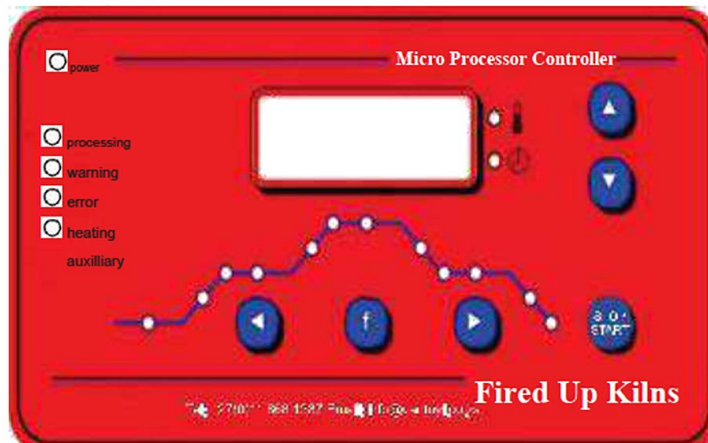# FIRED UP KILNS

firedupkilns.com.au

OWNER'S MANUAL

VT36 PROGRAMMABLE

CONTROLLER

Last Updated: November 2021

FIRED UP KILNS

firedupkilns.com.au

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Controller Details:

Congratulations on buying a VT36 Programmable Controller – (VT36).

The VT36 – Programmable Controllers is one of the best controllers on the market, this kiln controller was **developed** in South Africa, and amended for Australia for kiln management and easy operation for our clients.

These Controllers are "Fully Fledged" **programmable electronic processors,** they can store **36 individual programmes** each with **16 steps per programme**. The controller has a progress graph to track your programme during your firing. The controller has useful functions like **multiple Ramp Ups, Ramp Rates (up and down), Soak Times and Ramp Downs.** This allows for complexed firing programmes for several applications. In **addition,** other functions like **delayed starts,** fault finding with **warning and error alarms,** control of auxiliary equipment, **automatic re-start** after power failures are other useful functions.

Please fill in your details for easy reference with manufacturer.

Model: _____

Date of Purchase: _____

Serial No: _____

1   Installation:

1.1   Mounting - The controller should be mounted on a flat vertical surface away from the kiln (recommended +/-200mm), so that it cannot be affected by the heat radiated from the kiln.

1.2   Connection - It is important that the electrical installation is done professionally. Depending on the type of kiln, ensure that your controller is set to the correct thermocouple type (most common is a type K, see global parameters), the VT36 controller is pre-set to a type K thermocouple. For the correct electrical connections, please read the section on "Electrical Connections".

1.3   Safety - Ensure there is no risk of water entering the controller or its connecting leads. The electrical connections should be done professionally, to ensure that the unit is wired correctly and therefore poses no electrical risks.

2 Key Functions on display:

The VT36 Programmable Controller has a well laid out display, this allows the user to easily see at what stage the programme is, as well as having some useful functions.
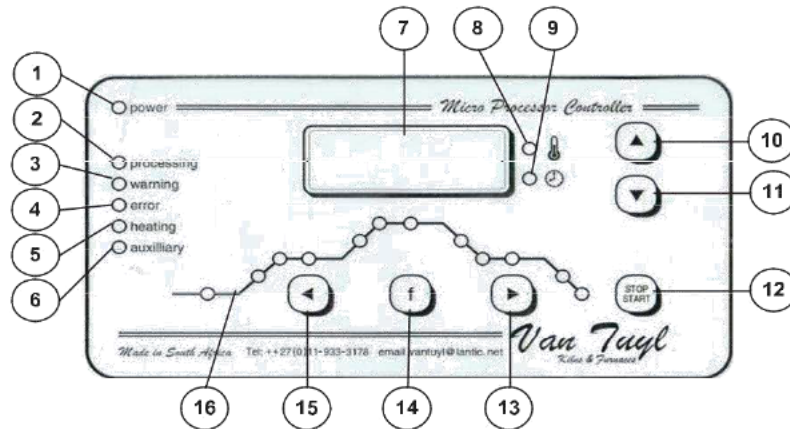
KEY FUNCTION

1   **Power Indicator** - The system has power.
2   **Processing Indicator** - The programme cycle is running correctly.
3   **Warning Indicator** - A minor problem has occurred during the firing cycle, but the programme can continuing. (e.g. - Power interruption or Ramp rate set maybe too high for the kiln to achieve but will "go as fast as it can").
4   **Error indicator** - The firing cycle has been aborted due to a critical error (e.g. - Thermocouple failure). *Note the difference between an Error and Warning - in the case of a warning the controller can continue the programme.*
5   **Element Indicator** - The element (coils) are currently heating the kiln.
6   **Auxiliary Indicator** - The auxiliary is currently on.
7   **Display Screen** - Main information display.
8   **Temperature Indicator** - Temperature value is shown on the display screen (when LED is on).
9   **Time Indicator** - Time value is shown on the display screen (when LED is on).
10   **Increase Control** - To increase value (e.g. set temperature, ramp rate, soak time etc.).
11   **Decrease Control** - To decrease value (e.g. set temperature, ramp rate, soak time etc.).
12   **Start/Stop** - Stop or Start a programming cycle.
13   **Right Control** - To review your steps in your programme.
14   **Function button** - To choose controller functions and programmes.
15   **Left Control** - To review your steps in your programme.
16   **Programme Progress Graph Indicator** - The graph tracks your programme's progress through the steps set.

3   Quick Guide:

3.1 To run a programme:

- When switching on the controllers (on the side of controller) the system will first start by showing the version of software (e.g. 2.1) and then the current temperature (Temperature mode) in the display screen. If the Kiln is cool this temperature should be +/- room temperature.
- Press the "f" (14) button to display the programme cycle numbers. This should reflect the last programme used (this can be anything from 01 to 36).
- Press the ▲(10) and ▼(11) buttons to select the programme cycle you wish to use. (*Note – the controller has 12[01 to 12] pre-set programme in the controller these can always be changed*). *See section 13 for details.*
- Press the "f" (14) button to return to the Temperature mode.
- Press the "STOP/START" (12) button to begin the programme you have selected.

4   Programming Controller:

- While editing a programme, there are a few inputs that the user needs to consider and how many heat cycles (Ramp ups or Ramp downs) the programme will require.
- Typically, a heat cycle has a Ramp Up, a Set Temperature and Soak Time.

4.1 General terms:

- **Ramp Up Rate** - (the *rate of temperature per hour - increase*)
- **Set Temperature** - (*temperature to achieve*)
- **Soak Time** - (*time for kiln to sit at the Set Temperature*)
- **Ramp Down Rate** - (*the rate of temperature per hour - decrease*)
- **Delay start** - (*this function allows you to start your programme after a delayed time (very common in countries that have cheaper electricity rates at night for example*).

4.2 Programme Progress Graph Indicator - The graph tracks your programmes progress through the various steps set in your programme.

Table a)

5
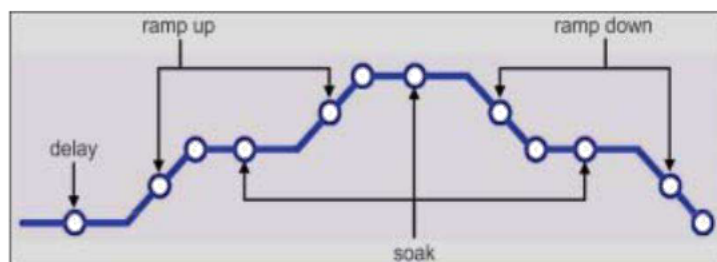
4.3 Editing a Programme:

- To edit a programme, first select the programme by pressing the "f" (14) button and then using the ▲(10) and ▼(11) buttons select the programme number (this will show in the display screen (7)) you wish to use or edit.
- When you have the programme you wish to edit, use the ◄(15) and ► (13) buttons to move to the selected step/s that you wish to edit.
- As you move along the steps you should see the LED lights on the **Programme Progress Graph Indicator** (16) move along the graph as you press the buttons.
- If the programme has been used before it will show in the display screen (7) the last data you used, if not it will show -- . - -(*this is zero [0]*) in the display screen (7).
- When you get to the step that you wish to edit the LED light on the Programme Progress Graph Indicator (16) will aluminate and show the last used data in the display screen (7).
- e.g. if you wish to edit the Ramp Up step, go to the step and then adjust by selecting the ▲ (10) and ▼ (11) buttons to change the value up or down.
- The above process can be done for any of the steps.
- When you are finished use the ◄(15) and ► (13) buttons until the display screen (7) returns to the current temperature.
- The edit to your programme is complete.
- To start you programme selected the "STOP/START" button (12), the firing cycle will begin.

Note – See Table a) that hi-lights the steps in the programme.

4.4 To Skip a Step in the programme:

- To skip a step – the value in a step need to reflect (---- or --.--). This is a Zero input.
- Note that a Zero in any step will not affect any of the other steps that have been programmed.
- Ensure that all steps after the last step in the programme being used reflects -- . -- (Zero) otherwise this could impact your firing.

4.5 Target indicators:

- Setting an Alarm (AL-1 or ALE-1) If you wish to set an alarm for a step (AL-1) then when editing a step, the alarm setting for that step can be accessed by pressing the "f" (14) button. To activate the alarm at the end of the step, change the alarm setting from AL - - to AL-1. If the buzzer is configured to be activated, it will sound after the step. If the auxiliary is configured to respond to the alarm, it will be turned on after the step. *(See parameter number 14 for the alarm options).*

o The Auxiliary function is set per step and is either switched on (AU-1) or off (AU - -) at the beginning of the step. This function is accessible by pressing the "f" (7) button until the AU function is reached. The AU and the AUE auxiliary settings will be ignored if the global setting (Parameter 14) has been configured to respond to the alarm. While a programme is in progress and if the step that is edited is the current step, the auxiliary setting will take immediate effect.

o The last target indicator shows alarm end (ALE) and auxiliary end (AUE) instructions. These will turn on the alarm or auxiliary at the end of the programme cycle. If the auxiliary end setting is edited while a programme is not running, the setting will take immediate effect.

o The alarm and auxiliary settings are set per proramme, this enables a programme to be stored with unique alarm and auxiliary configurations.

4.6 Display Indicators

Function	Setting	Explanation
Step value	- - - -	Temperature/rate value is zero and step will be skipped
	- - . - -	Time value is zero and step will be skipped
Alarm	AL - -	Alarm is off
	AL -1	Alarm activates after the step
	ALE -	Alarm not set for end of firing cycle
	ALE1	Alarm activates at end of firing cycle
Auxiliary	AU - -	Auxiliary will turn off as step starts
	AU -1	Auxiliary will turn on as step starts
	AUE -	Auxiliary will turn off as firing cycle ends
	AUE1	Auxiliary will turn on as firing cycle ends

5   Warning and Error Messages:

The controller is fitted with both Warning and Error messages to help the user determine what may have gone wrong with the programme.

5.1   If either an Error (E) or Warning (U) LED light is visible, it is possible to determine where and what warning or error took place.

> **U** = Warning
> **E** = Error
> **none** = No error or warning

In the Display Screen ensure that the temperature is being displayed, then press the ◄(15) and ►(13) buttons simultaneously to get to the error display mode.

Select the ◄(15) or ►(13) buttons to move between the steps of the program, a U or E will be displayed with an error or warning number (*see 5.2 below for error codes*). This will identify the error or warning that has occurred (e.g. E000 – this is a thermocouple failed).

The system will alternate the display between the errors/warnings if more than one error/warning occurred in any particular step.
In all cases an error will terminate a running programme.

A warning never terminates a programme, as it is not a critical problem and can continue with your programme *(e.g. – your kiln cannot ramp up as fast as you have set but will go as fast as it can OR there was a power interruption but has continued when the power returned)*.
To end the error viewing procedure, move the LED lights through the graph in the display screen (7) past the last target indicator on the display with the ►(13) button.

5.2   Error Codes:

Error Code	Error Detail	Possible Solution
E000	Thermocouple failure	Check thermocouple and wiring
E001	Thermocouple is reversed	Check wiring of thermocouple
E002	Temperature is out of thermocouple's range	Contact technical services
U003	CJC low	
U004	CJC High	
U005	Deviation over	
U006	Deviation under	
U007	Power failure	
E008	Flash memory error	Contact technical services
E009	EEPROM memory error	Contact technical services
E010	Programme error	Check the steps of the programme, as an illogical value has been programmed into a step

6   Global Parameters (P – 01):

The VT-36 Controller has set Global Parameters that are standard, however these can be changes to suit your kiln or work that you may be using the controller for.

6.1 Access to Global Parameters:

To access the Global Parameters (P-01), you need to press the "f" (14) button for 5 seconds to get to the parameter view (P-01), in the Display Screen (7) a P-01 will show you are now in Global Parameter. Use the ▲(10) and ▼(11) buttons to go between the global parameters and the ▸(15) button to view the value/default data for the corresponding parameter. Press the ▲(10) and ▼(11) buttons to alter the values/data of the selected global parameter. Use the ◂(13) button to get back to the list of global parameters.
Press the "f" (14) button to get back to the Display Screen (7) that will show the temperature. Your changes have been saved.

6.2 Global parameters table:

No	Parameter	Range	Default setting
P-01	Kiln temperature limit	0-2000	1300
P-02	Thermocouple type	1 = K	1 = Type K
		2 = R	
		3 = S	
P-03	Thermocouple offset	-150 – 150	0
P-04	Brightness of screen	1-7	2
P-05	Firing strategy(see note 1 (6.4))	1 = PID	1
		2 = Reactive PID	
P-06	Hysteresis	0-255	1
P-07	Interval	5-254	20
P-08	Derivative	0-9999	90
P-09	Integral	0-9999	20
P-10	Gain	0-9999	7
P-11	Recovery (see note 2 (6.4))	1 = Best	1 = Best
		2 = Last	
		3 = Stop	
P-12	Alarm over fire (see note 3 (6.4))	0-255	20
P-13	Alarm under fire (see note 3 (6.4))	0-255	20
P-14	Alarm options (see note 4 (6.4))		
P-15	Mimic iterations (see note 5 (6.4))	1 = 8 steps	1 = 8 steps
		2 = 16 steps	

NB - All notes are reflected in 6.4 below hi-lighting the more commonly changed global parameters.

6.3 View Functions:

No	View Functions	Explanation
16	View CJC	Cold Junction Temperature
17	View Integral	Integral Value - current or last firing
18	View on time	On time of the current or last interval
19	View Fire count 1	Firing count X 10000
20	View Fire count 2	Firing count
21	View time (days) 1	Total running time of cycles in days X 10000
22	View time (days) 2	Total running time of cycles in days
23	View time (hr:min)	Total running time of cycles in hours and minutes
24	View on time (days) 1	Total on time of coils in days X 10000
25	View on time (days) 2	Total on time of coils in days
26	View on time (hr:min)	Total on time of coils in hours and minutes
27	View interim temperature	Ideal temperature
28	View max. thermocouple temperature	Max. thermocouple value of current or last cycle
29	View max. above	Max. deviation above ideal temperature of current or last firing
30	View max. below	Max. deviation below ideal temperature of current or last firing
31	View current time	Duration of the current or last firing
32	View current on time	Duration of coil on time of current or last firing
33	Reserved	

6.4 Notes (Global Parameters) :

Note 1

This is the firing strategy of the system. There are two types of strategies.

- **PID** – the system learns about the conditions of the kiln and preempts the "on time" of the coils. The system generally reacts at the end of the interval period. The standard industry P.I.D algorithm is used. The interval period can be set in the range of 5 – 254.
- **Reactive** – the system reacts to the conditions of the kiln, according to the sensitivity set by the hysteresis.

The default setting is a hysteresis of 1. The hysteresis can be set within the range of 0 – 255.

Note 2

Recovery takes place after the unit has lost power and a programme is in progress.

There are 3 settings for recovery:
- ○ **1. BEST**: (default): The unit looks at the current temperature and tries to start as close to the last step as possible. A hysteresis of 10°C prevents a restart after a short power failure (e.g. 1 second) and a soak of 2 hours has already taken place.
- ○ **2. LAST:** The unit continues at the last step before power failure.
- ○ **3. STOP**: The unit stops the programme due to power failure no recovery.

Note 3

The diagram shows how if the alarm is set for over or under or for both, the alarm will sound if the deviation set under parameters 12 and 13 are exceeded.

Note 4 - Alarm Option:

Options	Function
0	Not used.
1	Not used.
2	Not used.
3	Not used.
4	Not used.
5	Buzzer will sound when a warning occurs.
6	Buzzer will sound when an error occurs.
7	Buzzer will sound when an error or warning occurs.
8	Not used.
9	Auxiliary will be activated when a warning occurs. Normal auxiliary settings are disabled.
10	Auxiliary will be activated when an error occurs. Normal auxiliary settings are disabled.
11	Auxiliary will be activated when an error or warning occurs. Normal auxiliary settings are disabled. Note 4 Alarm Options
12	Not used.
13	Buzzer will sound and Auxiliary will be activated when a warning occurs. Normal auxiliary settings are disabled.
14	Buzzer will sound and Auxiliary will be activated when an error occurs. Normal auxiliary settings are disabled.
15	Buzzer will sound and Auxiliary will be activated when an error or a warning occurs. Normal auxiliary settings are disabled.

11

This global parameter (P-15) is a KEY function as this is where you can change your programme to run the full 16 steps (default setting is 8 steps).
Note that you cannot Up Ramp on a Down Ramp and vice versa.

P-15 = 1 (8 steps) - The mimic consists of 8 steps, where the first step is a delay (which can be set from 0 – 99:59 hours).

P-15 = 2 (16 steps) - The mimic consists of 16 steps, where the second set of 8 steps starts with a soak. The second set of 8 steps can be identified by a dot after the last digit in the main display.

NB – Note that if you change a programme to 16 steps (P-15), all programmed will revert to 16 steps. They will not be affected.

7   Firing Cycle:

7.1   During a firing cycle, all the functions are accessible and editable, even global parameters. This allows you to adjust your programme during the process.

Press the "f" (14) button during a firing to reveal how long the current step has taken. This is a useful function, for example to see how far along you are on a soak.

8   Electrical Connections:

8.1   If a pre-wired cable and plug is not fitted then the system can be wired to the kiln as shown below. The instrument is fitted with 2-part connectors to facilitate wiring. The maximum wire size is $2.5mm^2$.
The auxiliary connections can either be wired as normally open (AUX NO) or as normally closed (AUX NC).
All input wiring to the thermocouple should be the correct compensating cable for the thermocouple type, with the correct polarity maintained throughout.
A 3 Amp or higher, four core cable can be used to power the device and to feed live to the contactor coil as illustrated.
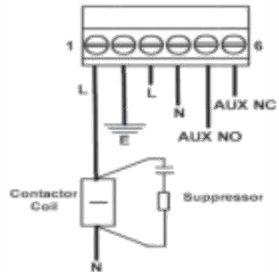
Diagram b)

Diagram c)

Thermocouple Connections
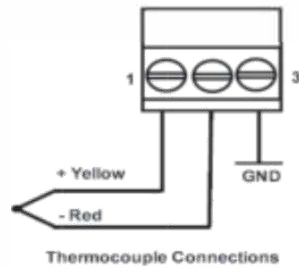
NB: The controller should never be used to drive the kiln elements directly.

9   Controller Plug:

9.1   Most kilns from Fired Up Kilns are fitted with a VT36 Controller. The Controller can either be a) "hard wired" into the kiln this is directly into the electrics of the kiln or b) a 5 PIN PLUG is fitted to the controller with a socket on the kiln, *this is standard for Fired Up Kilns.* The advantage of this is it can be used on multiple kilns, controller can be easily put away after use.

9.2   A Controller that is fitted with a PLUG.
   o   The PLUG has a 5-pin assignment and is fitted with a pre-wired cable as follows:

Diagram d)
   Plug (male connection) pin configuration (looking towards the plug).
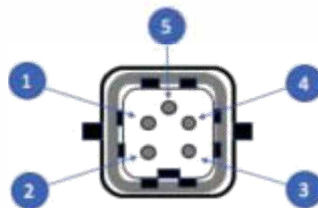
    ○   Plug wiring:

Pin no	Wire use	Wire Colour
1	Control output (phase)	Purple
2	Power supply (phase) – Live 240 volts	Brown
3	Neutral	Blue
4	Thermocouple -	Red
5	Thermocouple +	Yellow

Note the above wiring details may change from time to time, so please check with your installer.

10   Specifications:

Size	190mm x 110mm x 56mm
Electricity Supply	220-240V 50Hz
Thermocouple	K - expected range (-150°C to 1372°C)
	R - expected range (-50°C to 1768°C)
	S - expected range (-50°C to 1768°C)
Programmes	36 Programmes
Steps per programme	16 Steps
Temperature Display Resolution	1°C
Temperature Accuracy	0.2% ± 1 digit
Ambient Temperature	-10°C to 60°C

11   Warranty:

11.1   Your VT-36 Controller has been fully tested in the factory before being dispatched.

11.2   Your Controller is guaranteed against faulty workmanship and component failure for a period of 1 year. However, this is an electrical unit and we cannot guarantee against power surges and incorrect installation or a faulty kiln resulting in any damage.

12   Disclaimer:

12.1   Disclaimer - Under no circumstances shall Fired Up Kins be liable for any incidental, special or consequential damages that result from the use or the inability to use the software, hardware or related documentation, even if Fired Up Kilns has been advised of the liability.

13 General Ceramic Programmes:

Ceramic Programmes (pre-loading in VT36)

No.	Definition	Programme Circuit 1-8 step (1 = 8 Step, 2 = 16 Step)	Delay (Hour.Min hh.mm)	1st Ramp Up (Per/Hour)	Target Temp. (Deg. C)	Soak Time (Hour.Min hh.mm)	2nd Ramp Up (Per/Hour)	Target Temp. (Deg. C)	Soak Time (Hour.Min hh.mm)	1st Ramp Down (Per/Hour)	Target Temp. (Deg. C)	Soak Time (Hour.Min hh.mm)	2nd Ramp Down (Per/Hour)	Target Temp. (Deg. C)
1	Low Bisque	1	--	150 deg C	200 deg C	--	250 deg C	870 deg C	--	--	--	--	--	--
2	Medium Bisque	1	--	100 deg C	600 deg C	--	250 deg C	1000 deg C	0.10	--	--	--	--	--
3	High Bisque	1	--	100 deg C	600 deg C	.	250 deg C	1160 deg C	--	.	.	.	--	--
4	Stoneware	1	--	100 deg C	200 deg C	--	250 deg C	1260 deg C	0.10	--	--	--	--	--
5	Porcelain	1	--	100 deg C	200 deg C	--	250 deg C	1290 deg C	0.10	--	--	--	--	--
6	Low Glaze	1	--	150 deg C	500 deg C	.	250 deg C	960 deg C	0.10	.	.	.	--	--
7	Medium Glaze	1	--	150 deg C	500 deg C	--	250 deg C	1070 deg C	--	--	--	--	--	--
8	High Glaze	1	--	150 deg C	500 deg C	--	250 deg C	1120 deg C	--	--	--	--	--	--
9	Lustre	1	--	125 deg C	750 deg C	.	--	--	--	.	.	.	--	--
10	Crystalline Glaze 1	2	--	150 deg C	600 deg C	--	350 deg C	1288 deg C	--	600 deg C	1093 deg C	2.00	600 deg C	1066 deg C
				--	--	2.00	--	--	--	600 deg C	1010 deg C	0.45	--	--
11	Crystalline Glaze 2	1	--	150 deg C	600 deg C	.	350 deg C	1288 deg C	--	600 deg C	1049 deg C	2.00	--	--
12	Crystalline Glaze 3	1	--	150 deg C	600 deg C	--	350 deg C	1288 deg C	--	600 deg C	1124 deg C	0.45	--	--
36	Test Programme		--											

🔥 **We recommend reducing the second ramp rate to 150c/hr. Refer to our on-line video or section 4.3 of this manual on how to do this.**

14 General Glass Programmes:

Glass Programmes (Not loaded - Guide)

No.	Definition	Programme Circuit 1-8 step (1 = 8 Step, 2 = 16 Step)	Delay (Hour.Min hh.mm)	1st Ramp Up (Per/Hour)	Target Temp. (Deg. C)	Soak Time (Hour.Min hh.mm)	2nd Ramp Up (Per/Hour)	Target Temp. (Deg. C)	Soak Time (Hour.Min hh.mm)	1st Ramp Down (Per/Hour)	Target Temp. (Deg. C)	Soak Time (Hour.Min hh.mm)	2nd Ramp Down (Per/Hour)	Target Temp. (Deg. C)
1	Window Glass /Full (fusing 30cm or less)	1	--	290 deg C	600 deg C	--	365 deg C	845 deg C	0.05	90 deg C	350 deg C	--	--	--
2	Window Glass/Full (fusing 30cm or more)	1	--	240 deg C	625 deg C	--	330 deg C	845 deg C	0.05	90 deg C	350 deg C	--	--	--
3	Window Glass Slumping	1	--	180 deg C	625 deg C	--	300 deg C	725 deg C	0.05	90 deg C	350 deg C	--	--	--
4	Kiln-carving spectrum Glass	1	--	240 deg C	625 deg C	--	330 deg C	790 deg C	0.05	90 deg C	350 deg C	--	--	--
5	Bulseye - Slump	1	--	145 deg C	625 deg C	--	330 deg C	680 deg C	0.05	90 deg C	350 deg C	--	--	--
6	Bulseye - Full Fuse	1	--	140 deg C	625 deg C	.	320 deg C	810 deg C	0.05	90 deg C	350 deg C	.	--	--
7	Fibre Paper Burnout	1	--	Full	600 deg C	0,05	--	--	--	--	--	--	--	--
8	Drying Kiln Shelvers	1	--	Full	250 deg C	0,05	--	--	--	--	--	--	--	--

15   Quick Reference Chart:

➢ **Selection Programme:**
  ○ Press f (14) button to display the selected programme number.
  ○ Change programme number using the ◄ (15) or ► (13) buttons.
  ○ Press f (14) button to go back to main display.

➢ **Editing a Programme:**
  ○ Press the ◄ (15) buttons unit the parameter is shown to be edited.
  ○ Edit the parameter value using ▲ (10) and ▼ (11) buttons.
  ○ Press ► (13) button beyond last step of or mimic to end editing.

➢ **Display Errors or Warnings**
  ○ Press ►(13) and ◄(15) simultaneously. Mimic LED will be flashing.
  ○ Use ◄ (15) to view all the steps of the programme.
  ○ Press ◄(15) beyond the last step of mimic to end mode.

➢ **Start a programme at a certain step**
  ○ Press ◄(15) until the step is highlighted on the Progress Graph
    Indicator (16) where the programme should start from, press start/stop (12)

➢ **Viewing routine of current step**
  ○ Press F(14) while the firing cycle is running.
  ○ Press F(14) to end this display mode.

- The VT-36 Programmable Controller has the flexibility to be able to run multiple sets of steps in a programme with a number of UP-Ramp sets and DOWN-Ramp sets.
- The Controllers' standard default setting is set to run on 8 Steps (Cycle A). This allows the user to run 2x UP-Ramps sets and 2x DOWN-Ramp sets.
- You can change the Controller to 16 Steps (Cycle A&B) in the Global Parameters. This will allow the user to run a maximum of either 4x UP-Ramp sets, and 2x DOWN-Ramp sets **OR** 2x UP-Ramp sets and 4x DOWN-Ramp sets.
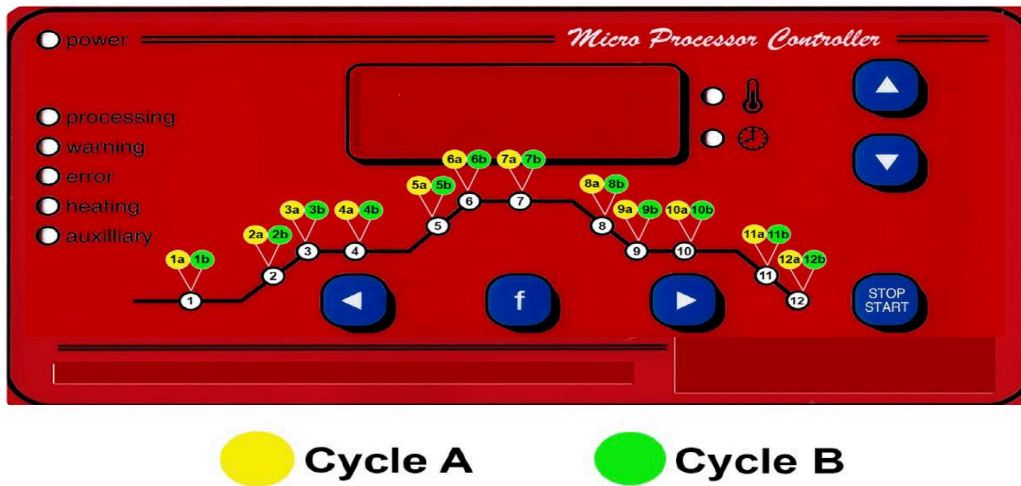
Client Programme Data   3 UP ramps only

	Program - Cycle A			
	Type	**Controller Input**	**Detail**	**Comments**
1a	Delay	-- . --		*No Delay*
2a	1st Ramp Up	0040	Deg C / Hour	
3a	1st Set Temperature	0200	Deg C	
4a	1st Soak	-- . --	Hours & Minutes	
5a	2nd Ramp Up	0060	Deg C / Hour	
6a	2nd Set Temperature	0600	Deg C	
7a	2nd Soak	-- . --	Hours & Minutes	
8a	1st Ramp (down)	-- . --	Deg C / Hour	*No data to reflect*
9a	1st Set Temperature (down)	-- . --	Deg C	*No data to reflect*
10a	1st Soak (down)	-- . --	Hours & Minutes	*No data to reflect*
11a	2nd Ramp (down)	-- . --	Deg C / Hour	*No data to reflect*
12a	2nd Set Temperature (down)	-- . --	Deg C	*No data to reflect*

	Program - Cycle B			
	Type	**Controller Input**	**Detail**	**Comments**
1b	Not Available on Cycle B	-- . --		
2b	3rd Ramp Up	0100	Deg C / Hour	
	3rd Set Temperature	1000	Deg C	
3b	3rd Soak	-- . --	Hours & Minutes	
4b	4th Ramp Up	-- . --	Deg C / Hour	
5b	4th Set Temperature	-- . --	Deg C	
6b	4th Soak	-- . --	Hours & Minutes	
7b	1st Ramp (down)	-- . --	Deg C / Hour	*No data to reflect*
8b	1st Set Temperature (down) for 16 Steps	-- . --	Deg C	*No data to reflect*
9b	1st Soak (down) for 16 Steps	-- . --	Hours & Minutes	*No data to reflect*
10b	2nd Ramp (down) for 16 Steps	-- . --	Deg C / Hour	*No data to reflect*
11b	2nd Set Temperature (down) for 16 Steps	-- . --	Deg C	*No data to reflect*

Programme Data entering:

ENTERING DATA FOR A 16-STEP PROGRAMME (BOTH CYCLE A & B)

1   Ensure no programme is running.
2   Select the programme you wish to set.
3   Return to the default screen (Kiln temperature should be on the display).
4   Hold down the "f" key for 5 seconds. The display will change to P-01. You are now in the Global Parameter Setting (page 7 in your manual).
5   Use the UP arrow key to select "P-15" (This is the parameter to change from 8 to 16 steps)
6   Press the RIGHT arrow key once. You will see "0001" on the display.
7   Change "0001" to "0002" by using the UP arrow key.
8   Press the "f" key twice to return to the default screen.
9   You have now set your controller to run 16 steps (2 Cycles)
10 Enter your programme data as per your table above (fig 1).

Note : When you are entering data in CYCLE B you will see a red dot on the bottom right corner of the controller display. This indicates that you are in CYCLE B.

Notes:

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