

# A: Operating instructions for equiflex® NRT 105 F011, F902 & F061 electronic fan-coil controllers

This electronic fan-coil controller provides the right room temperatures in individual rooms, apartments and zones. Due to its fully automatic operation, it offers great practicality: if the room temperature is too low, it switches the heating on; if it's too high, it switches the cooling system on. The valves for heating water or cooling water are opened either more or less and a 3-stage fan is operated in relation to the difference between the temperature's setpoint and its actual value. If the setpoint and the actual value are nearly the same, then neither heating nor cooling takes place; this is called the dead zone. To save energy when the room is not being used, there is the programmable input PROG which expands the dead zone so that the heating is not switched on until the temperature is lower, or the cooling is not switched on until the temperature is higher, as the case may be (reduced mode). The temperature setpoint, however, remains unchanged. In addition, the manual mode's time-restricted/unrestricted temperature change is available in order to obtain the absence/occupancy function (Section B).

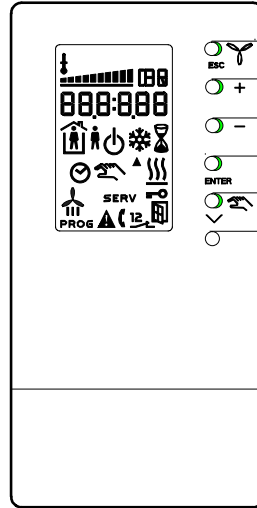
## A1: Display and keys

### LCD and its symbols

Shows the plant conditions and the room temperature.

- Temperature's actual value
- Ecometer shows the relative energy consumption
- °C, h (hours)
- Actual or desired room temperature (Left: actual value. Right: setpoint)
- Plant off, stand-by
- Cooling mode or frost protection active
- Time-limited or internal operation (busy)
- Fan, stage I ... III active. Flashing figure = after-running
- Manual mode
- Relay operates valve
- Heating mode or overheating protection is active
- Childproof safety facility (keys disabled)
- Warning
- Unoccupied (centrally controlled) \*
- Occupied (controlled by occupancy detector) \*
- Reduced temperature due to open window \*
- Remote control via telephone \*
- Malfunction \*
- Keys disabled externally \*
- External time-switch \*
- Dew point attained

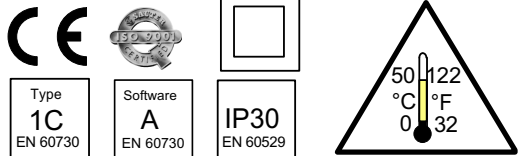
\* = alternative



### Keys

The keys have the following functions:-

- Fan-speed override:** allows the fan speed to be set manually (see Section B3) or the function to be aborted.
- Temperature setpoint** can be viewed and **increased** (see Section B1) or the flashing value can be increased.
- Temperature setpoint** can be viewed and **decreased** (see Section B1) or the flashing value can be decreased.
- Temperature setpoint** can be viewed or confirm and save the value shown.
- Manual mode** (see Section B2) or view next value (surf).
- Reset** (see Section D4)



To avoid the risk of injury, fire or damage to the equipment, particular care is required. After the controller has been installed by a qualified technician in accordance with the Fitting Instructions (MV) supplied, please read these instructions thoroughly.

## A2: Key to operating instructions

The following operating instructions explain each function step by step, using the following symbols:

- Symbol on the LCD that refers to the described function
- Denotes flashing symbol; requests an input or shows a particular condition
- Press button ...

If, during programming, no key is pressed for about 2 minutes, the previous function is restored automatically.

## B2: Manual mode (continued)

- Manual mode: shows the setpoint (23.0°C) for the next 5 hours (5h)
- Changes the current mode (Occupied → Unoccupied) or vice versa
- Alters the duration of mode change; valid for
  - 9h 9 hours
  - 8h 8 hours
  - etc. till
  - 2h 2 hours or
  - Plant Off (perhaps with frost & overheating protection) or unlimited

About 10 seconds after a key has been pressed, the actual value automatically re-appears. Press ESC to exit the manual mode.

## C: SERVICE mode (continued)

- Surf through the list of SERVICE parameters (P01, P02 ...); choose parameters.
- Change parameter (P13) ... (- - - denotes unrequired parameter); then confirm all changed values
- ENTER
- ESC and/or abort the function (normal mode).

- P01:000 Input TEMP: 0 = temp. ext. 1 = dew-point 2 = c/o \*)
- P02:000 Type of sensor: 0 = NTC 1 = Ni1000
- P03:000 Influence of wall NTC (-60 ... +60 ± ± 6 K)
- P04:000 Influence of wall Ni1000 (-60 ... +60 ± ± 6 K)
- P05:020 2 K proportional band (010 ... 200)
- P06:006 6 minutes period duration (004 ... 030)
- P07:008 0.8 K dead zone normal (002 ... 98)
- P08:100 10 K dead zone extended (004 ... 200)
- P09:030 30% switch-on-point of 1st fan speed G1 as a percentage of the P-band (%Pb) (005...040)
- P10:090 Fan90% switch-on-point of 2nd fan speed G2 as %Pb (020 ... 120)
- P11:120 120% switch-on-point of 3rd fan speed G3 as %Pb (040 ... 160)
- P12:015 15% switching difference, fan %Pb (005 ... 040)
- P13:002 2 minutes fan after-running (000 ... 010)
- P14:000 Fan function automatic when Heating and cooling = 0 Cooling only = 1
- P15:000 Minimum fan speed = inactiv 0 = inactive 1 = active
- P16:000 Contact input function PROG (0 = Absence transmitter) (1 = Presence transmitter) (2 = Window contact) (3 = External time-switch) (4 = Remote control) (5 = Fault: symbol appears in display) (6 = Keys disabled)
- P17:000 Frost protection/overheating protection (0 = Frost 1 = Overheating) (2 = both active 3 = inactive)
- P18:000 Anti-jamming function for valves (0 = inactive, 1 ... 15 = minutes active)
- P19:014 Minimum limitation, range °) Temperature setpoint Tmin (009 ... 035)
- P20:032 Maximum limitation, range °) Temperature setpoint Tmax (011 ... 037)
- P21:000 Hours-run counter (relay contacts closed) in units of 10 hours; not deletable
- P22:10x Software version

\*) only version F011 with production index C or higher  
 °) depending on proportional band and dead zone

## B: Temperature changes

Apart from the temperature changes controlled by the PROG input, the room temperature can be adapted to requirements either by altering the room temperature's setpoint or by using the manual mode.

### B1: Setpoint adjustment

The desired room temperature is determined by the setpoint; this is always the same, whether for heating and cooling, or in Normal (occupied) or reduced (unoccupied) modes. (To limit the range of adjustment for the temperature's setpoint <img alt="Temperature up/down keys"/>).

- (Room temperature 23.3°C, occupied)
- Shows the temperature's setpoint (23.0°C)
- Raise or lower the setpoint.

### B3: Fan override

Allows the fan speed to be set manually to stage 1, 2, 3 or back to automatic. (Automatic fan control at stage 3)

- Manual fan control (Diagram shows Stage 3 calculated by the controller. Press ESC to abort)
- Set speed manually to current stage
- Raise or lower the fan speed
- Confirm override setting

## B2: Manual mode

The mode (Occupied or Unoccupied) can be changed to time-limited or time-unlimited.

- (Shows the actual value of the room temperature 23.3°C, occupied)

## C: SERVICE mode

Allows the technician to adapt the controller's basic settings to the plant and to fulfill specific requirements.

- (Normal mode; shows room temperature 23.3°C)
- >4s Press key for more than 4 seconds
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## D: Various

### D1: Childproof safety facility

- The childproof safety facility prevents tampering; it is activated by pressing the following keys in the order stated: (Display actual room temperature 23.3°C, Occupied ('Presence') mode)
- ENTER Activate childproof safety facility (the same sequence is used to deactivate it).
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### D2: Energy saving

The air-conditioning accounts for a large portion of the primary energy required by the building, but sizeable savings can still be made. Up to 30 % can be saved by setting the fan-coil controller to reduced mode. ('Absence' reduces the temp. setpoint by 5°C compared with 'Presence' <img alt="Temperature up/down keys"/> C). Further tips: Use reduced mode as early (and for as long) as possible. If the room is aired by opening the windows, airing should be thorough but brief. Leave unused rooms in the 'Off' mode (with the frost or overheating protection activated, if necessary). Make full use of window blinds and shutters.

### D3: Running the plant

Air-conditioning systems are slow to react; changes of just a few degrees to the room temperature often take hours to realize. Therefore, in the case of well-insulated buildings, it makes little sense to alter the settings if the proposed period of absence is less than two hours. Proportional controllers have an inherent discrepancy between the setpoint and the actual value attained. If need be, this can be compensated for by adjusting the setpoint accordingly.

### D4: Malfunctions

Before calling the technician, check: fuses; main switch; whether the heat/refrigeration generator is working; circulation pump; valves; the room thermostat's fault indicator. If you suspect that the controller has been affected by problems with the mains electricity supply, press the reset key using a ballpoint pen (see Section A1). This has no effect on the SERV parameters.