Air-Con Monitor Advanced
Manual and Setup Guide v3

Scope

This document explains how to setup and configure Air-con monitor Advanced unit using the button. The document also gives an overview of the normal operation. This unit also has the USB setup via the PC software.

First Power Up

When the unit is powered up for the first time the RED LED remains illuminated for 15 seconds and then stops for 3 seconds. During this time the PIR is being allowed to settle to avoid any false triggers.

This means the unit cannot be interacted with for 20 seconds.

LED's

> In normal operation the LED's will indicate the following:-
>> RED Flash
>>> *Movement was detected from the PIR sensor*
>> GREEN Flash
>>> *The IR commands are being sent*
> In setup mode the LED's will indicate
>> RED Flash
>>> *The number of flashes per second will indicate the current setup mode the unit is in*
>> GREEN Flash
>>> *The GREEN LED will indicate either the parameter selected or unit status depending on current mode*

Normal Operation

In Normal operation the unit will wake up once a minute or if movement is detected. The unit will wake to movement once in a 1 minute period. On every timed wake up the unit will record the current daylight level and also check to see if any sensors need timers increasing.

On each timed wakeup a counter is incremented for the movement sensor. If movement is detected then the counter is reset to zero. If the unit wakes up a specified number of times (set by the PIR delay in minutes) without detecting movement then the IR OFF Command will be sent on the final wake up.

IR Commands

Air-Con Monitor Advanced has 2 IR commands:-

Air-con OFF command. - This command will switch the Air control unit off.

Air con TEMP UP command - This command will increment the set temperature up 1 degree.

The following conditions must be met for the unit to send out the recorded IR commands. Air-Con Monitor Advanced has 2 IR commands.

<u>For OFF Command</u>
- The Air-con OFF Command must be stored.
- Either the PIR or Door delay time (if active) has been exceeded.
- The light sensor is either disabled or the current light reading indicates its light enough to send the IR command. (The command will not be sent when its dark)
- The unit is within an active time window.

<u>For TEMP UP command</u>
- The Air-con TEMP UP command must be stored.
- Temperature control is enabled.
- Recorded temperature is less than the specified minimum temperature set in the unit.
- The Air-con OFF command has **not** been sent.

External Inputs

Door Sensor
A counter also exists for a door sensor. If the door is closed the counter is reset to zero on every wakeup. The counter is incremented every time the unit wakes with the door open. If the counter exceeds the set Door switch time delay IR channel 1 (OFF Command) is sent. The counter is not incremented if the door switch is disabled.
The door sensor external unit (that can be purchased separately) is connected via the back access hole and attached to the green cable connector inside the unit.

Temperature Control
The room temperature is recorded every 15 minutes. If the recorded temperature is less than the set temperature set in the unit, then the Air-con TEMP UP command is sent. If both the OFF command and the Air-con temp command are due to be sent at the same time then only the OFF command will be sent. The GREEN LED will flash twice when this command is being sent.

USB
The unit will only communicate with custom ECO configuration software. The unit uses the windows embedded HID device driver allowing the unit to be used without the requirement of 3rd party device drivers. When the USB cable is connected, the unit will connect to the PC either when it wakes up on the next minute or if the button is pressed.
The following unit settings can be changed using the USB interface
- Active time window.
- Motion sensor delay time before IR command is sent.
- Door sensor delay time before IR command is sent.
- Light Sensor Threshold.
- Minimum temperature setting.
- The light, temperature and door sensors can be enabled or disabled.

The USB application software is available to download from our website to ensure you have the latest version by going to the following web address:- www.eco-energysavers.co.uk/downloads/

Active Time Window
The unit can be set to only operate at a specified time of the day. The start and stop times can be set using the ECO configuration software. If the start time set is greater than the end time the unit will assume that the stop time will be tomorrow. If the current time is outside an active window the unit will not wake from sleep until the start time of the next active window.

Opening the unit for viewing LED's, battery and USB port
To open the unit unscrew the bottom and lift up to release for access to the battery compartment, setup LEDS, USB connector and door sensor connector. Please Make sure when inserting batteries the **-** (negative) side of the batteries make contact with the springs.
When connecting the USB cable be careful as it needs to go in the right way round. When manually programming with the button you will be able to easily view the LED's with the top removed. When closing the top locate the top notches then lower in place and screw back. Be careful not to bend the raised IR transmitter LED.

Button
The button has three types of presses
Very long press – The button is pressed and held down for 15 seconds
This button press will return all configurations to factory settings and all IR commands stored will be deleted.
Long press – The button is pressed and held down for 2 seconds.
Short press – The button is pressed and held for more than ½ second.
Pressing the button will always wake the unit from sleep.

Battery Low
The battery is checked on every wakeup (once a minute). If the battery found to be low both RED and GREEN LED's will flash 5 times every minute.

Setup Mode

Reset to Factory defaults
From set up mode if the button is held for 15 seconds all configurations will be set back to factory settings and both 'OFF' and 'TEMP UP' IR commands stored will be deleted.
After 15 seconds the RED and GREEN LED will start flashing 3 times simultaneously. This will indicate to the user the unit has now been set to factory defaults. The unit will return to normal operating mode once complete.

A unit set to factory defaults has the following settings:-
> Active Time Window: Start - 00:00   End - 23:59.
> Movement Sensor: Enabled.
>> No Movement Detect Delay: 30 minutes.
> Temperature Control: Disabled.
> Minimum Set Temperature: 30C.
> Light Sensor: Enabled.
>> Light Threshold scale set to 5 / 10 (mid-scale).
Door Open Delay: 2 Minutes.

Changing Setup Modes
The unit has 6 setup modes. Each mode controls a different configuration parameter.
To enter setup mode press the button and hold for 2 seconds. The unit will enter setup mode 1 indicated by a single flash every 3 seconds on the RED led. Releasing the button and then pressing the button again for 2 seconds will put the unit into setup mode 2. This can be repeated to access all 6 setup modes.
During any mode pressing the button for 10 seconds will return the unit to normal operation.
The RED LED will indicate the current mode the unit is in by the number of flashes shown in a 3 second period.
A short button press will change the current setting, indicated by the GREEN LED. The short button press operation will vary depending on which mode is currently active.
The following lists the Setup mode function and instructions on how to set each parameter.

Setup Mode 1 (manually or via USB)
Indicated on RED Led as 1 flash every 3 seconds.
This mode controls the PIR delay time. The table below lists the time delays available which can be selected using the short button press. The GREEN LED will indicate the current time delay selected. To set the time delay, select the desired setting using the short button press. Then press and hold the button either for 2 seconds to move to the next mode or 10 seconds to return to normal operation.

Short Button Press	Parameter Set	Flashes per second
1st Press	OFF	1 Flash
2nd Press	15 minutes	2 Flashes
3rd Press	30 minutes	3 Flashes
4th Press	60 minutes	4 Flashes
5th Press will cycle back to OFF		

Setup Mode 2 (manually or via USB)
Indicated on RED Led as 2 flashes every 3 seconds.
This mode will enable or disable the light sensor. A short button press will enable or disable the light sensor. This will be indicated by the GREEN LED.
GREEN LED on – Light sensor enabled.
GREEN LED off – Light sensor disabled.
To leave the setup mode with the last command stored. Press the button for 2 seconds to move to the next setup mode or 10 seconds to return to normal operation. The manually set option will set the sensitivity to mid range, if you want to fine adjust the sensitivity of the light sensor up or down you can do this via the USB.

Setup Mode 3

This mode is used to set the OFF command. To set press the button to light the GREEN LED. This indicates the unit is waiting for an IR command.

Make sure your air-con remote is set to on well away from the Air-Con Monitor so it does NOT pick up the on signal before then pointing the remote directly at the monitor and pressing OFF to send the OFF IR command from the Air-con remote control. When the command is received and stored the GREEN LED will switch off and the unit will return to this mode setup. The operation can be re-performed with a further short button press.

If the button is pressed and no IR signal is received after 10 seconds the unit will timeout. If this timeout occurs this will clear any signal currently stored for the OFF command.

To leave the setup mode with the last command stored. Press the button for 2 seconds to move to the next setup mode or 10 seconds to return to normal operation.

Setup Mode 4

Indicated on RED Led as 4 flashes every 3 seconds.

This mode will transmit the currently stored OFF command. The command is transmitted on each short button press. The command is sent once per button press. The GREEN LED will flash when the command is transmitted.

To leave the setup mode with the last command stored. Press the button for 2 seconds to move to the next setup mode or 10 seconds to return to normal operation.

Setup Mode 5

Indicated on RED Led as 5 flashes per second.

This mode is used to set the Air-con TEMP UP command. To set press the button to light the GREEN LED. This indicates the unit is waiting for an IR command.

Make sure your remote is active and point it at the monitor and send the Air-con TEMP UP command from the Air-con remote control. When the command is received and stored the GREEN LED will switch off and the unit will return to this mode setup. The operation can be re-performed with a further short button press.

If the button is pressed and no IR signal is received after 10 seconds the unit will timeout. If this timeout occurs this will clear any signal currently stored for the TEMP UP command.

To leave the setup mode with the last command stored. Press the button for 2 seconds to move to the next setup mode or 10 seconds to return to normal operation.

You will need to set the desired minimum temperature via the USB.

Setup Mode 6

Indicated on RED Led as 6 flashes per second.

This mode will transmit the currently stored air-con TEMP UP command. The command is transmitted on each short button press. The command is sent once per button press. The GREEN LED will flash when the command is transmitted.

To leave the setup mode, press the button for 2 seconds return to normal operation.

Sighting the Monitor

The monitor needs to be able to send the IR signal to the unit in the same way as the remote control, so needs to be preferably in line of sight. You can test this by sending the off signal test from where you plan to site the unit.