

A guide to using a Powtran VFD

With your ClearVue Cyclone



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Using your Powtran VFD

Under Australian regulations only registered electricians holding a qualification to install these types of units may wire the unit into the power. The usual installation process is for the owner to have an electrician install a 15 amp single phase switched power point. The electrician should then provide the VFD with a lead with a 15 amp plug on the end. They should then connect the VFD to the Motor. It is preferable to use a shielded cable for this link to avoid any radio interference. Make sure that they check that the motor is configured for the voltage you are using. This is WYE or STAR for 3 phase 380-415 volts or DELTA for 3 phase 240 volt through a VFD.

Your electrician will know which method to use.

The VFD unit has a detachable control panel so you can locate the unit as close as practicable to your cyclone and have the control panel in a convenient spot in your workshop. The connection between the VFD and the control panel is by way of a computer network or CAT5 cable. These are readily available in a variety of lengths and simply plug one end into the VFD and the other into the back of the control panel.

The VFD is turned on or off using the switch on the wall socket or a separate switch if it is permanently wired in. (your electrician will advise).

When you turn the power to the VFD on it will take a few seconds and then display a series of numbers. These numbers are not important until you have programmed the unit.

Your VFD has been basically programmed before delivery and should run your system without further programming. These instructions are to assist you in changing other settings or re-programming if the need arises.

Once programmed to use your cyclone, turn on the power to the VFD turn the round knob anti-clockwise until the display shows Zero. Press the **RUN** key and wind the round knob clockwise to set the frequency you want to use. If you always use the same frequency most, commonly 60 MHz, then you can leave the unit set at that and just press the **RUN** key. The motor will then accelerate to this setting.

This is why you should configure the VFD to have a maximum frequency at 70 MHz or lower. Once the motor ramps up it will accelerate fast. It is not recommended to run the motor at greater than 70 MHz as damage or injury may occur. Instructions for configuring are described in the next pages under the heading Programming you VFD.

You can always cut the motor rotation by pressing the red **STOP/RESET** button.

Programming the VFD

The procedure is quite simple once you understand the basics.

The handbook supplied with your VFD contains all that you need to know. Unfortunately it also contains much that you do not need to know and it is not always easy to follow in its translation.

I shall attempt to simplify it and then give step by step instructions for the most important settings you need to control the basic operation of your ClearVue Cyclone.

The VFD will be pre-programmed before it is supplied to you. Should you need to re-program it these instructions will be helpful.

The keyboard layout is described on page 35 of the handbook.

To program a parameter you need to look through the manual and find what it is you want to set. Against each parameter the table shows the:

- function that parameter controls,
- range of settings available,
- factory setting,
- change code and
- reference page number.

The reference page gives a more detailed description of what it does and how it can be changed.

The setting codes are listed at the top of page 41 of the handbook. These define if a parameter can be changed and what mode the control has to be in to make any change to that parameter.

The important modes are Run or Stop. As you will see some parameters can be changed in either mode but some only in one or the other. For the examples in this guide I have indicated which mode is required.

Run is selected by pressing the **RUN** key on the control panel and Stop is selected by pressing the red **STOP/RESET** key. When in run mode the led run light is lit.

The parameters we are most concerned with are contained in the Basic Function Group of parameters which are described in table 5-1-2 starting at page 45 of the handbook.

You will see that each parameter in this group is given a number starting with the letter F followed by a number, a decimal point and two further numbers. The logic of this section is repeated for all other parameter groups in the book.

When you first turn the power supply on, the VFD panel will take a few seconds to light up. The numbers it displays vary and are not important at this point. The basic programming consists of using the keys to select:

- Firstly the parameter that you want
- then the value of that parameter.

When you turn the power supply off the VFD will continue to run until it has discharged all the residual power. This is normal and will occur even if you disconnect the unit from the power supply. This is to prevent shock if someone should open the unit.

So, for example, if you want to reverse the direction of the motor you would use parameter F0:24 and then choose 0 or 1; where 0 rotates the motor in the direction it is wired for and 1 rotates it in reverse.

The **ENTER** key stores the parameter you have selected in the memory. The **PRG** key allows you to move through the programming steps without recording the changes you have made.

The programmed parameters are stored in your unit not in the keypad so using a different keypad will not change your parameters.





In this guide numbers in Blue are static and numbers in Red are flashing

Setting parameters

The following pages show you the basics of programming parameters and include examples of all the standard parameters for setting up the VFD to operate you Clearvue Cyclone.

Setting values for parameters

To set a parameter you need to select the parameter number using the keypad.

Step	Action	Result
Step 1	Turn on VFD at power supply switch	Panel lights up displaying numbers
Step 2	Press Program PRG key	Panel displays F0
Step 3	Press ENTER key	Panel displays F0.00
Step 4	Select Parameter required: Use the UP  or DOWN  Arrow keys and scroll through to the number you want. Or Use the SHIFT key to move sideways through the displayed number until the display flashes the digit you want to change. Then use the Up  or Down  Arrow key to select the number you want. Repeat this process until the	For example: If you pressed the Shift Key twice the second last digit would flash F0.00 . If you then press the Up Arrow Key 2 times the display would change to F0.20



Step	Action	Result
Step 5	Press ENTER key	Panel displays 0
Step 6	Press ENTER key	Panel displays F0.21
Step 7	Press Up △ or Down ▽ Arrow Key	Until the number you want is displayed
Step 8	Press Up △ or Down ▽ Arrow Key	Until the parameter value you want is displayed
Step 9	Press ENTER Key	If you do not want to program any more parameters then proceed to Step 10 if not go back to Step 3
Step 10	Press the Program (PRG) key 3 times	
Step 11	Turn the power supply switch off.	

Examples

1. - To restore Factory settings

You may need to do this if you alter settings and make a mistake.

You should normally be able to just reset the particular function so this is really a last resort. It will restore VFD factory settings not ClearVue settings.


Step	Action	Result
Step 1	Turn on VFD at power supply switch	Panel lights up displaying numbers
Step 2	Press Program PRG key	Panel displays F0
Step 3	Press Down Arrow  key 4 times	Panel displays Y0
Step 4	Press ENTER key	Panel displays Y0.00
Step 5	Press ENTER key	Panel displays 0.00
Step 6	Press Up Arrow  key once	Panel displays 0.01


Step 7	Press ENTER key once	Panel displays Y0.01
Step 8	Press PRG key	Panel displays Y0

Step	Action	Result
Step 9	Press PRG key once	Panel displays 00.00 up to the highest frequency you have set
Step 10	Turn power supply switch off.	

2. – To set frequency control from the potentiometer



This means you can rotate the round knob to adjust the frequency and thus the speed of your motor.

Step	Action	Result
Step 1	Turn on VFD at power supply switch	Panel lights up displaying numbers that are flashing
Step 2	Make sure the Run led is not lit. If it is press the RUN/RESET key	Numbers that flash
Step 3	Press Program PRG key	Panel displays F0
Step 4	Press ENTER Key	Panel displays F0.00
Step 5	Press SHIFT key until 2nd 0 flashes	Panel displays F0.00
Step 6	Press Up Arrow  key 2 times	Panel displays F0.20
Step 7	Press ENTER key	Panel displays 0
Step 8	Press red STOP/RESET key	Panel displays 0

Step	Action	Result
Step 9	Press Up Arrow  key 3 times	Panel displays 3
Step 10	Press ENTER key	Panel displays F0.21
Step 11	Press Program PRG key 2 times	Panel displays 0.00
Step 12	Turn power supply switch off.	

3. – To set maximum frequency (Hz)

This means you can rotate the round knob to adjust the frequency and thus the speed of your motor.



Step	Action	Result
Step 1	Turn on VFD at mains plug switch	Panel lights up displaying numbers
Step 2	Make sure the Run led is not lit: if it is press the red RUN/RESET key	Numbers that flash
Step 3	Press Program PRG key	Panel displays F0
Step 4	Press ENTER key	Panel displays F0.00
Step 5	Press SHIFT key until 2 nd 0 flashes	Panel displays F0.00
Step 6	Press Up Arrow  key once	Panel displays F0.10
Step 8	Press SHIFT key until last 0 flashes	Panel displays F0.10
Step 9	Press Up Arrow  key 9 times	Panel displays F0.19
Step 10	Press ENTER key	Panel displays 050.00

Step	Action	Result
Step 11	Press SHIFT key until the 5 flashes	Panel displays 050.00
Step 12	Press Up Arrow \triangle key 2 times	Panel displays 070.00
Step 13	Press ENTER key	Panel displays F0.20
Step 14	Press Up Arrow \triangle key once	Panel displays F0.21
Step 15	Press SHIFT key until 2 flashes	Panel displays F0.21
Step 16	Press Down Arrow ∇ key 2 times	Panel displays F0.01
Step 17	Press ENTER key	Panel displays 050.00
Step 18	Press SHIFT key until the 5 flashes	Panel displays 050.00
Step 19	Press Up Arrow \triangle key 2 times	Panel displays 070.00
Step 20	Press ENTER key	Panel displays F0.02
Step 21	Press Program PRG key once	Panel displays 0.00
Step 22	Turn power supply switch off.	


4. – To set rate of deceleration

Occasionally you may find that the motor is decelerating too fast for the VFD when you use the stop button. This setup will allow you to avoid the Error 6 message you may receive if this happens.




Step	Action	Result
Step 1	Turn on VFD at mains supply switch	Panel lights up displaying numbers
Step 2	Press Program PRG key	Panel displays F0
Step 3	Press Up Arrow △ key 3 times	Panel displays F3
Step 4	Press ENTER key	Panel displays F3.00
Step 5	Press SHIFT key until last 0 flashes	Panel displays' F3.00
Step 6	Press Up Arrow △ key 8 time	Panel displays F3.08
Step 7	Press ENTER key	Panel displays 000.00
Step 8	Press SHIFT key until 2nd 0 flashes	Panel displays 000.00
Step 9	Press Up Arrow key △ 1 time	Panel displays 010.00

Step	Action	Result
Step 10	Press SHIFT key until 3rd 0 flashes	Panel displays 000.00
Step 11	Press Up Arrow  key 5 times	Panel displays 015.00
Step 12	Press ENTER key	Panel displays F3:09
	This is the next parameter we need to program for this process. If you have already set F3.09 go to step 24 - Otherwise:	
Step 13	Press ENTER key	Panel displays 000.0
Step 14	Press Up Arrow  key 2 times	Panel displays 000.2
Step 15	Press ENTER key	Panel displays F3.10
	This is the next parameter we need to program for this process. If you have already set F3.10 go to step 24 - Otherwise:	

Step	Action	Result
Step 16	Press ENTER key	Panel displays 000
Step 17	Press SHIFT key until 2nd 0 flashes	Panel displays 000
Step 18	Press Up Arrow △ key 8 times	Panel displays 080
Step 19	Press ENTER key	Panel displays 'F3.11'
	This is the next parameter we need to program for this process. If you have already set F3.11 go to step 24 – Otherwise:	
Step 20	Press ENTER key	Panel displays 000.0
Step 21	Press SHIFT key until 3rd 0 flashes	Panel displays 000.0
Step 22	Press Up Arrow △ key 2 times	Panel displays 002.0
Step 23	Press Program PRG Key 2 times until F3 is displayed	Panel displays F3

Step	Action	Result
Step 24	Press Down Arrow  key 3 times	Panel displays F0
Step 25	Press Program PRG key once	Panel displays 0.00
Step 26	Turn of the power supply switch	

The final step is to set the time for deceleration

Step	Action	Result
Step 1	Turn on VFD at mains supply switch	Panel lights up displaying numbers
Step 2	Press ENTER key	Panel displays F0.00
Step 3	Press SHIFT key until second 0 flashes	Panel displays F0.00
Step 4	Press Up Arrow  key once	Panel displays F0.10
Step 5	Press SHIFT key until last 0 flashes	Panel displays F0.10
Step 6	Press Up Arrow  key 4 time	Panel displays F0.14
Step 7	Press ENTER key	Panel displays 000.00 It may display 010.00
Step 8	Press SHIFT key until 2nd digit flashes	Panel displays 000.00
Step 9	Press Up Arrow key  4 time	Panel displays 040.00

Step	Action	Result
Extra	If the display does not match the previous step use the shift and arrow keys to make it match.	
Step 10	Press ENTER key	Panel displays F0.15
Step 11	Press Program PRG key 2 times	Panel displays 0.00 or other digits
Step 12	Turn power supply switch off.	