



Controller FCC-1
Function description

Contents

1. Introduction	3
2. Settings	4
2.1 Selection of the type of control(Temperature/External control signal)	4
2.2 Selection of the operating mode (Switched off, manual or Auto)	4
2.3 Temperature settings	4
3. Regulation	4
3.1 Automatic selection of cooling or heating control	4
3.2 Temperature control	5
3.3 Control according to the external 0-10 V signal	6
4. Remote control	6

1. Introduction

FCC-1 is a microprocessor based controller that controls the speed on a single phase fan over three speeds and a fluid valve automatically according to the measured temperature counter the set set-point value. FCC-1 controls both cooling and heating modes. The fluid temperature is measured using a contact sensor (fitted with a hose clamp) and based on this temperature and the set set-point value, FCC-1 determines whether the heating mode or cooling mode should be activated.

The operating mode (0, I, II, III or AUT) can be set using a push button on the front.

FCC-1 can also be controlled using a 0-10 V signal. The speed of the fan and the fluid valve are then controlled according to fixed voltage levels.

A remote control (ATDZ-21-4) can be connected to FCC-1. The current operating mode and set-point value can be set using this.

2. Settings

2.1 Selection of the type of control (Temperature/External control signal)

Control type selection is stated using the switch marked "CONTROL mode S1" on the controller's bottom card.
 TEMP. => Regulation according to the room temperature counter the set temperature set-point value
 0-10 V => Control according to the external 0-10 V.

2.2 Selection of the operating mode (Switched off, manual or Auto)

Four LEDs marked I, II, III and AUT. indicate the selected operating mode.

Control mode	Operation
AUT	Fully automatic operation. The fan and the valve are controlled fully automatically according to the temperature or external control signal.
I	The fan is run constantly at speed 1. The valve is controlled automatically according to the temperature.
II	The fan is run constantly at speed 2. The valve is controlled automatically according to the temperature.
III	The fan is run constantly at speed 3. The valve is controlled automatically according to the temperature.
01	The fan is manually switched off. Valve closed.

1 None of the LEDs AUT, I, II, III are on

Note when using 0-10 V control, only the AUT mode and position 0 (switched off) can be selected.

Press the button on the front panel to switch between operating modes.

If the LEDs flash this signifies that the setting is made with the remote control (see paragraph 4). Press the button on the front panel to return to local settings.

2.3 Temperature settings

SET TEMP. (5-35°C):

Desired room temperature. This setting is used to determine the requisite fluid temperature in order for FCC-1 to initiate heating or cooling modes (see figure 1).

HEAT-COOL SET. TEMPERATURE (2-10°C):

Minimum temperature difference (SET TEMP. counter fluid temperature) in order for FHC1-6 to initiate heating or cooling modes (see figure 1)

The settings are made under the cover using the graduated potentiometers.

3. Regulation

3.1 Automatic selection of cooling or heating control

FHC1-6 continuously measures the temperature of the fluid and then determines with the help of this temperature counter the set set-point value whether cooling or heating control should be initiated.

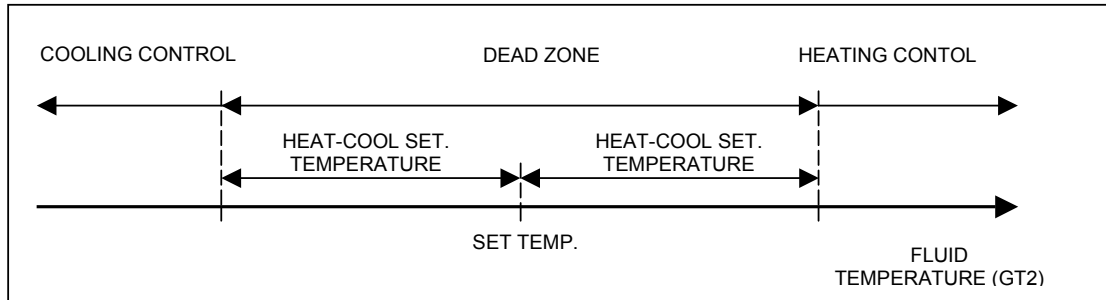


Figure 1. Automatic selection of the heating or cooling mode

When the fluid temperature is in the dead zone neither heating nor cooling mode is activated. There are no conditions to cool or heat the room to the desired temperature (SET TEMP.).

Consequently the fluid valve is always closed in the dead zone. This applies to both temperature control as well as control according to the external 0-10 V program.

The fan is also shutdown in the dead zone, if temperature control in AUT mode is initiated. Otherwise the fan is controlled according to the current settings even in the dead zone.

3.1.1 Exercise the fluid valve

As the fluid valve is closed, the temperature of the water can not be measured as there is no flow. In order not to remain in this state, exercise mode is started on the valve when closed. This involves opening the valve for 5 minutes every hour to check the water temperature. If a well-defined water temperature is measured and there is a corresponding requirement in the room, control is permitted to start. A test of the water temperature is always made directly when a new requirement occurs in the room to avoid unnecessarily long waiting times.

If the valve is closed on account of the unit being switched off by the user (0 mode) the fluid valve is not exercised. However, when the unit is switched on by the user (move from 0 mode) a 5 minute long test of the water temperature is always started.

3.2 Temperature control

To activate temperature control the switch marked "CONTROL mode S1" must be set to "TEMP.".

The current operating mode can be set to 0, I, II, III or AUT.

0 mode signifies that the valve is closed and the fan is switched off.

AUT mode signifies that the fan and valve are fully automatically controlled according to the figure below.

Modes I, II and III signify that the fan speed is set manually to speed 1 (I mode), speed 2 (II mode) or speed 3 (III mode) and, irrespective of the temperature, work constantly at this speed.

However, the valve is controlled automatically, even in these operating modes, according to the figure below.

The fluid temperature is continuously measured to determine whether heating or cooling modes can be initiated.

The valve is closed in the fluid temperature's dead zone and when AUT. mode is selected, the fan is also shutdown in this mode (see paragraph 3.1).

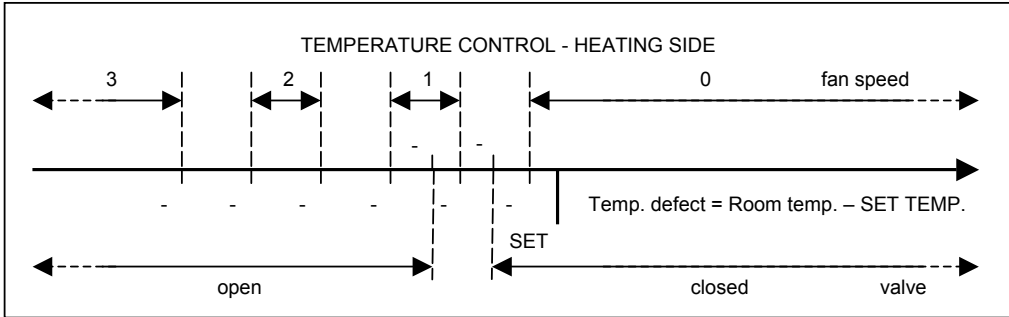


Figure 2. Temperature control - heating side

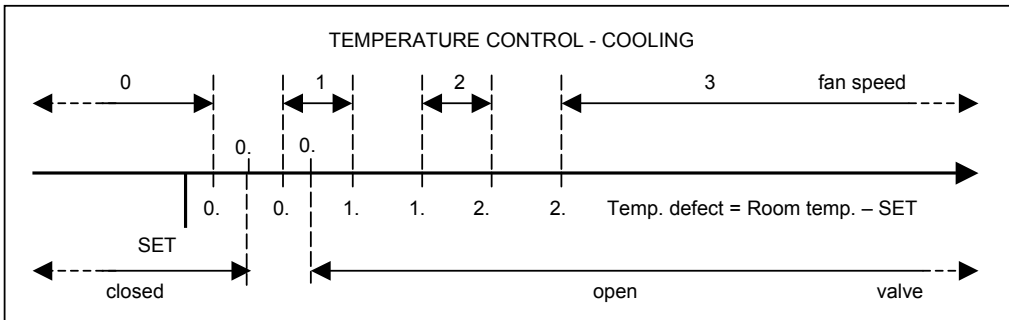


Figure 3. Temperature control - cooling side

3.3 Control according to the external 0-10 V signal

To activate 0-10 V control the switch marked "CONTROL mode S1" must be set to "0-10 V".
 The current operating mode can be set to 0 or AUT. In 0 mode the fluid valve is closed and the fan switched off. In AUT. mode the valve and fan are controlled according to the figure below.
 The fluid temperature is continuously measured to determine whether heating or cooling modes can be initiated. In the fluid temperature's dead zone the valve is closed (see paragraph 3.1).

Note it is important to make the settings as described in paragraph 2.3 even with control by a 0-10 V signal. This is to define the requisite fluid temperature for heating and cooling mode.

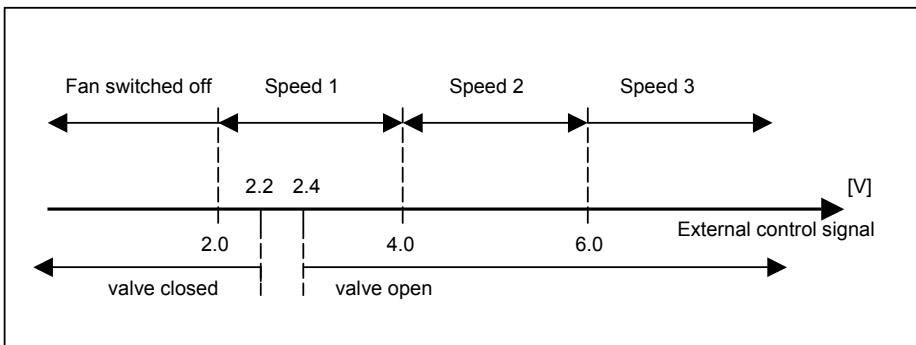


Figure 4. Voltage levels external 0-10 V signal

4. Remote control

A remote control (ATDZ-21-4) can be connected to FCC-1. The current operating mode and set-point value can be set using this.

For further information about ATDZ-21-4 see the separate manual.



Coiltech AB: SE-614 81 Söderköping
Phone +46 121-19100
Fax +46 121-10101
www.coiltech.com

Coiltech, Afrikalaan 303, BE-9000 Gent,
Belgium
Phone +32 9 218 71 30
Fax +32 9 218 71 39



Head Office:
33050 POCENIA (UD) | Via Giulio Locatelli, 22
Phone +39 0432.772.001
Fax +39 0432.779.594
www.ecogroup.com
info@ecogroup.com