

## Overview of product

New generation CFU-D series designed for commercial and residential fan coil applications for 2- and 4-pipe system. Modern design suits for all decor and wall box.

## Features

- Large LCD with orange backlight
- Universal voltage input
- Last status memory function
- Temperature display offset
- Setpoint limit adjustable
- Low temperature protection
- Energy saving with economy mode
- Input for external sensor and key card switch
- Suits both US and BS junction box
- Auto or manual 3 fan speed
- Open-close control by 2-wire or 3-wire actuator
- Drive valve to close when switch off



## Model selection

e.g. CFU - D 2 2 2

|                               |     |
|-------------------------------|-----|
| Fan coil thermostat series    | CFU |
| LCD type with push buttons    | D   |
| 2-pipe system                 | 2   |
| 4-pipe system                 | 4   |
| External sensor and occupancy | 2   |
| Cooling only                  | 1   |
| Cooling and/or heating        | 2   |

| D2 series    | Cooling only | Cooling or heating | 3 Fan speed | 1 Fan speed | External sensor | Occupancy contact |
|--------------|--------------|--------------------|-------------|-------------|-----------------|-------------------|
| CFU-D221     | ●            |                    | ●           |             | ●               | ●                 |
| CFU-D222     |              | ●                  | ●           |             | ●               | ●                 |
| CFU-D221-SS* | ●            |                    |             | ●           | ●               | ●                 |

\*-SS: Single fan speed available on request

| D4 series | Cooling only | Cooling and heating | 3 Fan speed | 1 Fan speed | External sensor | Occupancy contact |
|-----------|--------------|---------------------|-------------|-------------|-----------------|-------------------|
| CFU-D422  |              | ●                   | ●           |             | ●               | ●                 |

## Technical data

|                            |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                           |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                      | CFU-D221-SS<br>CFU-D221<br>CFU-D222<br>CFU-D422                                                                                                              | Cooling only, 1 fan speed, external sensor and occupancy contact<br>Cooling only, 3 fan speed, external sensor and occupancy contact<br>Cooling or heating, 3 fan speed, external sensor and occupancy contact<br>Cooling and heating auto changeover, 3 fan speed, external sensor and occupancy contact |
| Nominal voltage            | AC 100...240V, 50/60Hz                                                                                                                                       |                                                                                                                                                                                                                                                                                                           |
| Nominal voltage range      | AC 85...264V                                                                                                                                                 |                                                                                                                                                                                                                                                                                                           |
| Temperature display range  | 0...40°C, 0.5K per step (< 0°C : LO, > 40°C : HI)                                                                                                            |                                                                                                                                                                                                                                                                                                           |
| Sensing element            | Built-in : NTC thermistor, 100kΩ@25°C<br>External : NTC10kΩ@25°C, maximum cable length 10m<br>(Probe type sensor, EXT-TN-1072532, cable length 2m, optional) |                                                                                                                                                                                                                                                                                                           |
| Fan speed control          | Low ( I ), Middle ( II ), High ( III ) and Auto speed                                                                                                        |                                                                                                                                                                                                                                                                                                           |
| Setpoint range             | 5...35°C (factory default, 22°C)                                                                                                                             |                                                                                                                                                                                                                                                                                                           |
| Setpoint limit             | Adjustable from 5...35°C (factory default, lower setpoint : 5°C, upper setpoint : 35°C)<br>Interlock between lower and upper setpoint limit, LSP < USP by 1K |                                                                                                                                                                                                                                                                                                           |
| Economy setpoint           | Cooling range : 25...30°C (factory default : 28°C)<br>Heating range : 15...20°C (factory default : 15°C)                                                     |                                                                                                                                                                                                                                                                                                           |
| Switching differential     | 1K (cooling and heating)                                                                                                                                     |                                                                                                                                                                                                                                                                                                           |
| Deadband                   | 2K (D4 series only)                                                                                                                                          |                                                                                                                                                                                                                                                                                                           |
| Display temperature offset | ±3K (-3, -2, -1, 0, +1, +2, +3)                                                                                                                              |                                                                                                                                                                                                                                                                                                           |
| Load rating                | Fan speed output : 3A resistive, 1A inductive, AC 250V, 50/60Hz<br>Relay output : 3A resistive, 1A inductive, AC 250V, 50/60Hz (D4 series 1A)                |                                                                                                                                                                                                                                                                                                           |
| Control signal             | Open-close control by 3-wire or spring return by 2-wire                                                                                                      |                                                                                                                                                                                                                                                                                                           |
| Occupancy contact          | Voltage free contact input                                                                                                                                   |                                                                                                                                                                                                                                                                                                           |
| Ambient temperature        | Operating : 0...40°C<br>Storage : 0...45°C                                                                                                                   |                                                                                                                                                                                                                                                                                                           |

**Technical data (con't)**

|                      |                                                                        |
|----------------------|------------------------------------------------------------------------|
| Ambient humidity     | Max. 90% RH, non-condensing                                            |
| Wiring connection    | Terminal wiring 0.5...1.0 mm <sup>2</sup>                              |
| Agency approval      | LVD - CE according to 2006/95/EC<br>EMC - CE according to 2004/108/EEC |
| Material             | Fire-retardant PC, self-extinguishing: UL 94-V0                        |
| Degree of protection | IP30                                                                   |
| Weight               | 0.16 kg                                                                |
| Dimensions (LxWxH)   | 110 x 84 x 28mm                                                        |

**Operation**

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mode</b>                                 | On / off, cooling ❄ / heating ☀<br>Press  button once to switch on; press and hold for 2 seconds to switch off.<br>Press  button to switch between cooling or heating mode.<br>*For CFU-D422, auto changeover between cooling and heating according setpoint.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fan speed</b>                            | 3 fan speed ( Low  , Middle  , High  ) and Auto  (  ►  ►  )<br>Auto fan speed is determined by temperature between setpoint and ambient temperature;<br>i.e. 1K - Low  ; 2K - Middle  ; 3K - High  . |
| <b>Backlight</b>                            | Backlight lights for 120 seconds when pressing any button.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Valve output</b>                         |  icon appears when valve open.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Memory</b>                               | Last status (e.g. mode, setpoint, fan speed) will be resumed after power failure or switch off.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Occupancy contact</b>                    | Contact OPEN, thermostat runs in normal mode.<br>Contact CLOSE, thermostat runs in economy mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Display selection</b>                    | Setpoint or ambient temperature, adjustable in p-setting mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Temperature offset</b>                   | Ambient temperature display can offset, from -3K to +3K, in p-setting mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Low temperature protection (Defrost)</b> | When thermostat is switched OFF and ambient temperature < 5°C, thermostat automatically starts in heating mode until ambient temperature rise to 7°C.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Sensor select</b>                        | Built-in or external sensor, adjustable in p-setting mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Key lock</b>                             | Press and hold  and  for 5 seconds, all buttons are locked when  appears.<br>When key lock is active, no function will perform when any button is pressed.<br>Press and hold  and  for 5 seconds to unlock.                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Error code</b>                           | E1 : Built-in sensor short circuit.      E2 : Built-in sensor open circuit.<br>E3 : External sensor short circuit.      E4 : External sensor open circuit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Parameter setting mode**

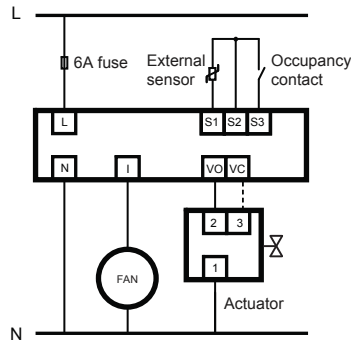
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|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Entering p-setting mode</b>   | When thermostat is switched OFF, press and hold  for 5 seconds,  appears indicating thermostat is in p-setting mode.                                                                                            |
| <b>Operate in p-setting mode</b> | Press  to change setting parameters, press  and  to change setting;<br>di SP > DSEt > dEFr > USP > LSP > SEn > COOL* > HEAt* |
| <b>Quit p-setting mode</b>       | When no button is pressed over 10 seconds, setting will be saved and quit p-setting mode.                                                                                                                                                                                                                                                                                             |

|       |                                                              |                          |
|-------|--------------------------------------------------------------|--------------------------|
| di SP | Display selection : ambient temperature "rt" / setpoint "SP" | ( factory default rt )   |
| DSEt  | Temperature offset : -3, -2, -1, 0, 1, 2, 3                  | ( factory default 0 )    |
| dEFr  | Defrost - low temperature protection : On / OFF              | ( factory default OFF )  |
| USP   | Upper setpoint limit : 10...35°C                             | ( factory default 35°C ) |
| LSP   | Lower setpoint limit : 5...30°C                              | ( factory default 5°C )  |
| SEn   | Sensor selection : external "Et" / built-in "int"            | ( factory default int )  |
| COOL* | Cooling setpoint in economy mode : 25...30°C                 | ( factory default 28°C ) |
| HEAt* | Heating setpoint in economy mode : 15...20°C                 | ( factory default 15°C ) |

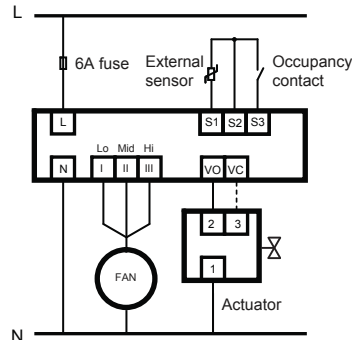
\*Available on corresponding models

## Wiring diagram

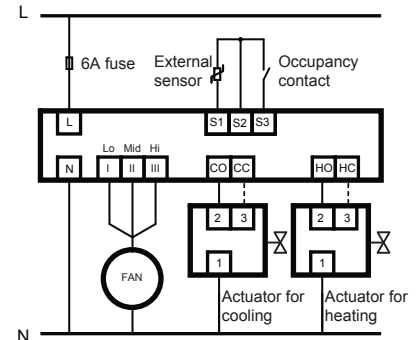
**CFU-D221-SS**



**CFU-D221 / D222**



**CFU-D422**

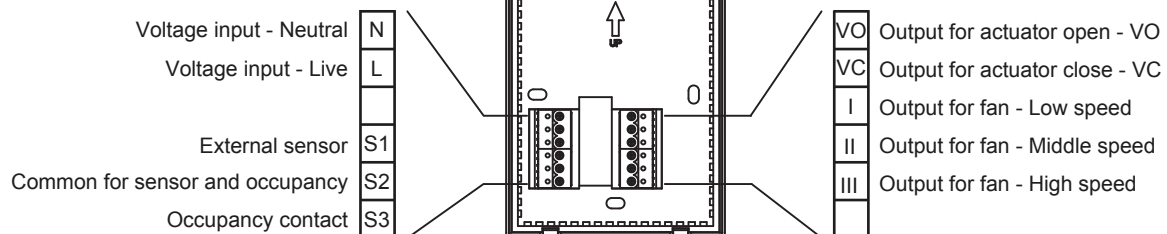


2-wire actuator connection

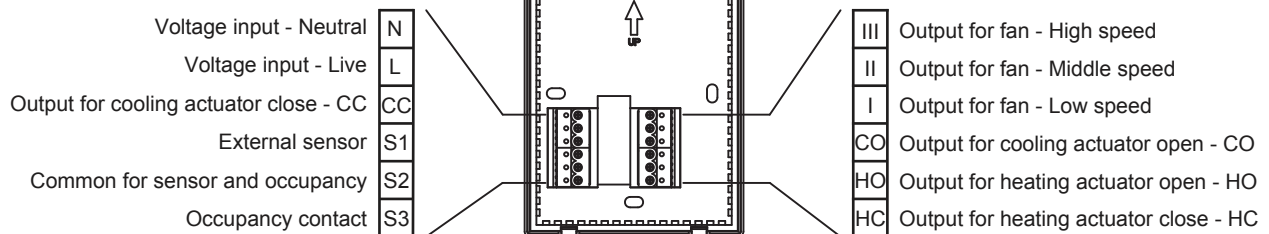
3-wire actuator connection

## Terminals

### D2 series

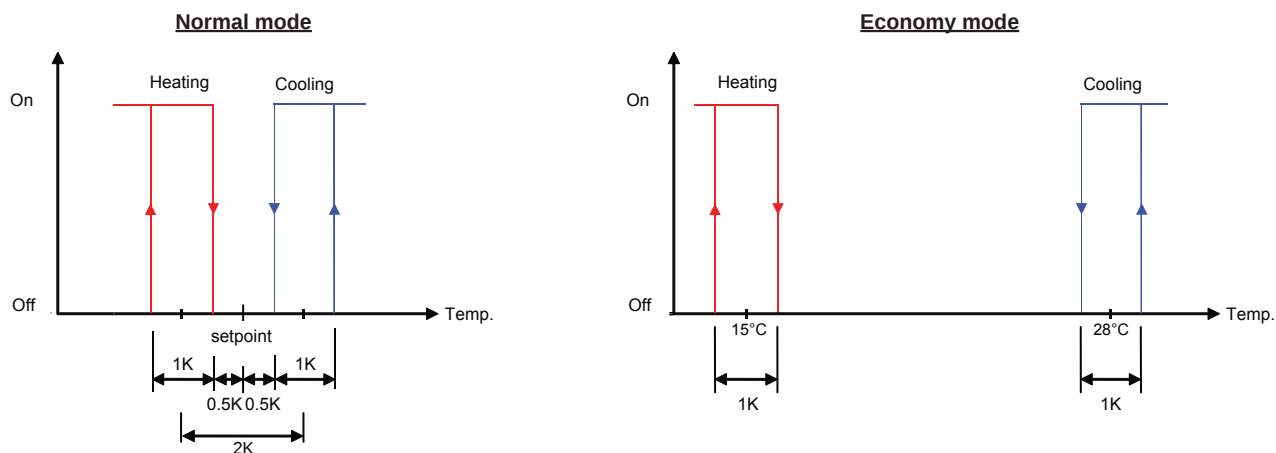


### D4 series



| Terminals | S1 and S2       | S2 and S3         |
|-----------|-----------------|-------------------|
| Function  | External sensor | Occupancy contact |

### Auto changeover for D4 series



Auto changeover is determined by setpoint and ambient temperature. When thermostat is in normal mode, auto changeover mechanism is as follows:

Cooling actuator turns on when ambient temperature above 1.5K of setpoint. When ambient temperature reaches 0.5K above setpoint, cooling actuator turns off.

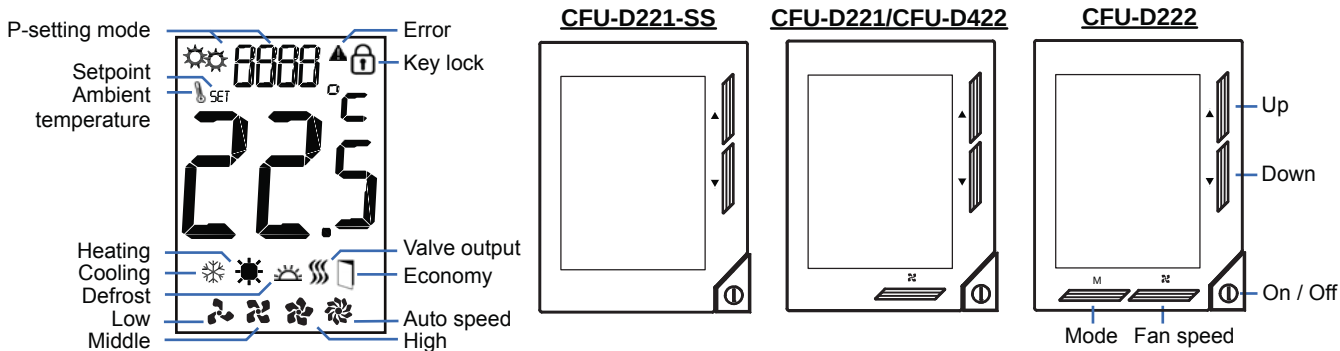
Heating actuator turns on when ambient temperature below 1.5K of setpoint. When ambient temperature reaches 0.5K below setpoint, heating actuator turns off.

The deadband is 2K in normal mode.

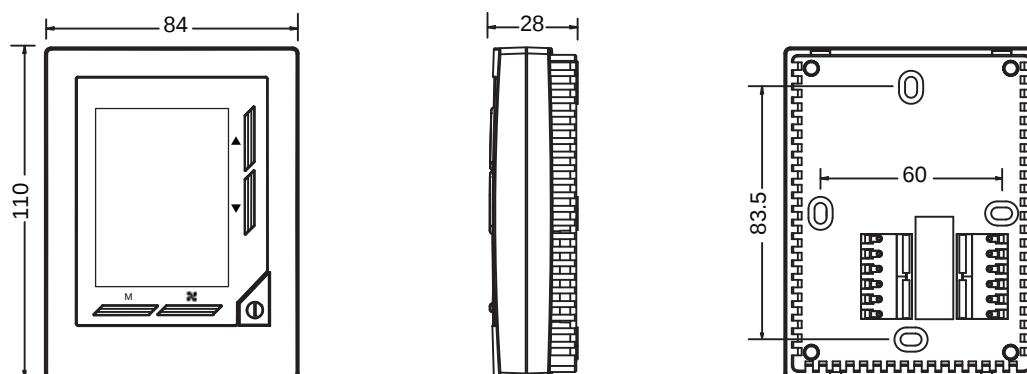
When thermostat is in economy mode, cooling setpoint set to 28°C (factory default, adjustable from 25...30°C), heating setpoint set to 15°C (factory default, adjustable from 15...20°C).

\*Auto changeover feature is available in D4 series only

### LCD display and buttons



### Dimensions (mm)



## Overview of product

New generation CFU-M series designed for commercial and residential fan coil applications for 2-pipe system. Modern design suits for all decor and wall box.

## Features

- Input for external sensor
- Suits both US and BS junction box
- Manual 3 fan speed
- Open-close control by 2-wire or 3-wire actuator
- Hidden LED indicate status



## Model selection

e.g. CFU - M 2 1 2

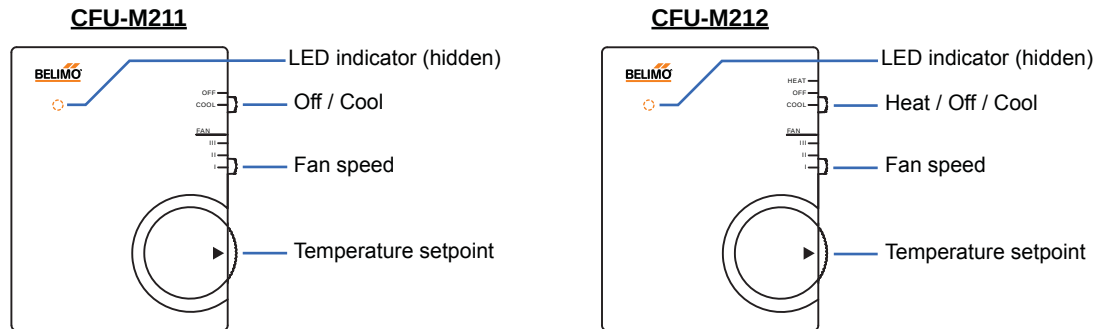
|                            |     |
|----------------------------|-----|
| Fan coil thermostat series | CFU |
| Mechanical dial input      | M   |
| 2-pipe system              | 2   |
| External sensor            | 1   |
| Cooling only               | 1   |
| Cooling or heating         | 2   |

| M series | Cooling only | Cooling or heating | 3 Fan speed | External sensor |
|----------|--------------|--------------------|-------------|-----------------|
| CFU-M211 | •            |                    | •           | •               |
| CFU-M212 |              | •                  | •           | •               |

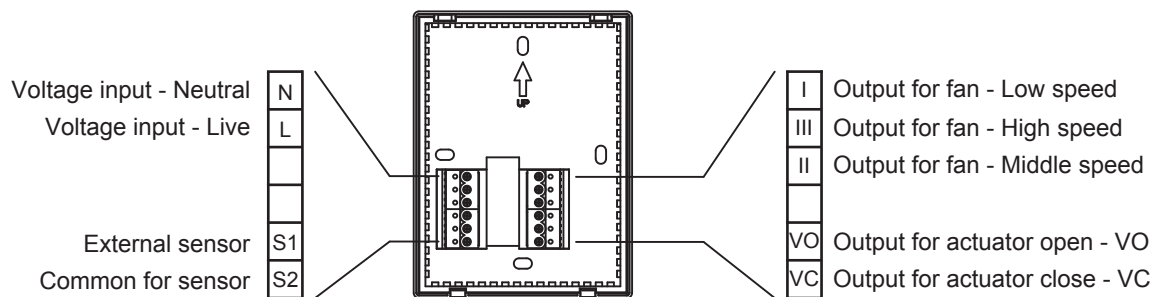
## Technical data

|                        |                                                                                                                                                              |                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Model                  | CFU-M211<br>CFU-M212                                                                                                                                         | Cooling only, 3 fan speed, external sensor<br>Cooling or heating, 3 fan speed, external sensor |
| Nominal volatge        | AC 220...240V 50/60Hz                                                                                                                                        |                                                                                                |
| Nominal voltage range  | AC 198...264V                                                                                                                                                |                                                                                                |
| Sensing element        | Built-in : NTC thermistor, 100kΩ@25°C<br>External : NTC10kΩ@25°C, maximum cable length 10m<br>(Probe type sensor, EXT-TN-1072532, cable length 2m, optional) |                                                                                                |
| Fan speed control      | Low ( I ), Middle ( II ), High ( III )                                                                                                                       |                                                                                                |
| Setpoint range         | 10...30°C                                                                                                                                                    |                                                                                                |
| Switching differential | 1K                                                                                                                                                           |                                                                                                |
| Hidden LED             | Orange : power on<br>Off : power off                                                                                                                         |                                                                                                |
| Load ratings           | Fan speed output : 3A resistive, 1A inductive, AC 250V, 50/60Hz<br>Relay output : 3A resistive, 1A inductive, AC 250V, 50/60Hz                               |                                                                                                |
| Control signal         | Open-close control by 3-wire or spring return by 2-wire                                                                                                      |                                                                                                |
| Ambient temperature    | Operating : 10...30°C<br>Storage : 0...45°C                                                                                                                  |                                                                                                |
| Ambient humidity       | Max. 90% RH, non-condensing                                                                                                                                  |                                                                                                |
| Wiring connection      | Terminal wiring 0.5...1.0 mm²                                                                                                                                |                                                                                                |
| Agency Approval        | LVD - CE according to 2006/95/EC<br>EMC - CE according to 2004/108/EEC                                                                                       |                                                                                                |
| Material               | Fire-retardant PC, self-extinguishing: UL 94-V0                                                                                                              |                                                                                                |
| Degree of protection   | IP30                                                                                                                                                         |                                                                                                |
| Weight                 | 0.13kg                                                                                                                                                       |                                                                                                |
| Dimensions (LxWxH)     | 110 x 84 x 28mm                                                                                                                                              |                                                                                                |

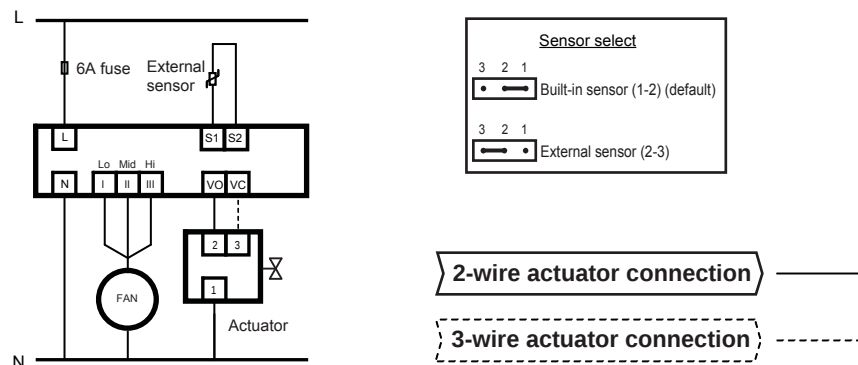
## Switches



## Terminals



## Wiring diagram and jumper setting



## Dimensions (mm)

