•Operating modes

Mode ONOFF1 (On1) with r0=ind.
Relay 1 with c1=dir.
Temperature of probe 1 >= SP1+r1 -->relay 1 ON
Temperature of probe 1 <= SP1 -->relay 1 OFF

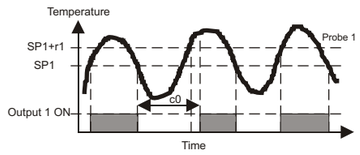

Figure 1

Relay 1 with c1=inv.
Temperature of probe 1 <= SP1-r1 -->relay 1 ON
Temperature of probe 1 >= SP1 -->relay 1 OFF

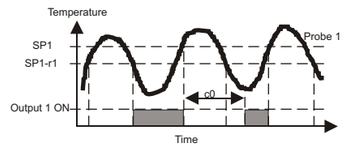

Figure 2

Relay 2 with c2=dir.
Temperature of probe 1 >= SP2+r2 -->relay 2 ON
Temperature of probe 1 <= SP2 -->relay 2 OFF

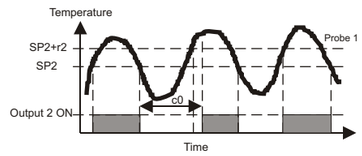

Figure 3

Relay 2 with c2=inv.
Temperature of probe 1 <= SP2-r2 -->relay 2 ON
Temperature of probe 1 >= SP2 -->relay 2 OFF

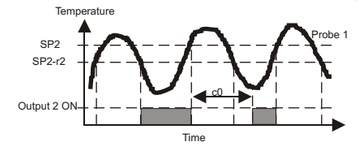

Figure 4

Mode ONOFF1 (On1) with r0=dep.
Output 1 works as in Independent ON/OFF control (Figure 1 and 2), but output 2 works as follows:

Relay 2 with c2=dir.
Temperature of probe 1 >= SP1+SP2+r2 -->relay 2 ON
Temperature of probe 1 <= SP1+SP2 -->relay 2 OFF

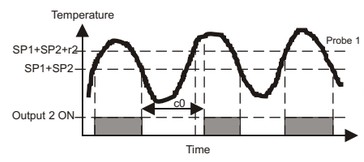

Figure 5

Relay 2 with c2=inv.
Temperature of probe 1 <= SP1+SP2-r2 -->relay 2 ON
Temperature of probe 1 >= SP1+SP2 -->relay 2 OFF

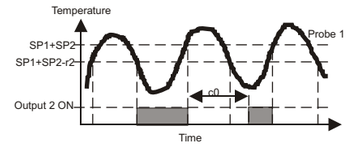

Figure 6

Mode ONOFF2 (On2)
Output 1 works as in Independent ON/OFF control (Figure 1 and 2), but output 2 works as follows:

Relay 2 with c2=dir.
Temperature of probe 2 >= SP2+r2 -->relay 2 ON
Temperature of probe 2 <= SP2 -->relay 2 OFF

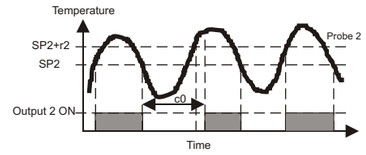

Figure 7

Relay 2 with c2=inv.
Temperature of probe 2 <= SP2-r2 -->relay 2 ON
Temperature of probe 2 >= SP2 -->relay 2 OFF

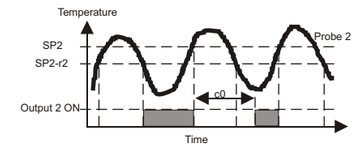

Figure 8

Neutral Area Mode (nEU)
Relay 1
Temperature of probe 1 >= SP1+r3 -->relay 2 ON
Temperature of probe 1 <= SP1 -->relay 2 OFF

Relay 2
Temperature of probe 1 <= SP1-r3 -->relay 2 ON
Temperature of probe 1 >= SP1 -->relay 2 OFF

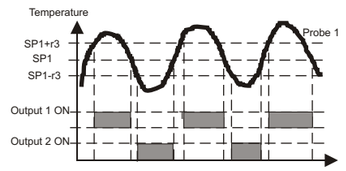

Figure 9

Operation in case of error.
If probe 1 fails, the operation is through c3.(See Parameter description)
If probe 2 fails, the operation is through c4.(See Parameter description)
In case of memory failure, both relays will remain open.

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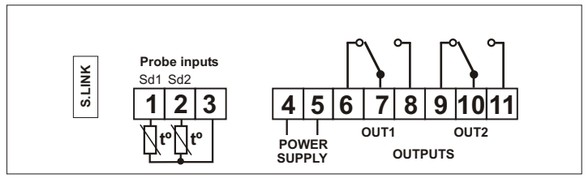
KELD KLT22Z Thermostat Cold/Heat Neutral Area

Specification and Operating Instructions

Wiring Diagram



Description

The KLT22Z is an electronic temperature controller designed for ON/OFF control or Neutral Area Control.
They can be provided with 1 or 2 probes (PTC or NTC) according to parameter P5 and it provides with two output relays plus an alarm buzzer.
The unit control cold, heat or both, since its relays can be setup for direct or reverse operation, in control modes ON/OFF.
The user is able to program 37 different parameters including set points, hysteresis, configuration of alarms and probe adjustment using the silicone front keypad.
The unit features error warning and password protection.

Model references

The model reference is given by: KLT22Z - WXYZ

Each sufix can take the following values:

W	Probe type	D=Probe Ptc/Ntc
X	Display color	R=Red, G=Green, B=Blue
Y	Supply voltage	110=115VAC, 230=230VAC 12=12Vac/dc, 24=24Vac/dc
Z	Units	F=ºF, C=ºC

Installation

NOTE: Unit must be mounted away from vibration, impacts, water and corrosive gases.

• Cut hole in panel 71 x 29 mm (2.80 x 1.14 inches)
• Apply silicone (or rubber gasket) around the perimeter of the hole to prevent leakage.
• Insert unit into hole of panel.
• Slide removable fitting clips onto unit from the back until secure to panel.
• Wiring diagram is displayed on the top of the unit
• *Note: DO NOT INSTALL PROBE CABLE NEAR POWER CABLES.*

Maintenance, cleaning and repair

After final installation of the unit, no routine maintenance is required.
Clean the surface of the display controller with a soft and damp cloth. Never use abrasive detergents, petrol, alcohol or solvents.
All repairs must be made by authorised personnel.

Technical Data

Supply voltages
115 Vac 10%, 230Vac 10%, 24 Vac/dc 10%, 12 Vac/dc 10%

Supply powers
4VA (230V/115V) 1,5VA(24V /12V)

Storage temperature
-20ºC to 80ºC (-4 to 176ºF)

Operating temperature
0ºC to 70ºC (32 to 158ºF)

Probe range
PTC -50ºC to 150ºC (-58 to 302ºF)
NTC -50ºC to 110ºC (-58 to 230ºF)

Accuracy
Better than 1% of full scale

Resolution
0.1º (3 digits)

Display
3-digit and sign (red, green or blue)

Probe Input (Selectable by parameter)
PTC1000 probes (25ºC - 1000 Ohm) / NTC

KLKey Input
For a quick programming of all parameters

Output
2 relays OUT1 SPDT Relay Resistive load 16A
1HP 240Vac - 10FLA, 60LRA 250Vac
OUT2 SPDT Relay Resistive load 8A
250Vac 8(3)A

Dimensions
Front 77 x 36 mm Depth 62 mm (3.03 x 1.42 x 2.44 inch)

Front Protection IP64

ETDT1330KI_110420

List of parameters

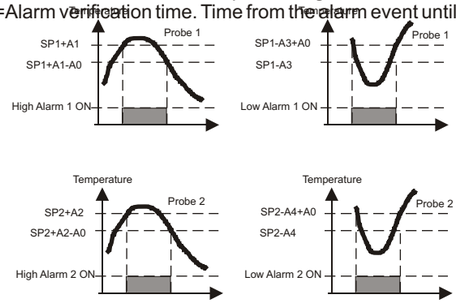
	Description	Units	Range
SP1	Set Point 1	Degrees	r4 to r6
SP2	Set Point 2	Degrees	r5 to r7
r0	Dependency SP1 - SP2	Range	ind/dep
r1	Differential for SP1	Degrees	0.1 to 20.0
r2	Differential for SP2	Degrees	0.1 to 20.0
r3	Band differential	Degrees	0.1 to 20.0
r4	Lowest value for SP1	Degrees	-99.9 to r6
r5	Lowest value for SP2	Degrees	-99.9 to r7
r6	Highest value for SP1	Degrees	r4 to 302
r7	Highest value for SP2	Degrees	r5 to 302
r8	Regulation or operating mode	Range	On1/On2/nEU
A0	Alarm differential	Degrees	0.1 to 20.0
A1	Maximun alarm probe 1 (1)	Degrees	0.1 to 99.9
A2	Maximun alarm probe 2 (2)	Degrees	0.1 to 99.9
A3	Minimiun alarm probe 1 (1)	Degrees	0.1 to 99.9
A4	Minimiun alarm probe 2 (2)	Degrees	0.1 to 99.9
A5	Alarm verification time	h-m (*)	0.0 to 18.0
A6	Alarm probe 1 selection	Range	AHL/Ano/AH/AL
A7	Alarm probe 2 selection	Range	AHL/Ano/AH/AL
c0	Minimum relay stop time	Minutes	0 to 240
c1	Operation relay 1	Range	dir/inv
c2	Operation relay 2	Range	dir/inv
c3	Default operation relay 1	Range	Opn/Clo
c4	Default operation relay 2	Range	Opn/Clo
P0	Temperature scale selection	Range	ºC/ºF
P1	Calibration of probe 1	Degrees	-20.0 to 20.0
P2	Calibration of probe 2	Degrees	-20.0 to 20.0
P3	Decimal point	Range	no/yes
P4	Probe to be displayed	Range	sd1/sd2
P5	Number of probes	Range	1/2
H0	Reprogramming	Range	0
H1	Keyboard protection	Range	no/yes
H2	Operation led OUT1	Range	dir/inv
H3	Operation led OUT2	Range	dir/inv
H4	Address for serial communication	Numeric	0 to 999
H5	Access code to parameters	Numeric	0 to 999
H6	Probe type	Range	Ptc/Ntc

(*)h-m are data in format XX.Y where XX are hours and Y tens of minutes.
(1)referred to set 1
(2)referred to set 2

Parameter descriptions

SP1 = Operation order of relay 1. Specifies the ON/OFF point of relay 1. Variable between r4 and r6.
SP2 = Operation order of relay 2. Specifies the ON/OFF point of relay 2. Variable between r5 and r7.
r0 = Dependency between SP1 and SP2.Only for mode ONOFF1
ind = order for relay 2, SP2
dep = order for relay 2, SP1+SP2
r1 = Differential or hysteresis for relay 1. Temperature differential between ON/OFF of relay 1 in ON/OFF control.
r2 = Differential or hysteresis for relay 2 Temperature differential between ON/OFF of relay 2 in ON/OFF control.
r3 = Band differential. Temperature differential between ON/OFF of relays 1 and 2 in neutral area control. For relay 1 it is added to SP1 and for relay 2 it is substracted from Sp1.
r4 = Lowest value for SP1
r5 = Lowest value for SP2
r6 = Highest value for SP1
r7 = Highest value for SP2
r8 = Regulation or operating mode. Selection of the operating mode.
A0 =Alarm differential. It is the temperature differential between the alarm On and Off cycle.

A1 =Maximun alarm probe1.
Maximun alarm ON when probe 1 higher than SP1+A1
Maximun alarm OFF when probe 1 lower than SP1+A1-A0.
A2 =Maximun alarm probe2.
Maximun alarm ON when probe 2 higher than SP2+A2
Maximun alarm OFF when probe 2 lower than SP2+A2-A0.
A3 =Minimun alarm probe1.
Minimun alarm ON when probe 1 lower than SP1-A3
Minimun alarm OFF when probe 1 higher than SP1-A3+A0.
A4 =Minimun alarm probe2.
Minimun alarm ON when probe 2 lower than SP2-A4
Minimun alarm OFF when probe 2 higher than SP2-A4+A0.
A5 =Alarm verification time. Time from the alarm event until it trips.



A6 =Alarm probe 1 selection.
AHL=Maximun and minimun alarm probe 1 enabled.
Ano=No alarms probe 1.
AH=Maximun alarm probe 1 enabled.
AL=Minimun alarm probe 1 enabled.
A7 =Alarm probe 2 selection.
AHL=Maximun and minimun alarm probe 2 enabled.
Ano=No alarms probe 2.
AH=Maximun alarm probe 2 enabled.
AL=Minimun alarm probe 2 enabled.
c0 = Minimum relay stop time. Minimun time from the disconnection of a relay till it can be switched on again.
c1 =Operation relay 1. Selection between direct or reverse operation for relay 1.
c2 =Operation relay 2. Selection between direct or reverse operation for relay 2.
c3 =Default operation relay 1. In case of failure of probe 1:
oPn= relay 1 will remain open.
Clo= relay 1 will remain closed.
c4 =Default operation relay 2. In case of failure of probe 1 (for all modes excepting ONOFF2) or in case of failure of probe 2 (for mode ONOFF2)
oPn= relay 2 will remain open.
Clo= relay 2 will remain closed.
P0 =Temperature scale selection.
P1 =Calibration of probe 1. Offset degrees to be added to probe 1.
P2 =Calibration of probe 2. Offset degrees to be added to probe 2.
P3 =Decimal point. If the displayed value of the probes is desired with decimals or not. (Only from -20ºC to 100ºC)
P4 =Probe to be displayed. Probe always on the display. The other probe can be seen pressing the keys SET+UP.
sd1= probe 1
sd2= probe 2
P5 =Number of probes. If P5=1, there is not ONOFF2 mode. If selected, it will operate as ONOFF1.

H0 =Reprogramming.Parameter to reprogram the thermostat.
H1 =Keyboard protection.
Yes=Keyboard protected. To change the sets, enter into parameter and exit again. The protection es momentarily released. It switches on again 1 minute after the last time a key was pressed.
No=Keyboard non protected.

H2 =Operation of led OUT1.
dir=On when relay 1 is ON.
inv=On when relay 1 is OFF.
H3 =Operation of led OUT2.
dir=On when relay 2 is ON.
inv=On when relay 2 is OFF.
H4 =Serial communication address. Address for computer connection.
H5 =Parameter entry code. Factory set as 0.
H6 =Probe model Ptc or Ntc.

Message display
Under normal operation, the temperature of the probe selected by P4 will be displayed, the following messages may also appear:
•**Err** Memory reading error.
•**ErP** Error of the probe not shown on the display.
•**AH1** Maximun temperature alarm, probe 1
•**AL1** Minimun temperature alarm, probe 1
•**AH2** Maximun temperature alarm, probe 2
•**AL2** Minimun temperature alarm, probe 2
•**ooo** Open probe
• --- Shorted probe
Pressing SET with UP it displays the probe not selected by P4. When the probe not selected by P4 is displayed, it alternates its value with message Sd1 or Sd2 depending if it is probe 1 or probe 2. The display blinks when waiting for a value confirmation.

Led indications.
Out1 : Indicates relay 1 On or Off as per parameter H2. If H2=dir, with relay 1 On, led lit, if H2=inv, with relay 1 On, led off. It blinks when SP1 is displayed.
Out2 : Indicates relay 2 On or Off as per parameter H3. If H3=dir, with relay 2 On, led lit, if H3=inv, with relay 2 On, led off. It blinks when SP2 is displayed.

Setting SP1 and SP2.
•Press and release SET. The current value of order 1 is displayed. SP1 and led OUT1 blink.
•Press UP or DOWN to increase or decrease the value.
•Press SET to confirm the new value. The actual value of order 2 will be displayed, SP2 and led OUT2 blink.
•Press UP or DOWN to increase or decrease the value.
•Press SET to confirm the new value and exit.

Parameter setup
•Press SET for 8 seconds. Value 0 will blink.
•With UP and DOWN input the code (factory set as 0).
•Press SET to confirm the code. If correct, the label of the first parameter will be displayed.
•With UP or DOWN go to the desired parameter in the parameter list.
•Press SET to see the value.
•With UP or DOWN change the value to the new value as desired.
•Press SET to confirm and exit again to the parameter list. (Also to exit to the list without parameter modification).
•Press SET + DOWN to exit setup or wait for 1 minute.

Resetting the keyboard code
You can setup to 0 the keyboard code switching the unit off and on while pressing the SET key.

Buzzer disconnection
Pressing SET with DOWN turn off the buzzer alarm. The message of alarm continue appearing in the display.

Reprogramming factory values (H0)
•Access to parameter H0 as explained in parameter setup.
•Value 0 will be displayed.
•Press SET for 8 seconds. Pro will be displayed if they have been setup correctly.
•Press SET + DOWN to exit setup or wait for 1 minute.

	Description	Factory value
SP1	Set Point 1	10.0
SP2	Set Point 2	10.0
r0	Dependency SP1 - SP2	ind
r1	Differential for SP1	1.0
r2	Differential for SP2	1.0
r3	Band differential	1.0
r4	Lower value for SP1	-99.9
r5	Lower value for SP2	-99.9
r6	Higher value for SP1	99.9
r7	Higher value for SP2	99.9
r8	Regulation or operating mode	On1
A0	Alarm differential	0.1
A1	Maximun alarm probe 1	99.9
A2	Maximun alarm probe 2	99.9
A3	Minimiun alarm probe 1	99.9
A4	Minimiun alarm probe 2	99.9
A5	Alarm verification time	18.0
A6	Alarm probe 1 selection	AHL
A7	Alarm probe 2 selection	AHL
c0	Minimum relay stop time	0
c1	Operation relay 1	dir
c2	Operation relay 2	dir
c3	Default operation relay 1	Opn
c4	Default operation relay 2	Opn
P0	Temperature scale selection	ºC
P1	Calibration of probe 1	0.0
P2	Calibration of probe 2	0.0
P3	Decimal point	yes
P4	Probe to be displayed	sd1
P5	Number of probes	2
H0	Reprogramming	0
H1	Keyboard protection	no
H2	Operation led OUT1	dir
H3	Operation led OUT2	dir
H4	Address for serial communication	0
H5	Access code to parameters	0
H6	Probe type	Ntc