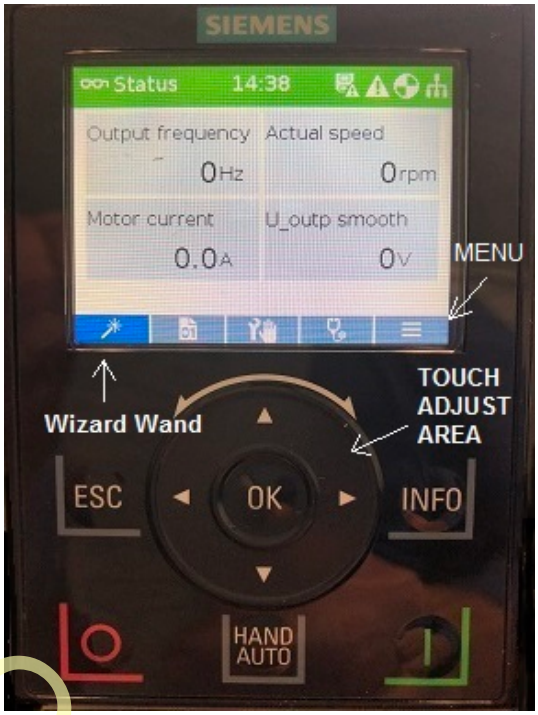
STANDARD I/O *COMMISSIONING INSTRUCTIONS*

*FOR SIEMENS **G120P** VSD'S BY HEVAC CONTROLS PTY LTD, using IOP-2 INTERFACE.*



FOR "STANDARD I/O PROGRAM"

Before commissioning drive, Please ensure all external drive enable inputs are disabled.

The user interface panel **IOP-2**, uses touch slide & button technology. The user can use the touch slide (circling the OK button) to navigate through the menu choices & data values, **or** the Up, Down, Left & Right buttons, **or** a combination of the two as best fits the data entry operation & user preference, Although I'd recommend the arrow buttons in most cases.

Note : This program does not automatically enable the VSD to restart after power loss (if the enable run input is still made), have essential services fire mode or have manual run inputs enabled. This program is the minimum required to have automatic operation from an on/off enable input to start operation at a minimum speed and then respond to a 0-10vdc signal for speed control.

These other features can be manually added using the parameter input menu or alternatively use the "GENERAL PURPOSE APPLICATION" in the wizard setup that loads these features by default - See Hevac's GENERAL PURPOSE APPLICATION guide on **page 8**.

P2

From the main running screen use the touch slide to navigate the LCD bottom selector bar until the wizard wand is highlighted in darker blue. Then proceed as follows for the quickest method to enter the minimum required data to commission the VSD for basic control with an on/off enable input & a 0-10vdc control signal. The touch slider & buttons can be a bit sensitive so make sure whilst pressing the OK button that the correct data or selection is being entered, if in doubt pressing the ESC button takes you back one step.

1.) Press "OK" (**basic commissioning**) choice will appear \

2.) Press "OK" (**factory reset**) select ***NO (>step 4)*** *or YES (>step 3)* \
with up or down button

3.) Press "OK" *resets any existing data (if new install no reset necessary).* \ *For new install no reset is necessary, and NO will cause display will to jump to step 4.)*

4.) Press "OK" **(Application class)** > to accept "Standard Drive Control" \

5.) Press "OK" **(Motor Data)** > to accept "Europe 50hz" default" \

6.) Press "OK" **(Select Motor Nameplate Data)** > to accept "YES Enter motor data" } SIMPLY PRESS THE "OK" BUTTON UNTIL "Motor Frequency" IS DISPLAYED

7.) Press "OK" (**Motor Type)** > to accept "Induction motor" default /

8.) Press "OK" **(Characteristic)** > to accept "50hz" default /

9.) Press "OK" (**Motor Connections)** is displayed. /

10.) Press "OK" to **Continue** /

Answer the following motor paramaters from motor nameplate information.

11.) Motor Frequency
Enter motor frequency use up,down,left,right or touch slide to set correct value ..ie 050.00 (Hz)
Press "OK"

12.) Motor Voltage
Enter motor voltage use up,down,left,right or touch slide to set correct value ..ie 00400 (V)
Press "OK"

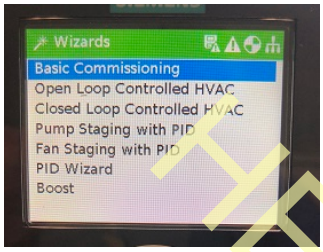
13.) Motor Current
Enter motor current use up,down,left,right or touch slide to set correct value ..ie 00001.00 (A)
Press "OK"

14.) Power Rating
Enter power rating use up,down,left,right or touch slide to set correct value ..ie 000000.37 (kW)
Press "OK"

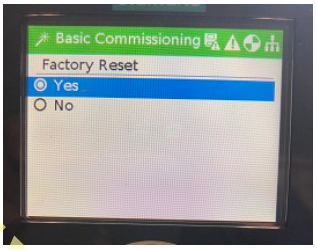
15.) Motor Speed **Enter motor speed** Press "OK" use up,down,left,right or touch slide to set correct value ..ie 001395 (rpm)

P3

Screen shots of user programming & editing for Siemens G120P+IOP2 VSD
for standard basic application of 0-10vDC control with 1 x on/off enable input
As Per HEVAC instruction guide sheet.



STEP 1



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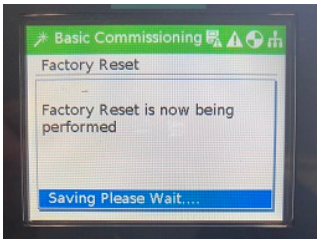
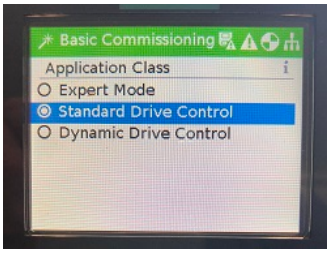


STEP 3a

STEP 3b



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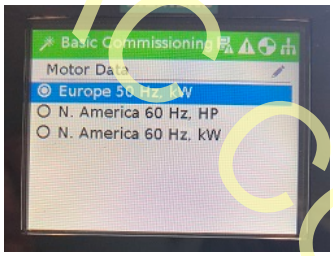

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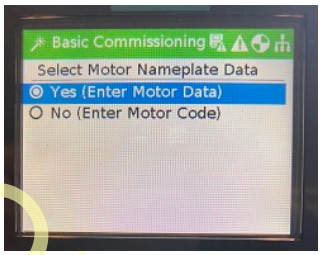

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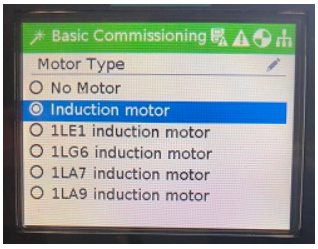

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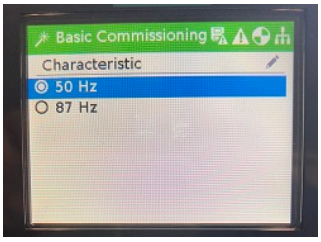

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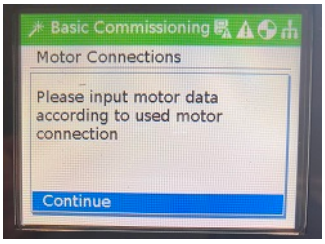
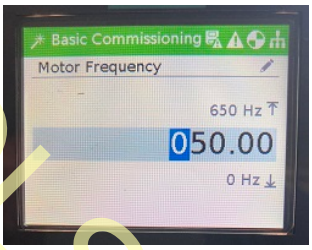


STEP 9

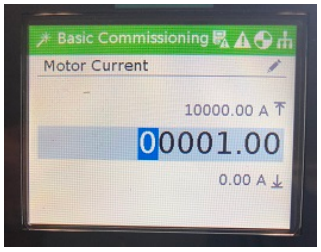
Press OK button

STEP 10



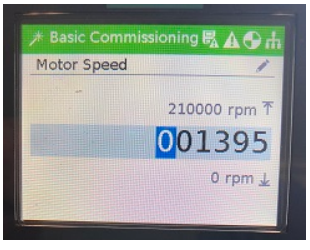
STEP 11

STEP 12



STEP 13

STEP 14



STEP 15

P4

Accept the following 3 defaults.

16.) **Technology Application** > accept "Linear Characteristic" default

Press "OK"

17.) **Motor Data Id** > accept "ID standstill" default (will perform auto motor test after this programming)

Press "OK"

18.) **Macro Source** > accept "standard IO with analog setpoint" default

Press "OK"

Edit or accept the following default values to suit site requirements.

19.) **Minimum Frequency**

Enter motor frequency use up,down,left,right or touch slide to set correct value ..ie 010.00 (Hz)

Press "OK"

20.) **Maximum Frequency**

Enter motor frequency use up,down,left,right or touch slide to set correct value ..ie 050.00 (Hz)

Press "OK"

21.) **Ramp Up** (time)

Enter ramp up time use up,down,left,right or touch slide to set correct value ..ie 000010.00 (s)

Press "OK"

22.) **Ramp Down** (time)

Enter ramp up time use up,down,left,right or touch slide to set correct value ..ie 000010.00 (s)

Press "OK"

23.) LCD screen displays "**Summary of settings** **Continue** "

Press "OK"

24.) LCD screen displays "**Save Settings** **Save**"

Press "OK"

The screen will now display a progress bar of saving all these settings.
Apon completion screen will sit at "press OK to continue"

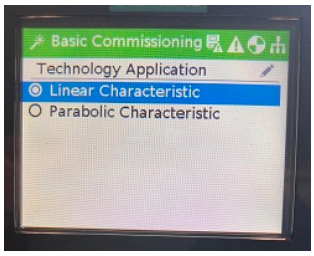
25.) Press "OK"

Motor Data ID LCD will display message : " Next command will initiate Motor Data ID" -**Continue**

26.) Press "OK" to now return to normal LCD display screen (waiting for next vsd enable to trigger test)

Programming is complete. Now enable the VSD (terminal 5), The vsd will undergo a once off test phase to verify your settings match the motor drive characteristics it detects and if correct will finish the test and stop operation. To then allow normal operation turn external enable off and then back on, The drive is now ready for automatic operation. 27.) press ESC to return to normal LCD status screen display.

P5



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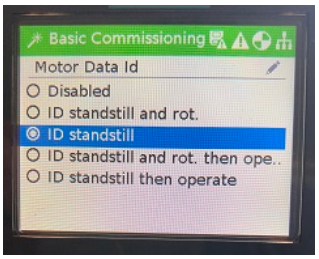

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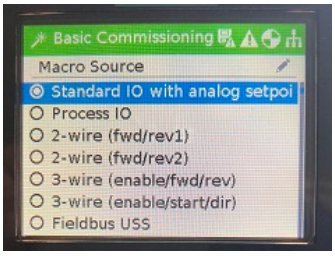

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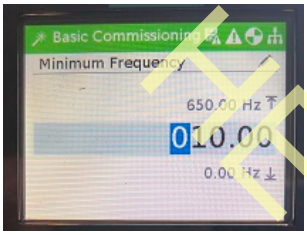

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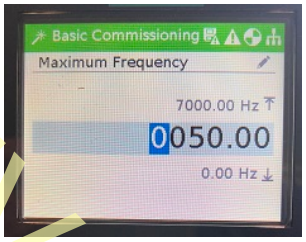

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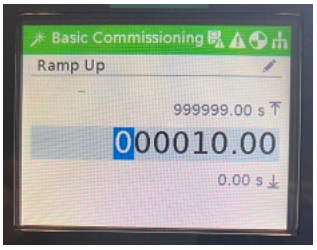

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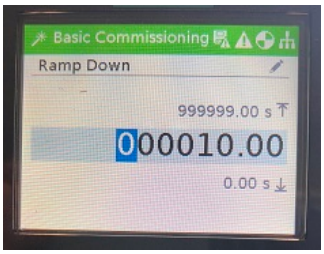

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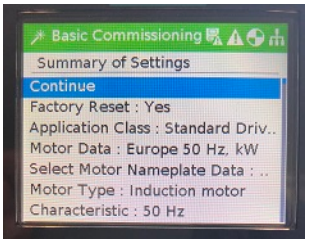

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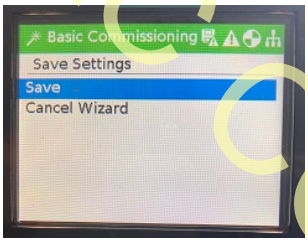
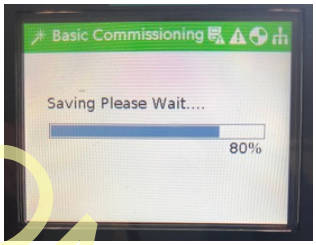
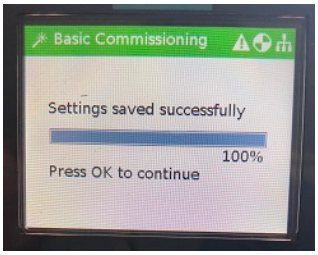


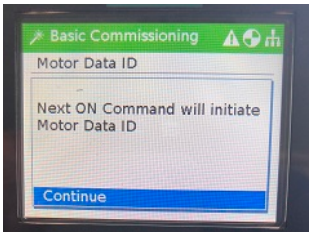
STEP 24a



STEP 24b



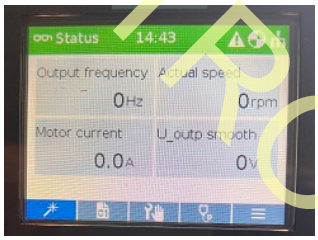
STEP 24c



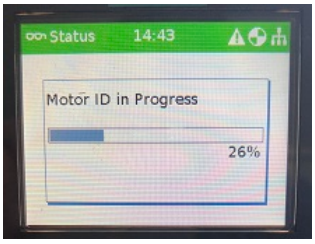
STEP 25

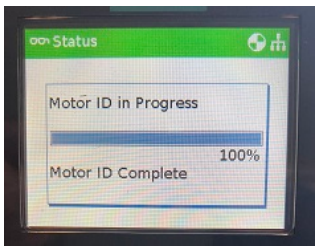
Press OK button

STEP 26



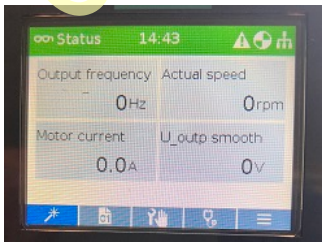
normal running screen





Press ESC button

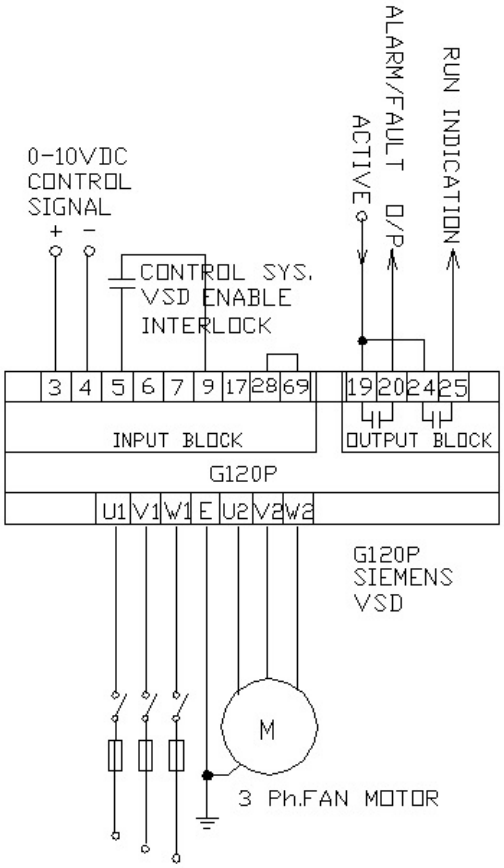
STEP 27



LCD screens automatically displayed by once off post programming VSD testing phase, after drive is enabled. Press ESC to return to normal display screen and disable & then re-enable drive to start normal automatic operation.

P6

CONNECTION DETAIL
TO SUIT STANDARD I/O
PROGRAM.



MANUAL STOP/START PROCEDURE

To manually operate the drive , press HAND/AUTO button under the OK button.
To start the drive press the green 1 button on the right , to stop the drive press the 0 button on the left .
With the drive running use the touch slide or LEFT/RIGHT buttons to increase the manual speed setting. To return to normal control, 1st stop the drive then again push the HAND/AUTO button. A hand symbol in the top right of the LCD screen gives indication of manual control mode.

MANUAL EDITING OF PARTICULAR PARAMATERS to suit site conditions

THE SIEMENS VSD SAVES ITS OPERATING DATA AND PROGRAM IN A LIST OF USER ADJUSTABLE PARAMETERS. TO ALTER PARTICULAR PARAMETERS USE THE FOLLOWING PROCEDURE *:*

1.) From the main running screen, rotate the touch slide or using right button to highlight the menu symbol (☰) on the displays selection bar.

If u make a mistake pressing the "esc" button takes you back one step or screen.

2.) Press "OK" and using buttons or slide highlight "PARAMETERS".

3.) Press "OK" and using buttons or slide highlight "SEARCH BY NUMBER" .

4.) Press "OK" and the main parameter number selection screen is displayed.

5.) Press "OK" to accept the current highlighted digit and move one digit to the right or move right or left to highlight another digit to alter the number. Use the up or down buttons to alter the digit value.

Parameter	Default value	Description
1080	450 rpm	Min. speed at VSD enable/Man. Low speed (digital input on terminal 5)
1047	10s	ramp up time
1048	10s	ramp down time
1210	0	Select option 26 to enable **Auto restart after power loss**

Commissioning notes

FROM MOTOR DATA PLATE

MOTOR FREQUENCY _____ in Hz

MOTOR VOLTAGE _____ in Volts

MOTOR CURRENT _____ in AMPS

POWER RATING _____ in kW

MOTOR SPEED _____ in RPM

USER SELECTED SETTINGS

MINIMUM FREQUENCY _____ in Hz (min. speed)

MAXIMUM FREQUENCY _____ in Hz

RAMP UP TIME _____ in Seconds

RAMP DOWN TIME _____ in Seconds

ALTERNATIVELY PROCEED AS FOLLOWS TO LOAD

"GENERAL PURPOSE APPLICATION"

This program automatically loads the following extra defaults :

1.) Auto restart after power loss
2.) Essential services fire mode
3.) Manual speed run inputs
4.) Extra external fault interlock

1-15.) As per instructions for the standard I/O application do steps 1 to 15 to enter in basic parameters and motor data.

16.) **Technology Application** > accept "Linear Characteristic" default
Press "OK"

17.) **Motor Data Id** > accept "ID standstill" default (will perform auto motor test after this programming)
Press "OK"

18.) **Macro Source** > LCD DISPLAYS : "standard IO with analog setpoint"
Press **DOWN** button until "**General Purpose application**" is displayed
Press "OK"

Edit or accept the following default values to suit site requirements.

19.) **Minimum Frequency**
Enter motor frequency use up,down,left,right or touch slide to set correct value ..ie 010.00(Hz)
Press "OK"

20.) **Maximum Frequency**
Enter motor frequency use up,down,left,right or touch slide to set correct value ..ie 050.00(Hz)
Press "OK"

21.) **Ramp Up** (time)
Enter ramp up time use up,down,left,right or touch slide to set correct value ..ie 000010.00(s)
Press "OK"

22.) **Ramp Down** (time)
Enter ramp up time use up,down,left,right or touch slide to set correct value ..ie 000010.00(s)
Press "OK"

23.) LCD screen displays "**Summary of settings** **Continue** "
Press "OK"

24.) LCD screen displays "**Save Settings** **Save**"
Press "OK"

The screen will now display a progress bar of saving all these settings.
Apon completion screen will sit at "press OK to continue"

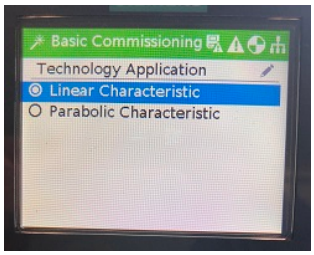
Press "OK"

25.) Motor Data ID LCD will display message : " Next command will initiate Motor Data ID" -**Continue**

26.) Press "OK" to now return to normal LCD display screen (waiting for next vsd enable to trigger test)

Programming is complete. Now enable the VSD (terminal 5), The vsd will undergo a once off test phase to verify your settings match the motor drive characteristics it detects and if correct will finish the test and stop operation. To then allow normal operation turn external enable off and then back on, The drive is now ready for automatic operation. 27.) Press ESC to return to normal LCD status screen display.

P9



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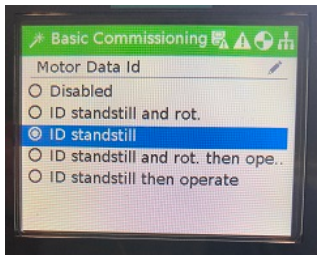

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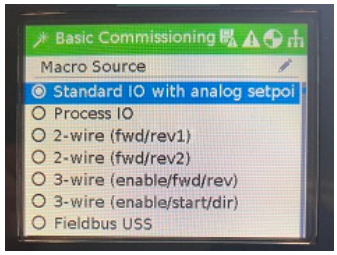
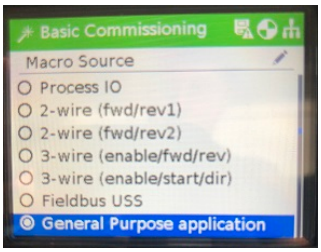
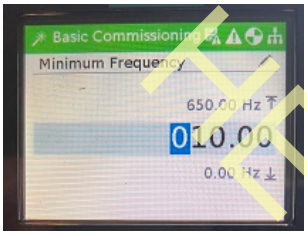


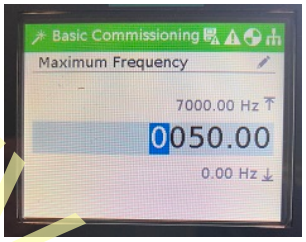
STEP 18a



STEP 18b



STEP 19



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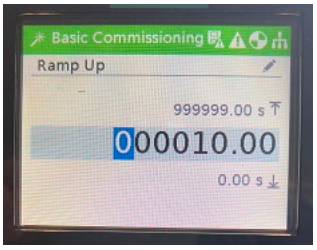

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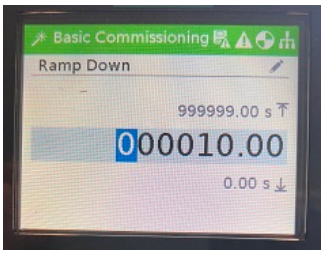

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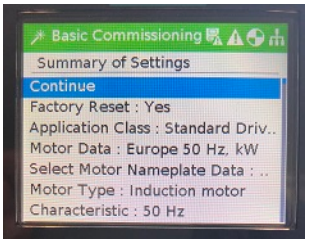
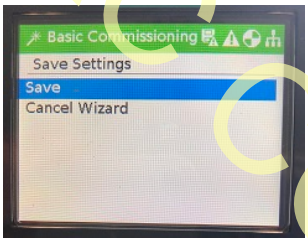
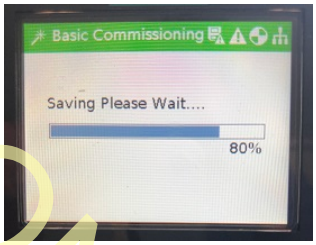


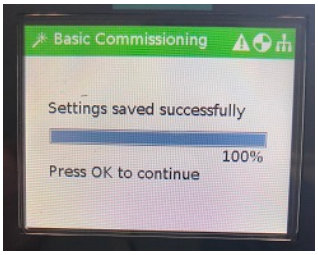
STEP 23



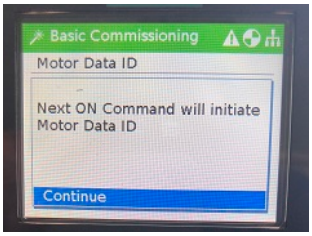
STEP 24a



STEP 24b



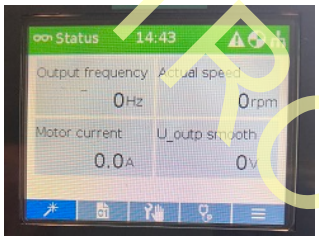
STEP 24c



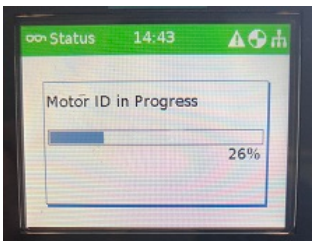
STEP 25

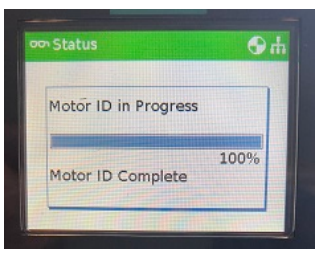
Press OK button

STEP 26



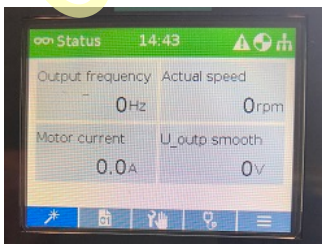
normal running screen





Press ESC button

STEP 27



LCD screens automatically displayed by once off post programming VSD testing phase, after drive is enabled. Press ESC to return to normal display screen and disable & then re-enable drive to start normal automatic operation.

JOB DONE :-)

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OTHER PARAMATERS THAT MAY REQUIRE EDITING TO SUIT SITE CONDITIONS

See page 6 for editing procedure

Parameter	*Default value*	*description*
1003	1200 rpm	**Manual High speed** in rpm (Digital input on terminal 17)…usually max RPM
1015	1500 rpm	**Fire mode speed** in rpm (triggered by digital input on terminal 7)
1080	450 rpm	**Min. speed** at VSD enable/Man. Low speed (digital input on terminal 5)
1047	10s	ramp up time
1048	10s	ramp down time

To alter basic motor settings as per motor name plate - redo basic commissioning as described earlier.

PERMANENT SAVING OF USER EDITED PARAMETERS

****** After any manual changes have been completed it is recommended to save data from the interface memory to the permanent drive memory otherwise changes may be lost on long power outages. Follow the steps below to transfer changes to permanent drive memory ***.**

1.) From the "MENU" screen in the selection bar and press the "OK".

2.) select "EXTRAS" and press "OK".

3.) select "PARAMETER SETTING" and press "OK".

4.) select "save RAM to ROM and then press "OK"

5.) "YES" will then be highlighted, press "OK" to continue, and a progress bar will appear during saving process, when finished press the "ESC" button to return to the main menu.

6.) It is good practice after saving the program changes, to turn the VSD power off & on by the mains isolator, and then test the drive for correct operation in response to its connected inputs.

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RUNNING DISPLAY SCREENS

On the main running screen , the bottom right data indicating panel shows the affective smoothed output voltage being delivered to the motor. As an alternative this information window could be set to display the incoming 0-10vdc speed control signal which would usually be of more interest. Proceed as follows to change the default motor voltage data to display the input signal level.

1.) From the main running screen, rotate the touch slide or using right button to highlight the menu symbol (☰) on the displays selection bar.
PRESS OK
If u make a mistake pressing the “esc” button takes you back one step or screen.
2.) Using buttons or slide, highlight “WIZARDS”.
PRESS OK
3.) Using buttons or slide, highlight “EXTRAS”.
PRESS OK
4.) Using buttons or slide, highlight “STATUS SCREEN WIZARD”
PRESS OK
5.) ACCEPT "SCALAR VALUE"
PRESS OK
6.) PRESS the "**DOWN**" button until the default value "4:r0025:U_output smooth" is highlighted
PRESS OK
7.) keep pressing the DOWN button until "r0752(0):A10(T.3/4) is highlighted (input 0-10v signal)
PRESS OK
8.) 0V (Volts) is displayed
PRESS OK
9.) PRESS the "**UP**" button to select 1 (for one decimal point voltage to be displayed ..ie 5.6volts)
PRESS OK
10.) "**continue**" will be displayed
PRESS OK
11.) "**save**" will be displayed
PRESS OK

After a short delay the running screen will reconfigure and now display the input signal in the bottom right information panel.

SEE ATTACHED DRAWING FOR ALL POSSIBLE WIRING CONNECTIONS RELATIVE TO ABOVE **THE "GENERAL PURPOSE APPLICATION"** ***PROGRAM . WIRE RELATIVE INPUTS / OUTPUTS AS SUITABLE PER PROJECT REQUIREMENTS.***