Instructions Manual

Heating controller MHC-01

1. Heating controller MHC-01

The device has been equipped with MHC-01 temperature regulator.

MHC-01
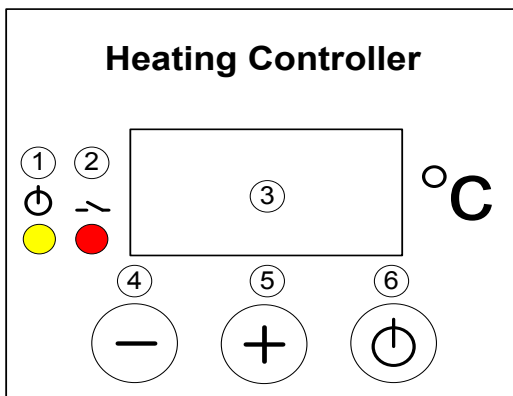
1.1. Setting up the controller

1.   Prior to plugging in the device to the mains, one must make sure that the controller is switched off.
2.   Switch (0/1) on the control panel shall be in "0" position
3.   Once plugged in to the mains, Switch (0/1) shall be moved from "0" position to "1" position
4.   Controller should be programmed in line with individual needs
5.   In order to enter the programming mode (Prog), buttons "+" and "-" must be pressed at the same time during controller start-up.

1.2. Starting work with the controller

1 – signalling the work state
Indicator lights up – temperature regulator switched on, indicator dimmed – temperature regulator switched off (controller operates as an ordinary thermometer), indicator flashes – temperature regulator switched on and initial heating in progress

2 – signalling the activation of heating transmitter Indicator lights up – transmitter contacts closed (heating on), indicator dimmed – contacts opened (heating off)

3 – display
Working mode – default mode, selected after controller power supply switched on. The display shows the measured temperature, readings specified in ºC.
Setting mode – selected when button "+" or "-" has been pressed. The display shows the preset temperature. Readings specified in ºC. Reading flashes and returns to measured temperature after a while.
Working time setting mode (Pro.) – activated when "ON/OFF" button is pressed and held. The display shows working time, counting it from activation, after which the thermostat gets switched off. Readings specified in hours.
Display brightness setting mode (d.br.) – activated when "ON/OFF" button is pressed and held for a longer time. The display shows the currently set brightness on all its segments . When the setting limit values are reached, the segments start to flash.

The modes specified below are accessible once the relevant code have been entered.

Calibration mode (CAL.) code L-1 – activated when the "ON/OFF' button has been pressed and held for a longer time. The display shows the measured temperature including the calibration. Readings specified in ºC.
Preliminary heating time setting mode (P.tl.) code L-2 – activated when "ON/OFF" button is pressed and held for a longer time. The display shows the working time, counting it from the activation, for which the controller performs preliminary heating maintaining the preliminary heating temperature programmed by the manufacturer. Reading "OFF" means deactivation of the preliminary heating function. Readings specified in minutes. When preliminary heating activated, the controller displays marking "HC2" during start-up.
Preliminary heating temperature setting mode (P.tE.) code L-3 – activated when the "ON/OFF" button is pressed and held for a longer time. The display shows the value of preset temperature for preliminary heating. Readings P … specified in   ºC.
Preset temperature limit setting mode (L.t.h.) code L-4 – activated when "ON/OFF" button is pressed and held for a loner time. The display shows maximum value of preset temperature that can be set . Readings L … are specified in

4 – button „-„ value decreasing
Working mode – pressing the button will decrease the preset temperature value. During preliminary heating, the option to change the setting for preset temperature is blocked.
Working time setting mode – pressing the button will decrease the time after which the thermostat will get switched off.
Display brightness setting mode – pressing the button will decrease the brightness of the display.
Calibration mode – pressing the button will decrease the value of the temperature to be transferred, calibrating the measurement duct in this way.
Preliminary heating time setting mode – pressing the button will decrease the time after which the thermostat will switch from preliminary heating phase to proper heating phase.
Preliminary heating temperature setting mode – pressing the button will decrease the value of preset temperature that will be maintained during preliminary heating.
Preset temperature limit setting mode – pressing the button will decrease the value of maximum preset temperature that will be to set.

5 – button „+" value increasing

Working mode – pressing the button will increase the value of preset temperature. During preliminary heating, the preset temperature setting changes is blocked.

Working time setting mode – pressing the button will increase the time after which the thermostat gets switched off.

Display brightness setting mode – pressing the button will increase the brightness of the display

Calibration mode – pressing the button will increase the value of the transferred temperature, calibrating the measuring duct in this way.

Preliminary heating time setting mode – pressing the button will increase the time after which thermostat switches from preliminary heating phase to proper heating phase.

Preliminary heating temperature setting mode pressing the button will increase the value of preset temperature which will be maintained during preliminary heating.

Preset temperature limit setting mode – pressing the button will increase the value of maximum preset temperature that can be set

6 – „ON/OFF" button

Short-time pressing of the button will activate (ON) and deactivate (OFF) the regulator interchangeably. At deactivated state (OFF) the regulator act as a thermometer. At activated state (ON) , the regulator shall activate and deactivate the outlet to control the heater in order to maintain the temperature set by the user.

Longer pressing and holding of the button and subsequent button releasing will activate the working time setting mode, signalled with (Pro.) notice. In this mode, by means of "+" and "-" buttons , the user has a possibility to define the time after which the controller gets deactivated, i.e. switches to the OFF state. Exit from the mode and setting approval occurs once the "ON/OFF" button is shortly pressed.

Longer pressing and holding of the button and its subsequent releasing will activate the display brightness setting mode – signalled with (d.br) notice.

In this mode, by means of "+" and "-" buttons the user has the possibility to set the brightness of the display segments. Exit from the mode and confirming the setting occurs when the "ON/OFF" button is pressed shortly. Longer pressing and holding of the button and subsequent releasing of the button will activate the calibration mode, signalled by the (CAL) notice. In this mode by means of "+" and "-" buttons, the user has a possibility to adjust the temperature readings to the real temperature. Exist from the mode and confirming the calibration settings occurs when the "ON/OFF" button is pressed shortly.

NOTE – the controllers supplied have been calibrated already.

Longer pressing and holding of the button and subsequent its releasing shall activate the preliminary heating time setting mode, signalled by (P.tl) notice. In this mode by means of "+" and "-" buttons the user has a possibility to define the time after which the controller gets switched from preliminary heating phase to proper heating phase. Deactivation of preliminary heating is signalled by the "OFF" notice. Exist from the mode and setting confirmation occurs when the "ON/OFF" button is pressed shortly.

Longer pressing and holding of the button and its subsequent releasing will activate the preliminary heating temperature setting mode, signalled by (P.tE.) notice. In this mode by means of "+" and "-" buttons the user has a possibility to define the preset temperature that shall be maintained during preliminary heating. Exit from the mode and setting conformation occurs when the "ON/OFF" button is pressed shortly. Longer pressing and holding of the button and its subsequent releasing will activate the preset temperature limit setting mode, signalled by (L.t.h.) notice. In this mode by means of "+" and "-" buttons the user has the possibility to set the upper limit of the preset temperature settings. Exist from the mode and setting confirmation occurs after the "ON/OFF" button is pressed shortly.

NOTE – all controller settings and working state (activated or deactivated) are stored in the non-volatile memory.

Entering the access codes

During controller start-up (displayed controller's name, software version, settings), press and hold the "+" and "-" buttons. Once "---" has been displayed on the screen, buttons may be released and the relevant code can be set. The code shall be confirmed by the "ON/OFF" button.

CODE	CCESS LEVEL
any	L-0
157	L-1
314	L-2
628	L-3
942	L-4

Working time setting mode (code L-0)
Display brightness setting mode (code L-0)
Calibration mode (code L-1)
Preliminary heating time setting mode (code L-2)
Preliminary heating temperature setting mode (code L-3)
Preset temperature limit setting mode (code L-4)

1.3. Controller error report

MHC-01 controller has been equipped with advanced mechanisms for error detection. Detection of any error activates emergency work stoppage and triggers error report screen. Error report screen is displayed in a continuous manner. It is therefore necessary to disconnect power supply, remove the error source and controller reactivation

ERROR	ERROR DESCRIPTION
(E-0) CPU STATUS	Damaging the main processing unit.
(E-3) T < Tmin	Too low temperature measured by T1 sensor.
(E-4) T > Tmax	Too high temperature measured by T1 sensor.
(E-5) button -	"-" button damage/pressing
(E-6) button +	"+" button damage /pressing
(E-7)button ON/OFF	"ON/OFF" button damage/pressing

1.4. Controller's technical parameters

CONTROLLER'S TECHNOLOGICAL PARAMETRES (STATE FOR FW: 0.1)	
Temperature measurement range*:	-50°C ... +250°C
Temperature readout resolution:	0,1°C
Temperature measurement accuracy:	± 1,5 °C
Minimal value of preset temperature:	30°C
Maximum value of preset temperature:	Set up in the range: 45°C ... 95°C
Setting range for automatic deactivation:	1 … 96 h
Setting range for preliminary heating temperature:	30°C ... 40°C

Setting range for preliminary heating time:	0 … 60 minutes
Regulation type:	bistate
Controller's electrical parameters	
Power supply for the controller board:	12VDC ±10%, Min. 200mA
Power supply of dedicated feeder:	100…240VAC 50/60Hz
Measurement input for temperature measurement	PT1000
Outlet type:	Relay, contact NO
Output load:	AC1 - 9A 230V
Maximum power of the heater attached:	2000W 230VAC
Outlet switching durability	> 3 x 10^4 for 10A 230VAC
Maximum switching frequency AC1	600 cycles/h
Environmental conditions	
Temperature of the regulator in operation:	0°C…55°C