ALTEC®

MTC35-F22 Temperature Differential Controller
Instruction Manual

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1. Introduction

The MTC35-F22 Temperature Differential Controller is a particularly flexible controller, which allows On/Off control of the temperature difference.

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.

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-F22-2T-2R-220V
  ①   ②   ③   ④

① Software Function

F22	Temperature differential controller

② Input

| 2T	2 temperature sensors

③ Output

2R	2 Relays

④ Power Supply

| 220V	220V AC

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.
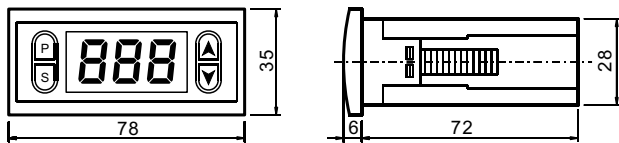
Note:

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

4. Front Panel Layout
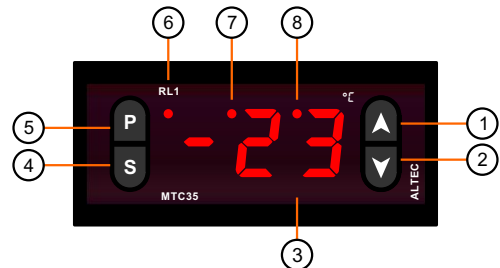
①. Up Key

②. Down Key

③. Dispaly
   Indicates PV, Parameters and Values

④. Setting Key(S)

⑤. Parameter Key(P)

⑥. Main output indicator(RL1)
   lit when OUT is 'ON'

⑦. Alarm output indicator(ALM)
   lit when OUT2 is 'ON'

⑧. PV2 displaying indicator(PV2)
   lit when PV2 value is displaying

5. Electrical Connection
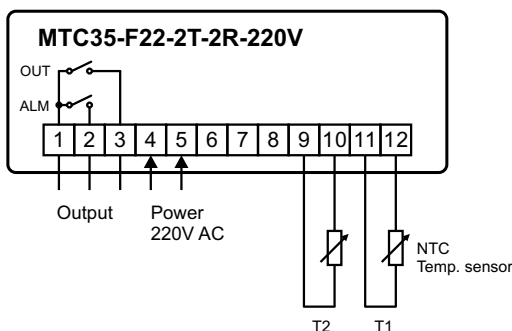
6. Operation

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 differential setpoint Li appears on the display. Press key 'S', the value of Li appears; press keys ▲ or ▼ to increase or decrease setpoint. Keeping it pressed results in a progressively faster variation. Press key 'P' again, next parameter HYi appears, setting its value in the same way.

Use the same method, alarm value $L2$ and it's hysteresis $HY2$ can be set.

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6.3 Output Action

$Atl = dir$, OUT1 as cooling control output;

$Atl = rEu$, OUT1 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 rtl between the switch OFF and switch ON, regardless of the input value.

The control algorithm is ON/OFF, temperature differential setpoint is Ll, hysteresis is HYl.

ON/OFF Control - Cooling mode   *ON/OFF Control - Heating mode*
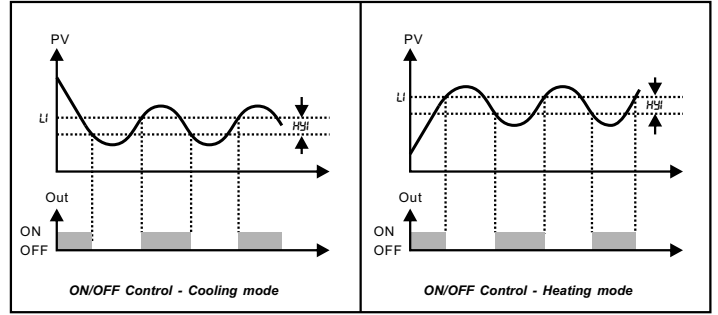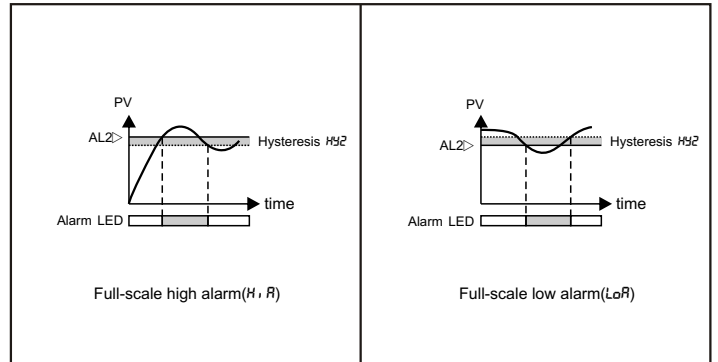
6.4 Parameter List

Switch off the controller; press keys ▲ and ▼ at the same time and hold on, then switch the controller on again. Parameter SPH 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	Ll	Temp. differential setpoint	$SPH~SPL$	Operation parameter
2	HYl	Hysteresis 1	1~10 °C	
3	$AL2$	Alarm value	$SPH~SPL$	
4	$HY2$	Alarm hysteresis	1~10 °C	
5	SPH	Setpoint high limit	-50°C~150°C	limit the adjustable range of Ll and $AL2$
6	SPL	Setpoint low limit	-50°C~150°C	
7	rtl	OUT relay min. off time	0~10 minutes	Compressor protection
8	PFl	Temperature sensor failure output	on OFF	OUT 'ON' while sensor failure OUT 'OFF' while sensor failure
9	Adl	Temp. sensor 1 adjustment	-5~5°C	
10	Atl	Output action	dir rEu	Direct(cool) Reverse(heat)
11	$Ad2$	Temp. sensor 2 adjustment	-5~5°C	
12	$2AL$	Alarm object	tl $t2$ dt	Channel 1 measured temp. T1 Channel 2 measured temp. T2 Temperature difference
13	ALo	Alarm mode	OFF HiA LoA	Turn alarm off Full-scale high alarm Full-scale low alarm

6.5 Alarms

Two different types of alarm can be configured with ALo: HiA and LoA as the right table shows. The alarm hysteresis is $HY2$.

Hysteresis is used to provide a definite indication of the alarm condition and to prevent alarm relay chatter.

Full-scale high alarm(HiA)   Full-scale low alarm(LoA)

6.6 Sensor Failure

While temperature sensor connection breakdown ur is displayed, or while overrange Snb is displayed.

At this time, when the temperature sensor T1 fails, relay output(OUT) is determined by PFl 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, ≤2.0W
Dimensions	W78×H35×D78mm
Environmental	Temp: -20~55 °C, Rel. Humidity：≤85%