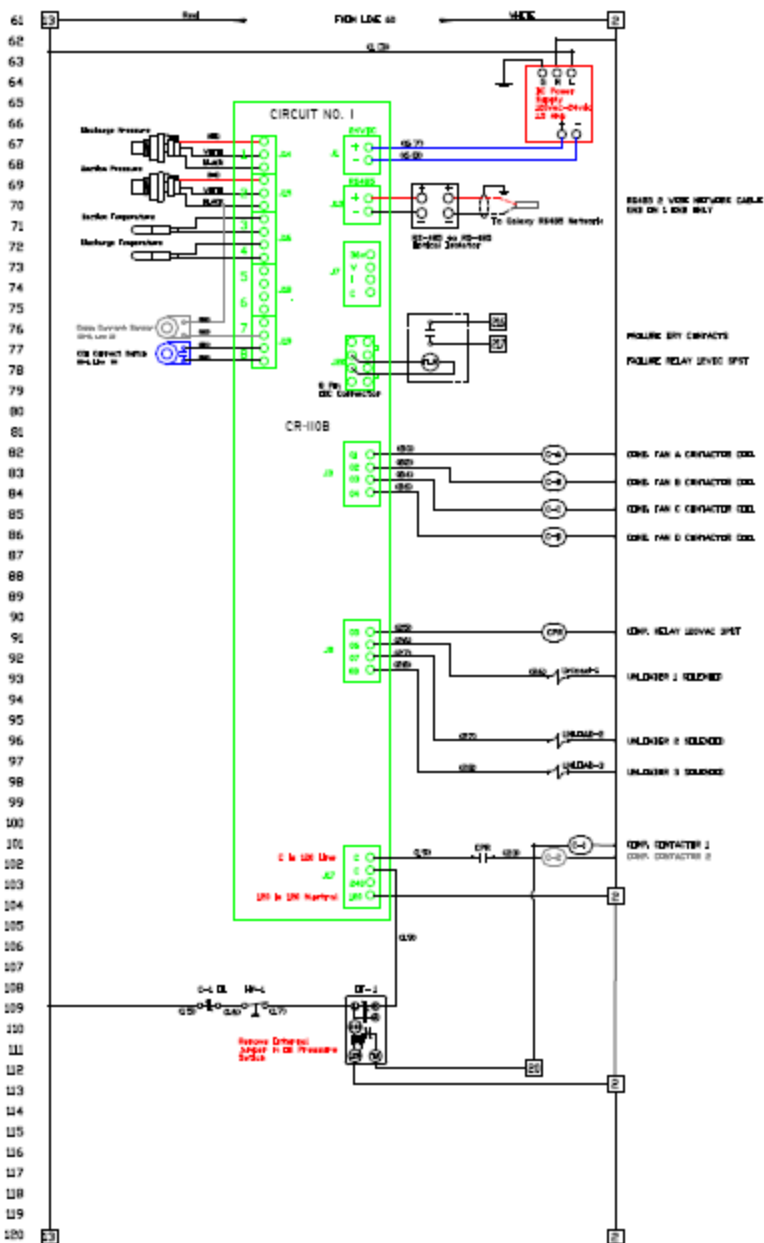


CHAPTER 20
CR-110 Application Note
APP-002

Compressor Suction Control

This application Note will describe how to use the CR-110 to control the suction pressure instead of temperature. In this application, a number of unit coolers are used with independent LLS control for multiple temperature zones. The compressor suction Setpoint will be set for the lowest suction pressure needed.



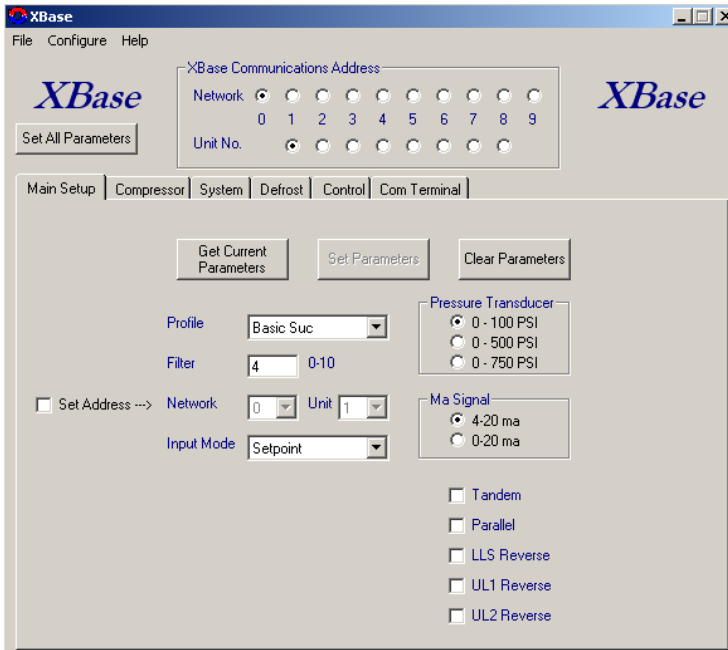
Theory

The CR-110 uses a PID loop to maintain a Suction Setpoint. The compressor turn on point is set 5 psi below the Suction pressure Setpoint. Up to 3 unloaders can be used to load and unload the compressor to maintain the Suction Setpoint. The PID will produce a output signal from 0 to 100%. The compressor will start when the suction pressure reaches to turn on point. The LLS, and unloader outputs (6,7,8) will all act as unloaders. Normal convention is the unloader is de-energized to load. Xbase now has a option to reverse this logic if necessary.

Logic

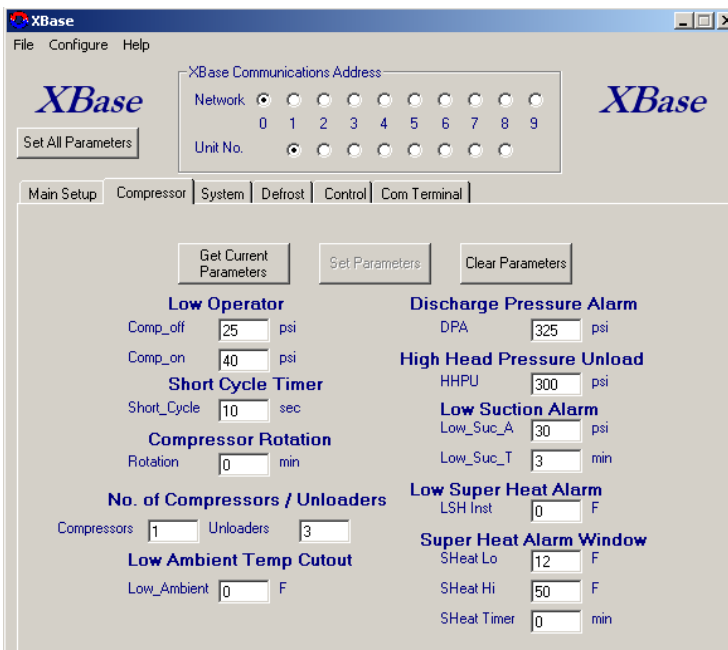
The pump down mode of the CR-110 has been removed for this application, in that the operation of the LLS is not part of the CR-110 operation. The CR-110 will be in refrigeration anytime the compressor is running. The compressor will turn on at the Low Operator Com-

pressor turn on point, and off at the compressor turn off point. The PID loop runs all the time and will produce a signal call cooling demand from 0 to 100 %. The settings for the LLS and unloaders will cause all three to cycle on and off. If the suction pressure is greater than the Suction Setpoint, and climbing, then the PID loop will increase the signal and the unloader will load up to bring the pressure back to Setpoint.



The profile is called Basic Suction, and the input mode needs to be Setpoint. A 100 psi transducer needs to be used for the suction pressure.

If the unloaders are reverse from the normal operation, use the check boxes to change the operation.



The low operator Comp_on value should be 5 psi less than the Suction Setpoint.

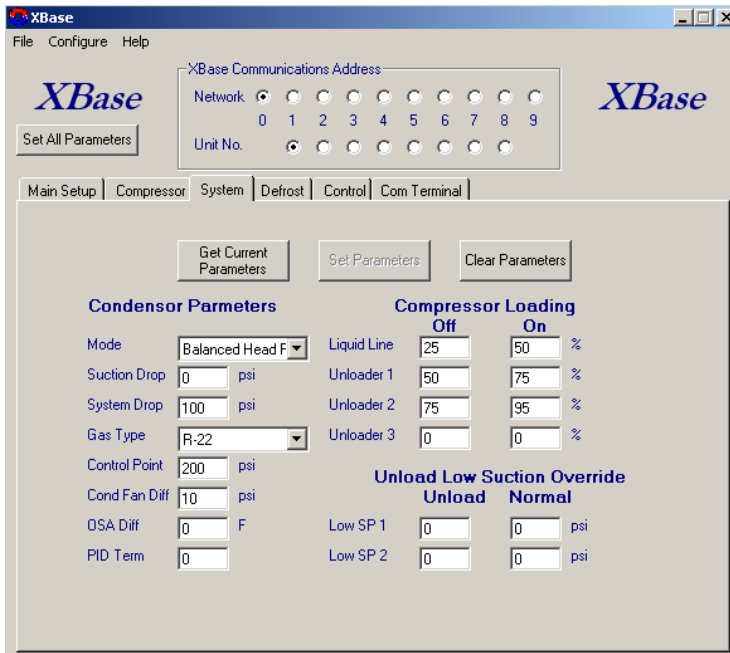
Unloaders need to be set for the number of unloaders on the compressor.

The Discharge Pressure Alarm, and High Head Pressure Unload should be set for the appropriate values.

The Low Suction Alarm should be set for 15 psi lower than the Suction Setpoint. The timer should be set for 3 to 5 minutes.

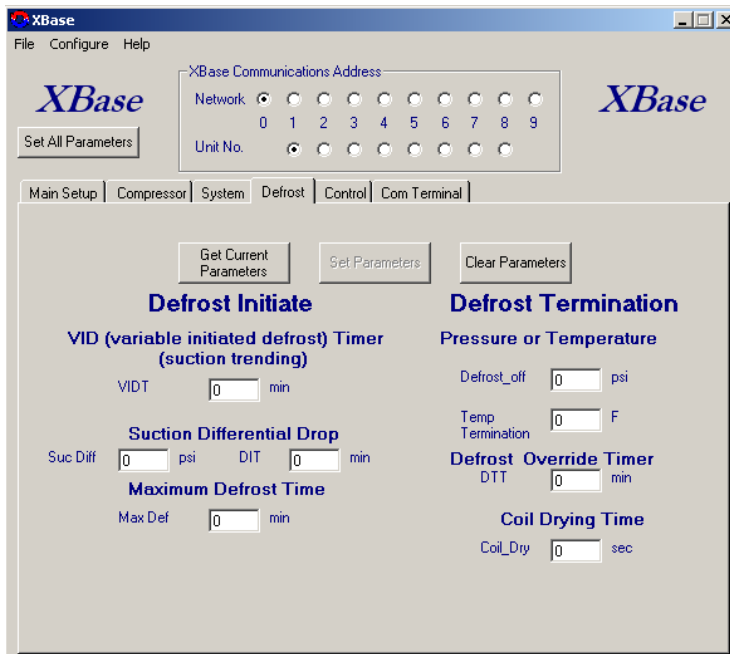
Low Super Heat Alarm should be set for 0 and not used.

The Super Heat alarm Window is typically 12 for low, 50 for high, and 10 minutes.

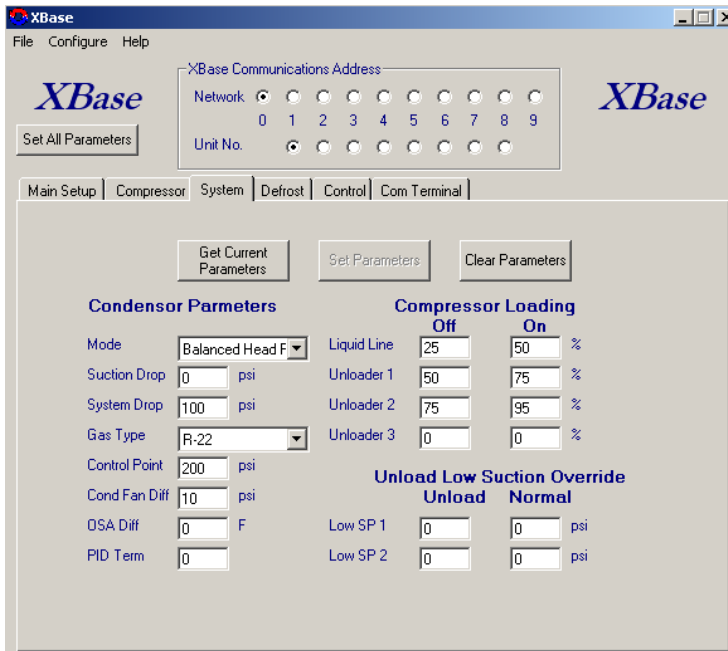


The Liquid Line setting is for Unloader 1, Unloader 2 is for Unloader 3, and Unloader 2 for Unloader 3.

The Unload Low Suction Override is not used in this application.



No Parameters are used in the Defrost settings.



The Liquid Line setting is for Unloader 1, Unloader 2 is for Unloader 3, and Unloader 2 for Unloader 3.

The Unload Low Suction Override is not used in this application.



The PID mode needs to be Suction.

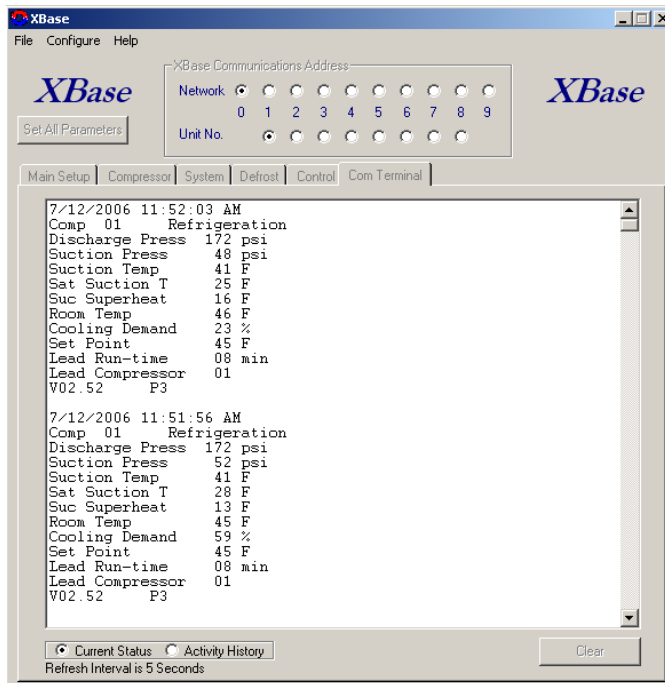
SP is the suction pressure Setpoint in psi.

The PID loop is a PI loop for this application. The D value is set to 0.

The Update time is in .1 sec and is set for 50 or 5 seconds.

P is set for 15, and I for 5.

KI_div is 10, KI_Thresh is 3, KI_div2 is 20 and PID Scale is 0. These values are for factory testing only and should not be changed.



The Com Terminal can be used to monitor the Suction pressure and other parameters.