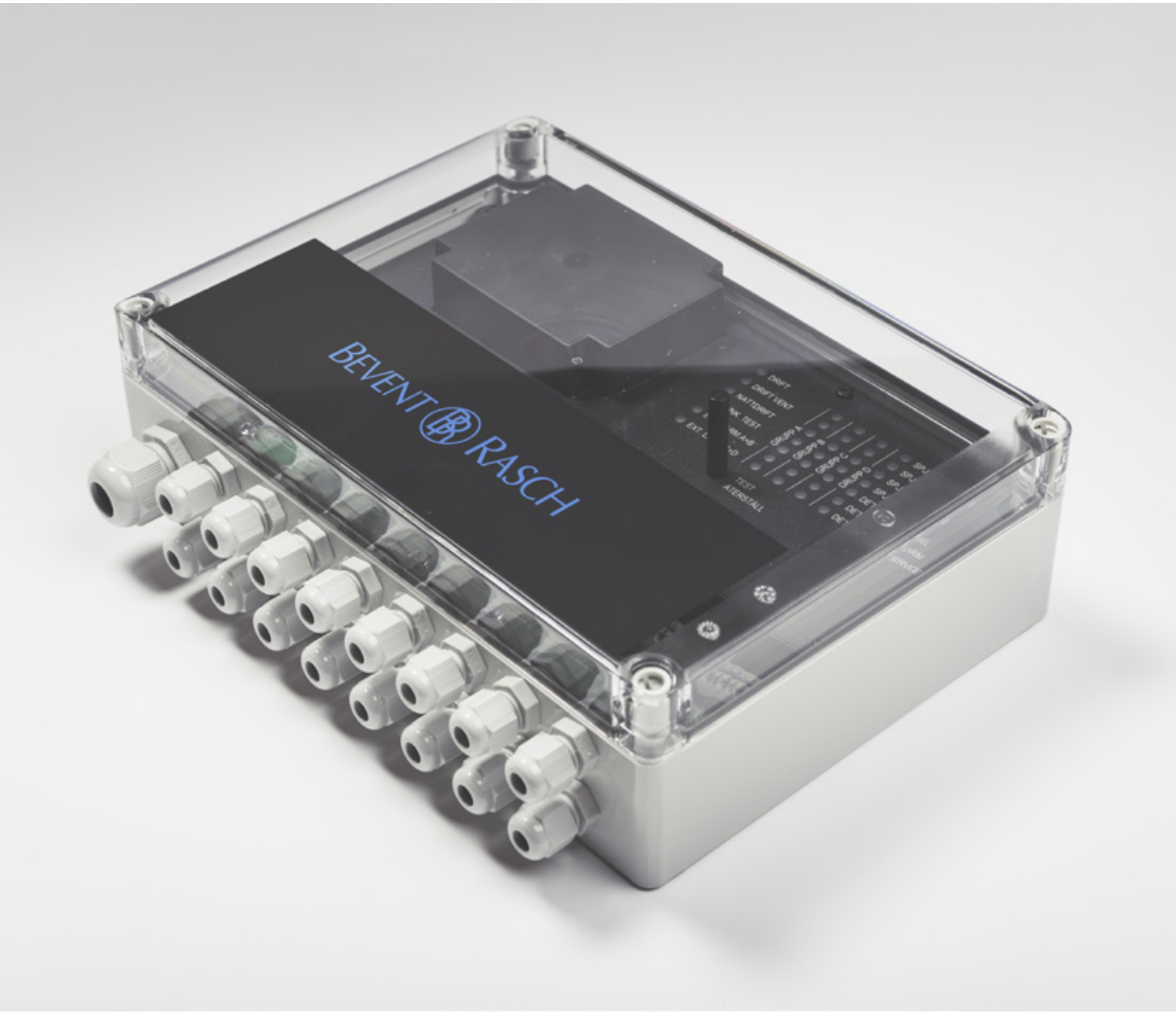
RCMU8/-MOD

Control unit
Monitoring system MRB

FIRE SAFETY



13/07/2023

Quick facts

- Up to 8 dampers and 8 smoke detectors split into four groups
- Indicators for each individual damper
- Optional external incoming alarm
- Night operation function
- Alternating relay contacts for both main alarm and dirty detector
- Alternating relay to, for example, turn off unit during function test
- Integrated transformer from 230 V to 24 V for powering actuators

Function description

The RCMU is an encapsulated microprocessor-based, intelligent, self-monitoring control unit split into four groups, A to D, for connecting up to 2 dampers and 2 detectors in each group.
The RCMU8 can either act as an independent control unit and perform automatic function tests every 48 hours after power up/resetting or it can be connected in a network to a minimaster RCMM for centralised registration, control and monitoring. RCMU8-MOD is used to connect to Modbus. Function tests can also be initiated by an external switch. During the test, damper groups A+B are tested first then C+D. The RCMU has electronic circuits that automatically connect outputs with connected damper actuators.

By setting a microswitch, a so-called DIP switch, you can determine the effect of the smoke detectors as follows:

- The four detector groups A-D only affect their corresponding damper group.
- Groups A and B work together as a single group and close the corresponding damper groups, regardless of which detector in groups A and B was triggered, while the detectors in group C and group D only affect their corresponding damper group respectively.
- Groups C and D work together as a single group and close the corresponding damper groups, regardless of which detector in groups C and D was triggered, while the detectors in group A and group B only affect their corresponding damper group respectively.
- All groups work together and all dampers close, regardless of the triggered detector.

The detector outputs feature an electronic short circuit fuse. All connected dampers enter the alarm position in the event of a short circuit or a break in one of the detector loops. The RCMU can even be made to enter alarm operation mode for the A+B group and the C+D group via an external incoming alarm.

Alarm functions

Operating parameters are easy to change as they are programmed in a so-called EEPROM. Control unit RCMU has an output relay main alarm (A alarm) and a service alarm (B alarm).
The main alarm is triggered in case of:

- Fault in detector loop
- Triggered detector
- Damper fault
- External incoming alarm
- Power failure
- System fault or communication fault

The service alarm is triggered in case of a dirty detector.
Each alarm relay has an alternating potential free contact, 24 V AC, 3 A.

BORÅS Tel +46 (0)33 - 23 67 80 **STOCKHOLM** Tel +46 (0)8 - 54 55 12 70

Operating indicators

34 LEDs are used to present the control unit's operating status with, among other features, individual indicators for each damper and function as follows:

OPERATION is indicated by a green LED as follows:
- Lit during normal operation when the RCMU is functioning independently and is not connected to a network
- Lit 2 s/off 0.5 s during normal operation when the RCMU is connected to a network
- Lit 0.1 s/off 0.1 s in case of network fault
- Off in case of power failure

OPERATION VENT. - Green LED lit when output relay for vent. unit is activated.

NIGHT OPERATION - green LED lit in case of activated input.

FUNC. TEST - yellow LED lit during internal function test.
- Lit 2 s/off 0.5 s during external function test

EXT. ALARM - red LED lit in case of activated alarm input.

DAMPER POSITION - indicated by green LED as follows:
- Lit in open position
- Lit 2 s/off 0.5 s in closed position
- Lit 0.1 s/off 0.1 s in middle position
- Off when damper motor is not connected/overloaded

DAMPER FAULT - indicated by red LED.
Function when LED for DAMPER POSITION is lit with indicator as above:
- Lit when damper will not open
- Lit 2 s/off 0.5 s when damper will not close
- Lit 0.1 s/off 0.1 s when damper will neither open nor close
- Lit 0.5 s/off 2 s when damper indicates open and closed simultaneously

Function when the LED for DAMPER POSITION is off:
- Lit 0.1 s/off 0.1 s in case of overload on one of outputs (both damper fault LEDs flash).
- Lit 2 s/off 0.5 s in case of motor failure

DETECTORS FAULT - red LED lit for each detector loop in case of break in detector loop.
- Lit 0.1 s/off 0.1 s for each detector loop in case of short circuit in detector loop.

DETECTORS ALARM - red LED lit for each detector loop in case of triggered detector.

DETECTORS SERVICE - yellow LED lit for each detector loop in case of dirty detector.

Resetting

The RESET button resets all alarms. After activation the microprocessor performs a self-test, a memory test and an EEPROM test, all LEDs are lit for a visual test, output relays are activated and then dampers connected to groups A+B and then groups C+D are function tested. After the test the RCMU8 enters normal operation mode.
External incoming alarms can be reset remotely by activating the "External Function Test" input. Other alarms cannot be reset remotely. Not used with network connection.

Night operation

Via an external switch the panel enters NIGHT OPERATION mode, at which time the dampers close without the control unit triggering an alarm.
The external switch must be controlled by a time channel from DUC, a timer or similar device and not from the ventilation unit to avoid "self-locking". Used, for example, during intermittent operation. Not used with network connection.

Controlling the ventilation unit

If you want to stop the ventilation unit in conjunction with a function test or in case of alarm operation, there is an integrated closing relay switch, 24 V AC, 3 A.
A microswitch marked "Delay" can be used to activate a 5-minute delay on the dampers' function test if using an electrically-heated thermobattery. The relay remains activated throughout night operation. Damper faults do not affect the above functions.

Network connection

When the RCMU is connected in a network to a minimaster RCMM, the RCMM determines which functions the RCMU is to perform. In the case of a network fault during operation the RCMU will enter alarm mode and the main alarm will be triggered.
Use RCMU8-MOD to connect to a Modbus network. The network can have free topology and the following information can be transferred:
- Status of RCMU8-MOD
- Which outputs have connected dampers
- Damper faults with detailed causes
- Detector faults and detector alarms
- Service alarms

Furthermore, the following options are available for controlling RCMU8-MOD Modbus-based equipment:
Remote reset | Function test | External alarm | Night operation

Activation of external incoming alarms via terminals 43-46 for network-connected devices.
Network connection to RCMM: No
Network connection to Modbus: Yes

External alarm

There are two inputs for external alarms: one for alarm operation of group A+B and one for group C+D. If connected to a network the minimaster is used to control this.

External alarm

The microswitch marked “Delay func. test 12h” can be used to delay the function test. In the ON position and after power up/resetting a function test is performed, with the next test 12 hours later, followed by a return to every 48 hours. This enables the automatic test to be performed during the night.

Specification

Control unit RCMU8
-»- RCMU8-MOD - for connection to Modbus network

ACCESSORIES:
RCKD/-RD - Smoke detectors

Technical data RCMU8-MOD

Supply voltage:	230 V AC +10% -15%, 50 Hz
Power rating:	75 VA
Encapsulation class:	IP 65
Ambient temp.:	0° – +50°C
Output relays:	Potential free, 24 V AC, 3 A, resistive load
Max. load per damper output:	10 VA, 24 V AC
Max. detectors per output:	2 units
Internal fuse:	500 mA tube fuse, delay
EMC:	EN 50081-1 (1992) EN 50082-2 (1995)

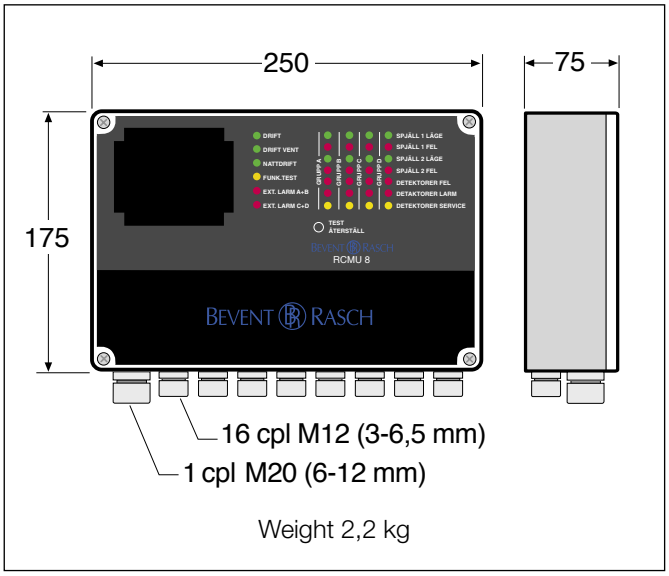
Technical data RCMU8-MOD

Interface:	RS485 (MODBUS-RTU)
Communication speeds:	9600/19200 baud, 8 bit, even parity with termination function

All addresses from 0 to 247.

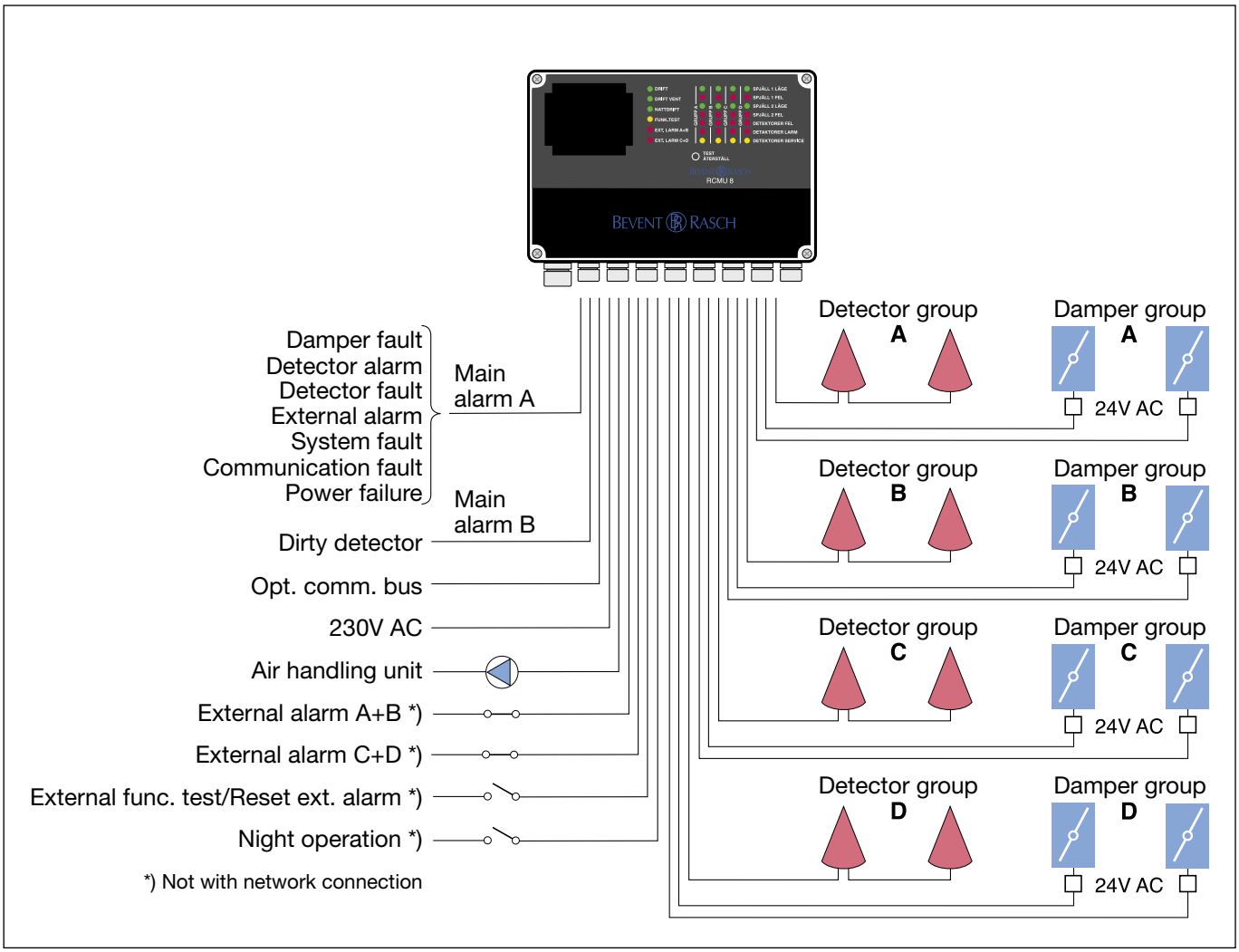
BORÅS Tel +46 (0)33 - 23 67 80 **STOCKHOLM** Tel +46 (0)8 - 54 55 12 70

Dimensions and weight

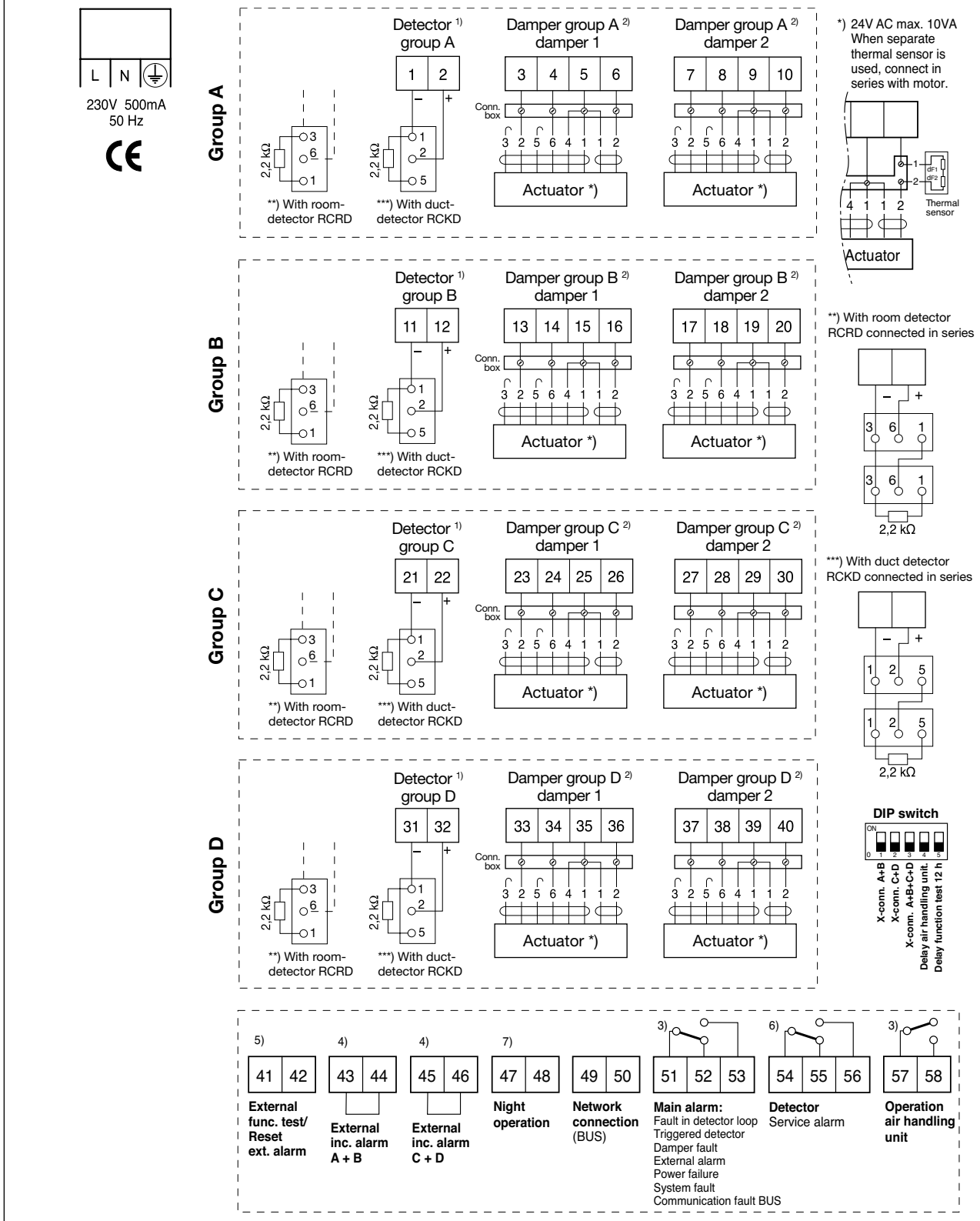


Weight 2,2 kg

Block diagram RCMU8, RCMU8-MOD



Wiring diagram RCMU8, RCMU8-MOD



Microswitch for damper mode is drawn with the actuator without power.

1) Max. 2 detectors per group (tot. 8 detectors per RCMU). See product sheet for series connection. A 2.2 kΩ terminating resistor is connected to the last detector in each loop. If no detector group is connected, short the terminals with a 2.2 kΩ resistor.

2) The damper output is 24 V AC, max. 10 VA per actuator. Low current contacts are used for position indication.

3) Potential free contact max. 24 V AC, 3 A. Shows potential free/alarm mode.

4) Break between terminals triggers alarm. Jumpered at factory. Not used with network connection.

5) Function test/Reset ext. alarm in case of short circuit. Not used with network connection.

6) Potential free contact 24 V AC, 3 A. Shows potential free/normal mode.

7) Night operation in case of short circuit. Not used with network connection.

12-0540_ENG / July 2023 teamfront.se