

TECH-TROL GASFLOW™ 7260 PROGRAMMABLE CONTROLLER

VRU Model (Electric Drive Unit)
with
Variable Frequency Drive

User Manual

**Please read this manual before operating the
controller and keep it for future reference**

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Table of contents

Introduction	3
Home Screen	4
Buttons	
Zero suction	5
Display sensor data	6
Set system parameters	7
Set points	8
Press to start	9
Run / Shutdown mode	
Run mode	10
Shutdown mode	10
'Set system parameters' screen	
Suction delay	11
Suction relay	11
Run hours	12
Lock out timer	12
Auto start / Var Frequency	12
Var Frequency	12
Motor range	13
Ball valve open close	13
Variable frequency drive	14
Throttling motorized valve	15
Touch screen calibration	18

Introduction

The TechTrol Gasflow™ programmable controller will continuously monitor and control critical conditions on gas compressors. The 7260 model is specific to the electric drive units with a Variable Frequency Drive (VFD) unit.

Features of the controller include a high-resolution graphics “Touch” screen, menu driven user selectable commands and a variety of control features selectable by the user to help maintain suction on the Vapor Recovery Unit.

The various options and how each one works are discussed in this User’s Manual.

Note : The features described in this manual are for reference only. The features on the controller are subject to customer specifications.

At a Glance

Home Screen

The main screen or the “Home” screen is where the user will always start to get to any of the settable parameters on the controller. The Home screen displays the serial number, compressor-company’s name, web site address and the “**RUN HOURS**”. Apart from this, the home screen also contains five buttons at the bottom: “Press To Start”, “Set Points”, “Set System Parameters”, “Display Sensor Data” and “Zero Suction”.

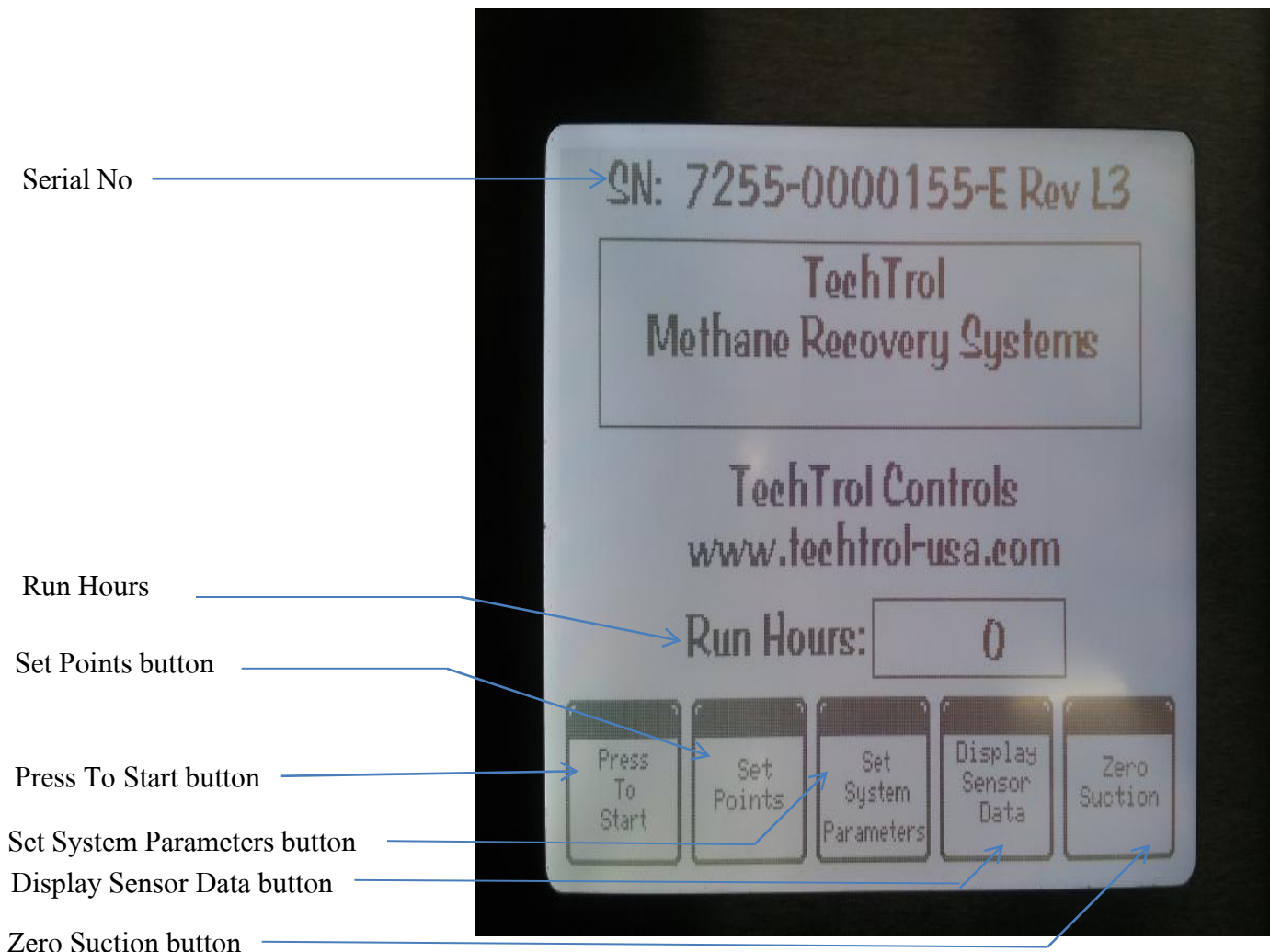


Figure 1 – Home Screen

Zero Suction button

This button will allow the user to zero the current value of the suction sensor. The user should check the following a) Suction sensor is properly connected to the controller b) There is no Pressure on the sensor

Note1: Sensor must be at atmospheric pressure before Zero Suction button is pressed.

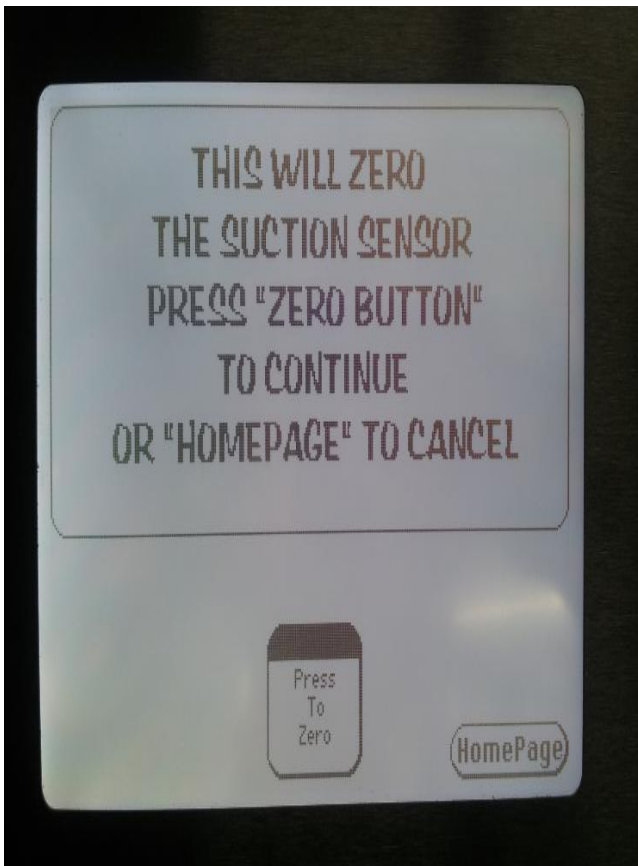


Figure 2 – Press to zero

Note2: The suction sensor must be connected during the zero mode. Do not zero the suction sensor while it is disconnected from the controller. This will result in false suction sensor readings.

Note3: Calibration (ie, zeroing sensor) recommended every 30 days.

Once the Zero Suction button is chosen from the Home Page, the above screen appears. The Press To Zero button has to be selected in order to complete the operation. No changes will be made until then.

If you do not want to continue, then select the Home Page button to go back to the Home Page. The sensor input will not have changed.

Display Sensor Data button

This button will display the real time sensor values. It can be viewed even when the compressor is not running. The Home Page button can be pressed to go to the Home Page. The sensor data display screen is automatically displayed after start sequence is followed and completed.



SENSOR NAME	VALUE	UNITS
SUCTION	0	OZ
OIL PRESSURE	0	PSI
DISG PRESSURE	0	PSI
DISG TEMPERATURE	78	F
OIL FILTER	0	PSI
SEPARATOR	0	PSI

HomePage

Figure 3 – Display Screen Data

Set System Parameters button

This button lets the operator specify how the compressor will operate by how the system parameters are set. The Set System Parameters screen is shown in Fig 4– Set System Parameters. The   buttons are used to scroll up and down between the different parameters. The  button is used to navigate left/right within the same parameter and the   buttons enable user to raise or lower the selected parameter's value. The 2nd, 3rd and 4th columns represent the upper range, lower range and their units respectively. The different parameters like suction delay, suction range, etc are explained on page 13.

Note : Pressing this button during normal running conditions will kill the motor.

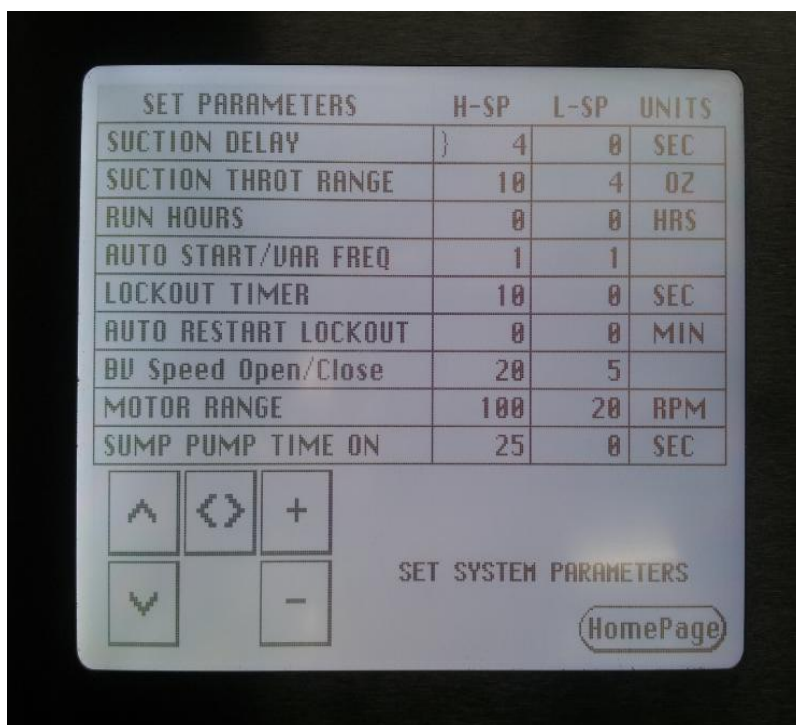


Figure 4 – Set System Parameters

Set Points button

The set points are also called the kill points. They represent the upper and lower limits of each parameter to stop the system. They can be set for all analog sensors. The   buttons are used to scroll up and down between the different parameters. The  button is used to navigate left/right within the same parameter and the   buttons enable the user to raise or lower the selected sensor's value. The 2nd, 3rd and 4th columns represent the upper range, lower range and their units respectively.

Note : Pressing this button during normal running conditions will kill the motor.



Figure 5 – Set Points

Press To Start button

Once the Press To Start button is pressed, there will be a 10 second countdown, indicating that the system is about to start. This is accompanied by a flashing amber light (shown in figure 6a). Once the system starts, the display screen figure 3 (on page 6) will be displayed. If the Emergency Stop button (Figure 6b) is pressed, then the screen will show the display as in Figure 7.

Note : Pull out the emergency stop button and then press start button to start.



Flash light



Emergency stop
button

Figure 6a – Flash Light

Figure 6b – Emergency stop button



Figure 7 – Press to start

The Run and Shutdown mode

Run/Shutdown Mode

Run Mode : Once the compressor starts, the unit is considered to be in 'Run mode'. The Display Data screen (fig 3) will show current values of all the sensors. While the compressor runs, the controller will monitor all sensor values

Shutdown Mode : If the controller shuts down for any reason other than high or low suction, user must resolve the fault listed on the screen before restarting the compressor. If the controller has the Auto-Start feature enabled, then it will restart automatically once the suction corrects itself



General controller shutdown criteria examples

- High / Low suction
- High / Low discharge
- Excessive vibration
- RPM
- High / Low compressor oil pressure
- High / Low engine oil pressure
- Low engine oil level
- High Engine Temperature
- High compressor temperature

Note : If auto-start feature is disabled, then the controller will not restart automatically.

Figure 8 - Shutdown

‘Set system parameters’ screen

“SUCTION DELAY” – Allows the user to select how quickly the controller will react to Suction Pressure in order to delay a shutdown. The Suction Delay can be set from 0 up to 120 seconds. The system continually polls all sensor inputs while the compressor is running. If Suction Pressure’s set limits are longer than the delay period, then the Compressor will shut down with a Suction fault which is displayed on the Shut Down Screen. For all other Sensor Inputs that are outside of the Set Points, the Compressor will shut down immediately.

Set the value in the left column (H-SP) for Suction Delay. The right column (L-SP) has no effect.

“SUCTION RELAY” - This feature allows the user to set the desired pressure range that will activate the bypass ball valve and Motor Speed if “Var. Freq.” is selected. The left column (H-SP) is the high pressure side in which the bypass valve will close and go to the “sale gas” mode when the Suction Pressure exceeds this value. If Suction drops below this value, the bypass valve will open and go into bypass mode in an effort to re-circulate gas within the compressor. The right column (L-SP) is the low pressure side and is used if “Var. Freq.” is selected.

If a throttling ball valve is connected to the bypass line, then it will attempt to adjust to the upper setting. It gives more control over the bypass mode.

‘Set system parameters’ screen (Continued)

“RUN HOURS” - Unit Run Hours – For maintenance purposes the run hours can be reset with every oil and/or filter change. If a cumulative run time is kept and the unit receives a program upgrade, then you can reset the run hours to the value on the unit at the time of the upgrade.

“LOCK OUT TIMER” – The user can set this variable for the start-up lockout timer. On startup, the sensors will not be monitored for a fault condition until this timer counts down to zero.

Caution: Setting the machine to run too long in this parameter can cause damage. It is the operator's responsibility to monitor sensor data and use the “Emergency Shut-Down” switch if necessary during the lock-out mode.

“AUTO START/VAR FREQUENCY” – These two settings allow the user to control the unit based on suction. Setting a “0” in the left column turns the auto start feature off. Compressor must be manually re-started if the compressor shuts down on a suction pressure fault. Setting a “1” in the left column will allow the unit to automatically restart if the unit shuts down on a suction pressure fault. The unit will restart once the suction reaches the value entered under the Suction Relay, high pressure setting (left) column. The amber light on top of the controller will flash for 10 seconds warning of the impending start.

“VAR FREQUENCY” – Setting a “0” in the right column turns the ‘VAR FREQUENCY’ feature off and the compressor will run at the maximum speed set in “MOTOR RANGE” parameter. Setting a “1” in the right column will allow the controller to vary the motor speed based on suction pressure.

‘Set system parameters’ screen (Continued)

“MOTOR RANGE” - The user can set the maximum and minimum RPM of the motor. If “VAR FREQUENCY” is enabled, the motor will run proportional to the suction as listed above. If “VAR FREQUENCY” is not enabled “0,” the motor will run at the high set value only.

“BALL VALVE OPEN/CLOSE” – The bypass throttling ball valve can be programmed to operate at a relative speed from “1” to “20.” The open and close function can be set independently. A setting of “1” will move the ball valve the slowest and a setting of “20” will move the ball valve at maximum speed. The user should experiment with these settings to optimize the control. For example, a slower moving ball valve may allow excess pressure into the bypass.

Variable Frequency Drive

The Variable Frequency Drive is sized by the motor used. Standard sizes are 20, 25, 30 and 40 Hhp These units can be used to convert single phase to three phase but the HP rating size must be doubled. For example, a system with single phase input and a 20 hp three phase motor would require a 40 HP VFD.



Figure 9 – Variable Frequency Drive

Note : The gasflow compressor is compatible with other VFD models also.

Throttling Motorized Ball Valve

The throttling ball valve is used for bypass and for other applications when required.

The ball valve is controlled by the panel while set in “Auto” mode. The black knob located on the front of the ball valve allows the user to select between “Auto” and “Manual.” Manual mode allows operator to use the handle on top to manually open or close the ball valve.

Note: the handle direction represents the position of the opening of the ball valve. Do not try to manually adjust the ball valve position when in the “Auto” mode.

From time to time, it may be necessary to calibrate the ball valve, if the ball valve does not go to the “fully closed” position or to the “fully open” position as expected. To complete a calibration of the ball valve, proceed as follows:

This procedure will manually reset the open and closed position for electric actuators with the DPS module installed when the unit gets moved off zero.



Figure 10 – Motorized Ball Valve

1. Remove the power supply to the actuator. (Remove connector or turn power off) the power connector is the large gray one on the far left side. Remember to check if the LED light on the top of the actuator is off.



Figure 11 – Removing connector



Figure 12 – LED light off

2. Remove the small black center connector from the actuator.



Figure 13 – Small connector removed

Note : The connector pins are oriented in only one way and can be connected only to the respective slots

3. Place the ball valve in Manual Mode.
4. Adjust the ball valve to the closed position, perpendicular with the handle on top.



Figure 14 – Normally closed position

5. Turn the ball valve to Auto Mode. Now remove the gasket for the pin.
6. On the small black plug on the actuator, center connector, short pin 3 to Earth Ground pin.

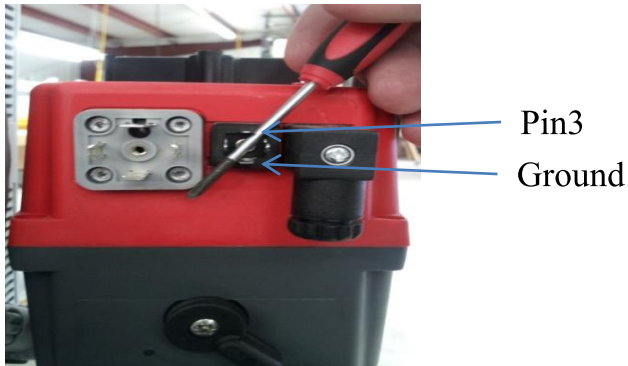


Figure 15 – connecting pin3 and ground



Figure 16 – LED light goes solid

7. Turn the power back on to the actuator and wait until the LED light on the top of the actuator goes solid.



Figure 18 – Position reset

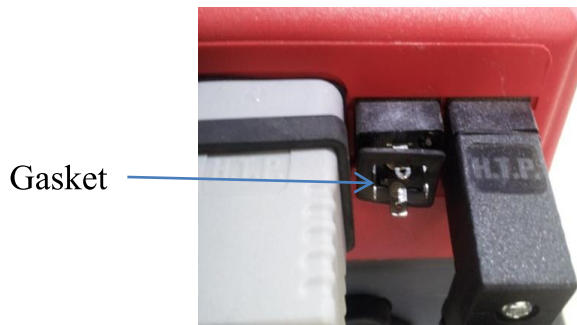


Figure 17 - Gasket

8. The actuator will then go through a mechanical position reset.
9. When the reset is complete (closed to open and back to closed) then turn the power back off.
10. Put the gasket back in place and re-connect small black center connector and turn power back on to test the actuator.
11. Screw the connectors back in.



Figure 19 – Connectors back in place

Note :If the LED light is blinking, it means that the actuator is not working.

Touch Screen Calibration

Sometimes if something is selected on the touch screen, it may not get selected. This type of problem arises for all devices with touch screen. This means that the touch screen is out of calibration. Now the touch screen needs to be calibrated. Listed below are the steps that are needed to calibrate the touch screen.

1. Open the controller door and make a quick reset of the screen power by switching off and turning back on the switch shown in the picture, with the index finger on the screen.



On – off button



Figure 20 – On-off button

Figure 21 – Holding the screen when it is switched off

2. Hold the screen while it is off. Switch the screen on. When the calibration screen appears, do not hold the screen for too long. When the calibration screen comes up, tap the screen immediately to get to the calibration screen shown. If it doesn't appear, then repeat the above process until you get to the calibration screen.



Figure 22 – Screen turns back on



Figure 23 – Tap when prompted to

3. Tap the screen again in order to calibrate the screen.



Figure 24 – Blinking dot at top left



Figure 25 – Tap the blinking dot

4. A blinking dot appears on the top left of the screen as shown. Touch the dot. The blinking dot now appears in the bottom right of the screen. Touch the dot. Now the touch screen calibration is done.



Figure 26 - Blinking dot at bottom right



Figure 27 – Tap the blinking dot

