



## MTC35-F20 Dual Channel Temp. Controller Instruction Manual

### 1. Introduction

The MTC35-F20 Dual Channel Temperature Controller is a particularly flexible controller, which allows On/Off control of your refrigeration or heating plant.

The controller has two temperature sensors as input and two outputs which are controlled by a MCU according to value programmed for the parameters in Parameter List.

MTC35-F20 can be configured as a independent dual channel temperature controller.

Temperature sensor: NTC, range: -50~150 °C.

To get the best performance, before installing and using it, read this instruction manual carefully.

### 2. Coding

#### MTC35-F20-2T-2R-220V

① ② ③ ④

① Software Function

F20	Dual channel Temp. controller
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③ Output

2R	2 Relays
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② Input

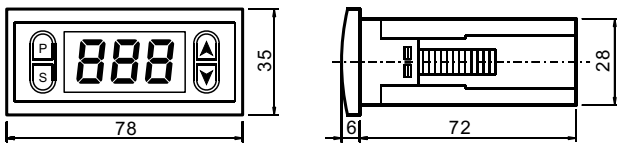
2T	2 temperature sensors
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④ Power Supply

220V	220V AC
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### 3. Dimensions and Mounting

- 1) Prepare a rectangular cut-out in the mounting panel to the size 72×30mm.
- 2) Insert the controller from the front panel cut-out.
- 3) From behind of the panel, slide the mounting brackets into the guides on the side of the housing. The flat faces of the mounting brackets must lie against the housing.
- 4) Push the mounting brackets up to the back of the panel, and tighten them evenly.



**Note:**

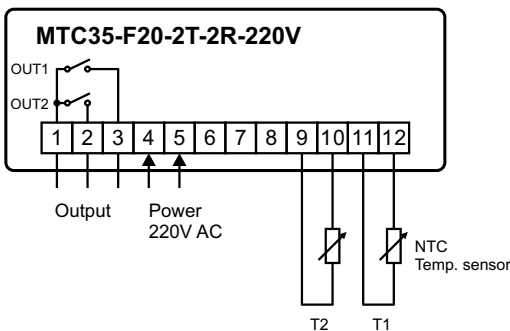
Please completes waterproof processing properly, in order to avoid seeps causes the instrument damage.

### 4. Front Panel Layout



- ①. Up Key
- ②. Down Key
- ③. Display  
Indicates PV, Parameters and Values
- ④. Setting Key(S)
- ⑤. Parameter Key(P)
- ⑥. Output 1 indicator(RL1)  
lit when OUT1 is 'ON'
- ⑦. Output 2 indicator(RL2)  
lit when OUT2 is 'ON'
- ⑧. PV2 displaying indicator(PV2)  
lit when PV2 value is displaying

### 5. Electrical Connection



### 6. Operation

#### 6.1 Viewing the PV

Mounting and wire up the controller and switch on, 3 seconds later, the measured temperature will appear on display. Channel 1 temperature T1 and channel 2 temperature T2 displaying can be exchange by pressing S key. When the 'PV2 displaying indicator' is lit, the display indicates T2.

#### 6.2 Setpoint Adjusting

During the basic functioning, press key 'P' and hold for 1 second, temperature setpoint L1 appears on the display. Press key 'S', the value of L1 appears; press keys ▲ or ▼ to increase or decrease setpoint. Keeping it pressed results in a progressively faster variation. Press key 'P' again, next parameter H1 appears, setting its value in the same way.

Use the same method, setpoint L2 and hysteresis H2 can be set.

**6.3 Output Action**

$Rt1 = dr$ , OUT1 as cooling control output;

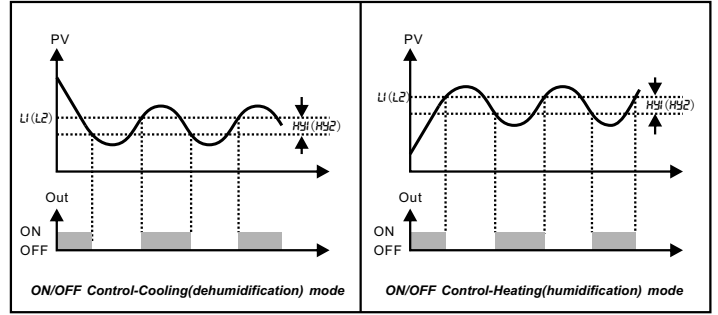
$Rt1 = rEu$ , OUT1 as heating control output;

$Rt2 = dr$ , OUT2 as cooling control output;

$Rt2 = rEu$ , OUT2 as heating control output.

While the controller was configured for cooling applications, to avoid compressor switch off and on frequently, must set the minimum off time( $rt1$ ,  $rt2$ ) between the switch OFF and switch ON, regardless of the input value.

The control algorithm is ON/OFF, temperature setpoint 1 is  $L1$ , hysteresis is  $H1$ ; Temperature setpoint 2 is  $L2$ , hysteresis is  $H2$ .



**6.4 Parameter List**

Switch off the controller; press keys ▲ and ▼ at the same time and hold on, then switch the controller on again. Parameter  $5PH$  appears on display. Parameter selection and the display of the value is obtained by pressing key P repeatedly; change with keys ▲ and ▼ and store with S.

SN	Mnemonic	Parameter	Adjustable Range	Parameter Description
1	$L1$	Temp. setpoint 1	$5PH-5PL$	Operation parameter
2	$H1$	Hysteresis 1	1~10 °C	
3	$L2$	Temp. setpoint 2	$5PH-5PL$	
4	$H2$	Hysteresis 2	1~10 °C	limit the temperature adjustable range $L1, L2$
5	$5PH$	Setpoint high limit	-50°C~150°C	
6	$5PL$	Setpoint low limit	-50°C~150°C	
7	$rt1$	OUT1 relay Min. off time	0~10 minutes	Compressor protection
8	$PF1$	Temperature sensor 1 failure output	on OFF	OUT1 'ON' while sensor T1 failure OUT1 'OFF' while sensor T1 failure
9	$Rd1$	Temp. sensor 1 adjustment	-5~5°C	
10	$Rt1$	Channel 1 output action	$dr$ $rEu$	Direct(cool) Reverse(heat)
11	$rt2$	OUT2 relay Min. off time	0~10 minutes	Compressor protection
12	$PF2$	Temperature sensor 2 failure output	on OFF	OUT2 'ON' while sensor T2 failure OUT2 'OFF' while sensor T2 failure
13	$Rd2$	Temp. sensor 2 adjustment	-5~5°C	
14	$Rt2$	Channel 2 output action	$dr$ $rEu$	Direct(cool) Reverse(heat)

**6.5 Sensor Failure**

While temperature sensor connection breakdown  $ur$  is displayed, or while overrange  $5nb$  is displayed.

At this time, outputs(OUT1 and OUT2) are determined by  $PF1$  and  $PF2$  as shown in the parameter list.

**Technical Data**

Measurement range	-50~150 °C
Resolution	1 °C
Sample rate	125ms
Temperature sensor	NTC, PVC Wire, 2.0m
Relay contact rating	5(8)A/250VAC
Control algorithm	ON/OFF
Power supply	220V AC, $\leq 2.0W$
Dimensions	W78×H35×D78mm
Environmental	Temp: -20~55 °C, Rel. Humidity: $\leq 85\%$