

The Comm Test Opto22 program is a simple program that reads the discharge pressure and writes the slide valve mode to a Frick, Quantum LX via Modbus TCP/IP. The program has no operator interface so all variable changes must be manually manipulated via Opto22 Control software. If communication can not be established with the Quantum, the program will fault out and stop running. After using the test program, remove the program from the PLC.

Quantum Configuration

The Frick Quantum needs to be properly configured or communication between a terminal and the compressor will not be able to be established. The default communication handle of the program is 192.168.0.101 with a socket of 502.

These parameters are accessible under level 2 of the Quantum. Press [Menu] and select [Session]. The user level is 2 and the password for level 2 is 20. Transfer the entered values into the Quantum by pressing [Tab]. Under level 2, the Quantum menu now expands to include a [Configuration] option. After selecting [Menu], [Configuration], select [Ethernet]. As figure 1 illustrates, the following screen appears. The IP Data tab displays the expected IP data. Confirm that the ModBus TCP parameter is enabled.

The screenshot shows the 'Ethernet' configuration screen. At the top, it displays the date 'Feb 26 2008', time '08:42:41', and status 'Off'. Below this, there are two panels: 'IP Data' and 'Naming Data'. The 'IP Data' panel includes a dropdown for 'Address Type' set to 'Fixed (Static)', and input fields for IP Address (192.168.0.101), Gateway Address (192.168.0.1), Subnet Mask (255.255.255.0), and Web Server Port (80). The 'Naming Data' panel includes fields for Hostname (QLX-Host), Workgroup (QLX Compressors), and a Comment field. Below these are 'Email Data' and 'Protocols' panels. The 'Email Data' panel has a dropdown for 'Email Notification On Warning Or Shutdown' set to 'Disabled', and input fields for Local Email Address, Alias Name For Local Email Address, Subject, SMTP Server Name OR IP Address, SMTP Server Port Number (25), and a Comma-Delimited List Of Email Recipients. The 'Protocols' panel has dropdowns for 'ModBus TCP' (Enabled), 'Ethernet/IP' (Disabled), and 'PROFINET' (Disabled).

Figure 1

Return to the home screen with [Menu] and [Home].

Computer Configuration

The IP address of the computer cannot be in conflict with the IP address of the Quantum. The computer network options are found under the Control Panel menu.

Opto22 Configuration

Load the Opto22 program named Comm Test.

The red block titled Reset Variables, holds the slide valve variable, nSlideValve_Wr. Double-click the red Reset Variable block to open the block to change the value of this variable. Notice the possible slide valve options: 10 = Auto, 20 = Remote Communications, 30 = Remote I/O, 40 = Remote 4-20ma and 50 = Remote Seq.

After changing the nSlideValve_Wr variable, compile the program and download the program to the PLC by referencing arrow 1 of figure 2. Start the program by referencing the green button under arrow 2 of figure 2.

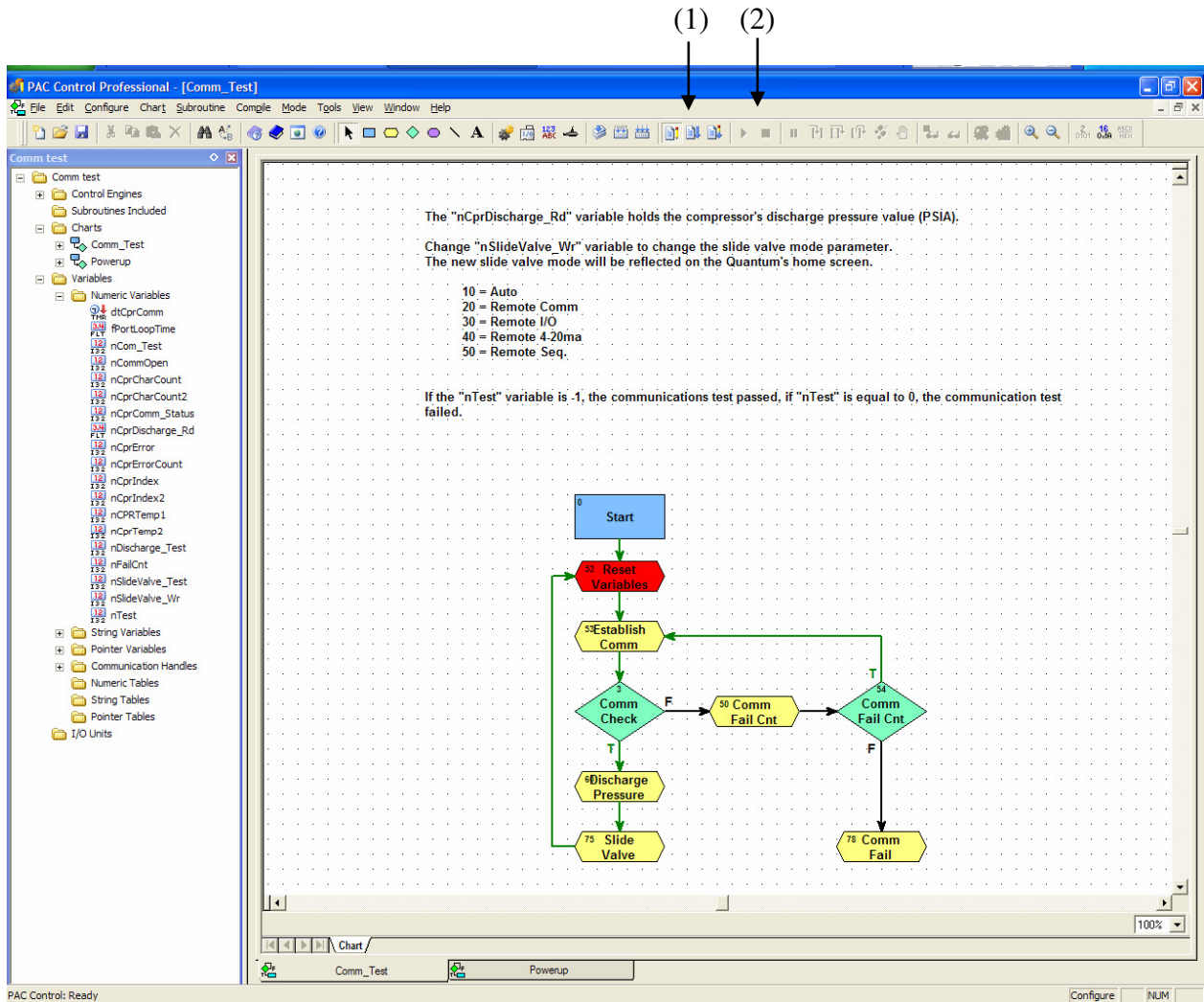


Figure 2

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If the equipment is properly configured and wired, the mode of the Slide Valve of the Quantum will change to match the value of the nSlideValve_Wr. For example if nSlideValve_Wr is set to a value of 30, the Quantum changes the slide valve to Remote I/O mode. Reference figure 3 and the indicating arrow.

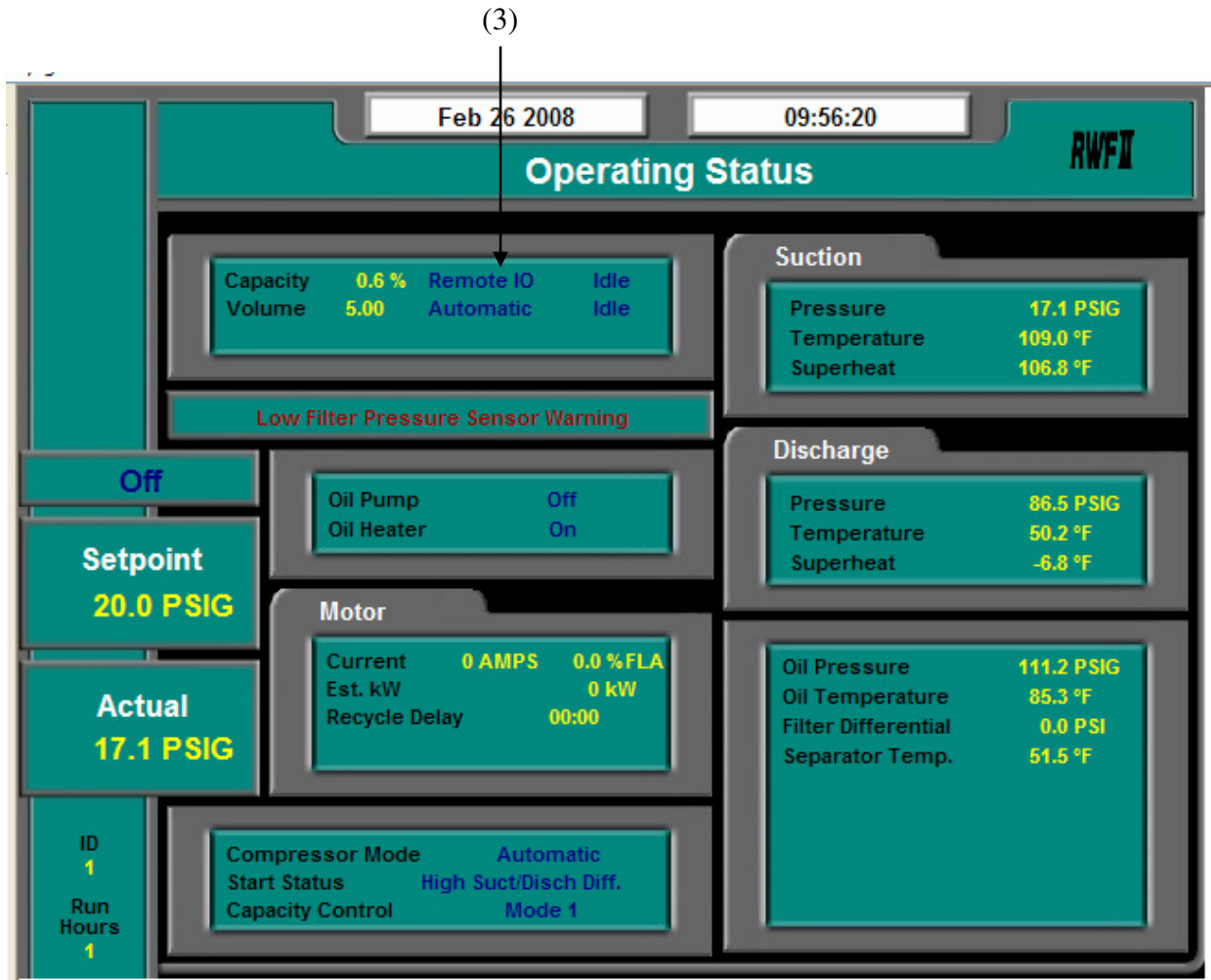


Figure 3

In the Opto22 program, open the tree as displayed in figure 2. Open the variable nCprDischarge_Rd to view the returned compressor's discharge pressure. The nCprDischarge_Rd will display the discharge pressure in PSIA.

If communication cannot be established, the program will attempt to reestablish communication 10 times. After failing to establish communication, the variable nTest will be set to 0 and the program will terminate.

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