

CEO-24 Series

Owner's Manual - Installation and Operating Instructions



Meitav-tec Ltd (Contel group)

Tel: +972-3-9626462 Fax: +972-3-9626620

www.meitavtec.com - support@meitavtec.com



Please read this manual carefully before installation and use.

Index

Options	1
Accessories	2
Installation Instructions	3
Wiring Connections	4
Hardware Jumpers Explanation.....	5
Operating Manual.....	6
Programming	7
Fan/Auto Fan function	8
Override set temperature	9
Unoccupied Mode (Set Back Mode)	10
Reset Button and Alarm Condition (red LED light)	11
Technician settings	12
Connection of External Sensor	13
To Replace Battery	14
Telephone settings	15
Menu of commands from a telephone to the thermostat	16
Troubleshooting for Technician.....	17

1. Options

- Programmable or non-programmable: to select, press one button and the program will remain in memory (No need to reset it again).
- External Temperature Sensor - (return air or wall mounted).
- High and Low Temperature Alarm (Dry contact)- alarm is indicated by RED led.
- Scale in Fahrenheit or Celsius- must be specified at time of order.
- Individual cooling and heating set points.
- Fault indication 1 (24Vac)
- Fault indication 2 (normally open, dry contact)
- Average Temperature sensing. Please look for details in our web site "Sensors & Accessories".

2. Accessories

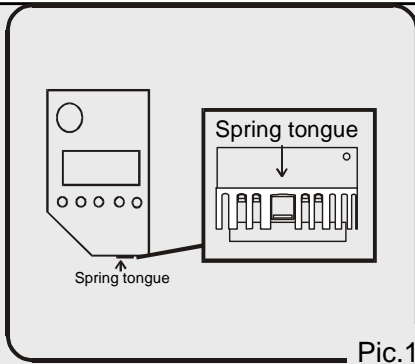
- Back Plate - 6"L x 4"W x 0.37"H - Part No. WP2.
- Wide Back Plate - 6"L x 6"W x 0.37"H – Part No. WP3.
- Temperature Sensor with 30 inches lead - Part No. TS01.
- Temperature Sensor in decorative box - Part No. RS01.
- Two temperature sensors in a decorative box (for averaging) - Part No. RS02
- Duct temperature sensor - Part No. DT02.

 **For details on where to purchase accessories, please contact Meitav-tec for your nearest location or visit web site as www.meitavtec.com**

3. Installation Instructions

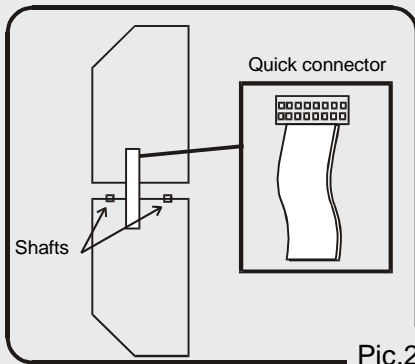


It is recommended to mount the thermostat or return air sensors between 5 & 6 feet (1.5 & 1.8 meters) from the floor where possible.



Separate the base from the cover by pressing the tongue (pic.1).

Gently disconnect the cover from the base with quick connector (pic.2)



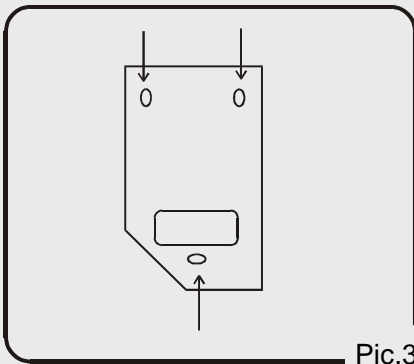
Line the back panel up against the wall or flat surface on which it is to be mounted and drill the appropriate fixing holes (pic.3).

Insert screws so they extend approx. 3/16" (3 mm) from wall or surface.

Align the back panel against these screws, pushing it forward, allowing it to slide downwards to lock into position.

Make electrical connections to terminals on the back panel as shown on enclosed electrical wiring diagram

Reconnect the quick connector.



Pic.3

Attach the cover to the base, first the two shafts and then the spring.



Do not install battery before power is applied!

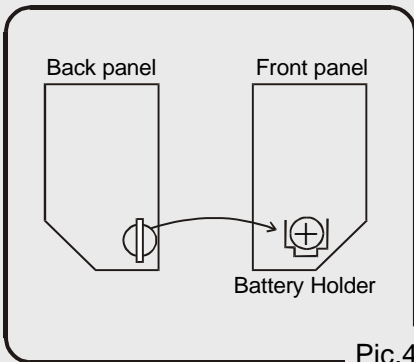
Connect 24Vac to the thermostat; verify that LCD display is ON.

Remove battery from back panel by sliding it to the left and out from its white retaining clip and mount it in black holder on front panel; insert it from the top, gently pressing downwards until it snaps into place and is held under the top clip of the holder.

The '+' engraved on battery should be visible (pic. 4).



Be careful when inserting the battery – the top clip of the holder is very fragile.



Pic.4

Reassemble front and back cover.

Connect at top first then at bottom.

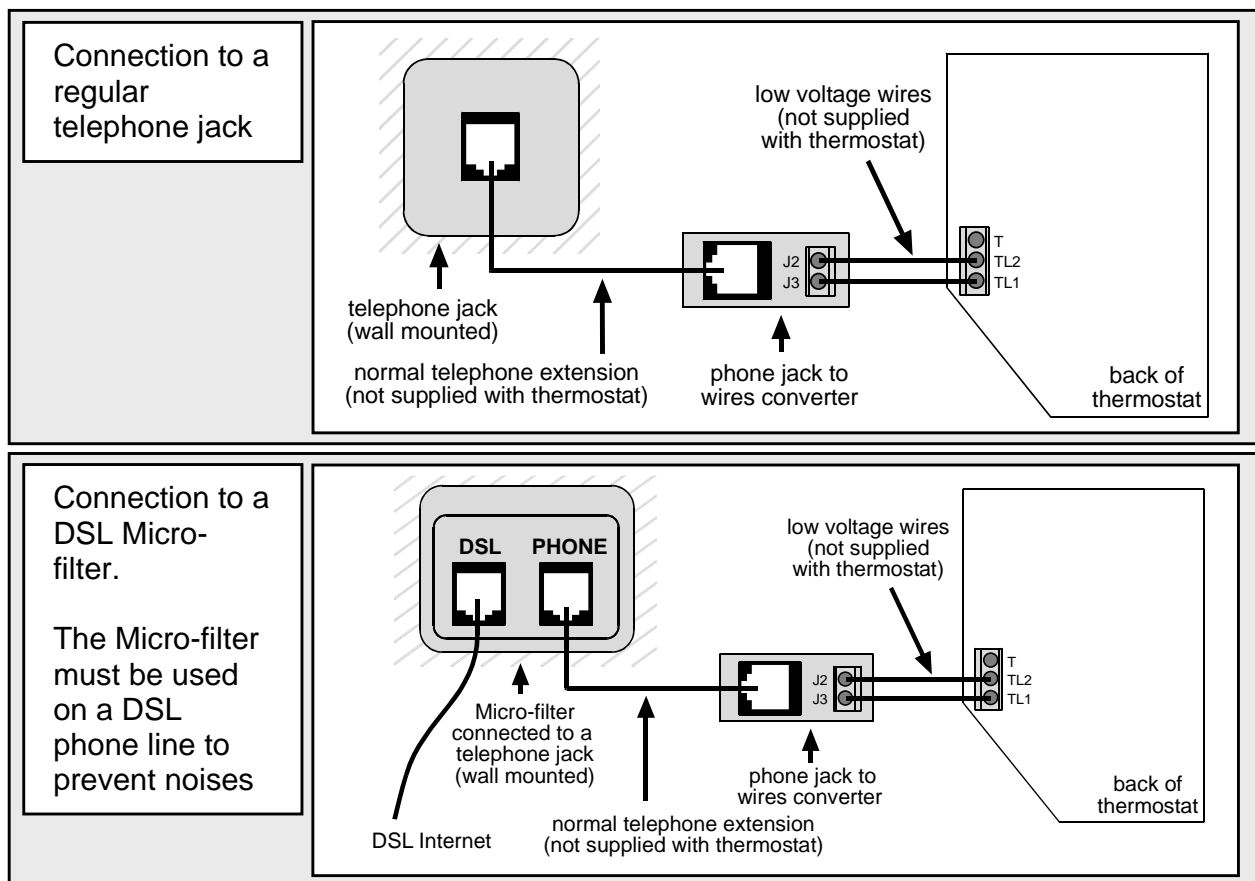
To change jumpers: Disconnect electricity, remove battery and wait 60 seconds

4. Wiring Connections

4.1 Phone line - wiring diagram.

The **CEO-24** thermostat has a connection for telephone line, exactly like an answering machine or a modem, and is connected in the same way. In the thermostat there are 2 terminals for the connection of the telephone line (TL2 and TL1).

The connection for the thermostat has no polarity – each of the wires can be connected to any of the terminals.





Default from factory is HC11 (One cool, One heat).

Rc-Rh - If only one 24Vac supply is being used, Rc-Rh must be connected together.



Important! The thermostat will not work unless $R=(R_c+R_h)$ and C are both connected.

4.2 Connections for all applications

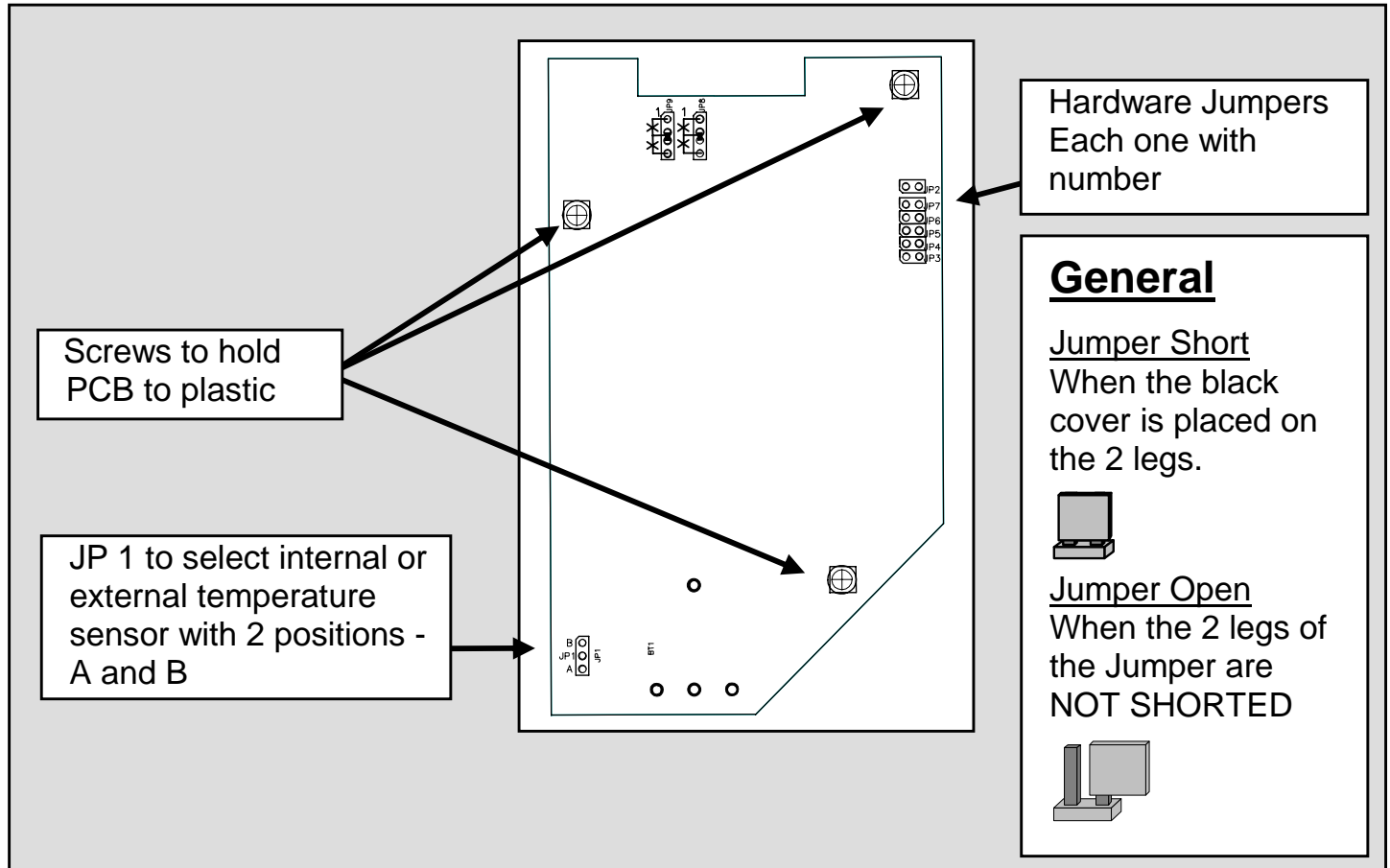
Switch	Function ETN	HC11	HC22
Rc	24Vac RED	X	X
Rh	24Vac RED (jumpered to Rc)	X	X
C	24Vac Common from transformer	X	X
Y1	Cooling 1 st Stage	X	X
Y2	Cooling 2 nd Stage	N/A	X
W1 (B/O)	Heating 1 st Stage	X	X
W2	Heating 2 nd Stage	N/A	X
G1	Fan	X	N/A
AL,AL	Alarm output	X	X
AUX	Fault input from system	X	X
Q1	Optional alarm output	X	X
⊥ , Q2	Return Air Sensor - SEE # 13	X	X
TL1, TL2	Telephone input	X	X



IMPORTANT! Before making any changes to the jumpers disconnect electricity in the main board.

5. Hardware jumpers

5.1 The Jumpers are located as shown in the picture below:



The options for the jumpers are:

- External sensor.
- Relay for compressor.
- Clock mode: AM/PM or 24 hours.
- Fan mode: electric or oil/gas.

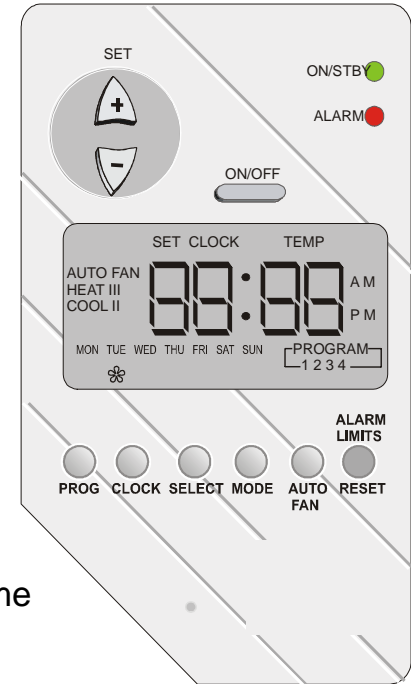
Table 5.1 – Jumper selection

Jumper	Function	Position	Default
JP1	Internal Sensor Control	Pos. A	X
	External sensor control	Pos. B	
JP2	NOT IN USE		
JP3	4 minutes delay for compressor	Open	X
	No delay	Short	
JP4	Clock mode – USA type- 24 hours	Open	
	Clock mode – Europe type- 12 hours (AM/PM)	Short	X
JP5	NOT IN USE		
JP6	With Q1 option	Open	X
	Without Q1 option	Short	
JP7	Electric mode – - Auto Fan - the fan will work only if there demand for Cooling or Heating. - Fan On - the fan will work continuously.	Open	X
	Oil/Gas mode – Option used when the heating system is different than the A/C unit (i.e. furnace). - Auto Fan – the fan will NEVER work. - Fan On – the fan will work continuously.	Short	

6. Operating Manual

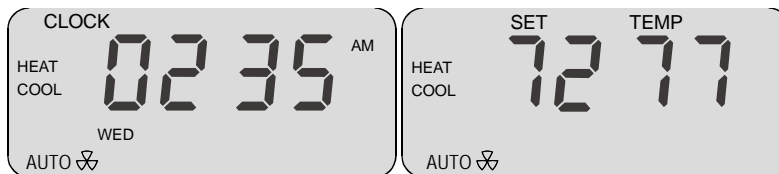
6.1 Turn the thermostat On or Off

- Press the **On/Off** button to activate the thermostat – The Green LED will turn on.
- Press and hold the **On/Off** button (5 seconds) to turn the thermostat off – The Green LED will turn off.



6.2 Normal display mode

- In normal mode, the display will alternate between real time clock and set/room temperature (pic.1).



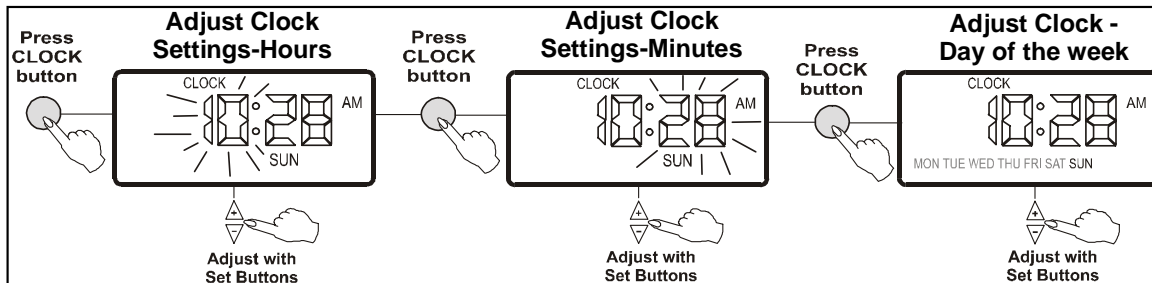
Pic.1



When the thermostat is in fan mode, the display will alternate between real time clock and room temperature only (no set temperature).

6.3 Real time clock and day

- Press the **Clock** button – the hours will flash.
- Adjust the hours using the “+” and “-” buttons (set buttons).
- Press the **Clock** button again – the minutes will flash.
- Adjust the minutes using the “+” and “-” buttons.
- Press the **Clock** button again – the day of the week will flash.
- Set the day of the week using the “+” and “-” buttons.
- Press the **Clock** button again to return to normal display mode.



6.4 Selecting modes

Press the **Mode** button to switch between the four modes:

- Cool – “COOL” appears on display.
- Heat – “HEAT” appears on display.
- Cool/heat (auto-change over) – both “COOL” and “HEAT” **appear** on display.
- Fan only – both “COOL” and “HEAT” **disappear** from display.

6.5 Set temperature

Set temperature in Cool and Heat modes.

- Press the “+” or “-” buttons - set temperature will flash.
- Adjust the set temperature using the “+” or “-” buttons.
- Wait until display returns to normal mode.

Set temperature in auto change-over mode.

- Press the “+” or “-” buttons – “COOL” and set temperature for cooling will flash.
- Adjust the set temperature for cooling using the “+” or “-” buttons.
- Wait 3 seconds – “HEAT” and set temperature for heating will flash.
- Adjust the set temperature for heating using the “+” or “-” buttons.
- Wait until display returns to normal mode.



IMPORTANT!

While in auto change-over mode, the thermostat has 2 different set points – one for cool and one for heat. The set temperature for heating must be at least 1 degree LESS than the set temperature for cooling. The thermostat will automatically adjust the set temperature for heating to be less than the set temperature for cooling.

6.6 Selecting fan/auto fan

Press the ***Auto Fan*** button to switch between:

- FAN ON – The fan will work continuously.
- Auto Fan – The fan will work according to cooling/heating demand (“AUTO FAN” appears on display)



In Oil/Gas systems, in heat mode, switching to Auto Fan mode will stop the fan (the Fan will NEVER turn on).

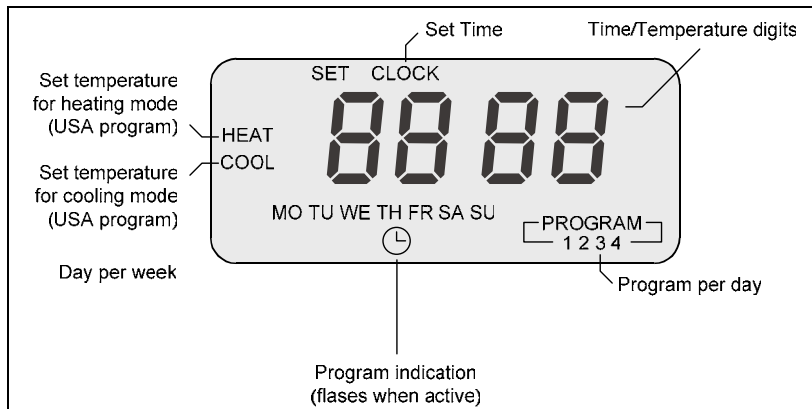
7. Programming

The thermostat is 5-1-1 weekly programmable, meaning;

Weekdays - Monday through Friday / Saturday / Sunday have individual programs.

There are four different program events per day.

Program Display

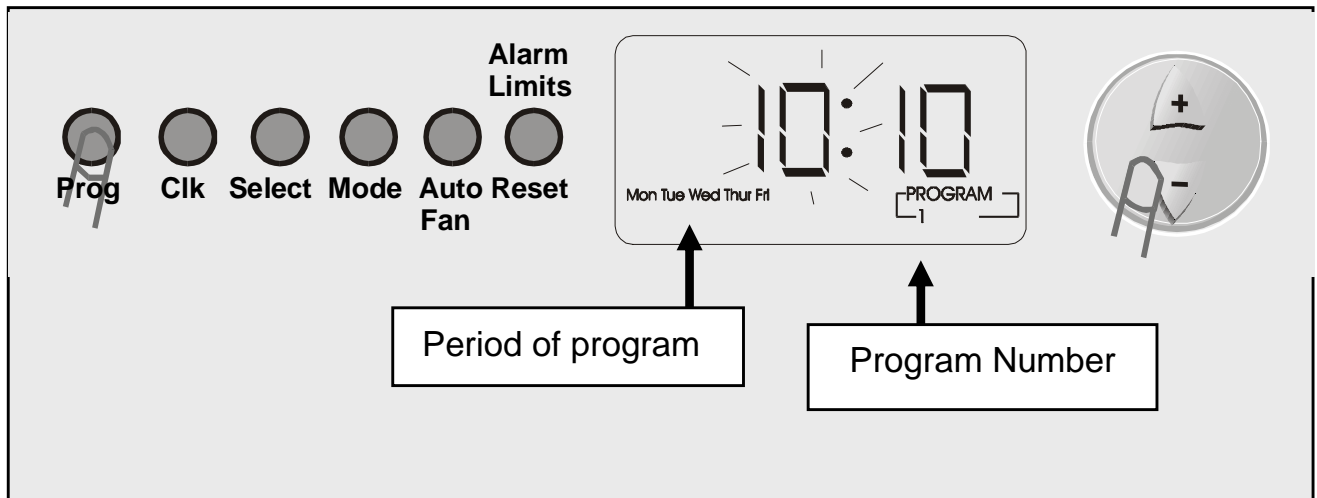


7.1. Setting the Program

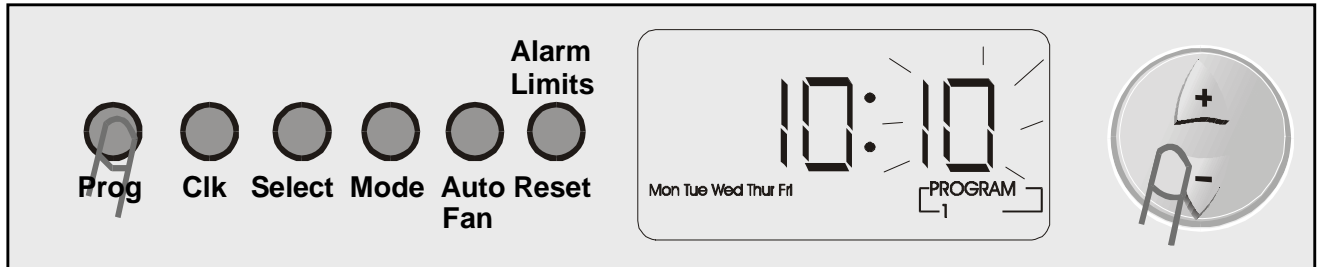
Pressing the **Prog** button does all Programming selections

- Press the **Prog** Button - the hour and minute will flash.

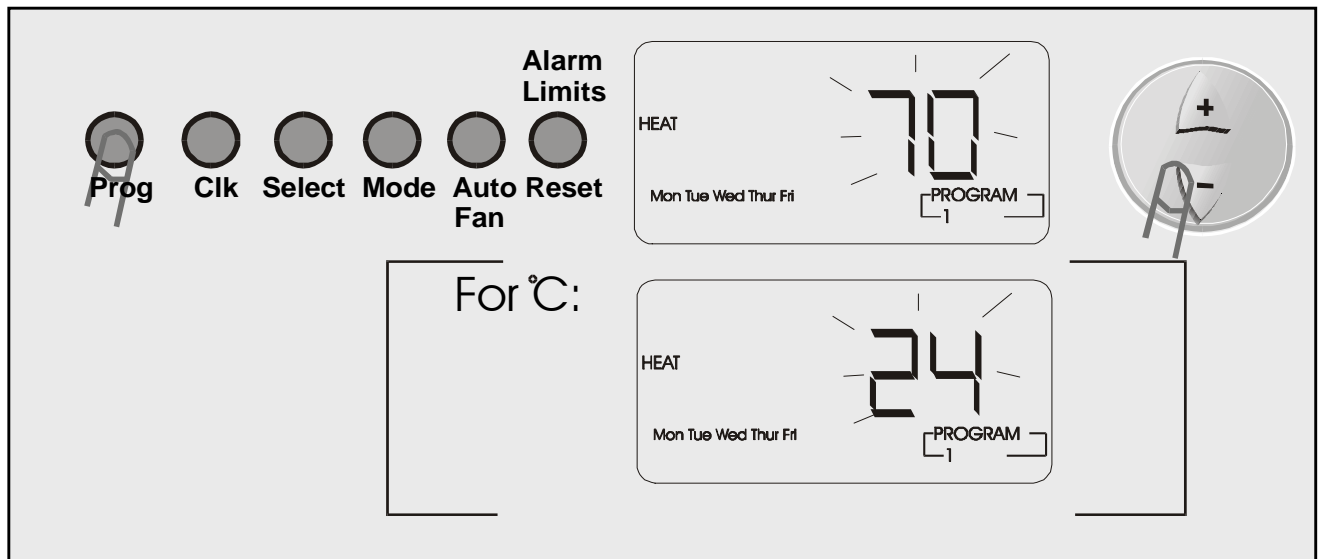
This shows that you are entering the **Prog** mode.



- Press the **Prog** button again - the minutes on display will flash.
- Adjust the minute using the '+' and '-' buttons.



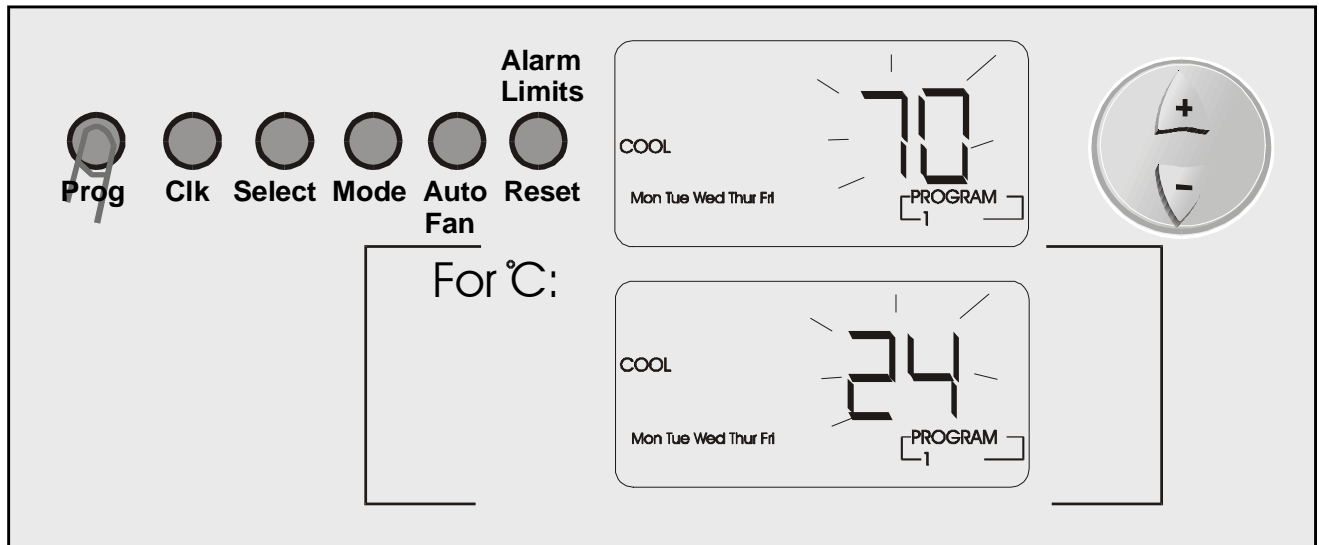
- Press the **Prog** button again - heat and temperature on display will flash.
- Adjust the set temperature for heating using the '+' and '-' buttons.



- Press the **Prog** button again - cool and temperature will flash.
- Adjust the set temperature for cooling using the '+' and '-' buttons.



The controller keeps a safe differential of at least 1 degree between Heat set and Cool set (Heat is always less than Cool).



- To set the time and temperature for the other programs repeat the steps above.
- Press the **Prog** button again to return to normal display.

7.2. Weekly Program Mode and Manual Mode.

You can change between weekly program and Manual program, by pressing and holding (3 seconds) the **Prog** button in normal display.

When the weekly program is activated, the clock symbol and the word “Program”, (in brackets) will be displayed.

The clock symbol and Program, in brackets, will not be displayed in Manual Mode.

7.3. Review the Program

You can review the program or change part by entering into the program mode and step quickly through by pressing **Clock** button.

8. Fan/Auto fan Function

- Press the **Auto Fan** button to select AUTO FAN.
- Press again to cancel.
- In AUTO FAN the fan will only run when calling for heat or cool.

9. Override Set Temperature

- At anytime you can change the temperature by pressing the ‘+’ and ‘-’ buttons.
- The new temperature will be retained until the next program start.
- If the thermostat was in program mode, then the number of the program will disappear until the next program.

10. Unoccupied Mode (Set Back Mode)

Unoccupied mode overrides the set point temperature and uses set economy temperatures for heat and cool when you leave home or office for any period of time - vacation, unexpected event - and the system will work in SET BACK mode.

(To set temperature for unoccupied mode See # 12.6)

10.1 Set the thermostat to work in Unoccupied Mode.

- Switch on the thermostat
- Press and hold the **Auto Fan** button (3 sec.) until the buzzer "beeps" – 'EC' (Economy) will appear on display.
- When returning home (office) - Press and hold (3 sec.) the **Auto Fan** button until the buzzer "beeps" and the set temperature returns to normal.



In Unoccupied Mode, none of the buttons function except Reset.



The green LED will light to show that the thermostat is working but the system may be turned off because there is no demand for Heating or Cooling.



When the thermostat is 'OFF', the 'EC' does not work.

11. Reset Button and Alarm Condition (red LED light)

When the room temperatures goes higher or lower than the alarm limits set by the technician, the alarm led (red) will flash and the alarm output will be activated.

Press and hold the **Reset** button to clear the alarm.

The alarm will automatically stop when the temperature returns to the allowed values.



The alarm works whether the thermostat is On or Off.

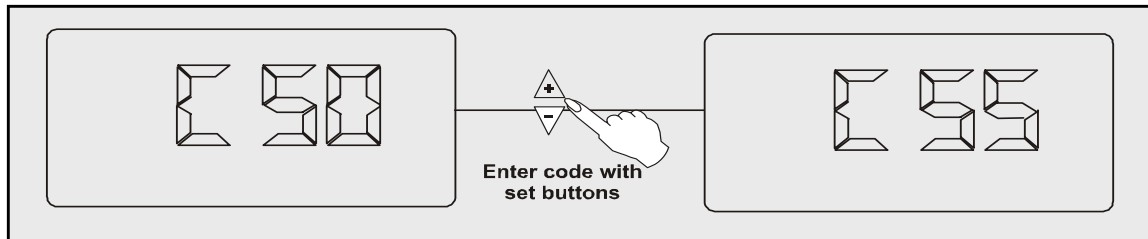
12. Technician settings

These settings allow the user to change the following:

- High temperature alarm.
- Low temperature alarm.
- Connecting external sensor.
- Connecting extra receiver.

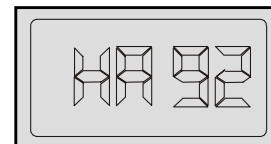
12.1 Enter code for technician

- Press the **Alarm Limit** button - 'C50' will appear on display.
- The code is 55.
- Enter the code using the '+' and '-' buttons.



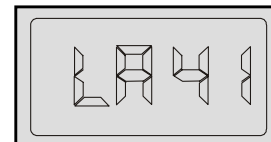
12.4 Set High temperature alarm - HA:

- Press the **Alarm Limit** button again - the LCD will show:
- Adjust the temperature using the '+' and '-' buttons.
(From 36°F-93°F or 8°C-46°C) so when the ambient temperature reaches the High Temperature limit, the alarm activates.
- Press the **Alarm Limit** button again.



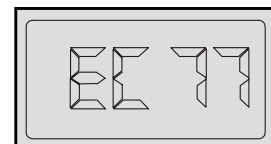
12.5 Set Low temperature alarm - LA:

- Press the **Alarm Limit** again for low temperature:
- Adjust the temperature you want (35°F-91°F or 2°C-39°C).
The unit will not allow you to set the Low Temperature limit higher than the High Temperature limit.
- Press the **Alarm Limit** button again.



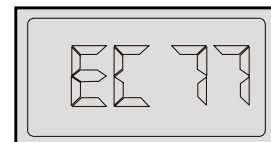
12.6 Set Economy mode - cooling:

- Press again to set Economy Mode for cooling.
(Your setting for unoccupied mode) 75°F-90°F (24°C-31°C)



12.7 Set Economy mode - Heating:

- Press again and set Economy Mode for heating
(Your setting for unoccupied mode) 36°F-60°F (5°C-15°C)



13. Connection of External Sensor



Important! The external sensor must be Meitav-tec type.

N.TC. Sensor: Temperature ~ Resistance Characteristics

Temp °C	7.2	10.0	12.8	15.6	18.3	21.1	23.9	26.7	29.4	32.2
Temp °F	45	50	55	60	65	70	75	80	85	90
Res. k	115.8	100.9	88.1	77.1	67.7	59.6	52.5	46.4	41.2	36.6

- Disconnect power to the thermostat 24Vac.
- Move Jumper 1 to position B. see # 5.1
- Connect the temperature sensor to \perp , Q2 terminals.
- Reconnect power 24Vac.

14. Replace Battery

- Leave controller under 24Vac open the front cover (see installation instructions)
- Replace battery (3V lithium battery –200mAh).

15. Telephone settings


The CEO-24 will call the user when the one of the following occurs:

- The ambient temperature goes above the High Temperature limit
- The ambient temperature goes below the Low Temperature limit
- Alarm 1 is activated (24Vac).
- Alarm 2 (*normally open, dry contact fault input) is activated.

*The connection to the dry contact can be any system determined by the user, for example; home alarm system, occupancy sensor, equipment fault.

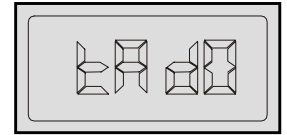
SELECTING A PIN (Personal Identification Number)

- Press the **Select** button - A four (4) digit password will appear: 1 2 3 4. (Default from factory)
- Select a code number, which is easy to remember (four digits).
- Set the first number using the '+' and '-' buttons.
- Press the **Select** button again to change the second number.
- Set the second number using the '+' and '-' buttons.
- Change the third and fourth number in the same way.

 The user **MUST** enter this PIN number when called by the CEO-24. Otherwise, he/she will not be able to access the thermostat settings and the thermostat will hang up.

RING SETTINGS

- Press the **Select** button again – ‘TAD0’ appears on LCD.
- Choose between ‘TAD 0’ and ‘TAD 1’ using the ‘+’ and ‘-’ buttons.



‘TAD 0’ = The unit will work in normal mode.

‘TAD 1’ = This feature allows the unit to be connected to the same phone line as another device, such as: answering machine, fax, etc.

Selecting “TAD1” does not affect the calling-out feature of the CEO-24. However, when making incoming call TO the thermostat, the following must be noted:

If “TAD1” is selected:

You must call the thermostat twice.

First, you must know the set number rings of the other device connected.

The number of rings of the thermostat must be more than the number rings of the other device.

On the first call, the user must hang up before the other device answers.

On the second call, the thermostat will know to answer if it is within 30 seconds of the first call.

E.g. Number rings for answering machine is four.

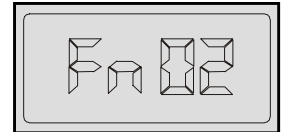
Number rings for the CEO-24 is five.

Follow these steps:

1. Set the ring setting to six rings (see below).
2. Call the CEO-24.
3. Let the telephone ring three times and hang up.
4. Wait for 4-5 seconds, and call again
5. The CEO-24 will answer after the second ring on the second call, before any other device.

To set the number of rings for the CEO-24:

- Press the **Select** button again – ‘Fn 02’ will be displayed.



This is the set number of rings after which the CEO-24 should answer. For the example above, FN should be set to 05.

If no device other than the thermostat is connected to the phone line, then the number of set rings for the CEO-24 should be at least 6.

This will ensure that the user has time to answer the telephone before the call is answered by the thermostat.

Programming Telephone Numbers

The CEO-24 can be programmed with up to 3 different telephone numbers. These numbers will be called by the thermostat twice each, in turn, in case there is no answer, a busy signal is obtained or the PIN number is not entered.

The CEO-24 will keep redialing every 2 minutes until someone answers and the correct PIN is entered.

To program the telephone numbers into the thermostat please follow the steps below.

Press the **Select** button again – 'n1' will be displayed.

- This is the first telephone number that the thermostat will call.
- Press the '+' button – '----' will be displayed.
- Press the '+' button again - enter the first digit of the telephone number.
- Press the **Select** button again – enter the second digit of the telephone number.

Note: You may enter 16 digits.

To enter the second telephone number please follows these steps:

- Press the **Select** button again – 'n2' will displayed.
- Follow the steps above to enter the second end third telephone numbers.

When one of the alarms is activated, the thermostat will call the telephone numbers that have been programmed into memory.

Once the user answers and the correct PIN is entered;

The thermostat will explain which alarm has been activated and will wait to receive commands from the user.

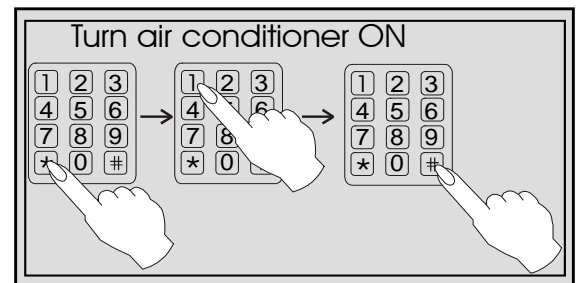
(See the list of the orders).

16. Menu of commands from a telephone to the thermostat

- Enter your password: 1•2•3•4•# (factory default - or any other code you have chosen 4 numbers only)

You will hear the status of the system:

- a. The temp in the room is...
- b. The air - conditioner is ON (or OFF)
- c. The Air-conditioner is in mode (cool, heat, fan, auto change over)...
- d. Set temp is...



- Enter your desired command as follows:

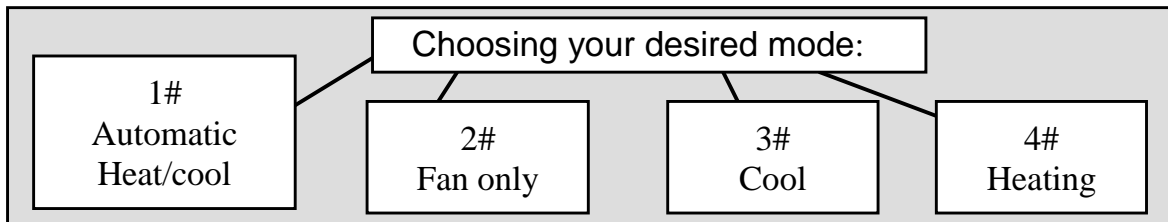
*1#: Turn the air conditioner ON

*2#: Turn the air conditioner OFF

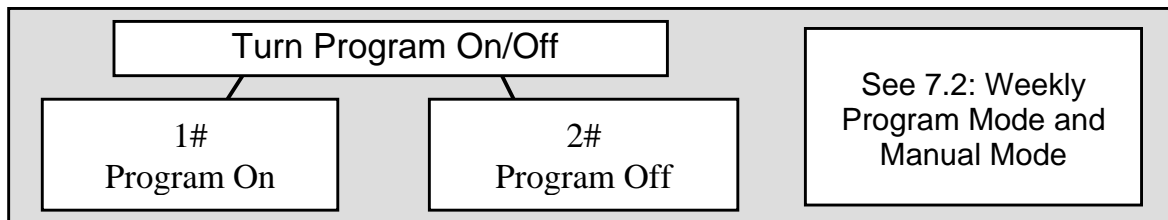
*3#: Adjust the desired temperature for cooling: Press the required temp - e.g. 72#

*4#: Adjust the desired temperature for heating: Press the required temp - e.g. 71#

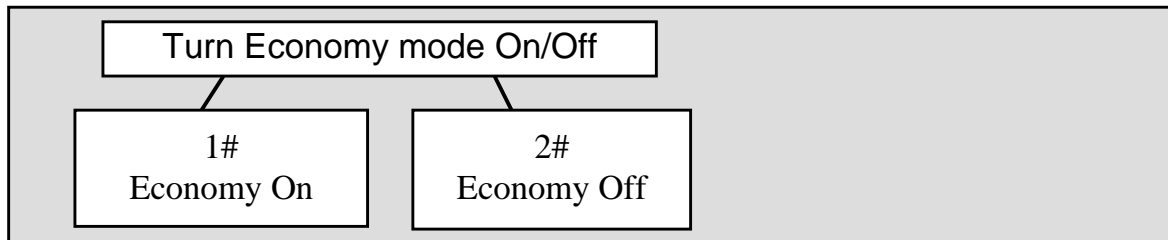
*5#:



*6#:



*7#:



0#: menu of commands.

 In each step exit or finish press *9#

30  At the end of each session you should press *9# to save the new commands.

17. Troubleshooting for Technician

Problem	Solution
The display does not light	The unit is not getting 24Vac - Check the wiring connections, Rh (Phase for heat), Rc(Phase for cool), C(common).
	If you are using one phase for cool and heat, check that the short between Rc, Rh and common is tight.
Temperature in the room (display) dropped to 32°F	The temperature sensor is sensing an OPEN CIRCUIT. Replace the jumper JMP1. If the temperature returns to normal - there is a problem with the external sensor.
Temperature in the room (display) rises to 87°F	The temperature sensor is sensing a SHORT CIRCUIT.
Cool stages do not switch on	Check the Rc connection.
Heat stages do not switch on	Check the Rh connection.
The unit does not respond to buttons and "EC" appears in the display	The unit is in Unoccupied Mode. To return to normal mode, see #10.
In heat mode, unit sends cool air	The Auto Fan is not ON.



Meitav-tec Ltd. can offer a WIDE range of products for the HVAC industry,

Such as:

- Flush Mount Thermostats - Programmable and Non-Programmable.
- HVAC Analyzer that can measure BTU's, for technicians.
- Tamper proof thermostats that can be operated ONLY from the remote control, for public places.

To obtain more information or technical support:

Tel : +972 (3) 962-6462 | e-mail: support@meitavtec.com | Web: www.meitavtec.com

Your suggestions or comments regarding these units would be appreciated.

At our web site, you can find technical details regarding the units, as well as, operating manuals, electrical drawings, Etc.

The company reserves the right to change the specifications any time without prior notice.