2K90POLCOM-3 OVERVIEW

7/7/2015

Executive Summary

The 2K90POLCOM-3 retrofit is intended to replace the Comtech EC6/EC8 controller. The RC2000A or RC2000C takes the place of the current ACU. The 2K90POLCOM-3 takes the place of Comtech's AIU-24D-24D-24D. The 2K90POLCOM-3 will still interface with Comtech's contactor board and VFD that are enclosed in Comtech's model DA-VHA-FDEC box.

Note: It is highly recommended to take note of the system overview that is found on the swing panel of the enclosure that contains the Danfoss VFD and relay board. The drawing on the enclosure's panel in conjunction with these instructions will help the installer fully understand the system and the appropriate connections.

Retrofit Details

A. Sensors

The AZ and EL encoders are replaced with *Powermation* pulse sensors Z-DTK-056M1, which can be purchased through RCI. The Powermation sensors are hall-effect sensors, which require +5.7V, Ground, and a return line.

B. Limit Switches

The original limit switches, supplied by Comtech, are kept. The integrator must install diodes that allow the 2K90POLCOM3 unit to effectively operate with the limit switches as intended.

C. VFD

Drive Commands:

The Danfoss VLT 2800 (Variable Frequency Drive) is used to control the hour angle (or azimuth) axis. The drive must be set up per these instructions in order to function with this retrofit.

Direction Control - The Danfoss VFD software allows the user to setup the drive so it performs a specific command when a signal is present on connections 18, 19, 27, 29, or 33. For our application, the commands look for a +24V signal, which is present on connection #12 of the VFD. The relay board in the 2K90POLCOM-3 uses jumpers to supply 24VDC to the appropriate pins on the VFD. The details about the Danfoss drive are discussed on p.59 in the Danfoss Manual, which can be opened on the supplied retrofit CD or downloaded from Danfoss' website.

1. To enter into the programming mode the user should press the Quick Menu and the '+' buttons simultaneously.
2. The screen will change to a set of numbers. The three numbers to the left indicate the memory location and the three numbers on the right indicate the command or setting.
3. Use the +/- buttons to scroll through the memory locations until '300' is displayed on the left side of the display.
4. To change the command or setting:
    a. Press "Change Data"
    b. Use the +/- buttons to change the value
    c. Press "Change Data" to set.

The VFD must be set up so these memory entries include the following data:

302 = 7 (This entry commands the drive to start the motor in the CW direction)
303 = 10 (This entry commands the drive to start the motor in the reverse or CCW direction)
304 = 0 (No command)
305 = 0 (No command)
307 = 0 (No command)

Once the data is set, the Danfoss drive should be power cycled by removing power for 15 seconds.

There will be wires between the 2K90POLCOM-3 and the Danfoss VFD on the following pins:
Pin #12 - 24VDC Power
Pin #18 - Drive CW
Pin #19 - Drive CCW
Note: If the motor drives in the wrong direction, simply reversing connections 18 and 19 will change the motor direction.

Speed Control:

The Danfoss VLT 2800 looks for a voltage from 0 to 10V on pin #53 to control the speed of the motor. The relay board in the 2K90POLCOM-3 box includes potentiometers that are used for this application. The potentiometer is wired to the Danfoss drive with these connections.

Power - Pin #50 (10 VDC)
Wiper - Pin #53 (Speed control input)
Ground - Pin #55 (Ground)

The user can adjust ‘P4’ to change the fast speed and ‘P1’ to change the slow speed on the hour angle (azimuth) axis.

D. Relay Board

Comtech's DA-VHA-FDEC includes a relay board that houses four relays, which are used to control the declination (elevation) axis. The relays are *Potter & Brumfield* P/N: T92S11D12-24. These relays are energized with 24VDC. The DC voltage to energize the relays is included in the 2K90POLCOM-3 enclosure and also flows through the relay board in the 2K90POLCOM-3.

CAUTION: Please refer to the diagram found on the swing panel of the enclosure that houses the Danfoss VFD and relay board. It is believed that the green connector to the left is used to power the declination motor. The signal from the 2K90POLCOM3 box will connect to the 10 pin black connector. The 115VAC to power the declination motor is borrowed from one of the phases of the 208V supply.

The connections for the relay board are:
#1 Common
#2 Up
#3 Down

Note: If the motor drives in the wrong direction, simply reversing connections 2 and 3 will change the motor direction.