

# RCBK4/-MOD

Control unit

Monitoring system MRB



FIRE SAFETY



13/07/2023



### Quick facts

- Up to 4 dampers and 4 smoke detectors split into two 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 two groups, A and B, for connecting up to 2 dampers and 2 detectors in each group. The RCBK4 can 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. RCBK4-MOD is used for connection to Modbus. Function tests can also be initiated by an external switch. The control unit has electronic circuits that automatically connect outputs with connected damper actuators.

A microswitch, a so-called DIP switch marked X-conn., is used to set the effect of the detectors as follows:

- Either detector group A affects damper group A and detector group B affects damper group B (position = 0).
- Or both damper groups work together regardless of the triggering detector group (position = ON).

This enables a single RCBK4 to be used for two independent ventilation systems.

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 RCBK4 can be set to alarm operation mode by an external incoming alarm.

### Alarm functions

Operating parameters are easy to change as they are programmed in a so-called EEPROM. Control unit RCBK4 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 (such as test not performed)

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.



## Operating indicators

19 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 RCBK4 is functioning independently and is not connected to a network
- Lit 2 s/off 0.5 s during normal operation when the RCBK4 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 (all 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 connected dampers are function tested. After the test the RCBK4 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 and 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 RCBK4 is connected in a network to a minimaster RCMM, the RCMM determines which functions the RCBK4 is to perform. In the case of a network fault during operation the RCBK4 will enter alarm mode and the main alarm will be triggered.

Use RCBK4-MOD to connect to a Modbus network. The network can have free topology and the following information can be transferred:

- Status of RCBK4-MOD
- Which outputs are connected to dampers
- Damper faults with detailed causes
- Detector faults and detector alarms
- Service alarms

Furthermore, the following options are available for controlling RCBK4-MOD Modbus-based equipment respectively.

- Remote reset
- Function test
- External alarm
- Night operation

Activation of external incoming alarms via terminal 23-24 in case of network-connected device.

Network connection to RCMM: No

Network connection to Modbus: Yes



## External alarm

There is an input for an external alarm. If the input is activated the entire control panel enters alarm operation mode. If connected to a network the minimaster is used to control this.

## Function test delay

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 RCBK4

-- RCBK4-MOD - for connection to Modbus network

#### ACCESSORIES:

**RCKD/-RD** - Smoke detectors

## Technical data RCBK4-MOD

Supply voltage:	230 V AC +10% -15%, 50 Hz
Power rating:	55 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:	315 mA tube fuse, delay
EMC:	EN 50081-1 (1992) EN 50082-2 (1995)

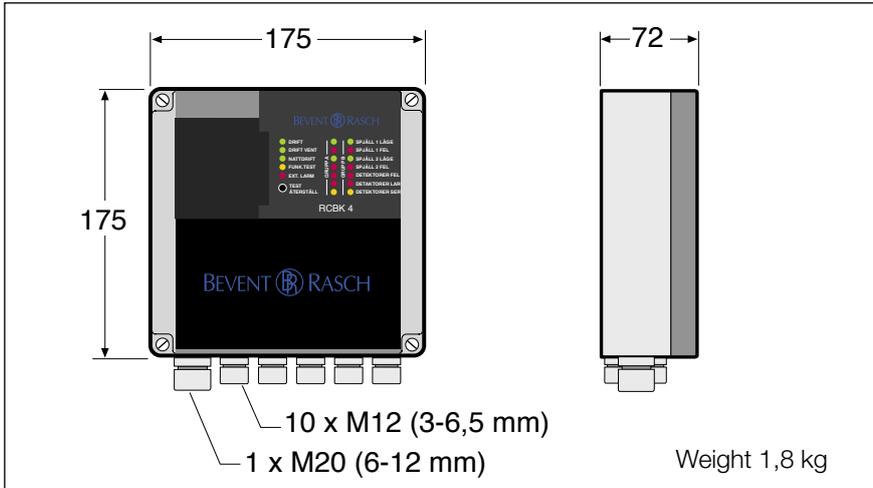
## Technical data RCBK4-MOD

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

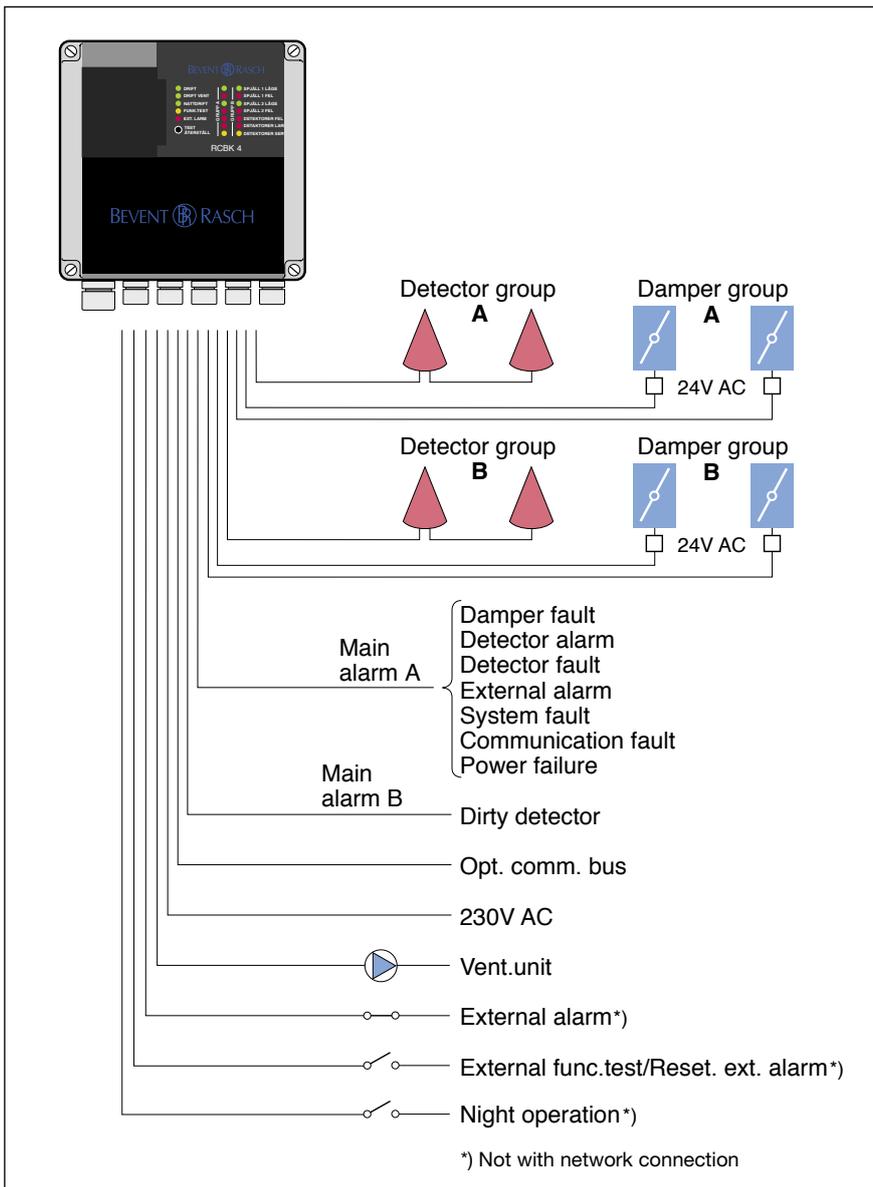
All addresses from 0 to 247.



### Dimensions and weight



### Block diagram RCBK4, RCBK4-MOD





## Wiring diagram RCBK4, RCBK4-MOD

