

**CR-110 Freq Drive Compressor Suction Control Application Note
APP-025**

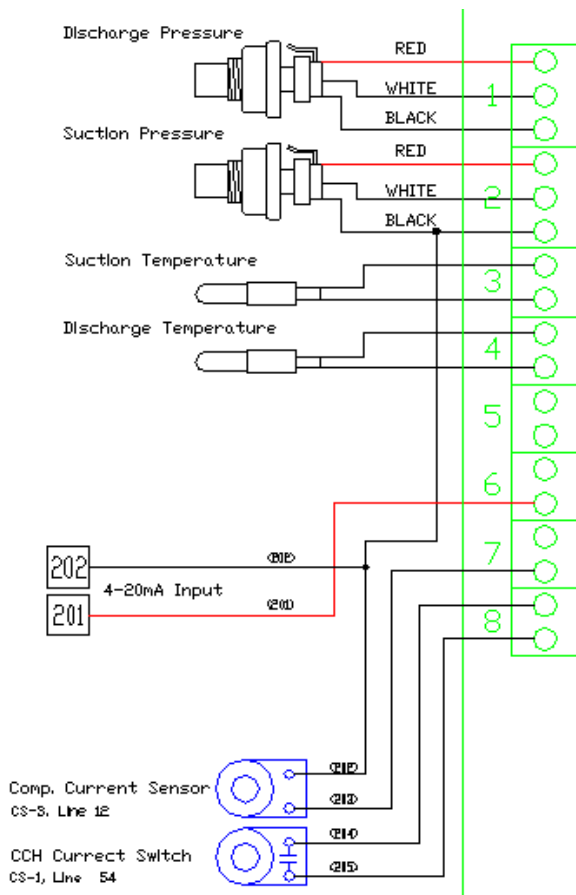
Freq Drive Compressor

This application Note will describe how to use the CR-110 to control a compressor with a VFD and using Suction control. Application note 001 describes using a VFD on a compressor, but without suction control. Suction control uses the ma signal from the panel to create a floating suction Setpoint. The CR will then control the compressor to maintain the suction pressure. Application note 19 shows how to setup the parameters for suction control.

Theory

The VFD is used to operate the compressor from 30% to 100% output by varying the speed of the compressor. The CR card will control the VFD to hold a constant suction pressure. The suction Setpoint has a span that is controlled by the 0-20ma signal from the control panel.

Sensors



The pressure sensors and temperature sensors are located right next to the compressor.

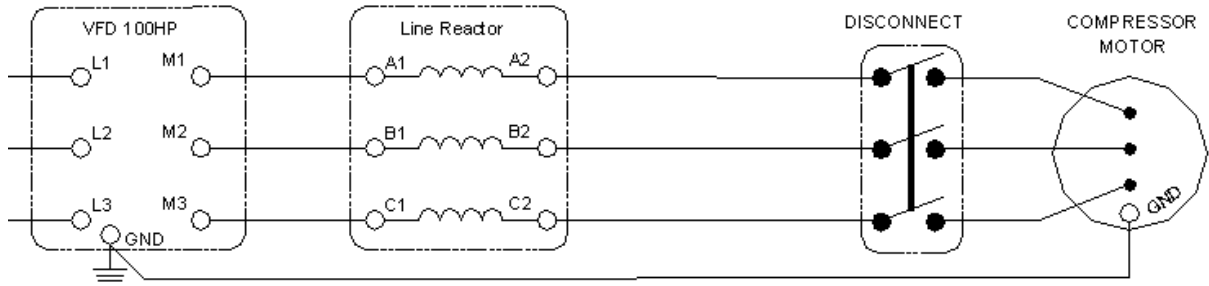
Ch 5 is not used at this point.

Ch 6 is the 0-20ma or 4-20ma signal from the control panel.

Ch 7 is a 0-5vdc current transducer. The transducer has a switch for selecting different ranges. Make sure that the CR-110 is programmed for the correct setting.

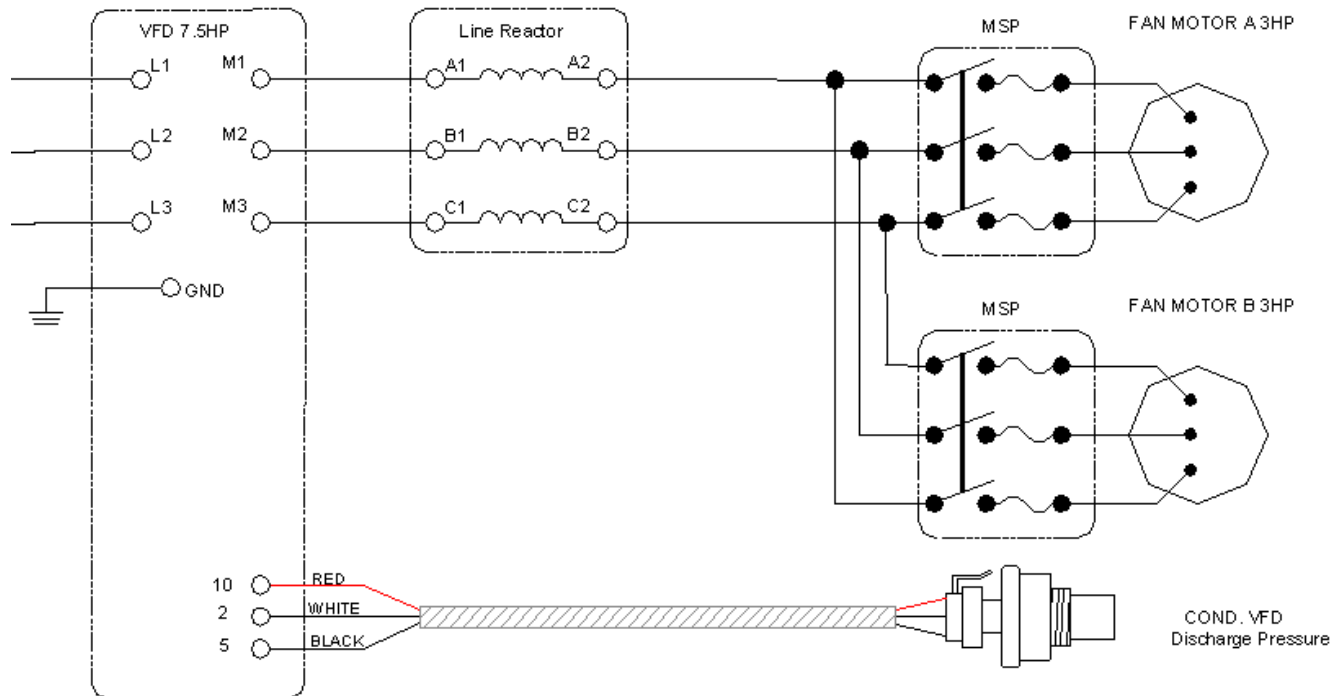
Ch 8 is a current switch that provides a dry contact when the Crank Case heater is on.

Freq Drive Compressor High Voltage Wiring

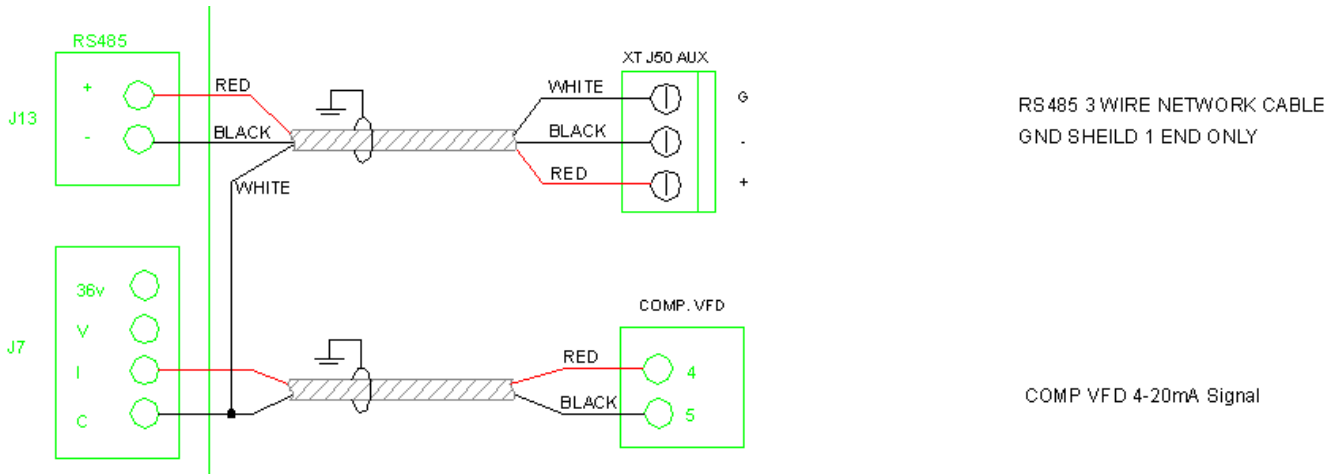


Freq Drive Condenser Fans High Voltage Wiring

An option is to use a VFD to control the head pressure of the compressor. This provides a very smooth operation and helps with the overall control. This requires a separate pressure transducer that connects directly to the VFD. The pressure Setpoint is programmed in the VFD.



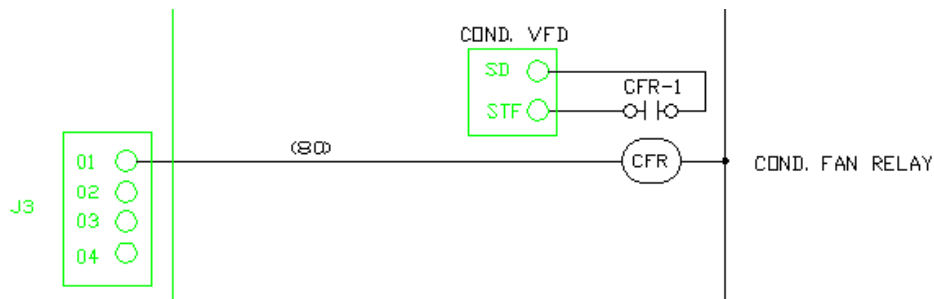
CR-110 Communications and VFD Control



J13 is the main communications connection to the CR & ER cards.

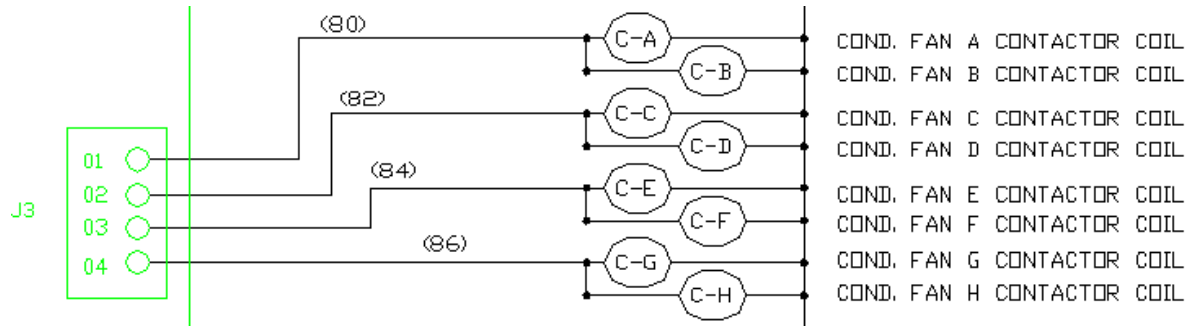
J7 is the 4-20 ma output to the VFD for the compressor. J7 will also provide a 0-10vdc signal to the freq drive if preferred. Use the C and V terminals on J7 for 0-10vdc.

CR-110 VFD Condenser Fan Control



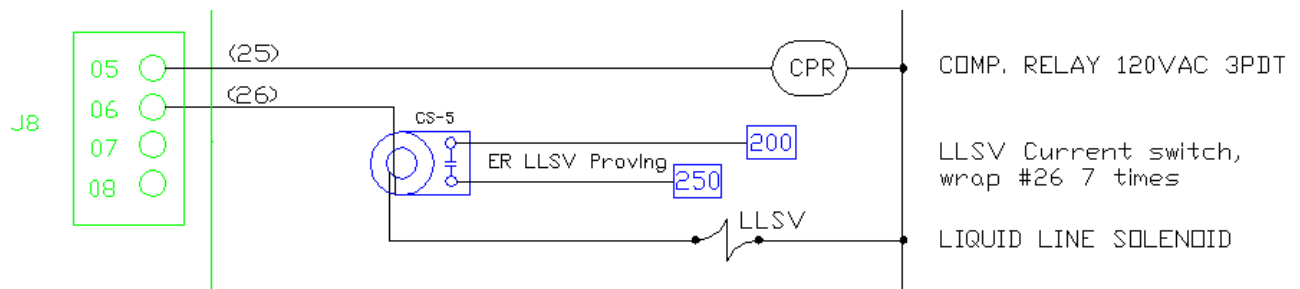
When using a VFD on the condenser fans, a single relay is used to provide a start signal to the drive. The drive will then use a PID loop to control the pressure to a Setpoint save in the drive.

CR-110 Condenser Fan Control



The first 4 outputs are the condenser fans and may take a number of different configurations.

CR-110 VFD Compressor and LLS Valve Control



The CPR relay is used to provide a start signal to the compressor VFD and also provide a start signal to the oil switch. A fault contact from the VFD drive is also used to trigger an external alarm on the CR card.

