SENSORI® EEV DRIVER MANUAL - *VERSION 1.0*

03/2021

OXFORD ENERGY SOLUTIONS

Contents

SENSORI CONTROL WITH VEV DRIVER

The series of Sensori Controls that use the VEV driver are:

1. **M172 18IO** - ***Sensori Case Management and VEV***
2. **M172 42IO** - ***Sensori Case Management, Compressor Safety and VEV***
3. **M172 18IO – *Sensori Compressor Safety and VEV***
   (*See these manuals for all screen layouts*)

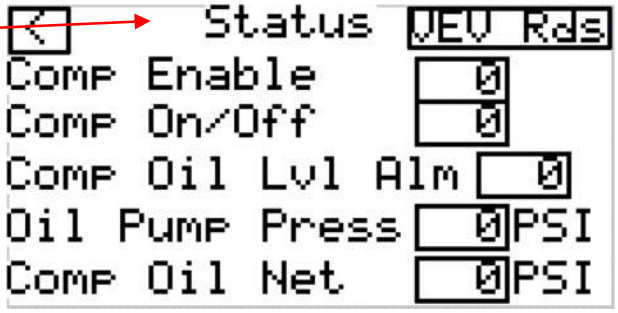
All status screens *AND* parameters for the **VEV ONLY** are generically all the same. See manuals listed above for navigation information and functionality.

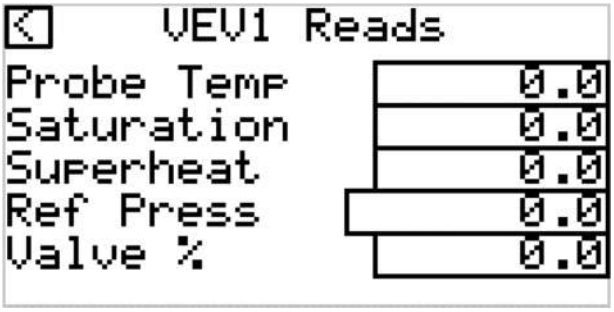
**All default settings to be used on Emerson EXV bipolar stainless-steel valve.*

Compressor Safety and VEV – 18 I/O

Status:

Push button, to advance to valve readouts below.





Probe temp – Temperature probe located on suction line at outlet of evaporator as installed by contractor.

Saturation – The SST of the selected refrigerant based on its current pressure.

Superheat – The calculated superheat in real time

Ref Press – The pressure of the suction line where the suction line transducer was installed by contractor.

Valve % – EXV valve operating % in real time.

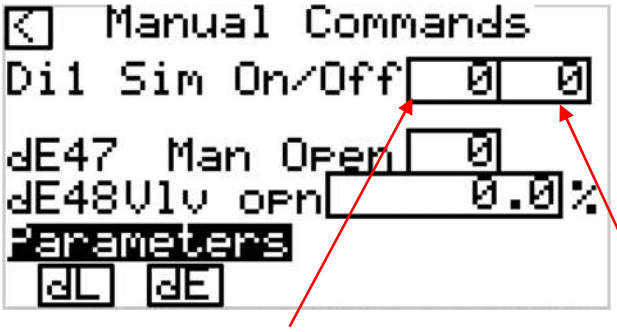
Setpoints

*NOT ALL SETPOINTS ARE ACCESSIBLE FROM THE M172 SENSORI CONTROL.
Setpoints that need to be changed that are not listed below MUST be changed using the TM171DLED Terminal.

See **Schneider's Manual (Modicon M171 EEV)** for more information and selection of setpoints.
It is not recommended changing the PID settings, as this has been tested on multiple applications. The preconfigured PID settings (dE21) may be changed for desired applications and easier to work with as there are plenty options for speed and response times.

***NOTE:** Certain Parameters require a power cycle/Reset to the device for the change to take effect and save. Refer to Schneider's Manual to see list of parameters that need to be reset.

Compressor Safety and VEV – 18 I/O



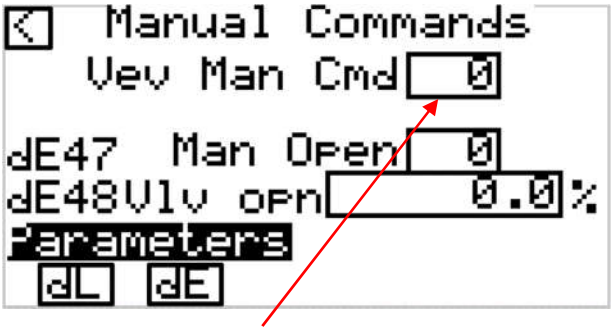
Simulation Value – 0=Off, 1= On

Simulation of physical DI1 – 0 = No simulation (*normal mode, waiting for DI1 to be true from source*), 1 = simulate input manually.

To manually open the valve using parameters **dE47** and **dE48**, DI1 MUST BE ON/TRUE.

If no command is sent to this device from external source, the simulation mode will give you ability to control the valve manually.

Circuit Management and VEV – 18 I/O and 42 I/O



Like the previous screen – however, this is the internal command sent from the device to tell the valve to go into manual mode. Parameters **dE47** and **dE48** can only be used when there is a call for cooling/

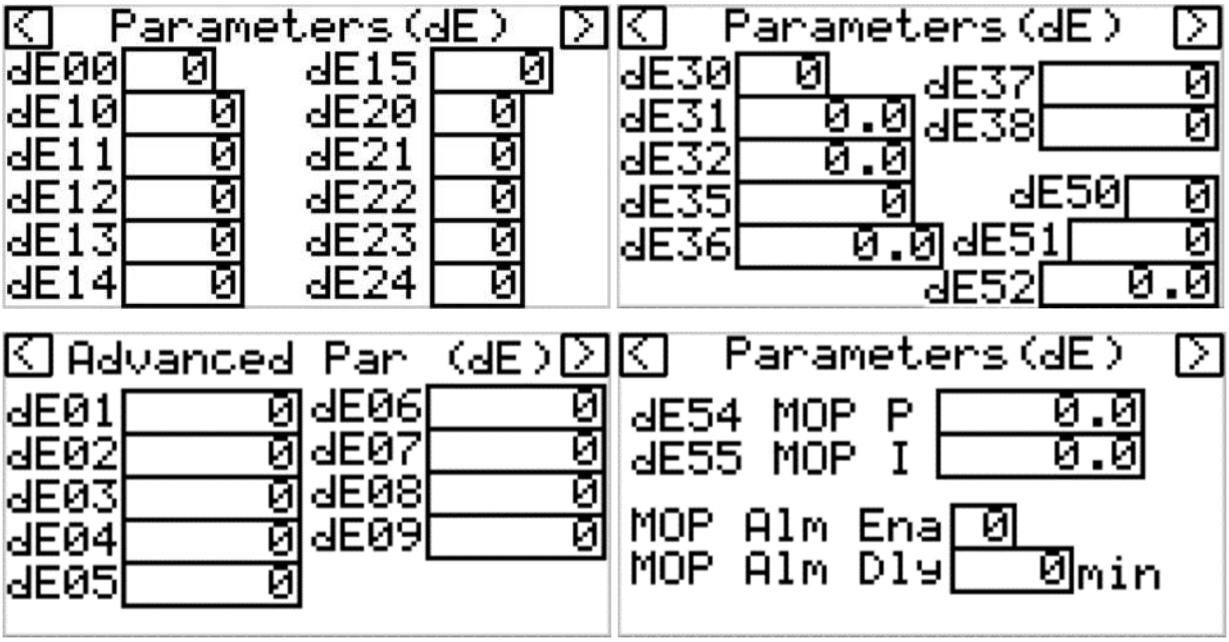
the valve is active. When the valve is not active (*case is satisfied on temp, in defrost, or not enabled*), "Vev Man Cmd" may be used to force the valve using those selected parameters.

dE47 Man Open – Set to 0 for automatic/normal operation. Set to 1 for manual control.

dE48 Vlv Opn – This is the Valve Open % that you set. This will immediately set the valve to the % you selected. This does not have automatic superheat control – it is a manual override of the valve.

*It is recommended to use this feature only when servicing equipment. *Value must be set back to 0 for normal operation.*

Parameters dE



MOP Function

When **dE50** = 1 (*enabled*), This function works as a Superheat Setpoint "Shift", changing the dynamic superheat setpoint on a PID control.

MOP is used mostly on a OLPP system when having an evaporator case SST above the normal operating OLPP system SST. This is used to prevent spiking of suction pressure and causing unnecessary compressor cycling.

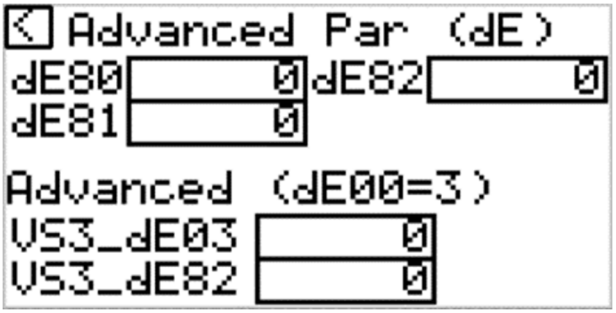
To prevent too high of a superheat, **dE31** (*overheating upper threshold*) must be set where a max superheat setpoint will be seen by the PID control algorithm (**dE54**, **dE55**). Superheat will float between **dE31** and **dE32** if the SST is above the Setpoint **dE52** and **dE51** set time has expired. Set **dE51** (*MOP disable time at start up*), to prevent MOP cycling from fast temperature/pressure fluctuations.

Valve Type Settings (Alco / Danfoss Colibri ETS)

Danfoss Colibri Expansion Valve ETS12C – ETS100C

When **dE00** = 3, **dE01-dE09** settings are as follows. These settings will not change.

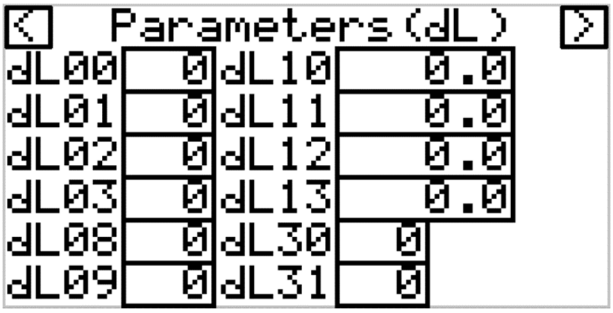
DANFOSS	ALCO
dE00 = 0 (CUSTOMIZABLE)	dE00 = 3 (EX4-6)
dE01 = 240 STEPS / SEC	dE01 = 500 STEPS / SEC
dE02 = 600	dE02 = 750
dE03 = 6 STEPS	dE03 = 100
dE04 = 600 mA RMS (800 mA PEAK)	dE04 = 500 mA
dE05 = 10 Ω	dE05 = 13 Ω
dE06 = 100 mA	dE06 = 100 mA
dE07 = MICROSTEP - (RECOMMENDED) (2) - FULL STEP CAN BE USED	dE07 = 0 (FULL STEP)
dE08 = 100%	dE08 = 100%
dE09 = 50 ms x 10 / STEP	dE09 = 50 ms x 10 / STEP

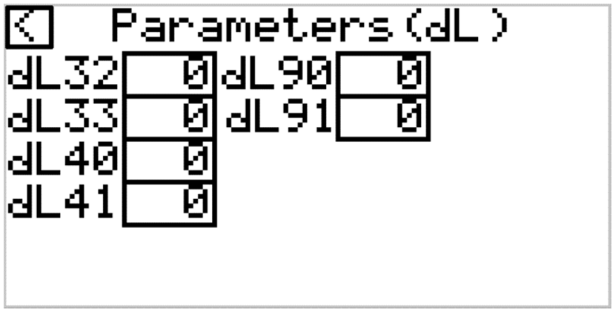


dE80-**dE82** parameters MUST be set to manufacturer specifications and max values. Damage to Valve can occur if settings are not correct! These changes can only be made when **dE00** = 0 (customizable)

VS3_dE03 (*stepper motor extra steps in total closure*) and **VS3_dE82** (*extra steps in total closing every 24hrs of valve running*) only take effect when **dE00** = 3 (*Alco EX4-6*).

Parameters dL





dE20 – Refrigerant Selection: 0 = R404A, 1 = R448A, 2 = R410A, 3 = R134a, 4 = R744, 5 = R407C, 6 = 427A, 7= R513a, 8 = R515B.

NOTE: *selection 7 and 8 are both "Customizable Refrigerants" selected in VEV.*

ALARMS!

Indication that an alarm is present. Follow the Image to find which alarm is present.

This Screen lists all the VEV alarm codes that could be present.

A value of **0 = no alarm**. A value of **1 indicates an alarm for that feature is present**.

See Schneider's Manual (*Modicon M171 EEV*) for more information and probable causes for alarms indicated. If a Modbus error occurs, check wiring (**see schematic**) and ensure that resistors are installed in appropriate spots. (Start and End of line) Interferences may also be an issue with high voltages and improper grounding of devices.

*A Modbus error will occur when unplugging or unwiring the valve when power is on to device!! Make sure to disconnect power to device when valve is being changed or wired. If an error occurs. A power reset is required to clear this alarm.