Repeater Modul
with conversion the standard bus topology
in a star or ring topology

Scope of application

The SRT1 is an intelligent 3 channel hub driver for RS-485 networks.
SRT1 module can convert a normal bus-shaped into a star- or ring-shaped topology. All channels are monitored for cable short circuits at all times. The ring mode protects against data loss during a cable interruption in the network. The galvanic isolation of all channels ensures maximum security in the event of interference in the network. The SRT1 module can also be used to extend existing RS485 networks.

Function

The new SRT1 module has been specifically designed for RS-485 Technology. Now there is nothing to be done to realize a star or ring net topology. This development leads to the highest flexibility in practical application. The range of the individual channels is up to 1200 m. Short circuits or cable interruptions of all channels are subject to constant monitoring.

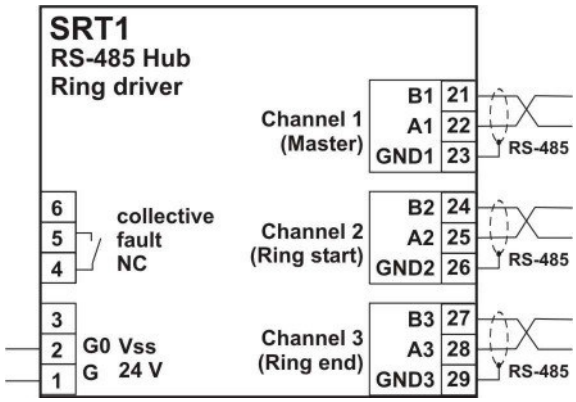
As a hub, the SRT1 behaves like a star point. Unique is the realization of an intelligent RS-485 line with ring-like behavior. Channel 1 serves as an input channel (master), channel 2 and 3 are respectively the beginning and the end of the ring.

All RS-485 channels are galvanically decoupled, which allows better suppression and decoupling in the network. If a short- circuit occurs in a channel, the other channels are not affected. Fault messages are stored optically, so sporadic faults can also be detected at any time. A potential-free contact serves as a collective fault signal. The integrity of the bus cable can also be tested without communication using a test key.

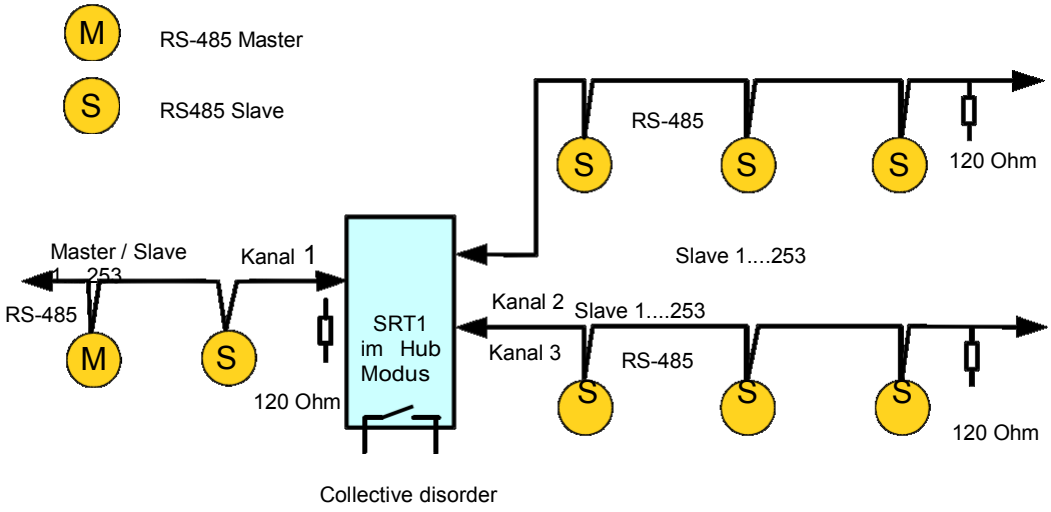
Technical Data **FSC-A-SRT1**

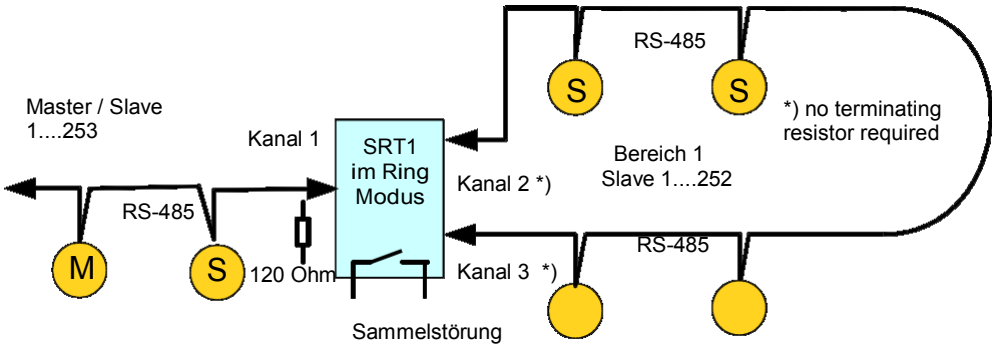
Supply voltage	20-26 V AC, 19-36 V DC
Power consumption	max. 4 W
Display LED	7 LED for : - Power / Ring Modus (grün) - Kommunika. Ch1, Ch2, Ch3 (gelb) - Error Ch1, Ch2, Ch3 (rot)
RS-485 channels	3 channels galvanically decoupled, maximum 1000V
number Slaves	Per line max. 253 bei 1/8 Last, or 30 subscriber ati 1/1 Load
Line length	Per channel max. 1200m
Settings	- 9600 Baud, 19200 Baud, 1 Stop Bit - Parity (10 -11 Bit pro Byte) - Hub /Ring Modus
Signal delay	ca. 1/ 2 Bit
Terminating resistor	channel 1 internal without resistance channel 2,3 internal 120 Ohm
Potential-free contacts	Collective disorder, NC 230V/ 1A
Ambient temperature	0 ℃ to +40 ℃
Ambient humidity	20 - 90 % rF not condensing
Protection class	IP 20
Connection terminals	Plug-in terminals max. 1,5 mm²
Built-in dimensions	(B x H x T) 27 x 107 x 89 mm
Mounting	Standard rail 35mm DIN EN 50022-35
CE	The device fulfills all requirements oft the CE marking.

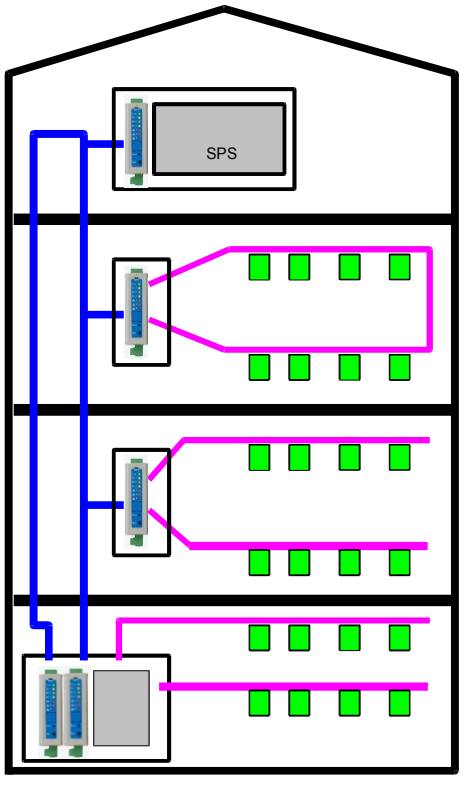
ConnectionFSC-A- SRT1

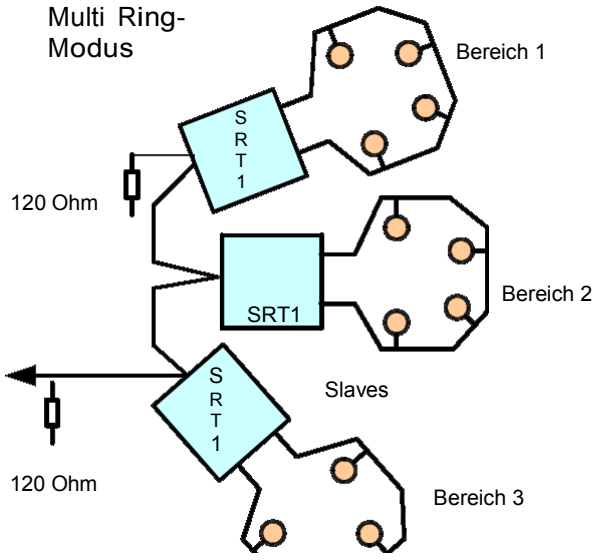


Anschlussbeispiele









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