

# Type 196000030158

Electronic surface-mounted compact controller for EC door air curtain



## Installation and operating instructions

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### 1. Safety notes

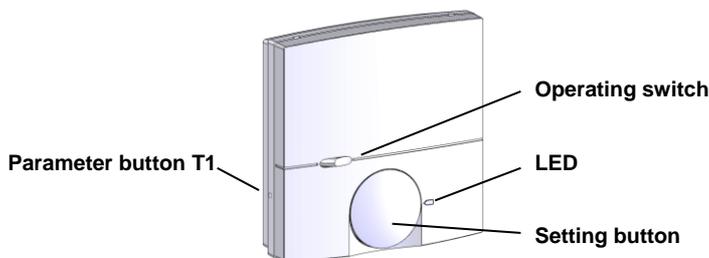
 **Safety note!** This device must only be opened by an electrician and installed according to the circuit diagram in the housing lid/on the housing/in the operating instructions. Observe the existing safety provisions. After installation, the operator must be instructed in the function and operation of the device by the executing installation company. The operating instructions must be kept freely accessible to operating and maintenance staff.

 **Attention!** Operation near devices that do not comply with the ENC provisions may influence the device's function.

### 2. Application

This contact controller has specifically been developed to control door air curtains with EC fan motors and electrothermal valve actuators (closed when not powered up) in 2-pipe systems. The device can be used to set the fan speed. For other areas of use that cannot be foreseen by the manufacturer, the safety provisions applicable from time to time must be observed. For suitability, see section 11.

### 3. Functions



The operating type switch switches between the following operating modes:

 Operating mode „Standby“

 Operating mode „Winter“

 Operating mode „Summer“

#### 3.1 Operating mode "Standby"

In the operating mode "Standby", the output "H" is deactivated. If the room temperature control has been activated with switch S4 (see section 5.2), room temperature control is performed to a target temperature of 8 °C (room frost protection), i.e. if the temperature drops below approx. 8 °C, output "H" is activated; when a temperature of approx. 9 °C is exceeded, it is deactivated again. This prevents the room from cooling off too far. If the room frost protection or door air curtain is activated, this is indicated by flashing of the red LED and by activating the output "M". No other fault messages are issued for other causes.

#### 3.2 Operating mode "Winter"

In operating mode "Winter", the fan is operated at the fan speed set at the setting button (see section 3.4). The relay output "H" is active continually in position 0 ("Absence/Night"). If the room temperature control has been activated with switch S4 (see section 5.2), position 0 ("Absence/Night") of the setting button performs room temperature control according to a parameterised target value (see section 6.2). With the door contact closed, the LED is lit permanently yellow; with the door contact open, the LED flashes yellow approx. every 2 seconds.

### 3.2.1 Operating mode "Winter" with active room temperature control

Switch S4 activates the room temperature control (see section 5.2). With the operating mode switch in position "Winter" and the setting button in position 0 ("Absence/Night"), two-point control will take place to the target value entered in parameterisation (see section 6.2). The hysteresis during this control is approx. 1 K at the temperature sensor. Switch S2 (see section 5.2) activates the internal or external sensor (factory settings internal sensor). Below the target temperature, the output "H" is activated and the fan is activated at 60% of the maximum fan speed; above the target temperature plus the switching difference of 1 K, the output "H" and the fan are deactivated (see section 3.5). If a sensor error is detected at the selected sensor (temperature value below -20 °C or above +100 °C), an emergency run is tripped. For this, the relay output "H" and the fan (at 60% of the maximum fan speed) are activated with a fixed setting duration of 30% (3 minutes On/7 minutes Off). At the same time, the LED is lit permanently red and the indicator output "M" is activated.

### 3.3 Operating mode "Summer"

In operating mode "Summer", the fan is operated at the fan speed set at the setting button (see section 3.4). The relay output "H" is deactivated continually. With the door contact closed, the LED is lit permanently blue; with the door contact open, the LED flashes blue approx. every 2 seconds.

### 3.4 Setting the maximum fan speed (can be activated in the winter and summer operating modes)

The setting button sets the fan speed. The fan speed can be continually adjusted between the minimum of 13.3% and 100% of the maximum fan speed (see section 6.3). Position 0 ("Absence/Night") deactivates the fan.

Position setting button	Control voltage in % of the maximum control voltage
0 (Absence/Night)	0 %
1	20 %
2	40 %
3	60 %
4	80 %
5	100 %

### 3.5 Fan lag (can be activated in the winter and summer operating modes)

A fan lag only takes place at deactivation of the fan through the door contact. The control signal does not drop suddenly, but is lowered by 0.1 V per second when the fan is deactivated (the door is closed).

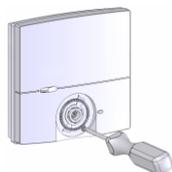
## 4. Installation/mounting

After mounting on the wall or on a recessed socket, electrical connection and **production of a safe insulation between the mains voltage and the safety low voltage with the enclosed separating wall (cf. section 10.)**, the housing lid is attached with the lower hook for closing and then turned up until it latches. Then the housing lid is secured with the enclosed screw.

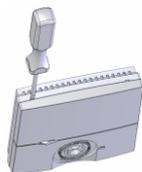
**Attention!** Sensor and contact lines must be stripped by no more than 10 mm (except when using at least H 03 xx). The device must not be installed on electrically conductive surfaces. If using external sensors or contacts, observe that the line must not be installed in parallel to mains-voltage-conducting lines. If parallel installation is not avoidable, use shielded lines and place the shield on terminals 8, 10, 12 or 14. The controller is intended for mounting on the wall or UP socket and must not be directly exposed to sources of heat or cold. Observe that the controller is not exposed to any external heating or cooling, e.g. from hollow walls due to drafts or risers.



Remove the button



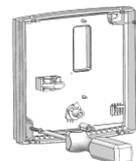
Loosen the screw



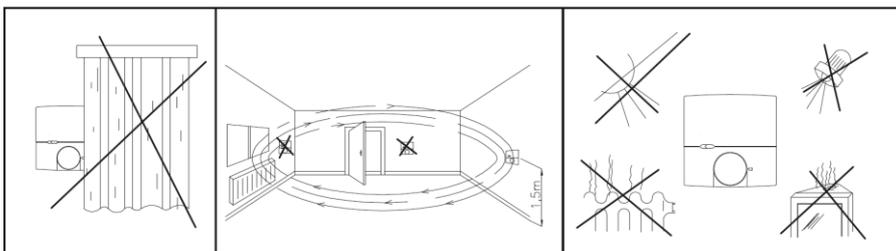
Press in the upper hook



Turn up the lid

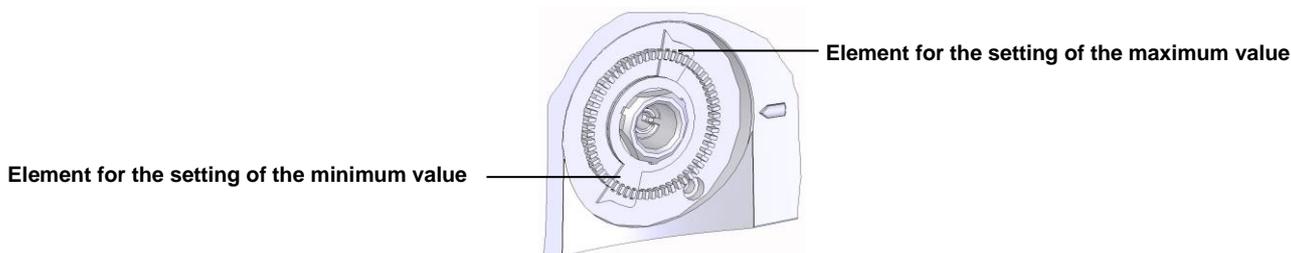


Screw on the controller



### 5.1 Narrowing the setting range

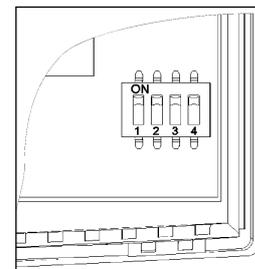
The setting vanes below the setting button can mechanically limit the setting range of the controller. For this, the button must be pulled off and pushed on again after adjusting the stops (red for maximum value, blue for minimum value).



## 5.2 Switch S1 – S4

Switches S1 - S4 can be used to make the following settings:

Switch	Function	ON	OFF
S1	Increase of the control voltage (terminal 9/10) 0-10 V at request by the door contact	no increase (factory settings)	increase by the parameterised value
S2	Sensor selection	internal sensor (factory settings)	external sensor
S3	Function of the input "M"	motor fault message filter monitoring (factory setting)	frost protection sensor (Frost indicator)
S4	Activation room temperature control	room temperature control deactivated (default setting)	room temperature control activated



Switch S1 – S4

## 6. Parameters

The parameter setting function can increase the speed when the door contact is active, set the target temperature for the room temperature control and the maximum control voltage for the fan. Parameters cannot be set while a fault is pending. Setting of parameters is started by pushing the button T1 at the left housing side. After successfully starting the parameter setting, the LED below the setting mark starts flashing depending on the switch position of the three-level operating mode switch and the outputs are deactivated (except the analogue output when setting parameters for the maximum fan control voltage).

-  A value is only changed when the setting button has been adjusted. If the setting button is already in the right position at the start of parameter setting, this position must be changed first and the setting must be repeated then.
-  With the controller in parameter setting mode, the operating mode switch can be used to switch between the settings (see sections 6.1/6.2/6.3). The set values are put in interim storage.
-  Setting of parameters is completed by pushing the button T1 at the left housing side. The changed values are taken over and the function selected with the operating mode switch is executed.
-  If the parameter settings are not completed, parameter setting mode will close on its own 120 seconds after the last action (target value adjustment, adjustment of the switch) and the function selected with the operating mode switch will be executed. All settings made will be rejected.
-  After completing the parameter settings, the operating elements must be set according to the desired function.

### Restoring the default settings:

From the parameter setting mode, the parameters can be reset to their defaults by pushing the button T1 for 5 seconds. If the button is not pushed for a full five seconds, the parameter setting mode will be left without restoring the default settings. After successfully restoring the factory settings, this is signalled by a 5-second yellow/blue colour change (approx. 4 times per second) of the LED.

### 6.1 Setting the fan speed increase at active door contact

The operating mode switch must be in the position "Standby" for this. After starting parameter settings (before the setting button is pushed), the LED will flash approx. twice per second as follows based on the previously set speed increase:

Position setting button	Colour sequence of the LED	Speed increase
0	blue, blue, ...	10 %
1	blue, red, blue, ...	20 %
2	blue, red, red, blue, ...	30 %
3	blue, red, red, red, blue, ...	40 %
4	blue, red, red, red, red, blue, ...	50% (default setting)
5	blue, red, red, red, red, red, blue, ...	60 %

### 6.2 Setting the target temperature in the function "Room temperature control"

The operating mode switch must be in the position "Winter" for this. After starting parameter settings (before the setting button was pushed), the LED will flash approx. twice per second as follows based on the previously set target temperature:

Position setting button	Colour sequence of the LED	Target temperature	Setting range of target temperature
0	yellow, yellow, ...	8°C (frost protection)	-
1	yellow, red, yellow, ....	14°C	13.4°C ... 15°C
2	yellow, red, red, yellow, ....	16°C	15.1°C ... 17°C
3	yellow, red, red, red, yellow, ....	18°C	17.1°C ... 19°C
4	yellow, red, red, red, red, yellow,	20°C (default setting)	19.1°C ... 21°C
5	yellow, red, red, red, red, red, yellow, ....	22°C	21.1°C ... 22°C

### 6.3 Setting the maximum control voltage for the fan

The operating mode switch must be in the position "Summer" for this. After starting parameter settings, the LED will flash blue approx. twice per second. While setting the parameters, the fan will be activated at the set voltage for verification. The control voltage can be changed at steps of 0.1 V in the range between 5 V and 10 V, with the positions of the setting button approximately corresponding to the following values:

Position setting button	Maximum control voltage
0	5 V
1	6 V
2	7 V
3	8 V
4	9 V
5	10 V (default setting)

## 7. Functions of the contact/sensor inputs

### Input "Motor fault message/frost protection indicator/NTC 47 kΩ"

This input must be connected to a potential-free contact or temperature sensor (NTC 47 kΩ@25 °C). The function can be selected with the switch S3 (see section 5.2).

Function motor fault message/filter monitoring (see section 5.2 - switch S3):

The function is activated when the contact is closed and the device is not in the operating mode "Standby" or when setting parameters. The LED is permanently lit red and the output "M" is activated. The fault message is retained both at power outage and if the contact is opened again. The fault message must be reset by switching off and on again with the operating mode switch while the contact is open. No other functions are affected.

Frost protection (see section 5.2 – switch S3)

The function is activated when the contact is opened or a connected NTC (47 kΩ@25 °C) measures a temperature of less than 8 °C and the device is not in parameter setting mode. This ensures frost protection of the door air curtain. The LED flashes red approx. once per second, the output "H" and the output "M" are activated and the fan is deactivated. If the measured temperature rises to above 9 °C or if the contact is closed again, the output "H" is deactivated. The red LED continues to flash; the output "M" remains active and the fan remains off. The function must be reset by switching off and on again (only in operating mode "Standby") with the operating mode switch when the cause has been removed. The frost protection message is preserved after a power outage as well.

### Input "Door contact"

The input must be connected to a potential-free contact. The input has no function in operating mode "Standby" or while setting parameters. Activation of the fan depends on the setting of switch S1 (see section 5.2). When switch S1 is turned to the position ON (default setting), the fan is deactivated when the contact is opened (door closed) (see fan lag). If switch S1 is turned to the position OFF, the fan is set to the speed chosen at the dial switch when the contact is opened (door closed). When the contact is closed (door open), the control signal of the fan is increased by the amount set in the parameters (see section 6.1) (xx% of the maximum control voltage). If the control signal exceeds the value of the maximum control voltage (see section 6.3), the fan is operated at the maximum control voltage (see section 6.1). When the contact is open (door closed), the LED flashes yellow every 2 seconds in operating mode "Winter" and blue in operating mode "Summer". When the contact is closed (door open), the LED is lit yellow in operating mode "Winter" and blue in operating mode "Summer". If no door contact is used, a jumper must be placed between the terminals 13 and 14 (delivery condition).

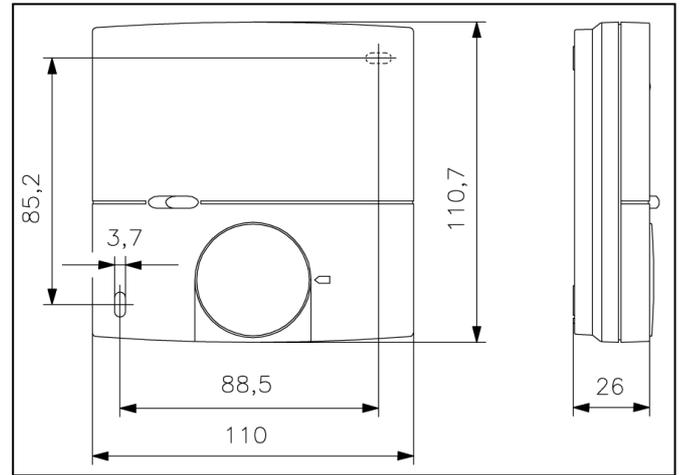
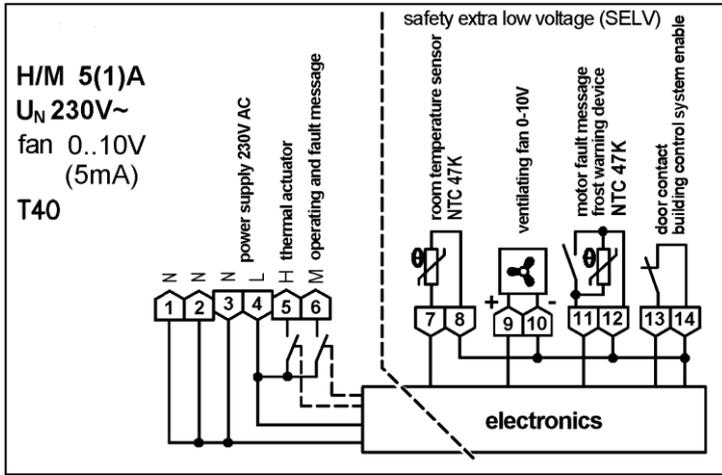
## 8. Displays

Blue	summer operation, door contact closed (door open)
Flashing blue (every 2 seconds)	summer operation, door contact open (door closed)
Flashing blue (twice per second)	see parameter settings for maximum speed
Flashing blue and red (twice per second)	see parameter settings for speed increase
Yellow	winter operation, door contact closed (door open)
Flashing yellow (every 2 seconds)	winter operation, door contact open (door closed)
Flashing yellow and red (twice per second)	see parameter settings for target temperature
Yellow, blue alternating	resetting the parameters to defaults
Red	fault, motor fault/filter monitoring, sensor break
Flashing red	room frost protection or protection of the door air curtain

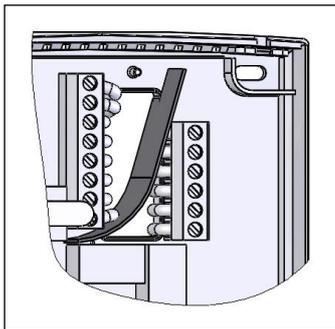
## 9. Technical data

Operating and switching voltage:	230 V~
Outputs:	heating (H): relay NO contact max. 5(1) A/230 V~/max. 5 valve drives
Messages (M):	Relay NO contact max. 5(1) A/230 V~
Analogue output:	0-10 V (SELV), max. 5 mA for fan control
Operating mode switch:	Standby (frost protection), Winter, Summer
Control range for room temperature:	frost protection 8 °C, 8 °C .... 22°C
Switching difference:	1 K measured at an external room temperature sensor
Power consumption:	< 1 W / < 2 VA
Protection class:	II, after mounting accordingly
Protection type:	IP30, after mounting accordingly
Permitted ambience temperature:	0 ... 40 °C
Storage temperature:	-20 ... 70 °C
Permitted humidity:	max. 95%r.H. non-condensing
Mounting:	on the wall or in a recessed socket
Housing material and colour:	plastic ABS, pure white, similar to RAL 9010 print blue-grey, similar to RAL 7031
Equipment:	operating mode switch, internal DIP switches for function selections, setting mark backlit in three colours, lateral button for activating and ending the parameter settings
Degree of contamination:	2
Nominal surge voltage:	4000 V
Effect:	Type 1.B
Energy efficiency class:	I (contribution to seasonal room heating energy efficiency 1%)

## 10. Connection and dimension drawings



⚠ If the external contact input at the terminals 13 and 14 is not used, the terminals must be connected with a jumper.



⚠ Strip sensor and contact lines no more than 10 mm (except when using at least H 03 xx). Separating wall for safe insulation between the mains voltage and the safety low voltage must be installed accordingly.

## 11. Warranty

The technical data specified in these instructions have been determined under laboratory conditions and in compliance with generally approved test regulations, in particular DIN standards. Technical characteristics can only be warranted to this extent. The testing with regard to the qualification and suitability for the client's intended application or the use under service conditions shall be the client's own duty. We refuse to grant any warranty with regard thereto. Subject to change without notice.