# Electronic Controls Handbook

**Programming Flow Charts & Parameter Lists for**

## EWPC Series Controllers

Specialists in electronic refrigeration control

**www.thermofrostcryo.co.uk**

London
Tel. 020 8655 7600
Fax. 020 8761 8081

Birmingham
Tel. 0121 666 4700
Fax. 0121 622 7268

**Caution**

This handbook has been produced by Thermofrost Cryo PLC
Its unauthorised reproduction and or distribution in part or in whole, is an infringement of copyright

# Eliwell Controls

## Programming Flow Charts & Parameters

**General -**



**Programming & Flowcharts -**

The Programming Flow Charts & Parameter explanations shown in this brochure are designed to assist in the installation and service of Eliwell micro-processor based controls. Unfortunately it would be impractical to cover all of the Eliwell range in such a brochure so we have concentrated on the more commonly used models.

This booklet is not designed to replace the original manufacturers instruction booklet ( which is supplied with each new control ) but to provide additional guidance.

### Eliwell Control Installation & Set-up Suggestions

**Fault signals** - **'E1'** = room sensor fault - check wiring & connections between control and sensor. If no fault in wiring, check sensor resistance value as per table shown below. **'E2'** = evaporator sensor fault - check as per **E1**.
**Sensors** - Eliwell controls predominantly use PTC sensors with NI100 & PT100 types also being used on some models.
**Sensors - connections** - preferably use screw connection blocks or spade connections.
**Sensors - extension** - PTC sensors are extendable to a max. of 100 mtrs using 1,5 mm square section conductor cable.
**Sensors - interference** - avoid running sensor leads close to other electrical equipment and other cables conducting large switching loads. If this is unavoidable, use screened cable, earthed at both ends.
**Sensors - resistances** - sensor temperature (degree C.) / ohms resistance

| | **-10 C** | **0 C** | **+10 C** | **+20 C** |
|---|---|---|---|---|
| **PTC** | 740 | 800 | 877 | 950 |
| **NI100** | 94,6 | 100 | 105,6 | 111 |
| **PT100** | 96,1 | 100 | 104 | 108 |

| **Sensors - operating temps - sensor operating range** | | **cable ambient range** | |
|---|---|---|---|
| **PTC** | - 55 to + 140 C | **PVC** | - 20 to + 80 C |
| **PTC(W) *** | - 55 to + 140 C | **Silicone** | - 90 to + 200 C |
| **NI100** | - 50 to + 150 C | **Vetrotex(P)** | 0 to + 550 C |
| **PT100** | - 90 to + 600 C | **Vetrotex(P)** | 0 to + 550 C |

***** waterproof / high ambient sensor ( optional ).

**Spikes** - if power spikes are possible, fit a Varisitor in parallel with the power and neutral lines to the transformer on the 240v input side. Ask for part no. CON210. Refer to inside back cover - ***Adverse Condition Protection.***
**Supply fluctuation** - if the supply voltage drops below an acceptable level, the control display will flash indicating that the problem exists. During this time all functions are suspended until the correct voltage returns and the control resumes its normal programmed operation.
**Power** - most Eliwell controls are for connection to either mains 240v.1.50Hz supply or 12 VAC/DC ( normally fed from either a remote slave unit or a 3VA transformer ).
**Power interruption** - Eliwell controls will retain the entered operating program during a power failure. However, it is good practice to use the 'cleanest' available power supply. If the supply is also used for controlling large electrical loads, fit a 'noise filter' ( part no. CON200 ). Refer to inside back cover - ***Adverse Condition Protection.***
**Programming** - most Eliwell controls will retain the program memory for several years without an external power supply. This allows the control to be programmed 'on the bench' before issuing for site installation.
**Outputs** - check that the switching currents applied are within the ratings shown on the control & in the control detail.
**Output interference** - if the control is connected to an inductive coil (e.g. solenoid valves, etc. ) it is possible to pick up and transmit interference back to the control thus causing errors. If this could be a problem, fit a noise filter (part no. PELE342) in parallel, preferably across the coil. Refer to inside back cover - ***Adverse Condition Protection***.
**Water / humidity** - the EWPC900 & EWTB/EWPC1000 series controls have an IP65 rated front fascia. To provide a complete IP65 rated seal for the front fascia of a 74 x 32 mm control, a rubber gasket ( part no. PELE206 ) should be fitted between the back face of the control fascia and the panel mounting face. The control does require ventilation and therefore has ventilation slats on both sides of the control housing. These slats are designed to resist the intake of moisture but for 'drip' protection for the terminal connections, a protection kit ( part no. PELE205 ) is available.

**Setting the Set Point - after programming the control, ensure that the SET POINT value has also been entered.**

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

EWPC901 / T with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**SET**" button for about 10 seconds until display changes to read
**"HC"**

You are now in programming mode. See note

Release "**SET**" button
Display now shows first parameter
See list opposite

Press & release "**SET**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ^ & v buttons → Press & release "**SET**" button. The new setting has now been entered. The display shows the parameter just entered → Quickly press & release ^ button. The next parameter is displayed

Yes

Press & release "**SET**" button

Quickly press & release ^ button. The next parameter is displayed

Have all the required parameters been set ?

No → Press & release "**SET**" button to display parameter's current setting Is the setting correct ?

Yes

Allow control approx. 10 seconds to exit programming mode
See Note

Now enter the required Set Point by pressing & releasing the "**SET**" button & adjusting with the ^ & v buttons

Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

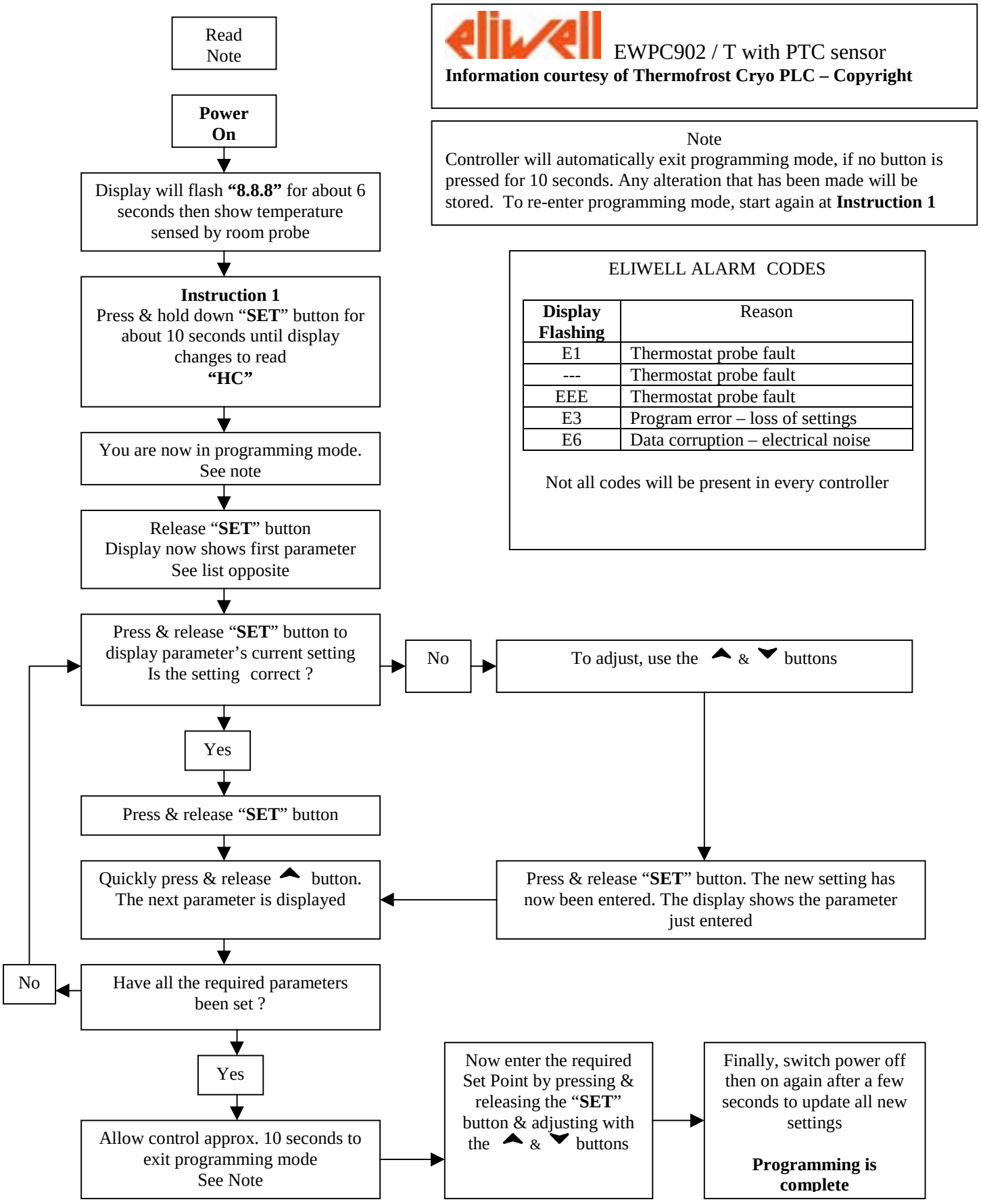
| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC901T / AR Parameters

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **SP**<br>Set Point | Sets the temperature at which the relay opens |
| **HC**<br>Heating / Cooling | H = Heating applications, differential is below Set Point (relay makes on fall)<br>C = Cooling applications, differential is above Set Point (relay makes on rise) |
| **d**<br>Differential | Sets the number of degrees above (or below) Set Point at which the relay closes |
| **LS**<br>Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HS**<br>Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **CA**<br>Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **rP**<br>Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **PS**<br>Protection type | **0** = delay, **in seconds,** before compressor starts (enter value in **Pt** below)<br>**1** = delay, **in minutes,** before compressor starts (enter value in **Pt** below)<br>**2** = after compressor stops, a delay, **in minutes,** before it can re-start (enter value in **Pt** below ).<br>**3** = delay, **in minutes,** between successive compressor starts ( enter value in **Pt** below ). |
| **Pt**<br>Protection time | Time period for parameter **PS** as above ( enter value between 0 > 31, mins or secs ). |
| **HA**<br>High Temp Alarm | Temperature deviation above set point at which internal alarm will be activated ( value entered must be positive ' + ' ). |
| **LA**<br>Low Temp Alarm | Temperature deviation below set point at which internal alarm will be activated ( value entered must be positive ' + ' ). |
| **Ad**<br>Alarm differential | Temperature differential for **HA** & **LA** alarms. |
| **PA**<br>Power on alarm delay | Alarm time delay, in hours, after start-up during which alarm will not activate. |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**




EWPC902 / T with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC902T/R/P Parameters

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **SP**<br>Set Point | Sets the temperature at which the relay opens |
| **d 1**<br>Differential | Sets the number of degrees above (or below) Set Point at which the relay closes |
| **LS 1**<br>Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HS 1**<br>Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **od**<br>Output delay | Delay in minutes between power coming on and output relays activating |
| **Lci**<br>Lower current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's bottom end of scale. (see note below) |
| **Hci**<br>Higher current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's upper end of scale. (see note below) |
| **CAL**<br>Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **PSE**<br>Probe type selection | **Ni** = Ni100 (RTD)<br>**Pt** = PT100 (RTD)<br>**FE** = J type thermocouple<br>**Cr** = K type thermocouple<br>**rh** = S type thermocouple |
| **HC 1**<br>Heating / Cooling | H = Heating / De-hum etc., differential is below Set Point (relay makes on fall)<br>C = Cooling / Hum etc., differential is above Set Point (relay makes on rise) |
| **rp1**<br>Relay protection | If sensor / wiring is defective, the relay will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **LF1**<br>LED function 1 | **di** = LED on when relay is energised<br>**in** = LED off when relay is energised |
| **dP**<br>Decimal Point | **oF** = No decimal point in readout<br>**on** = Will show decimal point in readout ( if this function selected see notes below)<br>**Note 1** - current & voltage input models, if this option selected, parameters '**Lci**' & '**H** must be entered as 10 times actual value.<br>**Note 2** - all models - if changed from non-decimal to decimal readout, all parameters entered in degrees will be automatically divided by 10.<br>**Note 3** - this function not applicable to models with thermocouple input. |
| **Hdd**<br>Half digit display | Half digit On / Off - Used to make the display's right hand digit read full scale ( 0 to 9 ) or half digit only ( 0 or 5 ) |
| tAb<br>Do not adjust | Do not alter this setting |

**Note - Pressure & Humidity models :** You must adjust the controller to the working range of the sensor. For example, if you have a humidity probe with a working range of 20÷80%RH, you must enter the value "20" into parameter **Lci**, and "80" into parameter **Hci**

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

EWPC905 / T with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**SET**" button for about 10 seconds until display changes to read
**"db"** or **"d1"**

You are now in programming mode. See note

Release "**SET**" button
Display now shows first parameter
See list opposite

Press & release "**SET**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ^ & v buttons → Press & release "**SET**" button. The new setting has now been entered. The display shows the parameter just entered

Yes

Press & release "**SET**" button

Quickly press & release ^ button.
The next parameter is displayed

No ← Have all the required parameters been set ?

Yes

Allow control approx. 10 seconds to exit programming mode
See Note

Now enter the required Set Points by pressing & releasing the "**SET**" button once for Set Point 1 & twice for Set Point 2, (if 2 stage), then adjust with the ^ & v buttons
If set as 2 stage control, Set Point 2 as differential value below Set Point 1
(see Param. table)

Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC905T Parameters

**Important Note**: Parameter **"Ft"** sets EWPC905 to act as either a 2 stage or Dead Band Controller.
Set parameter **"Ft"** before setting any other parameter

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **d 1** Differential for Set Point 1 | Sets the number of degrees above (or below) Set Point 1 at which relay 1 closes (Also see parameters **HC1** & **Ft**) |
| **d2** Differential for Set Point 2 | Sets the number of degrees above (or below) Set Point 1 at which relay 2 closes (Also see parameters **HC2** & **Ft**) |
| **db** Dead band | Sets the number of degrees above and below Set Point, at which the respective relays close. Relays will open again when Set Point is achieved. |
| **LS 1** Lower limit for Set Point 1 | Sets the lowest value to which customer will be able to adjust Set Point 1. |
| **LS 2** Lower limit for Set Point 2 | Sets the lowest value to which customer will be able to adjust Set Point 2. |
| **HS 1** Higher limit for Set Point 1 | Sets the highest value to which customer will be able to adjust set point 1. |
| **HS 2** Higher limit for Set Point 2 | Sets the highest value to which customer will be able to adjust set point 2. |
| **od** Output delay | Delay in seconds between power coming on and output relays activating |
| **Lci** Lower current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's bottom end of scale. (see note below) |
| **Hci** Higher current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's upper end of scale. (see note below) |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **Ft** Function type | Sets the EWPC905 to operate as a 2 stage or dead band controller<br>**on** = 2 stage control **nr** = Dead band control |
| **OCO** Set Points 1 & 2 dependent or independent | **di** = Set Point 2 is dependent on Set Point 1. Alter 1 and 2 will follow it<br>(Here, the temperature entered in Set Point 2 is the deviation from Set Point 1)<br>**in** = Both Set Points independent of each other<br>**Note**: **di** (dependent) is only possible if parameter **"Ft"** = **on** (2 stage operation) |
| **HC 1** Relay 1 Heating / Cooling | **H** = Heating / De-hum etc., differential is below Set Point (relay makes on fall)<br>**C** = Cooling / Hum etc., differential is above Set Point (relay makes on rise) |
| **HC 2** Relay 2 Heating / Cooling | **H** = Heating / De-hum etc., differential is below Set Point (relay makes on fall)<br>**C** = Cooling / Hum etc., differential is above Set Point (relay makes on rise) |
| **rP1** Relay 1 protection | If sensor / wiring is defective, the relay 1 will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **rP2** Relay 2 protection | If sensor / wiring is defective, the relay 2 will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **LF1** LED function 1 | **di** = LED on when relay 1 is energised<br>**in** = LED off when relay 1 is energised |
| **LF2** LED function 2 | **di** = LED on when relay 2 is energised<br>**in** = LED off when relay 2 is energised |
| **dP** Decimal Point | **oF** = No decimal point in readout<br>**on** = Will show decimal point in readout |
| **Hdd** Half digit display | Half digit On / Off - Used to make the display's right hand digit read full scale ( 0 to 9 ) or half digit only ( 0 or 5 ) |
| tAb Do not adjust | Do not alter this setting |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

EWTR910 / 920
with Ni100 or PT100 (RTD) sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**PRG, EWTR & SET (1)** buttons together until the display changes to read **"d1"**

You are now in programming mode. See note

Release all buttons
Display now shows first parameter
See list opposite

Press & release "**SET (1)**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ▲ & ▼ buttons → Press & release "**SET (1)**" button. The new setting has now been entered. The display shows the parameter just entered → Quickly press & release ▲ button. The next parameter is displayed

Yes

Press & release "**SET (1)**" button

Quickly press & release ▲ button. The next parameter is displayed

Have all the required parameters been set ?

No → Press & release "**SET (1)**" button to display parameter's current setting Is the setting correct ?

Yes

Allow control approx. 10 seconds to exit programming mode
See Note

Now enter the required Set Point by pressing & releasing the "**SET (1)**" button & adjusting with the ▲ & ▼ buttons
**NB "dro"** must be at **"P"**

Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWTR910 / 920 Parameters

**Important Notes:** Parameter **"dP"** decimal point on / off can effect some other parameters by a factor of 10. Always set **"dP"** first **.** Not all parameters listed may be present in every controller

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **d 1** Differential for Set Point 1 | Sets the number of degrees above (or below) Set Point 1 at which relay 1 closes (Also see parameters **HC1** & **Ft**) |
| **d2** Differential for Set Point 2 | Sets the number of degrees above (or below) Set Point 1 at which relay 2 closes (Also see parameters **HC2** & **Ft**) |
| **db** Dead band | Sets the number of degrees above and below Set Point, at which the respective relays close. Relays will open again when Set Point is achieved. |
| **LS 1** Lower limit for Set Point 1 | Sets the lowest value to which customer will be able to adjust Set Point 1. |
| **LS 2** Lower limit for Set Point 2 | Sets the lowest value to which customer will be able to adjust Set Point 2. |
| **HS 1** Higher limit for Set Point 1 | Sets the highest value to which customer will be able to adjust set point 1. |
| **HS 2** Higher limit for Set Point 2 | Sets the highest value to which customer will be able to adjust set point 2. |
| **od** Output delay | Delay in seconds between "power on" and output relays starting to operate |
| **Lci** Lower current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's bottom end of scale. (see note below) |
| **Hci** Higher current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's upper end of scale. (see note below) |
| **LAO** Low analogue output | Sets the temperature at which the analogue output will be at 4mA (for models with 4-20mA analogue output only) Also see parameter "**AOF**" |
| **HAO** High analogue output | Sets the temperature at which the analogue output will be at 20mA (for models with 4-20mA analogue output only) Also see parameter "**AOF**" |
| **CAL** Calibration | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **PSE** Probe selection | **NI** = Ni100 **Pt** = PT100 |
| **AOF** Analogue output function | **ro** = Temperatures entered into **LAO** & **HAO** are actual temperatures and remain fixed even if the Set Point is altered.<br>**Er** = The analogue output is linked to the Set Point. If Set Point is altered, the the analogue output will follow, and the relationship between **LAO, HAO** & Set Point will be maintained. Temperatures entered into **LAO** & **HAO** are not actual temperatures, but are the deviation away from Set Point<br>**Note:** The 4-20mA analogue output is always proportional between **LAO** & **HAO** |
| **OCO** Set Points dependent or independent | **di** = Set Point 2 is dependent on Set Point 1. Alter 1 and 2 will follow it (Here, the temperature entered in Set Point 2 is the deviation from Set Point 1)<br>**in** = Both Set Points independent of each other |
| **HC 1** Relay 1 Heating / Cooling | **H** = Heating / De-hum etc., differential is below Set Point (relay makes on fall)<br>**C** = Cooling / Hum etc., differential is above Set Point (relay makes on rise) |
| **HC 2** Relay 2 Heating / Cooling | **H** = Heating / De-hum etc., differential is below Set Point (relay makes on fall)<br>**C** = Cooling / Hum etc., differential is above Set Point (relay makes on rise) |
| **rP1** Relay 1 protection | If sensor / wiring is defective, the relay 1 will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **rP2** Relay 2 protection | If sensor / wiring is defective, the relay 2 will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **LF1** LED function 1 | **di** = LED on when relay 1 is energised **in** = LED off when relay 1 is energised |
| **LF2** LED function 2 | **di** = LED on when relay 2 is energised **in** = LED off when relay 2 is energised |
| **dP** Decimal Point | **oF** = No decimal point in readout **on** = Will show decimal point in readout |
| **dro** Display readout | **P** = Display system temperature **S** = Display Set Point |
| **AOS** Analogue Output Security | **Ao** = Analogue output goes to 20mA if sensor fails<br>**AF** = Analogue output goes to 4 mA if sensor fails |
| **Hdd** Half digit display | Half digit On / Off - Used to make the display's right hand digit read full scale ( 0 to 9 ) or half digit only ( 0 or 5 ) |
| **tAb** Do not adjust | **Do not alter this setting** |

EWTR930
with Ni100 or PT100 (RTD) sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**PRG, EWTR & SET (1)** buttons together until the display changes to read **"db"**

You are now in programming mode. See note

Release all buttons
Display now shows first parameter
See list opposite

Press & release "**SET** " button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ^ & v buttons → Press & release "**SET** " button. The new setting has now been entered. The display shows the parameter just entered → Quickly press & release ^ button. The next parameter is displayed

Yes → Press & release "**SET** " button

Have all the required parameters been set ?

No → Press & release "**SET** " button

Yes → Allow control approx. 10 seconds to exit programming mode
See Note → Now enter the required Set Point by pressing & releasing the "**SET**" button & adjusting with the ^ & v buttons
**NB "dro"** must be at **"P"** → Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note
Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWTR930 Parameters

**Important Notes:** Parameter **"dP"** decimal point on / off can effect some other parameters by a factor of 10. Always set **"dP"** first **.** Not all parameters listed may be present in every controller

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **db**<br>Dead band | Sets the number of degrees above and below Set Point, at which the respective relays close. Relays will open again when Set Point is achieved. |
| **LS 1** Lower limit for Set Point 1 | Sets the lowest value to which customer will be able to adjust Set Point 1. |
| **HS 1** Higher limit for Set Point 1 | Sets the highest value to which customer will be able to adjust set point 1. |
| **od** Output delay | Delay in seconds between "power on" and output relays starting to operate |
| **Lci**<br>Lower current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's bottom end of scale. (see note below) |
| **Hci**<br>Higher current input | For pressure and humidity models only. Set to same value as that of the transducer or humidity probe's upper end of scale. (see note below) |
| **LAO** Low analogue output | Sets the temperature at which the analogue output will be at 4mA (for models with 4-20mA analogue output only) Also see parameter "**AOF**" |
| **HAO** High analogue output | Sets the temperature at which the analogue output will be at 20mA (for models with 4-20mA analogue output only) Also see parameter "**AOF**" |
| **CAL** Calibration | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **PSE** Probe selection | **NI** = Ni100 **Pt** = PT100 |
| **AOF** Analogue output function | **ro** = Temperatures entered into **LAO** & **HAO** are actual temperatures and remain fixed even if the Set Point is altered.<br>**Er** = The analogue output is linked to the Set Point. If Set Point is altered, the the analogue output will follow, and the relationship between **LAO, HAO** & Set Point will be maintained. Temperatures entered into **LAO** & **HAO** are not actual temperatures, but are the deviation away from Set Point<br>**Note:** The 4-20mA analogue output is always proportional between **LAO** & **HAO** |
| **rP1**<br>Relay 1 protection | If sensor / wiring is defective, the relay 1 will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **rP2**<br>Relay 2 protection | If sensor / wiring is defective, the relay 2 will –<br>**ro** = Open ( ie. compressor is switched off until fault is corrected ).<br>**rc** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **LF1** LED function 1 | **di** = LED on when relay 1 is energised **in** = LED off when relay 1 is energised |
| **LF2** LED function 2 | **di** = LED on when relay 2 is energised **in** = LED off when relay 2 is energised |
| **dP** Decimal Point | **oF** = No decimal point in readout **on** = Will show decimal point in readout |
| **dro** Display readout | **P** = Display system temperature **S** = Display Set Point |
| **AOS** Analogue Output Security | **Ao** = Analogue output goes to 20mA if sensor fails<br>**AF** = Analogue output goes to 4 mA if sensor fails |
| **Hdd**<br>Half digit display | Half digit On / Off - Used to make the display's right hand digit read full scale ( 0 to 9 ) or half digit only ( 0 or 5 ) |
| tAb Do not adjust | Do not alter this setting |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

EWPC961T / AR with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**SET**" button for about 10 seconds until display changes to read
**"d"**

You are now in programming mode. See note

Release "**SET**" button
Display now shows first parameter
See list opposite

Press & release "**SET**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ^ & v buttons → Press & release "**SET**" button. The new setting has now been entered. The display shows the parameter just entered

Yes

Press & release "**SET**" button

Quickly press & release ^ button.
The next parameter is displayed

No ← Have all the required parameters been set ?

Yes

Allow control approx. 10 seconds to exit programming mode
See Note

Now enter the required Set Point by pressing & releasing the "**SET**" button & adjusting with the ^ & v buttons

Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC961T / AR Parameters

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **d** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LS** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HS** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 15 deg.. |
| **rP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **PS** Compressor protection system | **0** = delay, **in seconds,** before compressor starts (enter value in **Pt** below)<br>**1** = delay, **in minutes,** before compressor starts (enter value in **Pt** below)<br>**2** = after compressor stops, a delay, **in minutes,** before it can re-start (enter value in **Pt** below ).<br>**3** = delay, **in minutes,** between successive compressor starts (enter value in **Pt** below |
| **Pt** Protection time | Time period for parameter **PS** as above ( enter value between 0 > 31, mins or secs ). |
| **dS** Defrost System | **dF** = defrost period based upon compressor running time in hours (Digifrost ).<br>**rt** = defrost period based upon real ( clock ) time. |
| **dI** Defrost Interval | Time period, in hours, between defrost starts ( see **dS** above ). |
| **dE** Defrost Endurance | Maximum length of defrost, in minutes. |
| **dL** Defrost display Lock | **n** = Display will continue to show sensor temperature during defrost.<br>**y** = During defrost, display will be 'locked' - for options see **dr** below. |
| **dr** Display readout unit | If **dL** ( as above ) is set to **'y',** this determines locked display shown during defrost -<br>**C** = Display locked on the temperature showing prior to defrost.<br>**df** = Display locked to show **'' df "** indicating defrost in progress<br>**Note :** Either display will remain 'locked' until the set point temp. is regained. |
| **do** Defrost at power on | System will go into defrost when power supply is connected -<br>**n** = No.<br>**y** = Yes. |
| **dd** Defrost delay | Delay, in minutes, after power on before defrost can start. |
| **HA** High temp. Alarm | Temperature deviation above set point at which alarm will be activated ( value entered must be positive ' + ' ) i.e. if set point is minus 10 deg C & required alarm ter is minus 3 deg C, enter value " 7 ". |
| **LA** Low temp. Alarm | Temperature deviation below set point at which alarm will be activated ( value entered must be positive ' + ' ). |
| **Ad** Alarm differential | Temperature differential for **HAL** & **LAL** alarm settings ( as above ). |
| **PA** Power on alarm delay | Alarm time delay after power on ( hours ). |
| **dA** Defrost Alarm delay | Alarm time delay after defrost ( see **Au** below ). |
| **Au** Alarm time unit | Selects unit ( hours or minutes ) for defrost alarm delay - see **dA** above. |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**SET**" button for about 10 seconds until display changes to read
**"dif"**

You are now in programming mode. See note

Release "**SET**" button
Display now shows first parameter
See list opposite

Press & release "**SET**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ^ & v buttons → Press & release "**SET**" button. The new setting has now been entered. The display shows the parameter just entered → Quickly press & release ^ button. The next parameter is displayed

Yes

Press & release "**SET**" button

Quickly press & release ^ button. The next parameter is displayed

Have all the required parameters been set ?

No → Press & release "**SET**" button to display parameter's current setting Is the setting correct ?

Yes

Allow control approx. 10 seconds to exit programming mode
See Note

Now enter the required Set Point by pressing & releasing the "**SET**" button & adjusting with the ^ & v buttons

Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

EWPC970 T with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC970T Parameters

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **diF** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LSE** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HSE** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **dty** Defrost type | **EL** = Electric defrost.<br>**in** = Reverse cycle or hot-gas defrost. |
| **dit** Defrost interval | Time period, in hours, between defrosts ( see **dct** below ). |
| **dct** Defrost counting type | **dF** = Defrost interval based upon compressor running time.<br>**rt** = Defrost interval based upon real ( clock ) time.<br>**SC** = Goes into defrost when compressor stops.<br>**Fr** = Allows free use of defrost relay for other purposes i.e. isolation of separate alarm system during defrost, etc.. |
| **doh** Defrost offset | If defrost on start up is required (see **dPo** below) then this parameter creates an initial time period, in minutes, of normal operation before the defrost commences. ie. if **dPo** is on '**Y**' & **doh** is at '**10**', then on start-up system will run for 10 mins & then go into defrost. |
| **dEt** Defrost duration | Time period, in minutes, of defrost cycle |
| **dt** Drip time | Time period, in minutes, at the end of defrost when compressor remains off |
| **dPo** Defrost at power on | Instructs controller to carry out defrost when power supply is reconnected -<br>**n** = No.<br>**y** = Yes. |
| **ddL** Defrost display lock | **n** = When system goes into defrost, display will show sensor temperature.<br>**y** = During defrost, display will lock on temperature shown at start of defrost.<br>**Lb** = Display shows '**def**' throughout defrost cycle.<br>**Note :** Options '**y**' & '**Lb**' – display remains locked until set point temp is regained. |
| **cPP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **ctP** Compressor type of protection | **nP** = No compressor short-cycling protection.<br>**don** = A delay is created between signal for the compressor to run and the compressor relay making ( for time period, see **CdP** below ).<br>**doF** = A delay is created between the compressor switching off and subsequent re-start ( for time period, see **CdP** below ).<br>**dbi** = After compressor starts, there is a time period before it can restart ( for time period, see **cdP** below ) |
| **cdP** Compressor delay protection | The time period, in minutes, for **ctP** (see above). |
| **odo** Output delay at power on | When power supply is switched on, all functions are delayed for this period ( in mins. ). |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **tab do not adjust** | **Do not alter this setting** |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

EWPC971 T with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**SET**" button for about 10 seconds until display changes to read
**"dif"**

You are now in programming mode. See note

Release "**SET**" button
Display now shows first parameter
See list opposite

Press & release "**SET**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ^ & v buttons → Press & release "**SET**" button. The new setting has now been entered. The display shows the parameter just entered

Yes

Press & release "**SET**" button

Quickly press & release ^ button.
The next parameter is displayed

No ← Have all the required parameters been set ?

Yes

Allow control approx. 10 seconds to exit programming mode
See Note

Now enter the required Set Point by pressing & releasing the "**SET**" button & adjusting with the ^ & v buttons

Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E2 | Evaporator probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

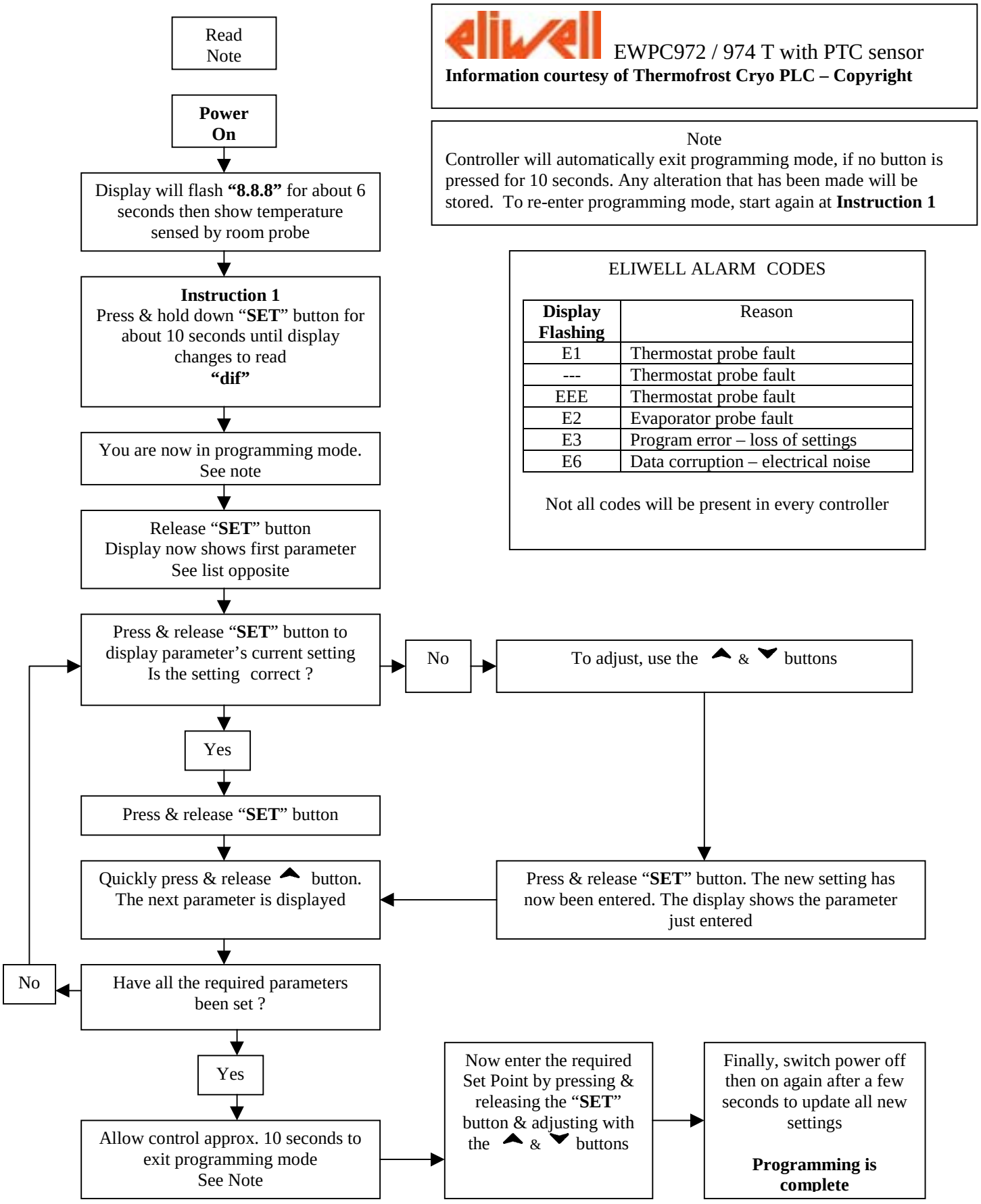
Not all codes will be present in every controller

# Eliwell EWPC971T Parameters

**Important:** If using in conjunction with EWDR975, refer to pages 31 for special instructions

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **diF** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LSE** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HSE** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **dty** Defrost type | **EL** = Electric defrost.<br>**in** = Reverse cycle or hot-gas defrost. |
| **dit** Defrost interval | Time period, in hours, between defrosts ( see **dct** below ). |
| **dct** Defrost counting type | **dF** = Defrost interval based upon compressor running time.<br>**rt** = Defrost interval based upon real ( clock ) time.<br>**SC** = Goes into defrost when compressor stops.<br>**Fr** = Allows free use of defrost relay for other purposes i.e. isolation of separate alarm system during defrost, etc.. |
| **doh** Defrost offset | If defrost on start up is required (see **dPo** below) then this parameter creates an initial time period, in minutes, of normal operation before the defrost commences. ie. if **dPo** is on '**Y**' & **doh** is at '**10**', then on start-up system will run for 10 mins & then go into defrost. |
| **dEt** Defrost duration | Time period, in minutes, of defrost cycle - maximum defrost time assuming **dSt** value ( as below ) is not reached first. |
| **dSt** Defrost termination temp. | Temperature as sensed by evaporator probe, at which defrost cycle is terminated. |
| **dt** Drip time | Time period, in minutes, at the end of defrost when compressor remains off |
| **dPo** Defrost at power on | Instructs controller to carry out defrost when power supply is reconnected -<br>**n** = No.<br>**y** = Yes. |
| **ddL** Defrost display lock | **n** = When system goes into defrost, display will show sensor temperature.<br>**y** = During defrost, display will lock on temperature shown at start of defrost.<br>**Lb** = Display shows '**def**' throughout defrost cycle.<br>**Note :** Options '**y**' & '**Lb**' – display remains locked until set point temp is regained. |
| **cPP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **ctP** Compressor type of protection | **nP** = No compressor short-cycling protection.<br>**don** = A delay is created between signal for the compressor to run and the compressor relay making ( for time period, see **CdP** below ).<br>**doF** = A delay is created between the compressor switching off and subsequent re-start ( for time period, see **CdP** below ).<br>**dbi** = After compressor starts, there is a time period before it can restart ( for time period, see **cdP** below ) |
| **cdP** Compressor delay protection | The time period, in minutes, for **ctP** (see above). |
| **odo** Output delay at power on | When power supply is switched on, all functions are delayed for this period ( in mins. ). |
| **EPr** Evaporator probe readout | Displays temperature sensed by the evaporator probe. |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **tab do not adjust** | **Do not alter this setting** |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**




EWPC972 / 974 T with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E2 | Evaporator probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC972T Parameters

**Important:** If using in conjunction with EWDR975, refer to pages 31 for special instructions

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **diF** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LSE** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HSE** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **dty** Defrost type | **EL** = Electric defrost.<br>**in** = Reverse cycle or hot-gas defrost. |
| **dit** Defrost interval | Time period, in hours, between defrosts ( see **dct** below ). |
| **dct** Defrost counting type | **dF** = Defrost interval based upon compressor running time.<br>**rt** = Defrost interval based upon real ( clock ) time.<br>**SC** = Goes into defrost when compressor stops.<br>**Fr** = Allows free use of defrost relay for other purposes i.e. isolation of separate alarm system during defrost, etc.. |
| **doh** Defrost offset | If defrost on start up is required (see **dPo** below) then this parameter creates an initial time period, in minutes, of normal operation before the defrost commences. ie. if **dPo** is on '**Y**' & **doh** is at '**10**', then on start-up system will run for 10 mins & then go into defrost. |
| **dEt** Defrost duration | Time period, in minutes, of defrost cycle - maximum defrost time assuming **dSt** value ( as below ) is not reached first. |
| **dSt** Defrost termination temp. | Temperature as sensed by evaporator probe, at which defrost cycle is terminated. |
| **FSt** Fan stop temp | When temperature sensed by evaporator probe is above this setting, evap fans stop |
| **Fdt** Fan delay time | Time period, in minutes, after end of defrost during which fans will remain stopped. |
| **dt** Drip time | Time period, in minutes, at the end of defrost when both compressor & evap fans remain off.. e.g. if **Fdt** = 5 mins & **dt** = 3 mins, then at end of defrost both compress & fans will remain off for 3 mins with evap. fans remaining off for a further 2 mins (i.e. a total of 5 mins). |
| **dPo** Defrost at power on | Instructs controller to carry out defrost when power supply is reconnected -<br>**n** = No.<br>**y** = Yes. |
| **ddL** Defrost display lock | **n** = When system goes into defrost, display will show sensor temperature.<br>**y** = During defrost, display will lock on temperature shown at start of defrost.<br>**Lb** = Display shows '**def**' throughout defrost cycle.<br>**Note :** Options '**y**' & '**Lb**' – display remains locked until set point temp is regained. |
| **dFd** Defrost fan disable | **n** = Evaporator fans remain on during defrost.<br>**y** = Evaporator fans switch off during defrost. |
| **AFd** Fan differential | Temperature differential for **Fst** (as above) and for **HAL / LAL** (as above). |
| **Fco** Fan compressor off | When the thermostat is satisfied -<br>**oF** = Compressor & evaporator fans switch off<br>**on** = Compressor switches off - fans remain on. |
| **cPP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

**Continued:-**

# Eliwell EWPC972T Parameters - continued

| | |
|---|---|
| **ctP** Compressor type of protection | **nP** = No compressor short-cycling protection.<br>**don** = A delay is created between signal for the compressor to run and the compressor relay making ( for time period, see **CdP** below ).<br>**doF** = A delay is created between the compressor switching off and subsequent re-start ( for time period, see **CdP** below ).<br>**dbi** = After compressor starts, there is a time period before it can restart ( for time period, see **cdP** below ) |
| **cdP** Compressor delay protection | The time period, in minutes, for **ctP** (see above). |
| **odo** Output delay at power on | When power supply is switched on, all functions are delayed for this period ( in mins. ). |
| **EPr** Evaporator probe readout | Displays temperature sensed by the evaporator probe. |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **tab do not adjust** | **Do not alter this setting** |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

# Eliwell EWPC974T Parameters

**Important:** If using in conjunction with EWDR975, refer to pages 31 for special instructions

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **diF** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LSE** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HSE** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **dty** Defrost type | **EL** = Electric defrost.<br>**in** = Reverse cycle or hot-gas defrost. |
| **dit** Defrost interval | Time period, in hours, between defrosts ( see **dct** below ). |
| **dct** Defrost counting type | **dF** = Defrost interval based upon compressor running time.<br>**rt** = Defrost interval based upon real ( clock ) time.<br>**SC** = Goes into defrost when compressor stops.<br>**Fr** = Allows free use of defrost relay for other purposes i.e. isolation of separate alarm system during defrost, etc.. |
| **doh** Defrost offset | If defrost on start up is required (see **dPo** below) then this parameter creates an initial time period, in minutes, of normal operation before the defrost commences. ie. if **dPo** is on '**Y**' & **doh** is at '**10**', then on start-up system will run for 10 mins & then go into defrost. |
| **dEt** Defrost duration | Time period, in minutes, of defrost cycle - maximum defrost time assuming **dSt** value ( as below ) is not reached first. |
| **dSt** Defrost termination temp. | Temperature as sensed by evaporator probe, at which defrost cycle is terminated. |
| **FSt** Fan stop temp | When temperature sensed by evaporator probe is above this setting, evap fans stop |
| **Fdt** Fan delay time | Time period, in minutes, after end of defrost during which fans will remain stopped. |
| **dt** Drip time | Time period, in minutes, at the end of defrost when both compressor & evap fans remain off.. e.g. if **Fdt** = 5 mins & **dt** = 3 mins, then at end of defrost both compresso & fans will remain off for 3 mins with evap. fans remaining off for a further 2 mins (i.e. a total of 5 mins). |
| **dPo** Defrost at power on | Instructs controller to carry out defrost when power supply is reconnected -<br>**n** = No.<br>**y** = Yes. |
| **ddL** Defrost display lock | **n** = When system goes into defrost, display will show sensor temperature.<br>**y** = During defrost, display will lock on temperature shown at start of defrost.<br>**Lb** = Display shows '**def**' throughout defrost cycle.<br>**Note :** Options '**y**' & '**Lb**' – display remains locked until set point temp is regained. |
| **dFd** Defrost fan disable | **n** = Evaporator fans remain on during defrost.<br>**y** = Evaporator fans switch off during defrost. |
| **HAL** High temp alarm | Temperature offset above the set point at which LED & alarm output signal will be activated ( value entered must be positive ' **+** ' ). |
| **LAL** Low temp alarm | Temperature offset below the set point at which LED & alarm output signal will be activated ( value entered must be positive ' **+** ' ). |
| **AFd** Alarm / Fan differential | Temperature differential for **Fst** (as above) and for **HAL / LAL** (as above). |

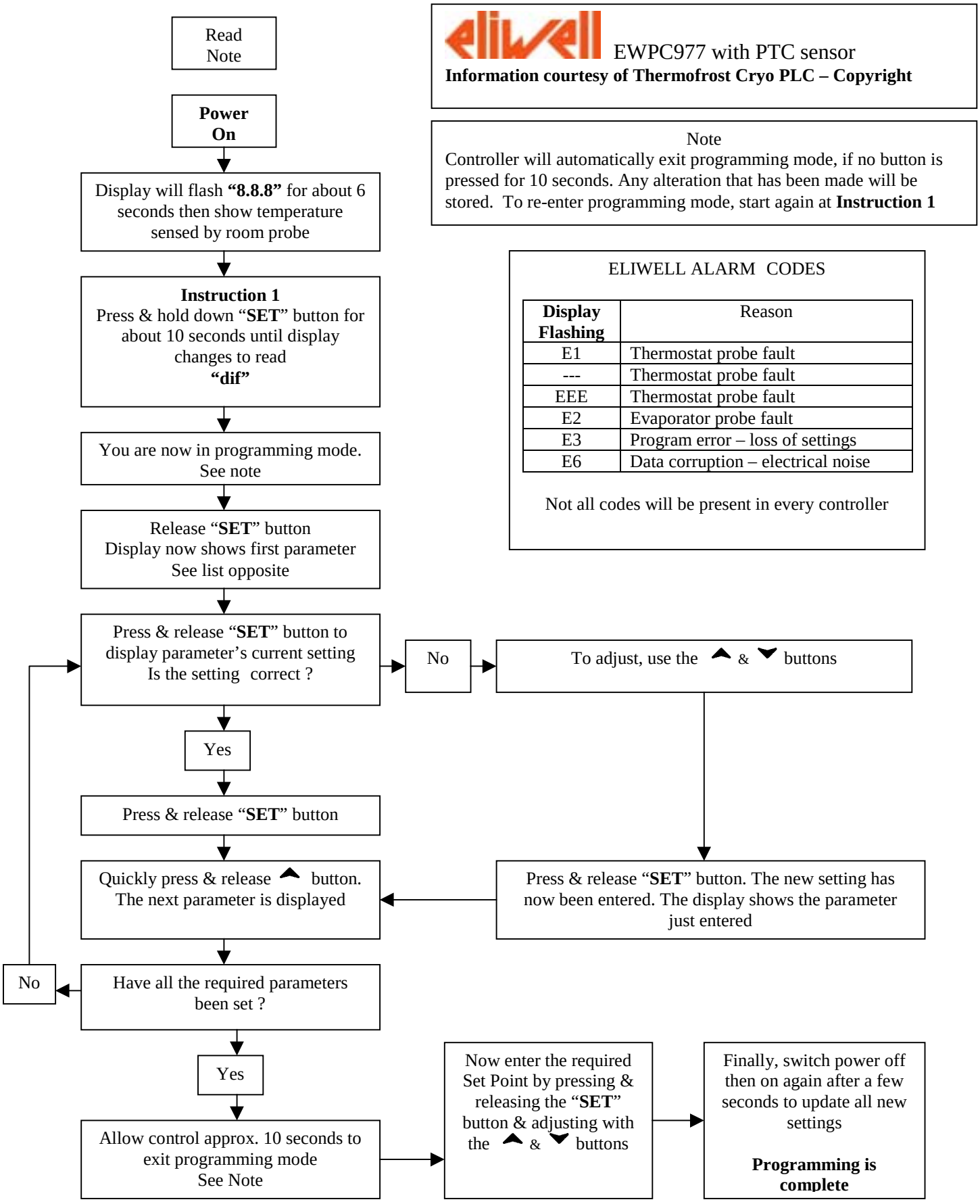
**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

**Continued:-**

# Eliwell EWPC974T Parameters - continued

| | |
|---|---|
| **PAo** Power on alarm o/ride | Delay, in hours, before alarm activates after power supply is connected |
| **dAo** Defrost alarm o/ride | Alarm delay, in hours, initiated after defrost cycle has been completed. |
| **Fco** Fan compressor off | When the thermostat is satisfied -<br>**oF** = Compressor & evaporator fans switch off<br>**on** = Compressor switches off - fans remain on. |
| **cPP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **ctP** Compressor type of protection | **nP** = No compressor short-cycling protection.<br>**don** = A delay is created between signal for the compressor to run and the compressor relay making ( for time period, see **CdP** below ).<br>**doF** = A delay is created between the compressor switching off and subsequent re-start ( for time period, see **CdP** below ).<br>**dbi** = After compressor starts, there is a time period before it can restart ( for time period, see **cdP** below ) |
| **cdP** Compressor delay protection | The time period, in minutes, for **ctP** (see above). |
| **odo** Output delay at power on | When power supply is switched on, all functions are delayed for this period ( in mins. ). |
| **EPr** Evaporator probe readout | Displays temperature sensed by the evaporator probe. |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **AoP** Alarm output polarity | Allows selection of alarm relay function -<br>**In** = Relay opens during alarm condition.<br>**di** = Relay closes during alarm condition. |
| **OSU** Zero suppression | **y** = Eliminates the prefix zero in 3-figure display.<br>**n** = Allows prefix zero to appear in display. e.g..'**0**20' |
| **tab do not adjust** | **Do not alter this setting** |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**




EWPC977 with PTC sensor

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E2 | Evaporator probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC977 Parameters

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **diF** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LSE** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HSE** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **dty** Defrost type | **EL** = Electric defrost.<br>**in** = Reverse cycle or hot-gas defrost. |
| **dit** Defrost interval | Time period, in hours, between defrosts ( see **dct** below ). |
| **dct** Defrost counting type | **dF** = Defrost interval based upon compressor running time.<br>**rt** = Defrost interval based upon real ( clock ) time.<br>**SC** = Goes into defrost when compressor stops.<br>**Fr** = Allows free use of defrost relay for other purposes i.e. isolation of separate alarm system during defrost, etc.. |
| **doh** Defrost offset | If defrost on start up is required (see **dPo** below) then this parameter creates an initial time period, in minutes, of normal operation before the defrost commences. ie. if **dPo** is on '**Y**' & **doh** is at '**10**', then on start-up system will run for 10 mins & then go into defrost. |
| **dEt** Defrost duration | Time period, in minutes, of defrost cycle - maximum defrost time assuming **dSt** value ( as below ) is not reached first. |
| **dSt** Defrost termination temp. | Temperature as sensed by evaporator probe, at which defrost cycle is terminated. |
| **dt** Drip time | Time period, in minutes, at the end of defrost when compressor remains off |
| **dPo** Defrost at power on | Instructs controller to carry out defrost when power supply is reconnected -<br>**n** = No.<br>**y** = Yes. |
| **ddL** Defrost display lock | **n** = When system goes into defrost, display will show sensor temperature.<br>**y** = During defrost, display will lock on temperature shown at start of defrost.<br>**Lb** = Display shows '**def**' throughout defrost cycle.<br>**Note :** Options '**y**' & '**Lb**' – display remains locked until set point temp is regained. |
| **HAL** High temp alarm | Temperature offset above the set point at which LED & alarm output signal will be activated ( value entered must be positive ' **+** ' ). |
| **LAL** Low temp alarm | Temperature offset below the set point at which LED & alarm output signal will be activated ( value entered must be positive ' **+** ' ). |
| **AFd** Alarm / Fan differential | Temperature differential for **Fst** (as above) and for **HAL / LAL** (as above). |
| **PAo** Power on alarm o/ride | Delay, in hours, before alarm activates after power supply is connected |
| **dAo** Defrost alarm o/ride | Alarm delay, in hours, initiated after defrost cycle has been completed. |
| **cPP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

**Continued:-**

# Eliwell EWPC977 Parameters - continued

| | |
|---|---|
| **ctP** Compressor type of protection | **nP** = No compressor short-cycling protection.<br>**don** = A delay is created between signal for the compressor to run and the compressor relay making ( for time period, see **CdP** below ).<br>**doF** = A delay is created between the compressor switching off and subsequent re-start ( for time period, see **CdP** below ).<br>**dbi** = After compressor starts, there is a time period before it can restart ( for time period, see **cdP** below ) |
| **cdP** Compressor delay protection | The time period, in minutes, for **ctP** (see above). |
| **odo** Output delay at power on | When power supply is switched on, all functions are delayed for this period ( in mins. ). |
| **EPr** Evaporator probe readout | Displays temperature sensed by the evaporator probe. |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **AoP** Alarm output polarity | Allows selection of alarm relay function -<br>**In** = Relay opens during alarm condition.<br>**di** = Relay closes during alarm condition. |
| **tab do not adjust** | **Do not alter this setting** |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

EWPC / EWTB 1000 /C / S

**Information courtesy of Thermofrost Cryo PLC – Copyright**

Read Note

**Power On**

Display will flash **"8.8.8"** for about 6 seconds then show temperature sensed by room probe

**Instruction 1**
Press & hold down "**SET**" & "**HIDDEN**" button until display changes to read **"dif"**
**Note:** Hidden button is at the top right corner of front panel

You are now in programming mode. See note

Release "**SET**" button
Display now shows first parameter
See list opposite

Press & release "**SET**" button to display parameter's current setting
Is the setting correct ?

No → To adjust, use the ▲ & ▼ buttons → Press & release "**SET**" button. The new setting has now been entered. The display shows the parameter just entered → Quickly press & release ▲ button. The next parameter is displayed

Yes → Press & release "**SET**" button

Have all the required parameters been set ?

No → Press & release "**SET**" button

Yes → Allow control approx. 10 seconds to exit programming mode
See Note → Now enter the required Set Point by pressing & releasing the "**SET**" button & adjusting with the ▲ & ▼ buttons → Finally, switch power off then on again after a few seconds to update all new settings

**Programming is complete**

Note

Controller will automatically exit programming mode, if no button is pressed for 10 seconds. Any alteration that has been made will be stored. To re-enter programming mode, start again at **Instruction 1**

ELIWELL ALARM CODES

| **Display Flashing** | Reason |
|---|---|
| E0 | Pressure switch error |
| E1 | Thermostat probe fault |
| --- | Thermostat probe fault |
| EEE | Thermostat probe fault |
| E2 | Evaporator probe fault |
| E3 | Program error – loss of settings |
| E6 | Data corruption – electrical noise |

Not all codes will be present in every controller

# Eliwell EWPC & EWTB 1000 Parameters

| PARAMETERS | FUNCTIONS / OPTIONS |
|---|---|
| **diF** Differential | Sets the number of degrees above Set Point at which the compressor is re-started |
| **LSE** Lower Set Point limit | Sets the lowest value to which customer will be able to adjust set point. |
| **HSE** Higher Set Point limit | Sets the highest value to which customer will be able to adjust set point. |
| **dty** Defrost type | **EL** = Electric defrost.<br>**in** = Reverse cycle or hot-gas defrost. |
| **dit** Defrost interval | Time period, in hours, between defrosts ( see **dct** below – enter '**0**' value ). |
| **dct** Defrost counting type | **dF** = Defrost interval based upon compressor running time.<br>**rt** = Defrost interval based upon real ( clock ) time (see **dit** above & **dtl** below )<br>**SC** = Goes into defrost when compressor stops. |
| **dtl** Real time defrost set | **dt1** = Defrost start time settings - upto 6 sequential set times per 24 hrs ( **dt1** > **dt6** )<br>**oF** = Real ( clock ) time settings switched off. |
| **doh** Defrost offset | If defrost on start up is required (see **dPo** below) then this parameter creates an initial time period, in minutes, of normal operation before the defrost commences. ie. if **dPo** is on '**Y**' & **doh** is at '**10**', then on start-up system will run for 10 mins & then go into defrost. |
| **dEt** Defrost duration | Time period, in minutes, of defrost cycle - maximum defrost time assuming **dSt** value ( as below ) is not reached first. |
| **dSt** Defrost termination temp. | Temperature as sensed by evaporator probe, at which defrost cycle is terminated. |
| **POS** Postpone time | If system condition prevents a programmed defrost, this allows either postponement ( until condition has been rectified ) or cancellation of the defrost -<br>**n** = Cancel defrost<br>**y** = Postpone defrost |
| **FSt** Fan stop temp | When temperature sensed by evaporator probe is above this setting, evap fans stop |
| **Fdt** Fan delay time | Time period, in minutes, after end of defrost during which fans will remain stopped. |
| **dt** Drip time | Time period, in minutes, at the end of defrost when both compressor & evap fans remain off.. e.g. if **Fdt** = 5 mins & **dt** = 3 mins, then at end of defrost both compress & fans will remain off for 3 mins with evap. fans remaining off for a further 2 mins (i.e. a total of 5 mins). |
| **dPo** Defrost at power on | Instructs controller to carry out defrost when power supply is reconnected -<br>**n** = No.<br>**y** = Yes. |
| **ddL** Defrost display lock | **n** = When system goes into defrost, display will show sensor temperature.<br>**y** = During defrost, display will lock on temperature shown at start of defrost.<br>**Lb** = Display shows '**def**' throughout defrost cycle.<br>**Note :** Options '**y**' & '**Lb**' – display remains locked until set point temp is regained. |
| **dFd** Defrost fan disable | **n** = Evaporator fans remain on during defrost.<br>**y** = Evaporator fans switch off during defrost. |
| **HAL** High temp alarm | Temperature offset above the set point at which LED & alarm output signal will be activated ( value entered must be positive ' + ' ). |
| **LAL** Low temp alarm | Temperature offset below the set point at which LED & alarm output signal will be activated ( value entered must be positive ' + ' ). |
| **AFd** Alarm / Fan differential | Temperature differential for **Fst** (as above) and for **HAL / LAL** (as above). |
| **PAo** Power on alarm o/ride | Delay, in hours, before alarm activates after power supply is connected |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

**Continued:-**

# Eliwell EWPC & EWTB 1000 Parameters - continued

| | |
|---|---|
| **dAo** Defrost alarm o/ride | Alarm delay, in hours, initiated after defrost cycle has been completed. |
| **oAo** Door Alarm over-ride | Door alarm delay, in hours, after door opening. |
| **cAo** Cont. cycle Alarm o/r | After a continuous cycle operation has been manually initiated, the temp. alarm can be delayed for this period ( hours ). |
| **cct** Continuous cycle time | Duration of continuous cycle operation during which compressor will run regardless of thermostat signal ( in hours ). |
| **Fco** Fan compressor off | When the thermostat is satisfied -<br>**oF** = Compressor & evaporator fans switch off<br>**on** = Compressor switches off - fans remain on. |
| **Fod** Fan / door delay | **oF** = Evaporator fans switch off when doors are open.<br>**on** = Fans remain on with door open. |
| **cPP** Compressor probe protection | If sensor / wiring is defective, the compressor relay will –<br>**oF** = Open ( ie. compressor is switched off until fault is corrected ).<br>**on** = Close ( ie. compressor runs continuously until fault is corrected ). |
| **ctP** Compressor type of protection | **nP** = No compressor short-cycling protection.<br>**don** = A delay is created between signal for the compressor to run and the compressor relay making ( for time period, see **CdP** below ).<br>**doF** = A delay is created between the compressor switching off and subsequent re-start ( for time period, see **CdP** below ).<br>**dbi** = After compressor starts, there is a time period before it can restart ( for time period, see **cdP** below ) |
| **cdP** Compressor delay protection | The time period, in minutes, for **ctP** (see above). |
| **PEn** Pressure Error number | Number of acceptable pressure switch trips within specific time period (see **PEI** below). |
| **PEI** Pressure Error Interval | Specific time period for **PEn** as above. |
| **odo** Output delay at power on | When power supply is switched on, all functions are delayed for this period ( in mins. ). |
| **dod** Door open shut-down | Switch off compressor & evaporator fans when door open -<br>**n** = No.<br>**y** = Yes. |
| **dSd** Door open / light | Switch on lights when door is open -<br>**n** = No.<br>**y** = Yes. |
| **ldd** Light / door disable | Door operated switch continues to function if EWPC/EWTB control is switched off ( but still powered up ) -<br>**n** = No<br>**y** = Yes |
| **EPr** Evaporator probe readout | Displays temperature sensed by the evaporator probe. |
| **CAL** Calibration thermostat probe | Enables the sensor display temperature to be re-calibrated or offset by + / - 20 deg.. |
| **dEA** Device address | Applicable to ***TELEVIS*** version only - refer to ***TELEVIS*** installation instructions. |
| **dEF** Device Family | Applicable to ***TELEVIS*** version only - refer to ***TELEVIS*** installation instructions. |
| **tab do not adjust** | **Do not alter this setting** |

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

# Eliwell EWDR975

This supplementary device is used in conjunction with **Eliwell 'DIGIFROST'** controllers such as **EWPC971**, **972** or **974** to provide control for a dual system consisting of two separate compressors and evaporators or, alternatively, two evaporators with one compressor.

Due to the logic in the **'DIGIFROST'** controller, it is vital to the operation of the system that, where applicable, the following parameters on the **EWPC** 'mother' control should be set as follows -

| **PARAMETERS** | | **IMPORTANT SETTINGS** |
|---|---|---|
| **dSt** | Defrost Stop temp. | **Must be set to value of '85' or above** |
| **FSt** | Fan Stop temp. | **Must be set to value of '85' or above** |

## Important Notes

| | | |
|---|---|---|
| **EPr** | Evap Probe readout | **This function is now redundant.** |

Error messages **'E1'** & **'E2'** indicating a faulty sensor or connection will no longer appear in the display. If a fault occurs, the sensor resistances should be checked as per the table shown in 'Installation & Setup Suggestions' - please refer to page 1.

**For additional assistance or guidance on the application of the EWDR975, please contact our Technical Department.**

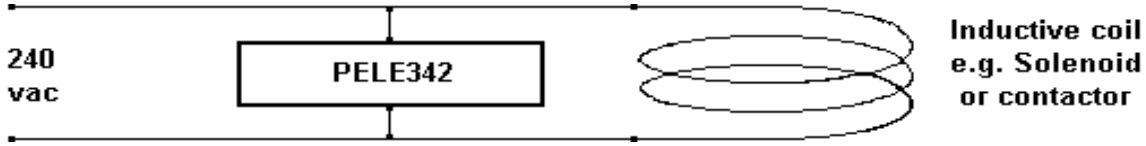
**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**

# Eliwell Controls - Adverse Condition Protection

In circumstances where a control could be influenced by other local electrical equipment or by an erratic or spike prone mains supply, it may be prudent to take action to protect the control and thereby the reliable operation of the system. Generally, these 'safeguards' are very inexpensive and may in some situations be looked upon as standard procedure where there is any doubt about the quality of the electrical supply or the effect of associated electrical equipment.

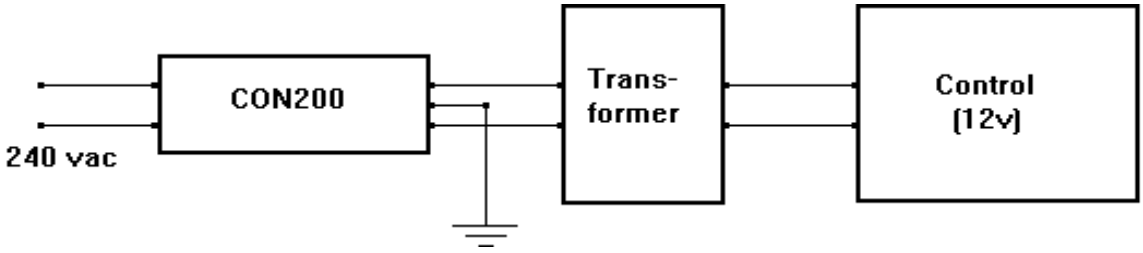
## Noise Filter for Inductive coils - part no. **PELE342**

Inductive coils as fitted, for example, to solenoid valves or contactors can produce a back EMF which can interfere with the control. This particularly relates to coils directly operated by the control. To minimise the effect, a noise filter should be fitted in parallel, and as near as possible, to the relevant coil as shown below.



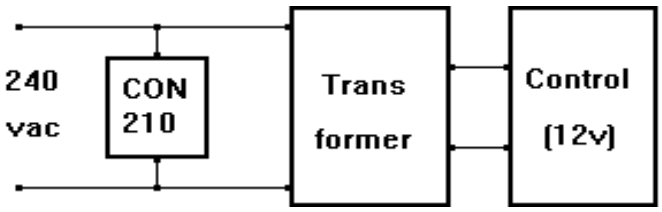

## Noise Filter for Mains supply - part no. **CON200**

Almost all electrical supplies are influenced by the running of other electrical equipment and will carry some 'noise' or transients. Most normal supplies are however acceptable but where the supply is also used for large motors, fluorescent lights, etc., the fitting of a mains noise filter is advisable. The filter, as above, is rated at 1 amp & should be fitted in series to the 240vac supply to the control or transformer. The earth connection **must** be made otherwise the filter will not function.

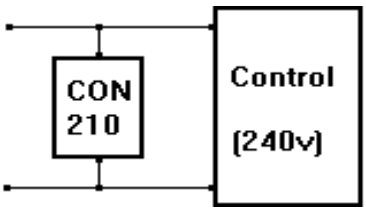



## Varistor Voltage Spike suppresser - part no. **CON210**

Spikes of up to 35 times the normal line voltage are not uncommon and will often either damage or influence any electronic control. When a poor quality supply is established or suspected, it is practical to fit a spike suppresser in parallel with the 240vac supply to the transformer or, in the case of 240v instruments, in parallel with the mains supply.




**Set-up for 12v controls**




**Set-up for 240v controls**

**Information courtesy of Thermofrost Cryo PLC – Copyright September 2000**