

**Screw Compressor Current Limiting & Soft Start
APP- 016**

This application deals with a screw compressor where the amps needed to be limited because of a 200 amp service. The program changes involve adding some parameters to compare to the amp reading and unload the compressor if necessary. The other component involves the starting of the compressor. A soft start device is being used and has a number of conditions that need to be met.

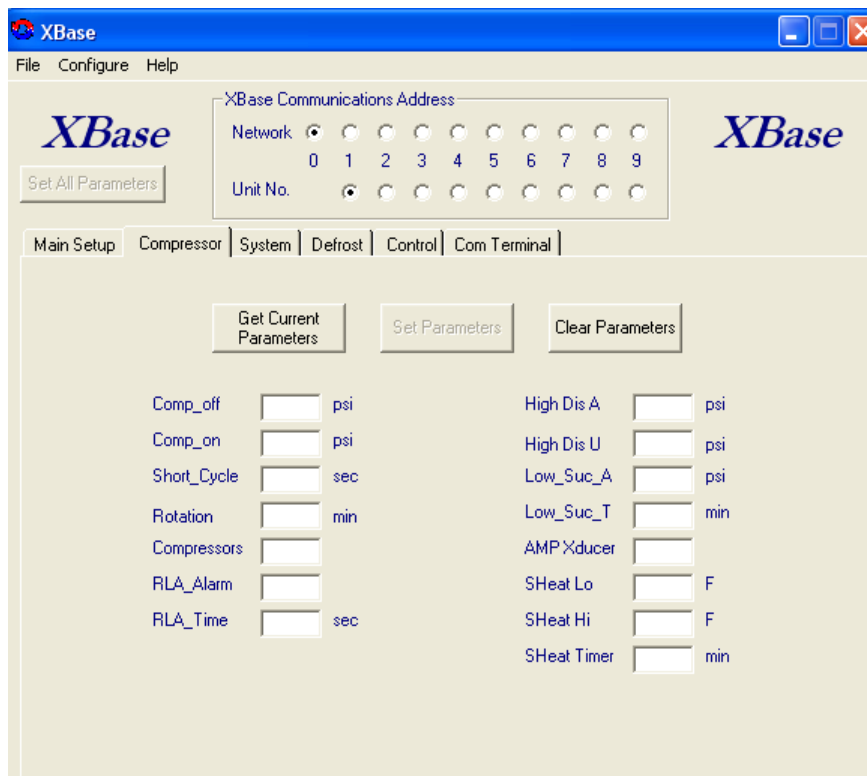
A new screw.inf (5-16-07) or later needs to be used to show the new parameters. The new parameters are as follows:

RLA_Alarm if this values is exceeded for the RLA_Time, the CR-110 will trip off on a high current alarm. This is a new alarm and the led's should indicate the following:

HIGH CURRENT ALARM ● ● ○ ○ ○ ●

RLA_Time this value is in seconds, with a limit of 250. If the compressor amps is above the RLA_Alarm point for this amount of time, it will trigger a High Current Alarm.

RLA_Limit if the compressor amps exceed the RLA_Limit, then the conventional loading is stop and the compressor is unloaded until the amps drop 5.



This screen shows the new RLA_Alarm and RLA_Time parameters. The RLA_Alarm is in amps and the RLA_Time is in seconds.



This screens show the new parameter RLA_Limit. Its unit of measure is amps.

SOFT START:

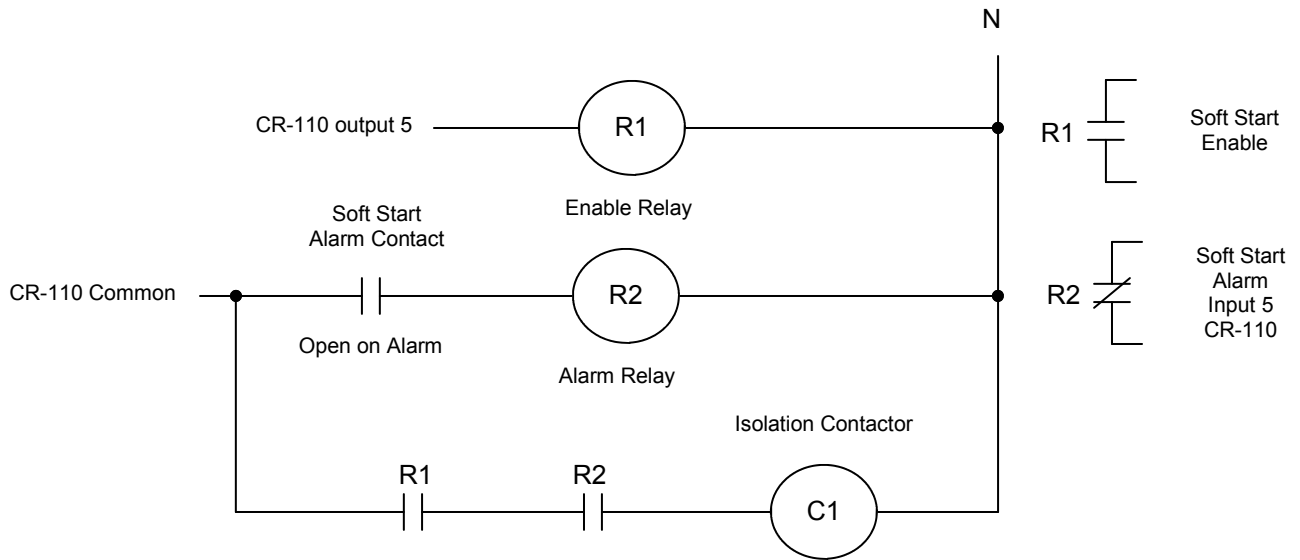
The soft start is made up of two components, the isolation contactor and the soft start device. The soft start device has a contact that will close once the device is up and running. This contact will pick up a alarm relay. The alarm relay has a normally closed contact that goes to input 5 of the CR-110. On compressor start up, the CR-110 will monitor the R2 contact and will expect to see it close within a programmable time. If the alarm contact does not close with in 30 seconds, it will then it will go out on a Soft Start Fail.



Under a normal start, the output 5 of the CR-110 will pickup and enable relay that will supply a contact to the soft start and also enable the circuit for the Isolation contactor. Once the soft start picks up the alarm relay, the Isolation Contactor will close.

If the compressor is running and the alarm contact opens, the compressor will shut down on a Soft start Fail alarm. It will stay locked out for 3 minutes, and then will do a card reset and try a restart.

Control Circuit:



Normal Start: R1 picks up when refrigeration is being called for. As soon as R1 picks up, the soft start begins its ramp up. Shortly after the soft start enable the soft start alarm contact will pick up. This will cause R2 to pick up and the isolation contactor will close.

Normal Stop: R1 de-energizes and tells the drive to ramp down to shutdown. As soon as R1 drops out the Isolation Contactor drops out.

Soft Start Fail Alarm: The soft start alarm contact will cause R2 to drop out. This will cause R2 to drop out and produce a Soft Start Alarm on the CR-110. After 3 minutes, the CR-110 will reset and try to run again. If the Soft Start Alarm happens on start up, then the CR-110 will lockout on alarm and stay locked out.