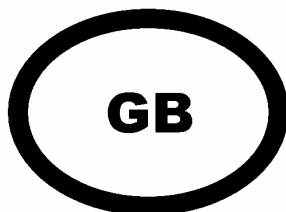**These instructions contain operating information and should be left with the unit.**

Vapac®

Electro Boiler
Units

Alpha-Numeric Display Module
Operation Manual
Edition 3.1

(For use with Software version 7.4 & subsequent issues)

VapaNet

GB

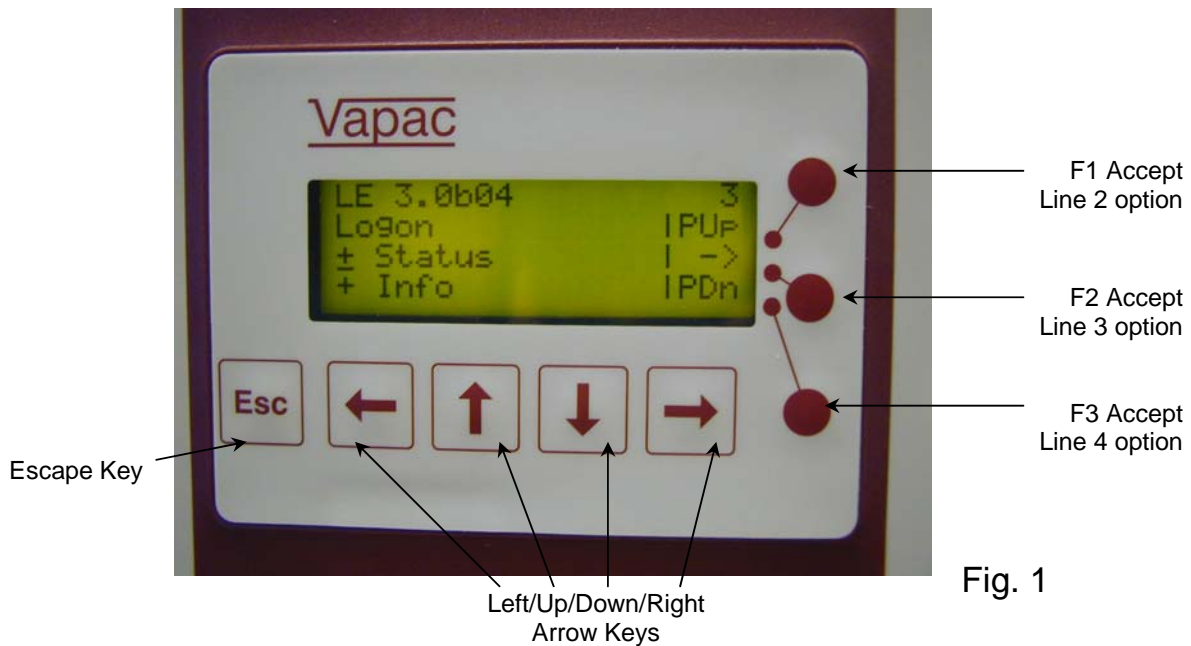# Contents

Introduction

Alpha-Numeric Display

Fig. 1

Figure 1 above shows the Alphanumeric keypad and display. This gives four lines of information, with each line having a maximum of twenty characters. The Arrow keys are used to navigate through the menus and the round buttons, on the right hand side, are used to action the associated options :

In the menu tree the up/down arrow keys are used to navigate through the menu's one option at a time (NB pressing the down arrow in the example above will take you to the "Status" line & the up arrow to the "Setup" line. Pressing F1 or F3 will move up or down three lines at a time

[page up or page down]. F2 will take you to the "Logon" screen. Pressing the "Escape" key at any time will move you bake one level in the menu, repeated presses will take you back to the default screen shown in Fig. 1.

Fig 1A shows the "unit status" menu tree screen. From here it is possible to view the status of the unit parameters.

If you report a fault to Vapac Humidity Control Ltd, you may be asked to provide this information to enable the problem to be diagnosed.
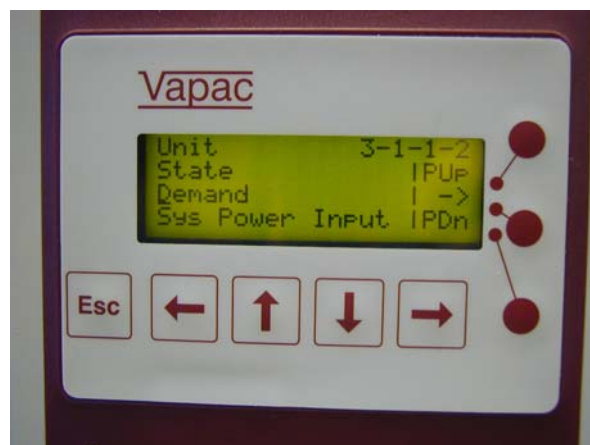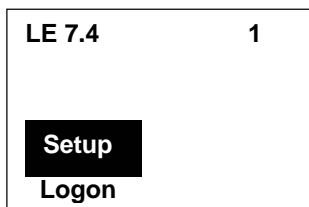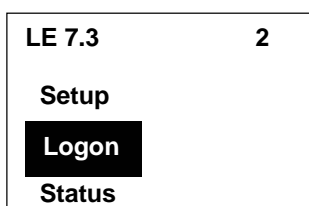

Fig. 1A

Non Password Protected Menu Options

```
LE 7.4            1



 Setup
 Logon
```

1-1	Languages	Used to select the displayed language: Languages available: Software – M1 GB; CZ; NL; F; D; GR; I; PL; P; E. Software – M2 GB; DK; F; D; IS; N; FIN; S.
1-2	Attach to unit	Used to link the display to the motherboard, Select this option, then confirm by pressing "ok", then press the "network pin" on the motherboard. This is already done if the display is factory fitted, but will need to be done if either PCB is changed, or if the display is "field fitted".
1-3	Factory Setup	This option should only be used by Engineers from Vapac Humidity Control Ltd. It is password protected and used to set the number of electrodes and number of times the electrode cable passes through the toroid
1-4	Setup unit	This option is used to set the site controlled parameters: **Control type**: (0-5V; 0-10V; 2-10V; 1-18V; 0-20V; 4-20mA; Pot; Full output; Network; or Sensing Head [0-5V; 0-10V; 0-20V; 4-20mA or pot]. **Voltage:** (115; 200; 230; 380; 400; 415; 440; 460; 480; 600V)
1-5	Network Setup	Used to set-up master/slave systems: Password protected (Password 1111). Select this option (from the master unit), confirm by pressing "ok" then press the service pin (this is referred to as the network button in the operating manual) on the motherboard that is fitted to the first slave unit (please ensure that this is the next largest unit). What while the slave unit is "configured" then press "ok" to finish the network set-up or proceed to the next slave unit and press its service pin. Once all the units are configured press "ok" to confirm that the set-up is complete.
1-6	Not available at this level	This item will not be displayed the next available menu item being displayed will be 1.7
1-7	Reset display	Used to re-synchronize the information between the motherboard and display

```
LE 7.3            2

 Setup
 Logon
 Status
```
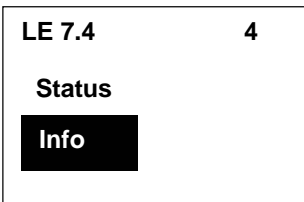
2	Logon	Used to gain access to protected menu trees. Passwords are entered via the arrow keys. Digits are incremented or decremented using the up/down arrows and digit being entered changed using the left/right arrows. Once the correct password is displayed it must be entered by pressing "ok". These levels are described later in the manual.

```
┌─────────────────────────────┐
│                             │
│  LE 7.4              3       │
│                             │
│   Logon                     │
│  ┌──────────┐               │
│  │ Status   │               │
│  └──────────┘               │
│   Info                      │
│                             │
└─────────────────────────────┘
```

3-1	Master Vapac	Used to select the "master" Vapac status parameters to be displayed
3-1-1	Unit	Used to select "unit" parameters.
3-1-2	Cylinder 1	Used to select "cylinder 1" parameters.
3-1-3	Cylinder 2 (if fitted)	Used to select "cylinder 2" parameters (this option will only be displayed if the "master unit has two cylinders).
3-2	Slave Vapac 1 (if fitted)	Used to select the first slave Vapac (this will only be displayed if there is a slave unit on the system) in which case 3-2-1 will again be "unit" properties and 3-2-2 "cylinder 1 " properties etc…. NB if additional slaves are fitted 3-3 (slave 2) and 3-4 (slave 3) etc will be displayed if necessary.
3-1-1-1	State	Displays the operational state of the unit either "Shutdown" ("switched off"; "EPO/security circuit" open circuit or no 24 Vac supply to PCB); "Stand by" (unit awaiting control signal demand) or "On" (unit operating – if the unit is on it will also display the percentage demand i.e On/50% means the unit has a demand level of 50%.
3-1-1-2	Demand	Displays the unit demand level as a percentage.
3-1-1-3	Temperature	This displays the space temperature (it will only be displayed if a thermistor is connected to control terminals 1 & 2.
3-1-1-4	Rel Humidity	This displays the space RH as a percentage it will only be displayed if a sensing head is used to control the unit.
3-1-1-5	System Power Input	This will display the actual power being supplied to the unit (kW/h)
3-1-1-6	Power Used	Displays the total power used by the unit (kW.h)
3-1-1-7	Steam Output	Displays the actual steam output.
3-1-1-8	Sys Steam Output	Displays the total steam output of the system – only visible on Master/Slave systems
3-1-1-9	Hours Run	This will display the total number of hours the unit has been operating for.
3-1-1-10	Analogue Inputs	This displays each of the four analogue inputs (Ai1 – AI4) as a 4 digit number
3-1-1-11	Resistive Inputs	This displays each of the 4 resistive inputs (AI5 – AI8) as a 4 digit number
3-1-1-12	Digital I/O	This will display each of the 9 Digital Inputs (DI1-9) and the 24 V input as a row of 10 binary digits (0 or 1) above another similar row representing the 10 Digital Outputs (DO1-10). This can be used to ascertain if any input or output is made, and is useful in diagnosing any problem
3-1-1-13	Device Info	This displays current and historic information relating to the health of the controller hardware. This information can be used in diagnosing any problem
3-1-1-14	Network Status	This displays information on the errors and good messages seen by the controller and the display. This information can be used to check the health of the network

3-1-1-15	Master/Slave	This displays information on the operation of master/slave systems. It can be used to verify and/or diagnose master/slave operation
3-1-2-1	Mode	Displays the cylinder mode (Shutdown/Standby/Online/Manual drain in progress/complete)
3-1-2-2	Demand	Displays the cylinder demand (for single cylinder units this will equal unit demand
3-1-2-3	Not available at this level	This option will not be displayed the next available menu item being displayed will be 3-1-2-4)
3-1-2-4	Hours run	Displays the total number of hour that the cylinder has been on line. (this can be reset at Service engineer's level)
3-1-2-5	Steam output	Displays the actual steam output of the cylinder
3-1-2-6	Current	Displays the unit demand level as a percentage.
3-1-2-7	Max current	Displays the normal maximum current that will flow in the cylinder at full output.
3-1-2-8	Actual Voltage	Displays the actual voltage being applied to the electrodes control the unit.
3-1-2-9	Power Input	Displays the actual input power to the cylinder
3-1-2-10	Consumption	Displays the average power consumed by the cylinder
3-1-2-11	Total Power Used	Displays the total power consumed by the cylinder
3-1-2-12	Fault Totals	Displays the total number of faults that have occurred on the cylinder
3-1-2-13	Demand Runhours (Version 7.4.2 controller)	Displays the run hours for 4 bands of cylinder demand
3-1-3-1 to 3-1-3-15		Cylinder status repeated for cylinder 2 if applicable
3-2-1 to 3-10-3-13		Unit & cylinder status repeated for slave units 1 to 9 (depending on the network configuration

```
LE 7.4                 4

  Status

 Info
```

4-1	Master Vapac	Used to select the "master" Vapac status parameters to be displayed
4-1-1	Unit	Used to select "unit" parameters.
4-1-2	Cylinder 1	Used to select "cylinder 1" parameters.
4-1-3	Cylinder 2 (if fitted)	Used to select "cylinder 2" parameters (this option will only be displayed if the "master unit has two cylinders).
4-2	Slave Vapac 1 (if fitted)	Used to select the first slave Vapac (this will only be displayed if there is a slave unit on the system) in which case 3-2-1 will again be "unit" properties and 3-2-2 "cylinder 1 " properties etc…. NB if additional slaves are fitted 3-3 (slave 2) and 3-4 (slave 3) etc will be displayed if necessary.
4-1-1-1	Unit capacity	Displays the maximum steam output of the unit, in addition to if the unit is derated either via UCP1 or `Rated Output'

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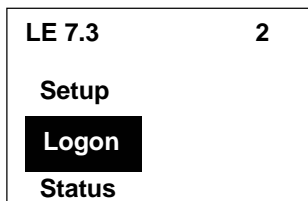|		
4-1-1-2	Not available at this level	This item will not be displayed the next available menu item being displayed will be 4-1-1-3
4-1-1-3	Rated Output	Displays the maximum operating capacity of the unit (which may be less than the unit capacity up to 50% by fitting an alternative value UCP1)
4-1-1-4	Unit Type	Displays the unit type i.e. "LE" or "LEP"
4-1-1-5	SW Version	Displays the software version fitted in the control PCB
4-1-1-6	Nominal Voltage	Displays the nominal supply voltage – as set during the initial unit "setup ".
4-1-1-7	Num Electrodes	Displays the number of electrodes fitted to each cylinder.
4-1-1-8	Num of turns	Displays the number of times the electrode cable passes through the current sensing transformer or "toroid "
4-1-1-9	Steam Units	Displays whether the steam output is measured in kg/h or lbs/h
4-1-1-10	Control Input	Displays the selected control signal – set during initial unit "setup"
4-1-1-11	Slaves Attached	Displays the number of slave units attached to the network
4-1-1-12	Num Cylinders	Displays the total number of cylinders attached to the system or network
4-1-1-13	VOS Algorithm	Displays the selected algorithm which is used by Vapac Operating System either "VOS 4" or "VOS 6" the standard setting is "VOS 6"
4-1-1-14	Water Economy	Displays whether water economy is "enabled" or "disabled"
4-1-2-1	Cyl Capacity	Displays the maximum amount of steam that the cylinder is designed to produce
4-1-2-2	Cylinder Type	Displays whether the cylinder is "LE" or "LEP". i.e. if the cylinder power is modulated by SSR's (close control) or not (comfort control)
4-1-2-3	Period drain int	Displays the time interval between periodic drains – "0" indicates that periodic drains have not been selected. Periodic drains can be set to completely drain the cylinder at timed intervals which can assist unit operation under certain conditions
4-1-2-4	Drain options	Displays whether the unit is set to stop or resume automatic operation once the periodic drain cycle is complete
4-1-2-5	Period flush int	Displays the time interval between periodic flushes – "0" again indicates that periodic flushes have not been selected. Periodic flushes can be set to completely drain the cylinder then re-fill with fresh water and finally drain the cylinder again to flush the cylinder at timed intervals. This can again assist unit operation under certain conditions
4-1-2-6	Flush options	Displays whether the unit is set to stop or resume automatic operation once the periodic flush cycle is complete
4-1-3-1 to 4-1-3-6		The cylinder information options are repeated for cylinder 2 (if fitted)
4-2 to 4-9-3-6		The unit and cylinder information options are repeated for slave units 1 to 9 if fitted to the system. NB the maximum number of cylinders on any system is 10

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VapaNet

Password Protected Menu Options
User Level Password "4602"

```
LE 7.4                    1



  Setup
  Logon
```

1-1	Languages	Used to select the displayed language: Languages available: Software – M1 GB; CZ; NL; F; D; GR; I; PL; P; E. Software – M2 GB; DK; F; D; IS; N; FIN; S.
1-2	Attach to unit	Used to link the display to the motherboard, Select this option, then confirm by pressing "ok", then press the "network pin" on the motherboard. This is already done if the display is factory fitted, but will need to be done if either PCB is changed, or if the display is "field fitted".
1-3	Factory Setup	This option should only be used by Engineers from Vapac Humidity Control Ltd. It is password protected and used to set the number of electrodes and number of times the electrode cable passes through the toroid
1-4	Setup unit	This option is used to set the site controlled parameters: **Control type**: (0-5V; 0-10V; 2-10V; 1-18V; 0-20V; 4-20mA; Pot; Full output; Network; or Sensing Head [0-5V; 0-10V; 0-20V; 4-20mA or pot]. **Voltage:** (115; 200; 230; 380; 400; 415; 440; 460; 480; 600V)
1-5	Network Setup	Used to set-up master/slave systems: Password protected (Password 1111). Select this option (from the master unit), confirm by pressing "ok" then press the service pin (this is referred to as the network button in the operating manual) on the motherboard that is fitted to the first slave unit (please ensure that this is the next largest unit). What while the slave unit is "configured" then press "ok" to finish the network set-up or proceed to the next slave unit and press its service pin. Once all the units are configured press "ok" to confirm that the set-up is complete.
1-6	Not available at this level	This item will not be displayed the next available menu item being displayed will be 1.7
1-7	Reset display	Used to re-synchronize the information between the motherboard and display

```
LE 7.3                    2

  Setup
  Logon
  Status
```

2	Logon	Used to gain access to protected menu trees. Passwords are entered via the arrow keys. Digits are incremented or decremented using the up/down arrows and digit being entered changed using the left/right arrows. Once the correct password is displayed it must be entered by pressing "ok". These levels are described later in the manual.

GB

```
┌─────────────────────────────────┐
│  LE 7.4              3           │
│                                 │
│   Logon                         │
│  ┌──────────┐                   │
│  │ Status   │                   │
│  └──────────┘                   │
│   Info                          │
└─────────────────────────────────┘
```

3-1	Master Vapac	Used to select the "master" Vapac status parameters to be displayed
3-1-1	Unit	Used to select "unit" parameters.
3-1-2	Cylinder 1	Used to select "cylinder 1" parameters.
3-1-3	Cylinder 2 (if fitted)	Used to select "cylinder 2" parameters (this option will only be displayed if the "master unit has two cylinders).
3-2	Slave Vapac 1 (if fitted)	Used to select the first slave Vapac (this will only be displayed if there is a slave unit on the system) in which case 3-2-1 will again be "unit" properties and 3-2-2 "cylinder 1 " properties etc…. NB if additional slaves are fitted 3-3 (slave 2) and 3-4 (slave 3) etc will be displayed if necessary.
3-1-1-1	State	Displays the operational state of the unit either "Shutdown" ("switched off"; "EPO/security circuit" open circuit or no 24 Vac supply to PCB); "Stand by" (unit awaiting control signal demand) or "On" (unit operating – if the unit is on it will also display the percentage demand i.e On/50% means the unit has a demand level of 50%.
3-1-1-2	Demand	Displays the unit demand level as a percentage.
3-1-1-3	Temperature	This displays the space temperature (it will only be displayed if a thermistor is connected to control terminals 1 & 2.
3-1-1-4	Rel Humidity	This displays the space RH as a percentage it will only be displayed if a sensing head is used to control the unit.
3-1-1-5	System Power Input	This will display the actual power being supplied to the unit (kW/h)
3-1-1-6	Power Used	Displays the total power used by the unit (kW.h)
3-1-1-7	Steam Output	Displays the actual steam output.
3-1-1-8	Sys Steam Output	Displays the total steam output of the system – only visible on Master/Slave systems
3-1-1-9	Hours Run	This will display the total number of hours the unit has been operating for.
3-1-1-10	Analogue Inputs	This displays each of the four analogue inputs (Ai1 – AI4) as a 4 digit number
3-1-1-11	Resistive Inputs	This displays each of the 4 resistive inputs (AI5 – AI8) as a 4 digit number
3-1-1-12	Digital I/O	This will display each of the 9 Digital Inputs (DI1-9) and the 24 V input as a row of 10 binary digits (0 or 1) above another similar row representing the 10 Digital Outputs (DO1-10). This can be used to ascertain if any input or output is made, and is useful in diagnosing any problem
3-1-1-13	Device Info	This displays current and historic information relating to the health of the controller hardware. This information can be used in diagnosing any problem
3-1-1-14	Network Status	This displays information on the errors and good messages seen by the controller and the display. This information can be used to check the health of the network

3-1-1-15	Master/Slave	This displays information on the operation of master/slave systems. It can be used to verify and/or diagnose master/slave operation
3-1-2-1	Mode	Displays the cylinder mode (Shutdown/Standby/Online/Manual drain in progress/complete)
3-1-2-2	Demand	Displays the cylinder demand (for single cylinder units this will equal unit demand
3-1-2-3	Not available at this level	This option will not be displayed the next available menu item being displayed will be 3-1-2-4)
3-1-2-4	Hours run	Displays the total number of hour that the cylinder has been on line. (this can be reset at Service engineer's level)
3-1-2-5	Steam output	Displays the actual steam output of the cylinder
3-1-2-6	Current	Displays the unit demand level as a percentage.
3-1-2-7	Max current	Displays the normal maximum current that will flow in the cylinder at full output.
3-1-2-8	Actual Voltage	Displays the actual voltage being applied to the electrodes control the unit.
3-1-2-9	Power Input	Displays the actual input power to the cylinder
3-1-2-10	Consumption	Displays the average power consumed by the cylinder
3-1-2-11	Total Power Used	Displays the total power consumed by the cylinder
3-1-2-12	Fault Totals	Displays the total number of faults that have occurred on the cylinder
3-1-2-13	Demand Runhours (Version 7.4.2 controller)	Displays the run hours for 4 bands of cylinder demand
3-1-3-1 to 3-1-3-15		Cylinder status repeated for cylinder 2 if applicable
3-2-1 to 3-10-3-13		Unit & cylinder status repeated for slave units 1 to 9 (depending on the network configuration

```
LE 7.4              4

  Status

 Info
```

4-1	Master Vapac	Used to select the "master" Vapac status parameters to be displayed
4-1-1	Unit	Used to select "unit" parameters.
4-1-2	Cylinder 1	Used to select "cylinder 1" parameters.
4-1-3	Cylinder 2 (if fitted)	Used to select "cylinder 2" parameters (this option will only be displayed if the "master unit has two cylinders).
4-2	Slave Vapac 1 (if fitted)	Used to select the first slave Vapac (this will only be displayed if there is a slave unit on the system) in which case 3-2-1 will again be "unit" properties and 3-2-2 "cylinder 1 " properties etc…. NB if additional slaves are fitted 3-3 (slave 2) and 3-4 (slave 3) etc will be displayed if necessary.

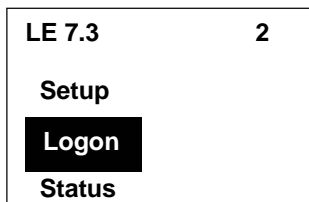| 4-1-1-1	Unit capacity	Displays the maximum steam output of the unit, in addition to if the unit is derated either via UCP1 or `Rated Output'
4-1-1-2	Not available at this level	This item will not be displayed the next available menu item being displayed will be 4-1-1-3
4-1-1-3	Rated Output	Displays the maximum operating capacity of the unit (which may be less than the unit capacity up to 50% by fitting an alternative value UCP1)
4-1-1-4	Unit Type	Displays the unit type i.e. "LE" or "LEP"
4-1-1-5	SW Version	Displays the software version fitted in the control PCB
4-1-1-6	Nominal Voltage	Displays the nominal supply voltage – as set during the initial unit "setup ".
4-1-1-7	Num Electrodes	Displays the number of electrodes fitted to each cylinder.
4-1-1-8	Num of turns	Displays the number of times the electrode cable passes through the current sensing transformer or "toroid "
4-1-1-9	Steam Units	Displays whether the steam output is measured in kg/h or lbs/h
4-1-1-10	Control Input	Displays the selected control signal – set during initial unit "setup"
4-1-1-11	Slaves Attached	Displays the number of slave units attached to the network
4-1-1-12	Num Cylinders	Displays the total number of cylinders attached to the system or network
4-1-1-13	VOS Algorithm	Displays the selected algorithm which is used by Vapac Operating System either "VOS 4" or "VOS 6" the standard setting is "VOS 6"
4-1-1-14	Water Economy	Displays whether water economy is "enabled" or "disabled"
4-1-2-1	Cyl Capacity	Displays the maximum amount of steam that the cylinder is designed to produce
4-1-2-2	Cylinder Type	Displays whether the cylinder is "LE" or "LEP". i.e. if the cylinder power is modulated by SSR's (close control) or not (comfort control)
4-1-2-3	Period drain int	Displays the time interval between periodic drains – "0" indicates that periodic drains have not been selected. Periodic drains can be set to completely drain the cylinder at timed intervals which can assist unit operation under certain conditions
4-1-2-4	Drain options	Displays whether the unit is set to stop or resume automatic operation once the periodic drain cycle is complete
4-1-2-5	Period flush int	Displays the time interval between periodic flushes – "0" again indicates that periodic flushes have not been selected. Periodic flushes can be set to completely drain the cylinder then re-fill with fresh water and finally drain the cylinder again to flush the cylinder at timed intervals. This can again assist unit operation under certain conditions
4-1-2-6	Flush options	Displays whether the unit is set to stop or resume automatic operation once the periodic flush cycle is complete
4-1-3-1 to 4-1-3-6		The cylinder information options are repeated for cylinder 2 (if fitted)
4-2 to 4-9-3-6		The unit and cylinder information options are repeated for slave units 1 to 9 if fitted to the system. NB the maximum number of cylinders on any system is 10

GB

Password Protected Menu Options
Service Engineer Level Password "5699"

```
┌─────────────────────────────────┐
│ LE 7.4              1            │
│                                 │
│                                 │
│ ██████████                      │
│ █ Setup █                       │
│ ██████████                      │
│   Logon                         │
└─────────────────────────────────┘
```

1-1	Languages	Used to select the displayed language: Languages available: Software – M1 GB; CZ; NL; F; D; GR; I; PL; P; E. Software – M2 GB; DK; F; D; IS; N; FIN; S.
1-2	Attach to unit	Used to link the display to the motherboard, Select this option, then confirm by pressing "ok", then press the "network pin" on the motherboard. This is already done if the display is factory fitted, but will need to be done if either PCB is changed, or if the display is "field fitted".
1-3	Factory Setup	This option should only be used by Engineers from Vapac Humidity Control Ltd. It is password protected and used to set the number of electrodes and number of times the electrode cable passes through the toroid
1-4	Setup unit	This option is used to set the site controlled parameters: **Control type**: (0-5V; 0-10V; 2-10V; 1-18V; 0-20V; 4-20mA; Pot; Full output; Network; or Sensing Head [0-5V; 0-10V; 0-20V; 4-20mA or pot]. **Voltage:** (115; 200; 230; 380; 400; 415; 440; 460; 480; 600V)
1-5	Network Setup	Used to set-up master/slave systems: Password protected (Password 1111). Select this option (from the master unit), confirm by pressing "ok" then press the service pin (this is referred to as the network button in the operating manual) on the motherboard that is fitted to the first slave unit (please ensure that this is the next largest unit). What while the slave unit is "configured" then press "ok" to finish the network set-up or proceed to the next slave unit and press its service pin. Once all the units are configured press "ok" to confirm that the set-up is complete.
1-6	Not available at this level	This item will not be displayed the next available menu item being displayed will be 1.7
1-7	Reset display	Used to re-synchronize the information between the motherboard and display

```
┌─────────────────────────────────┐
│ LE 7.3              2            │
│                                 │
│   Setup                         │
│ ██████████                      │
│ █ Logon █                       │
│ ██████████                      │
│   Status                        │
└─────────────────────────────────┘
```
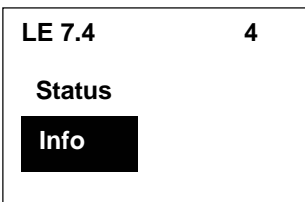
2	Logon	Used to gain access to protected menu trees. Passwords are entered via the arrow keys. Digits are incremented or decremented using the up/down arrows and digit being entered changed using the left/right arrows. Once the correct password is displayed it must be entered by pressing "ok". These levels are described later in the manual.

```
┌─────────────────────────────┐
│  LE 7.4              3       │
│                             │
│   Logon                     │
│  ┌──────────┐               │
│  │ Status   │               │
│  └──────────┘               │
│   Info                      │
└─────────────────────────────┘
```

3-1	Master Vapac	Used to select the "master" Vapac status parameters to be displayed
3-1-1	Unit	Used to select "unit" parameters.
3-1-2	Cylinder 1	Used to select "cylinder 1" parameters.
3-1-3	Cylinder 2 (if fitted)	Used to select "cylinder 2" parameters (this option will only be displayed if the "master unit has two cylinders).
3-2	Slave Vapac 1 (if fitted)	Used to select the first slave Vapac (this will only be displayed if there is a slave unit on the system) in which case 3-2-1 will again be "unit" properties and 3-2-2 "cylinder 1 " properties etc…. NB if additional slaves are fitted 3-3 (slave 2) and 3-4 (slave 3) etc will be displayed if necessary.
3-1-1-1	State	Displays the operational state of the unit either "Shutdown" ("switched off"; "EPO/security circuit" open circuit or no 24 Vac supply to PCB); "Stand by" (unit awaiting control signal demand) or "On" (unit operating – if the unit is on it will also display the percentage demand i.e On/50% means the unit has a demand level of 50%.
3-1-1-2	Demand	Displays the unit demand level as a percentage.
3-1-1-3	Temperature	This displays the space temperature (it will only be displayed if a thermistor is connected to control terminals 1 & 2.
3-1-1-4	Rel Humidity	This displays the space RH as a percentage it will only be displayed if a sensing head is used to control the unit.
3-1-1-5	System Power Input	This will display the actual power being supplied to the unit (kW/h)
3-1-1-6	Power Used	Displays the total power used by the unit (kW.h)
3-1-1-7	Steam Output	Displays the actual steam output.
3-1-1-8	Sys Steam Output	Displays the total steam output of the system – only visible on Master/Slave systems
3-1-1-9	Hours Run	This will display the total number of hours the unit has been operating for.
3-1-1-10	Analogue Inputs	This displays each of the four analogue inputs (Ai1 – AI4) as a 4 digit number
3-1-1-11	Resistive Inputs	This displays each of the 4 resistive inputs (AI5 – AI8) as a 4 digit number
3-1-1-12	Digital I/O	This will display each of the 9 Digital Inputs (DI1-9) and the 24 V input as a row of 10 binary digits (0 or 1) above another similar row representing the 10 Digital Outputs (DO1-10). This can be used to ascertain if any input or output is made, and is useful in diagnosing any problem
3-1-1-13	Device Info	This displays current and historic information relating to the health of the controller hardware. This information can be used in diagnosing any problem
3-1-1-14	Network Status	This displays information on the errors and good messages seen by the controller and the display. This information can be used to check the health of the network

3-1-1-15	Master/Slave	This displays information on the operation of master/slave systems. It can be used to verify and/or diagnose master/slave operation
3-1-2-1	Mode	Displays the cylinder mode (Shutdown/Standby/Online/Manual drain in progress/complete)
3-1-2-2	Demand	Displays the cylinder demand (for single cylinder units this will equal unit demand
3-1-2-3	Cylinder Data	Displays cylinder data i.e. Top Line: D=Demand%; F=Feed to current%; Mid Line: A=Actual current%; B=Boil to current%; Additional information may be requested by VHCL to assist in fault diagnosis.
3-1-2-4	Hours run	Displays the total number of hour that the cylinder has been on line. (this can be reset at Service engineer's level)
3-1-2-5	Steam output	Displays the actual steam output of the cylinder
3-1-2-6	Current	Displays the unit demand level as a percentage.
3-1-2-7	Max current	Displays the normal maximum current that will flow in the cylinder at full output.
3-1-2-8	Actual Voltage	Displays the actual voltage being applied to the electrodes control the unit.
3-1-2-9	Power Input	Displays the actual input power to the cylinder
3-1-2-10	Consumption	Displays the average power consumed by the cylinder
3-1-2-11	Total Power Used	Displays the total power consumed by the cylinder
3-1-2-12	Fault Totals	Displays the total number of faults that have occurred on the cylinder
3-1-2-13	Demand Runhours (Version 7.4.2 controller)	Displays the run hours for 4 bands of cylinder demand
3-1-3-1 to 3-1-3-15		Cylinder status repeated for cylinder 2 if applicable
3-2-1 to 3-10-3-13		Unit & cylinder status repeated for slave units 1 to 9 (depending on the network configuration

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LE 7.4              4

  Status
 ┌──────┐
 │ Info │
 └──────┘
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4-1	Master Vapac	Used to select the "master" Vapac status parameters to be displayed
4-1-1	Unit	Used to select "unit" parameters.
4-1-2	Cylinder 1	Used to select "cylinder 1" parameters.
4-1-3	Cylinder 2 (if fitted)	Used to select "cylinder 2" parameters (this option will only be displayed if the "master unit has two cylinders).
4-2	Slave Vapac 1 (if fitted)	Used to select the first slave Vapac (this will only be displayed if there is a slave unit on the system) in which case 3-2-1 will again be "unit" properties and 3-2-2 "cylinder 1 " properties etc…. NB if additional slaves are fitted 3-3 (slave 2) and 3-4 (slave 3) etc will be displayed if necessary.

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4-1-1-1	Unit capacity	Displays the maximum steam output of the unit, in addition to if the unit is derated either via UCP1 or `Rated Output'
4-1-1-2	Not available at this level	This item will not be displayed the next available menu item being displayed will be 4-1-1-3
4-1-1-3	Rated Output	Displays the maximum operating capacity of the unit (which may be less than the unit capacity up to 50% by fitting an alternative value UCP1)
4-1-1-4	Unit Type	Displays the unit type i.e. "LE" or "LEP"
4-1-1-5	SW Version	Displays the software version fitted in the control PCB
4-1-1-6	Nominal Voltage	Displays the nominal supply voltage – as set during the initial unit "setup ".
4-1-1-7	Num Electrodes	Displays the number of electrodes fitted to each cylinder.
4-1-1-8	Num of turns	Displays the number of times the electrode cable passes through the current sensing transformer or "toroid "
4-1-1-9	Steam Units	Displays whether the steam output is measured in kg/h or lbs/h
4-1-1-10	Control Input	Displays the selected control signal – set during initial unit "setup"
4-1-1-11	Slaves Attached	Displays the number of slave units attached to the network
4-1-1-12	Num Cylinders	Displays the total number of cylinders attached to the system or network
4-1-1-13	VOS Algorithm	Displays the selected algorithm which is used by Vapac Operating System either "VOS 4" or "VOS 6" the standard setting is "VOS 6"
4-1-1-14	Water Economy	Displays whether water economy is "enabled" or "disabled"
4-1-2-1	Cyl Capacity	Displays the maximum amount of steam that the cylinder is designed to produce
4-1-2-2	Cylinder Type	Displays whether the cylinder is "LE" or "LEP". i.e. if the cylinder power is modulated by SSR's (close control) or not (comfort control)
4-1-2-3	Period drain int	Displays the time interval between periodic drains – "0" indicates that periodic drains have not been selected. Periodic drains can be set to completely drain the cylinder at timed intervals which can assist unit operation under certain conditions
4-1-2-4	Drain options	Displays whether the unit is set to stop or resume automatic operation once the periodic drain cycle is complete
4-1-2-5	Period flush int	Displays the time interval between periodic flushes – "0" again indicates that periodic flushes have not been selected. Periodic flushes can be set to completely drain the cylinder then re-fill with fresh water and finally drain the cylinder again to flush the cylinder at timed intervals. This can again assist unit operation under certain conditions
4-1-2-6	Flush options	Displays whether the unit is set to stop or resume automatic operation once the periodic flush cycle is complete
4-1-3-1 to 4-1-3-6		The cylinder information options are repeated for cylinder 2 (if fitted)
4-2 to 4-9-3-6		The unit and cylinder information options are repeated for slave units 1 to 9 if fitted to the system. NB the maximum number of cylinders on any system is 10

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LE 7.4              5

  Info
  Adjust
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NB The adjust menu will only appear at the "Service Engineer" Level if a "Sensing Head" is used as the control signal, as the only adjustments available at this level are associated with "Sensing Head" control.

5-1	Master Vapac	Selects the master vapac adjust parameters
5-1-1	Unit	Selects the "unit" parameters.
5-1-1-1	Set point	Selects the "set point", use the up/down keys to adjust the controller set point up or down
5-1-1-2	Prop band	Selects the "proportional band", use the arrow keys to set the proportional band that is appropriate for the site control system
5-1-1-3	RH Offset	Selects RH Offset, allows the displayed "Space RH" & controller set-point to be "offset" to "calibrate" the sensing head to external monitoring equipment

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LE 7.4              6

  Adjust
  Service
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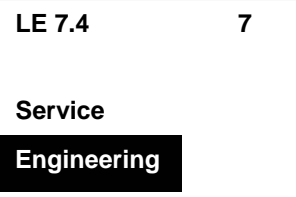| 6-1	Master Vapac	Selects the master vapac adjust parameters
6-1-1	Unit	Allows the "Unit" to be serviced..
6-1-2	Cylinder 1	Allows the "Cylinder 1" to be serviced
6-1-3	Cylinder 2	Allows cylinder 2 (if fitted) to be serviced
6-1-1-1	Constant Output	Allows the unit to be run at an (adjustable) preset level independently from the control signal
6-1-1-2	Quick Start	Allows the unit to get up to duty quicker by running at 100% demand until the cylinder has reached full current
6-1-1-3	Run Output	Allows the run relay to be switched "manually", to check external wiring to the remote indications
6-1-1-4	Fault Output	Allows the fault relay to be switched "manually", to check external wiring to the remote indications
6-1-1-5	Not available at this level	This item will not be displayed the next available menu item being displayed will be 6.1.1.7
6-1-1-6	Not available at this level	This item will not be displayed the next available menu item being displayed will be 6.1.1.7

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6-1-1-7	Store Runtimes	Commits the current run hours to FLASH memory.
6-1-2-1	Const Output	Allows the cylinder to be run at an (adjustable) preset level independently from the control signal
6-1-2-2	Manual Drain	Instigates a drain, as if holding down the manual drain switch, it can be used to prove the automatic drain is functioning or to drain the cylinder without holding the drain switch down
6-1-2-3	Auto Flush	Instigates an automatic flush, where the cylinder is filled with water and then fully drained a number of times. This is particularly useful when initially commissioning a unit which has a long run of new copper pipe in the feed supply, to "flush any impurities / flux from the water supply
6-1-2-4	Reset Run Hours	This re-sets the cylinder hours run to zero – usually done when the cylinder is changed
6-1-2-5	Manual Control	When this option is selected, automatic control of the feed valve and drain pump is suspended, allowing the following two options to be used
6-1-2-6	Feed Valve	This allows the feed valve to be manually switched "on" & "off" to prove the feed valve is operating correctly
6-1-2-7	Drain Pump	This allows the drain pump to be manually switched "on" & "off" to prove the drain pump is operating correctly
6-1-3-1 to 6-1-3-7		The above cylinder options are repeated for cylinder 2 (if fitted)
6-2 to 6-9-3		The above service options are repeated for slave units 1 to 9 (if applicable)

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LE 7.4              7


Service
Engineering
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7-1	Master Vapac	Selects the master vapac adjust parameters
7-1-1	Unit	Selects the "unit" parameters.
7-1-1-1	Fault Output	Allows the "fault" alarm signal to be set to either "Continuous" or "Pulsed.
7-1-1-2	Fault run scope	Allows the run & fault alarms to show either the "Master" or "Network" status. This defaults to "Network" as standard. i.e. the run signal will show if the network is operating and the fault indication will be made if any of the slaves are in a fault condition
7-1-1-3 to 7-1-1-29	Not available at this level	These items will not be displayed the next available menu item being displayed will be 7.1.1.30
7-1-1-30	Cyl Min Run	Specifies the minimum period of time that a cylinder will run
7-1-1-31	Cyl Hold On	Specifies the period of time a cylinder will continue to run after the demand signal has been removed.