

AMBIRAD

ENERGY EFFICIENT HEATING SYSTEMS

AMBITEC PLUS

ENERGY SAVING ELECTRONIC
CONTROL PANEL

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1 General description

The AmbiTec Plus has been designed to consolidate the function of all previous control panels into one unit. All relay outputs have volt free contacts and by installing various links within the control panel virtually all present, past and future heating units can be controlled by the AmbiTec Plus control panel. When replacing older control panels with the AmbiTec Plus it will be necessary to advise the Ambi-Rad Technical Department of the wiring diagram number of the heater in order to develop an interconnecting diagram.

The AmbiTec Plus may be used as a stand-alone panel to control an individual heater or several panels may be connected together for multiple heater control using a two-wire communications link.

Each AmbiTec Plus panel contains a digital display for monitoring system operation and a means of setting the various system parameters by way of panel mounted push buttons. LED indicators are used to show Frost Protection and Burner Lockout.

The AmbiTec Plus can be used to control ON/OFF, two stage and with a GM44 interface board, modulating burners can be controlled.

The vent output of the unit can be used to control ON/OFF damper motors or with positioners mounted on the damper motor any percentage of fresh air may be set.

Three levels of password protection are available on the panel for the security of settings.

2 Features/screen identification

Features

32 Character Alphanumeric display system operation.

Optional 'Optimum Start Facility' with automatic preheat adjustment.

LED's indicate frost protection and burner failure for automatic ignition burner systems.

Three level password protection against unauthorised changes.

Stand-alone or multiple system operation is possible using one AmbiTec Plus per heater and a two wire communication link.

In built lithium battery for memory retention is power failure occurs.

Clock includes calendar with automatic leap year correction. (Year 2000 complaint to BS DISC2000).

Optional automatic 1 hour clock set forward/back on user specified dates in the year.

Optional adjustable frost protection.

Optional holiday off periods.

Adjustable temperature differential between Heat and Vent.

Adjustable high-fire ignition time.

0 - 5VDC output for GM44 modulation valve interface board.

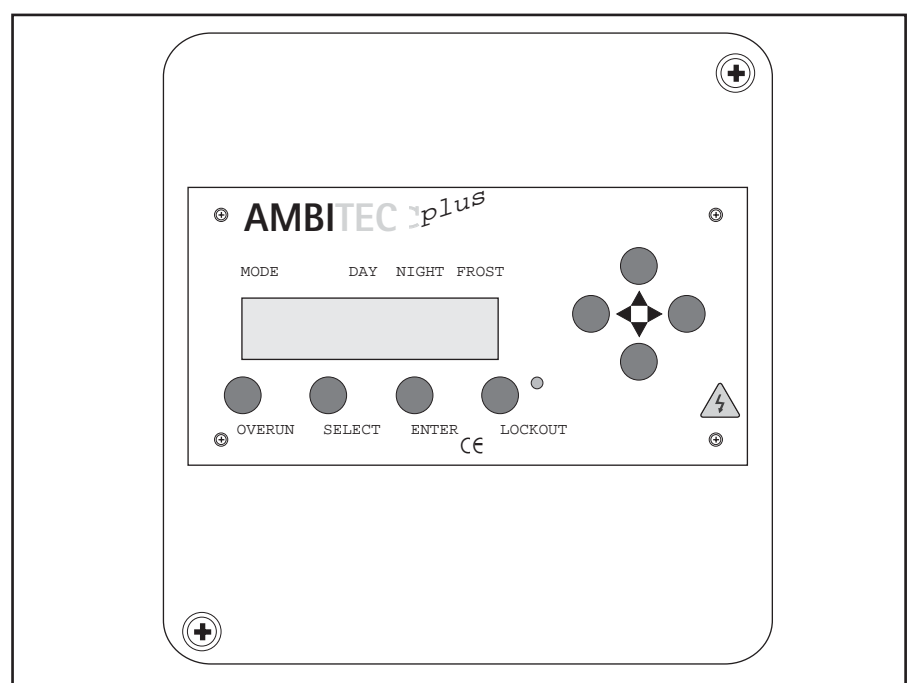
Selectable languages.

Screen identification

- 1 (Black) Button
Overrides an OFF or ON period adjustable from 0 - 30 minutes.

- 2 (Key) Button
Repeatedly scrolls through the various screens.
- 3 & 4 (Black) Buttons
Move across the current screen to select item for change.
- 5 & 6 (Black) Buttons
Changes settings selected by button 3 & 4.
- 7 Button
Stores the settings and reverts to the Standard Display.
- 8 (Red) Button
Resets burner lockout.
- 9 (Lamp)
Burner lockout lamp (Low intensity blink indicates that the unit is looking for a lockout condition. A high intensity blink indicates Burner Lockout)
- 10 (Lamp)
Frost protection indication (Green).
- 11 Screen
Shows status and displays for altering parameters.

Figure 1 AmbiTec Plus







3 General setting instructions

The AmbiTec Plus control panel is programmed with default settings as shown in the text. All default settings may be changed within the adjustment ranges of the windows.

The control panel is shipped with all password levels set to '0000' and all adjustments can be made. If three password levels have been set, pressing the Select button will prompt the password request. Without entering a password you will be able to the windows but no changes can be made.

Pressing the Select button moves the display through screens. Pressing the Enter button will save the program. It is not necessary to press the Enter button after each change is made, you make all necessary changes in any or all windows and then press the Enter button to save all changes. When the Enter button is pressed the window it will revert to the standard display. If further changes are required it will be necessary to press the Select button as many times as necessary to access any further windows that require changing.

The   are used to move through settings within a window and the   are used to select a value for that setting.

If at any time from pressing the Select button that a period of 45 seconds elapses between any button presses, the unit will save all changes made up to the last screen and the panel will revert to it's standard display. It will then be necessary to press the Select button to get to any other screens that required adjustments in their settings.

Clock on times should be set to the normal occupancy times regardless if preheat is set or not.

4 Display windows (Brief guide)

There are twenty-six different windows available, system parameters may be set in twenty four of them. The two that are fixed are the normal display and the software batch identification window.

1. Normal display.
2. Normal display adjust (No default)
3. Advance ON/OFF adjust (No default)
4. Adjust timers (No default)
5. Adjust language (Default = English)
6. Adjust year (Default = 1998)
7. Adjust frost temperature (Default = 4°C)
8. Adjust heat < > vent differential (Default = 6°C)
9. Adjust GM44 differential temperature (Default = 2°C)
10. Adjust AmbiTec Plus type (Default = 00)
11. Adjust reset type (Default = 01)
12. Adjust V3 vent (Manual or Auto)
13. Adjust high fire time (Default = 30)
14. Adjust pre-heat mode (Default = 02)
15. Adjust pre-heat time (Default = 1:00 hour)
16. Adjust night temperature band (Default = 16°C)
17. Adjust night temperature band (Default = 03°C)
18. Adjust forward clock 1 hour at 01:00 ON (No default)
19. Adjust retard clock 1 hour at 01:00 ON (No default)
20. Adjust holiday 1 period (No default) *(NB Frost protection only)*
21. Adjust holiday 2 period (No default)
22. Adjust holiday 3 period (No default)
23. Adjust holiday 4 period (No default)
24. Adjust 'Hand (default 30 min. adjust up to 2 hours)
25. Software type; A non-editable display of software issue number'
26. Adjust Key 3 password setting level 3 (Default 0000)
27. Adjust Key 2 password setting level 2 (Default 0000)
28. Adjust Key 1 password setting level 1 (Default 0000)

5 Display windows (Detailed)

Note It is far easier to understand these instructions whilst actually using the AmbiTec Plus Control Panel rather than attempt to read them in isolation.

Normal Display

The display panel of the AmbiTec Plus will be blank without power applied to it. However, the battery backup will maintain the program for a minimum of 5 years, although operation of the AmbiTec Plus control panel is not possible without power applied.

When power is first applied the display will read 'Adjust English' with the word English flashing. Pressing the Select button will advance the display to the normal display window.

The top line starting on the left shows the temperature in degrees centigrade, that the remote sensor is detecting. In use, the sensor temperature will alternate with one of the following:

Steady reading - Sensor temperature is within the differential range and neither heat nor vent is being called for by the system.

Alternating between the sensor temperature and \uparrow temperature is below set point and first stage heating is on.

Alternating between sensor temperature and $\uparrow\uparrow$ temperature is below set point and two stages of heating are on.

Alternating between sensor temperature and \downarrow temperature is above set point and first stage vent is on.

Alternating between sensor temperature and $\downarrow\downarrow$ temperature is above set point and two stages of vent are on.

Pressing the Select button will set the second entry, 'Operation mode' on the top row flashing. By using $\triangleleft\triangleright$ you may set the mode to Automatic, Heat, Vent, OFF or Slave (if unit is set for slave operation).

Pressing the $\triangleleft\triangleright$ will advance to the third entry on the top line of the display and set it flashing. This is the set point temperature

for daytime (Clock On). The $\triangleleft\triangleright$ will cycle through the band (which will be set in another window), for selecting the temperature required.

Pressing the $\triangleleft\triangleright$ will advance to the fifth entry on the top row. This is the set point temperature for night time (Clock OFF). The $\triangleleft\triangleright$ will cycle through the band, (which will be set in another window), for selecting the desired temperature.

Pressing the $\triangleleft\triangleright$ will advance the display to the bottom row where the Current Day, Date, Month and Time are shown. Use the $\triangleleft\triangleright$ to set these to the correct readings and the $\triangleleft\triangleright$ to move between them.

Note The arrow in the display between the Day and Night temperature will point to the temperature setting on the left (Day) when clock is ON, and to the right (Night) when the clock is OFF, indicating which set point it is trying to achieve.

Advance ON/OFF (3)

With the normal display shown, pressing the Select button twice will take you to the clock override screen. The display will show, advance 'ON or OFF' flashing. This is the current status of the clock. Use the $\triangleleft\triangleright$ to change the status.

Note Care should be taken in using this function. If for instance, the clock shifts off at 17:00 hours on Friday, and the function was used to force the clock on at that time. The program will look for the next programmed OFF if it happens to be Monday then the heater will run all weekend.

Therefore in an instance like this, it will be necessary to include an additional OFF time.

Adjust timers (4)

Press the Select button until the display window shows adjust timers. With the adjust timer screen displayed use the $\triangleleft\triangleright$ to select the day or group of days that are to be set to the same time. Besides individual days, group of Mon - Fri and Mon - Sun may be set. The group settings are for convenience of setting only when identical times are required.

After setting, all days will be individually

displayed and then alterations to settings may be made.

Use the $\triangleleft\triangleright$ to move to the ON/OFF position. This is indicated by an 'I' for ON and a 'O' for OFF followed by a switch number of 1 to 4. Use the $\triangleleft\triangleright$ to select the switch required. Use the $\triangleleft\triangleright$ to move to the Hour position and the $\triangleleft\triangleright$ keys to set the hour. Use the $\triangleleft\triangleright$ to move to the minute position and the $\triangleleft\triangleright$ to select the desired minute (selectable in ten minutes increments from 00 to 50 minutes).

If further times are to be set for the day use the $\triangleleft\triangleright$ to move back to the switch position and follow steps above. Up to four ON's and OFF's may be set for each day.

If further days are to be set use the $\triangleleft\triangleright$ to move back to the day position and then follow the step above.

The above procedure may be used to alter any of the settings, using the $\triangleleft\triangleright$ to select the position and the $\triangleleft\triangleright$ to select the required setting.

To delete a setting follow the procedure above and set the values for hours and minutes to --:-- this then becomes a Null setting and has no affect on control.

Note The unit switches in chronological order and not in switch sequence order.

Adjust language (5)

The adjust language display lets the user select between English, Dutch, French and Netherlands for display purposes. Use the $\triangleleft\triangleright$ to select the correct language.

Adjust year (6)


Use the $\triangleleft\triangleright$ to change the display to the current year.

Note The calendar is year compliant to year 2096 and has automatic leap year correction.


Adjust frost temperature (7)

Use the $\triangleleft\triangleright$ to set the desired frost protection temperature.




Adjust heat < > vent differential (8)

Press the  to set the desired temperature differential (dead band) between heat and vent when in the Auto mode.


Adjust GM 44 differential (9)

Press the  to set the number of degrees that the 0 - 5VDC proportional band is to vary over.


Adjust AmbiTec Plus type (10)

Press the  to set the control panel to the type of unit required. If the control panel is to be used to control an individual heater then set the display to read, 'Adjust Energy mizer 00'. If more than one control panel is to be used to control the heaters in a Master/Slave configuration the use the  to set the unit to be designated as the Master to read 'Adjust Master 00'. If a unit is to be designated as a slave panel then use the  to set each slave to read 'Adjust Slave XX'. XX is to be interpreted to be any number from 01 - 31. No two-slave panels are allowed to have the same number assigned. Only one Master panel is allowed on any one system.


Adjust reset (11)

Use the  to set the AmbiTec Plus to the type of reset required. Type 01 is all relays off and is used for those heaters with automatic ignition where power to the burner must be interrupted to cause burner reset in case of burner lock out. Type 02 is for use where a live or neutral is required to be switched back to the heater unit to cause burner reset.


Adjust V3 (12)

Use the  to change operation from manual 'Vent' mode to V1 auto temperature sensitive mode.


Adjust high fire time (13)

Use the  to set the time required for the burner to be on high fire during light up for proper ignition of the burner. The setting may be from 00 - 99 seconds.





Adjust preheat mode (14)

Press the  to select 01 if the preheat is to remain fixed at the time set in the adjust preheat screen. Select 02 to allow the controller to hold off the preheat to take into account the actual ambient temperature.





Adjust pre heat (15)

Use the  to set the required preheat time from 0 hours to 4 hours in 30 minute steps. Ideally this should be set to the time it takes to raise the room temperature to 20°C. Every on time will be advanced by this preheat time.





Adjust day temperature band (16)

Use the  to select 'From' reading. Use the  to set these to the lower end of the range over which the day temperature may be set in the normal display adjust screen. Use the  to select To reading. Use the  to set the upper end of the range over which the day temperature may be set in the normal display adjust screen. The From is adjustable from 00°C to 50°C and the To is adjustable from 00°C to 50°C. However the To reading can never be set lower than the From reading.





Night temperature band (17)

Use the  to select From reading. Use the  to set these to set the lower end of the range over which the day temperature may be set in the normal display adjust screen. Use the  to select To reading. Use the  to set the upper end of the range over which the day temperature may be set in the normal display adjust screen. The From is adjustable from 00°C to 40°C and the To is adjustable from 00°C to 50°C. However to To reading can never be set lower than the From reading.









FWD clock 1 hour at 01:00 (18)

Use the  to move to the month position and the  to select the month. Use the  to select the date position and the  to set the correct date for automatic clock forward time.

RTD clock 1 hour at 01:00 (19)

Use the  to move to the month position and the  to select the month. Use the  to select the date position and the  to set the correct date for automatic clock retard time.

Holiday (Covered only for frost protection no night set back) (20)

Use the  to select the From date position for the holiday period to start and the  to set the date. Use the  to select the From month position and the  to set the month. Use the  to select the To date position for the holiday period to end and the  to set the date. Use the  to select the To month position and the  to set the month.

Note If set the will turn off on the last OFF of the From date and will turn back on again on the first On of the To date.

Holiday 2 (21)

If required set a second holiday period as in holiday 1.


Holiday 3 (22)

If required set a third holiday period as in holiday 1.

Holiday 4 (23)

If required set a fourth holiday period as in holiday 1.

Adjust Hand (24)

Use the  to adjust from 30 min. to 2 hours in 30 min steps.

Software VO (25)

This is a non-editable display that shows the software issue number. The technical department may require this reading is a problem is encountered in the control panel operation and assistance is requested. Changes made under the different versions are as follows:

Version 6" MK3

Date introduced: 22/05/99
 Serial : S/N 2301 and onwards
 Changes New case and button layout.
 Additional modulating out-put for damper motors.

Adjust password level 3 (26)

Adjust password level 2 (27)

Adjust password level 1 (28)

6 Setting passwords

Adjust key numbers 3, 2 and 1

If the password setting is to be left at the default setting of 0000 where anyone can make adjustments the disregard all adjust key instructions. If passwords are to be set them all three levels must be set to ensure complete security.

Do not press the Enter key between the adjust key window setting. Only press it when all desired levels are set.

Password setting level 3 is the highest password level allowing access to adjustments of all variables.

Password setting level 2 will allow operators to adjust any setting in both lines of the standard (first) display screen within the ranges set in the adjustment windows.

Password setting level 1 will allow operators to adjust any item on the top line of the standard (first) display screen within the ranges set in the adjustment windows.

Entry without passwords will still allow viewing of all settings.

Entering passwords

Adjust key No.3 screen

XXXX will be shown in the window to hide the password from view.

Use the \blacktriangleleft to select the first X. Use the \blacktriangleright to set the first number of the password.

Use the \blacktriangleleft to move to the second X. The first password number will become an X. Use the \blacktriangleright to set the second number, following the above instructions. Do the same for the third and fourth password number. Press the Select button and the display will move to:

Adjust key No.2 screen

Set as described for adjust Key 3 screen, using the password selected for level 2. Press the Select key and the display will move to:

Adjust key No.1 screen

Set as described for adjust Key 3, using the password selected for level 1.

If only one password is set the 'unauthorised' users will have access for level 2 operation.

If only two passwords are set the 'unauthorised' users will have access for level 1 operation.

If three passwords are set the 'unauthorised' users will only be able to view setting and no changes can be made.

7 Master slave operation

The system sends 12V signals back and forwards between one unit designated as a Master Controller and the others which must be set as slaves. The unit is supplied set to 'Energy Mizor 00', this is a safe configuration which disables the communication line signals.

Having wired the system set the one unit that is to be the Master panel to 'Master 00'. All other units must be set as slaves with numbers '01' upwards.

Note No two slaves should have the same number and only one panel may be identified as a master.

The slave number is also used to generate a start delay. Slave 01 will have one-second delay on receiving a switch on command from the master. Slave 02 will have a two second delay etc. This reduces the gas surge and electrical surge by preventing all the slaves from coming on together.

The Master sends the time and date to the slaves to lock their clocks to the same time. The time is updated at one-minute intervals. Any change of time and date at the master will be sent to the slaves. The master checks each slave on the system for a burner failure. Should a failure occur this would appear not only on the slave controller but also on the master. The slave number that failed will be indicated in the digital display. The failed slave can be reset from either the master panel or the slave concerned. The reset signal from the master is only sent to the failed unit.

The slaves will follow operating instructions from the master, or can be set to run from their own internal settings. Each individual slave has its own temperature sensor for sensing temperature in its area. Therefore the set point temperatures are set at each individual panel.

8 Relay switching**Timer OFF**

Heat	=	Night mode
Vent	=	Frost mode
Auto	=	Night mode
OFF	=	Frost mode (including holiday shutdown)

Timer ON

Heat	=	Heat mode
Vent	=	Vent mode
Auto	=	Auto mode
OFF	=	Frost mode

Frost mode

CRF	=	On if H1 is ON
H2	=	On if room temperature < than frost temperature setting +2°C
H1	=	On if room temperature > than frost temperature setting
V1	=	OFF
V2	=	OFF
V3	=	OFF
0 - 5VDC output	=	ON if H1 is ON

Heat mode

CRF	=	ON
H2	=	ON if room temperature is < daytime temperature setting -2°C
H1	=	ON if room temperature is > daytime temperature setting
V1	=	OFF
V2	=	OFF
V3	=	OFF
0 - 5VDC output	=	ON if H1 is ON

Vent mode

CRF	=	ON
H2	=	OFF
H1	=	OFF
V1	=	ON if room temperature > than day setting temperature + dead band setting
V2	=	ON if room temperature > than day setting temperature + dead band + 2°C
V3	=	ON
0 - 5VDC output	=	OFF

Auto mode

CRF	=	ON
H2	=	OFF if room temperature > day temperature setting -2°C
H1	=	OFF if room temperature > day temperature setting
V1	=	ON if room temperature > day temperature setting + dead band
V2	=	ON if room temperature > day temperature setting + dead band +2°C
V3	=	ON/OFF as programmed
0 - 5VDC output	=	ON

Flame reset

01	=	All relays OFF
02	=	CRF + H1 + H2 + reset ON

Gas modulating output

Calculated from Set/Temperature - Actual/Temperature.

0 - 5V output has a constant 1 volt supply when there is no call for heat therefore the GM44 (or other interface type) should be set up to drop out at a voltage slightly above this level.


For the Ambi-Rad Technical Department telephone 01384 489700.

Before phoning it might be advisable to try the following points:

If after installing the LCD display is blank and the connections are correct the AmbiTec Plus could need resetting this is detailed below under clearing all settings.

Note The AmbiTec Plus control panel is fully compatible with the MK2 Energy Mizor but cannot be integrated with older style Energy Mizor Master/Slave units.

Clearing password and/or setting's is achieved by the following instructions (Remove this part of the page if security of operation is important.

To clear all settings in the panel, turn OFF the power and re-instate whilst holding the  and the Select button.


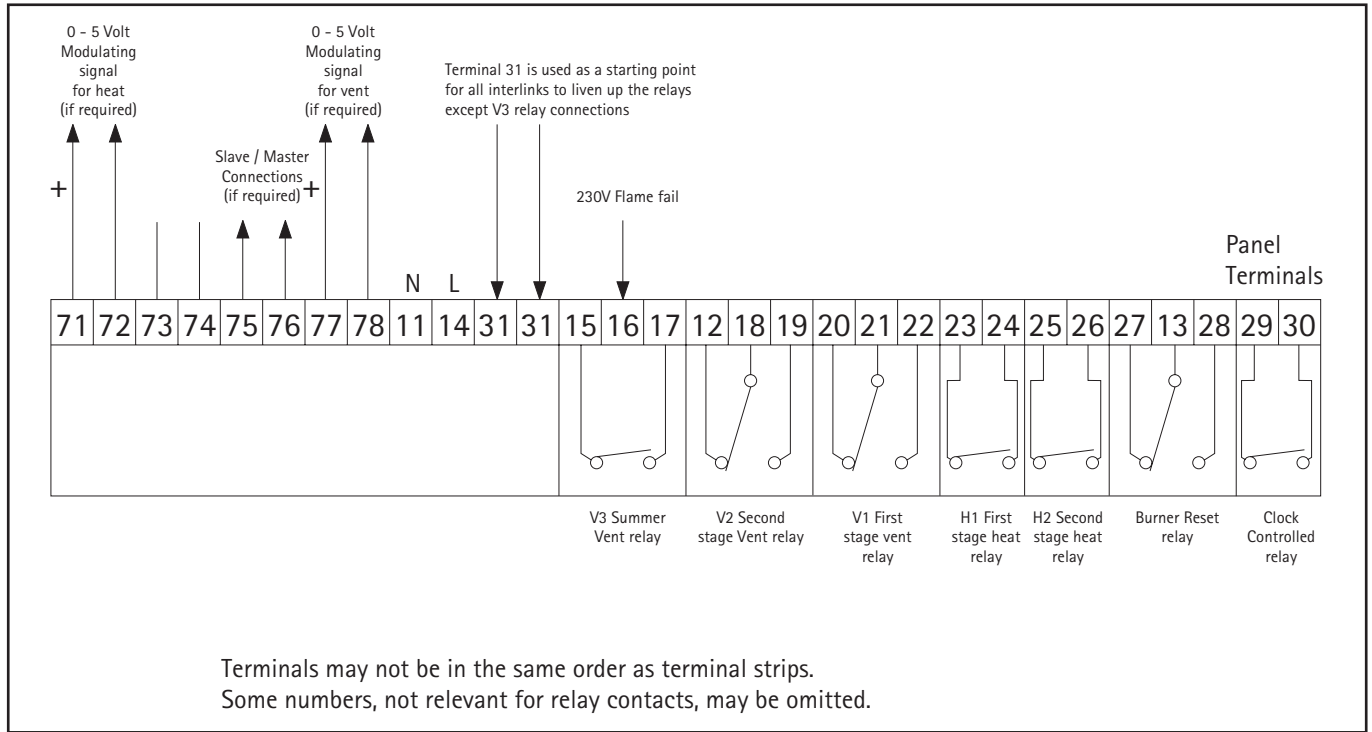
To clear only the passwords, turn off the power and re-instate whilst holding the 

Figure 2 AmbiTec Plus relay contacts





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innovation, Ambi-Rad reserves
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specification without due notice.
Document reference number **GB/WA/032/0201**

AMBIRAD
ENERGY EFFICIENT HEATING SYSTEMS



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