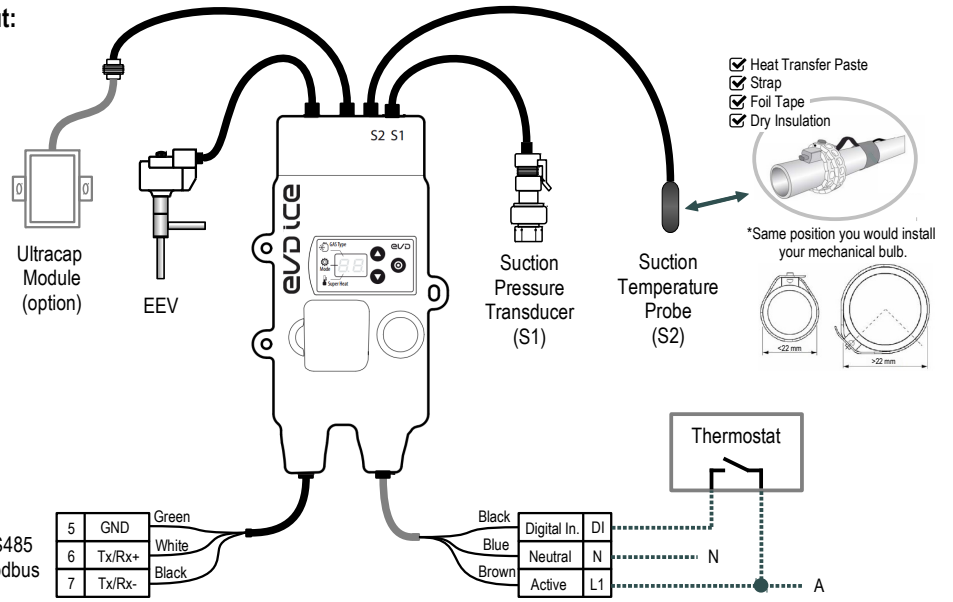
CABERO PRO

Distributed by: ACTROL

CAREL evd ice

Layout:



Check:

- ☑ The EVD Ice module has permanent power (Active / Neutral)
- ☑ The Digital Input is switched via the thermostat / cooling call.
- ☑ The Digital Input references the same phase as the EVD Ice Active.
- ☑ The BASIC commissioning parameters, Refrigerant and Superheat setpoint are set.
  Note: The Mode parameter is locked by default as the application is already predefined.

Operation Notes:

- ☆ OPEN digital input = Stand-by, the valve is closed.
  LED indicator is not flashing
- ☆ CLOSED digital input = Valve enabled, valve opens to start position and begins to modulate.
  LED indicator is flashing
- ☆ The Ultracap is used to drive the valve closed with power loss. This is an additional component.
- ☆ For negative values, the display flashes the minus symbol "-" before the value.
  For values above 99, the display flashes the number of hundreds followed by the remaining number.
- ☆ During operation the Superheat is displayed. The Superheat is only displayed between -5 to 55K.
  Outside of this range the display shows "- -"

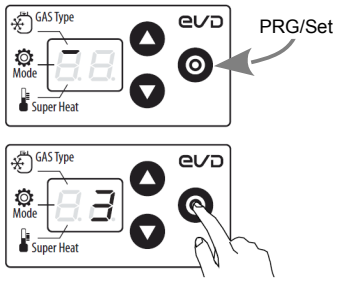
Setting the BASIC Parameters

There are only 3 base parameters. Some Evaporators have only 2.

- PRESS the PRG/Set button to view the base parameter.
- PRESS Up/Down to adjust
- PRESS PRG/Set to save
- PRESS Up/Down to move the selector.

Check and Set ALL the basic parameters before proceeding.

- **PRESS PRG/Set for 2 seconds to accept and enable the control.**



BASIC Parameters

Code	Description	Unit	Min	Max	Default	New
GAS Type	Refrigerant 0= Custom 11= R744* 22= R407F 33= R448A 1= R22 12= R728 23= R32[3] 34= R449A 2= R134a 13= R1270 24= HTR01 35= R450A* 3= R404A 14= R417A 25= HTR02 36= R452A* 4= R407C 15= R422D 26= R23 37= R508B* 5= R410A 16= R413A 27= R1234yf 38= R452B 6= R507A 17= R422A 28= R1234ze* 39= R513A* 7= R290 18= R423A 29= R455A* 40= R454B 8= R600* 19= R407A 30= R170* 9= R600a* 20= R427A 31= R442A* 10= R717 21= R245FA 32= R447A* *If selected it *can* change the transducer default setting, check S1.	-	0	40	3	
Mode	Operating Mode (By default this parameter is inaccessible) 1= Cabinet / Coldroom 2-6= Not Applicable 7= Cabinet / Coldroom with subcritical CO2	-	1	7	1	
Super-heat	Superheat Setpoint	K	Low SH	55	6	

ALARMS

Code	Description	Reset	Effect	Solutions / Check
A1	Probe S1 (Pressure) faulty or set Alarm range exceeded	Auto	Valve closed	Probe status, range and compare system pressure.
A2	Probe S2 (Temperature) faulty or set alarm range exceeded	Auto	Valve closed	Probe status and connections
E1	MOP protection activated	Auto	Protection in progress	MOP Threshold C5
E2	LOP protection activated	Auto	Protection in progress	LOP Threshold C3
E3	LowSH protection activated	Auto	Protection in progress	LowSH Threshold C1, possible floodback
E4	Low suction temperature	Auto	No effect	Low suction threshold C8
E5	Emergency closing	Auto	Valve closed	Power loss (if Ultracap fitted)
E6	Network error (if run as slave device)	Auto	Control based on DI	Wiring status, master device is on and working, addressing.
E7	Ultracap module powered at low voltage or low charge	Auto	No effect	Wiring, power supply and if a sufficient recharge time has passed
E8	Emergency close not completed	Manual	Valve closed	Press PRG/Set to manual reset. Check Ultracap
EE	EEPROM, operating and/or unit parameters are damaged	Driver failed	Total Shutdown	Replace the Driver

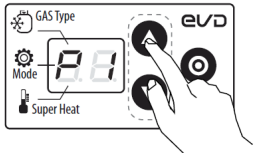
****The EVD Ice is factory fitted by Cabero, please contact Actrol for technical support.**

CABERO PRO ACTROL™ evd ice

Accessing the SERVICE Parameters:

Only accessible if the BASIC Parameters have been accepted.

- PRESS Up and Down for 5 seconds
- PRESS Up/Down to move the selector
- PRESS the PRG/Set button to view the parameter.
- PRESS Up/Down to adjust
- PRESS the PRG/Set button to exit the parameter.
- PRESS and HOLD the PRG/Set to exit the service menu.



Notes:
- If no button is pressed after 30 seconds the display automatically exits.

- The display is ONLY a 2 digit display, for values over 100 or below -9 the display indicates the number of 'hundreds' or the negative indicator followed by the number.

Troubleshooting:

⚠ The valve is overshooting / undershooting without achieving superheat setpoint.

- Check the status / condition / position of the sensors. Use Advanced parameters P1 and P2 to review.
- Check the correct transducer is programmed, Use Advanced parameter S1.
- Check the correct refrigerant has been set.
- Ensure that no cork tape / heavy tape has been applied to the superheat sensor.
- Ensure the valve is getting a steady feed of liquid refrigerant (no flash gas, short charge etc..)
- Check the conditions the valve has been engineered to.

⚠ The valve does not appear to be doing anthing. No signs of operation.

- Ensure the basic commissioning procedure is complete. Each BASIC parameter must be checked. And when ready, push and hold the PRG/Set button for 2 seconds to initiate control.
- Ensure the EVD Ice is getting a run call. The digital input is switched via a cooling call. When operating, the display has a flashing LED in the bottom right of the screen.

⚠ The valve intermittently 'stops' working, and it seems a power reset fixes the issue.

- This is typically caused when the compressor is OFF while the valve maintains a request to operate from the thermostat. (Room has not reached setpoint, but the Compressor has turned off)

  What happens?

  When the valve has its digital input enabled, it opens to a pre-set start opening percentage%.
  If the compressor is off, but the digital input is enabled:
  1. The Suction pressure will rise to equate to the room temperature. (SST = Room temp)
  2. The Superheat sensor will read the evaporator temp, which will equal room temperature.
  The controller views this as Low Superheat, and the valve will modulate closed.
  When the compressor restarts, as the valve is already enabled it does not move to its opening %.
  The superheat will be huge as the suction pressure falls with the compressor now on.
  The valve does not open quick enough, and the compressor trips on LP. The issue starts again.

  Solution
- Check and set the Advanced parameter C3 (LOP threshold).
  This value must be set *between* the expected operating pressure and the system LP cut out.
  When the pressure reaches the threshold, it forces the valve open to increase the suction pressure.
- Ensure the EVD Ice digital input is being switched via the cooling call.

SERVICE Parameters

Code	Description	Unit	Min	Max	Cabero Default	New
P1	S1 Probe reading (pressure transducer)	bar	-85	200	-	
P2	S2 Probe reading (superheat temp sensor)	°C	-85	200	-	
tE	Evaporation temperature (as saturated suction value)	°C	-85	200	-	
tS	Suction temperature (will read the same as P2)	°C	-85	200	-	
Po	Valve opening	%	0	100	-	
CP	PID Proportional Gain	-	0	800	15	
ti	PID Integral time	s	0	999	150	
C1	LowSH protection threshold	K	-5	SH Set	2	
C2	LowSH protection integral time	s	0	800	15	
C3	LOP protection threshold (set as saturated suction value)	°C	-85	C5	-50	
C4	LOP protection integral time	s	0	800	0	
C5	MOP protection threshold (set as saturated suction value, using S1 probe)	°C	C3	200	50	
C6	MOP protection integral time	s	0	800	20	
C7	MOP protection disabling temperature threshold (using S2 probe)	°C	-85	200	30	
C8	Low suction temperature threshold	°C	-85	200	-50	
S1	S1 Ratiometric pressure transducer range 1= -1 to 4.2 bar 3= -1.0 to 9.3 bar 4= 0 to 17.3 bar 6= 0 to 34.5 bar 7= 0 to 45 bar **for more options refer to the manual +0300038EN	-	1	11	3	
n1	Network address (Modbus)	-	99	99	99	
n2	Modbus Communication options (refer to the manual +0300038EN) 1= 9600, 2 stop bit, no parity 2= 19200, 2 stop bit, no parity	-	0	17	2	
Si	Unit of measure (1= Metric °C/bar, 2= Imperial °F/psi)	-	1	2	1	
IA	Enable operating mode parameter modification (0= yes, 1= no)	-	0	1	1	
U1	Enable manual valve positioning (0= no, 1= yes)	-	0	1	0	
U2	Manual valve position (Carel valves are 480 steps)	step	0	999	0	
U3	Valve control steps (1= 480, 2= 960)	-	1	2	1	
U4	Valve opening position at start-up	%	0	100	40	
Fr	Firmware revision	-	-	-	-	
di	Digital input configuration (1= start/stop regulation, 2= backup regulation)	-	1	2	1	
rt	Reserved	-	1	1	1	
L1	S1 Alarm, Minimum suction pressure alarm threshold	°C	-85	H1	-1	
H1	S1 Alarm, Maximum suction pressure alarm threshold	°C	L1	200	9.3	

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