



A Rockwell Automation Company

Robicon Canada Limited VFD Trip/Alarm Monitor

The Client:

Robicon is a Subsidiary of High Voltage Engineering Corporation. Robicon Canada Limited is a manufacturer of a diverse range of electronics based power equipment and system solutions. The U.S. based company has installations in fifty-seven countries and takes pride in providing excellent

customer service and support. Robicon provides both standard and custom designs and requires precise testing methods for troubleshooting and efficient commissioning.

The Requirement:

Robicon has installed Variable Frequency Drives (VFDs) at six stations along the Alberta Oil Sands Pipeline (AOSPL) for AEC pipelines. The VFD trips and alarms are monitored on site by a Modicon Quantum programmable logic controller (PLC), and can be viewed on a QuickPanel on site. Unfortunately, the QuickPanel cannot be viewed remotely. Robicon support personnel require a method of remotely viewing the trips and alarms so that they can take the correct diagnostic or replacement equipment to site as required. Power cells, communication boards and synchronization boards are some of the equipment that may be required to get a VFD up and running.

Hinz was asked to provide a computer program that could allow Robicon personnel to dial into the VFD PLC on site

and view the trip and alarm register information.

Functionally the user must be able to:

- Display bit alarms with red or green indicators
- Enter serial port communication information such as parity, baud rate and Modbus address.- Dial the site via modem by entering the phone number, modem initialization string and commands to access the VFD PLC telephone extension.
- Fill in spares by specifying the register, bit required, and the corresponding trip or alarm description.

The Design Solution:

Borland Delphi was chosen as the development tool. The largest contributing factor to the decision was the ability to reuse code and components that were employed in a previous application. Delphi also has other benefits. Because it is object oriented programming, the program allows for fast design and screen prototyping. In addition, the code compiles to small, fast, stand-alone executables free of licensing fees.

An application that meets the design requirements was made using Borland Delphi. The program is windows based, consists of a number of screens, and is run on a computer using a mouse and keyboard.

The program works as follows. The user sets up the serial port settings and can save them to a disk file for use at a later time. The user then dials the modem and connects to the VFD PLC.

The Program accomplishes this by using Delphi to access the windows API functions for serial setup and communication.

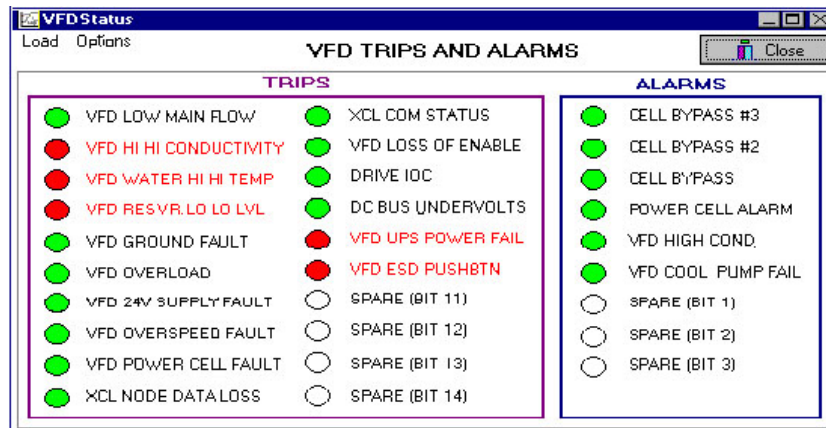
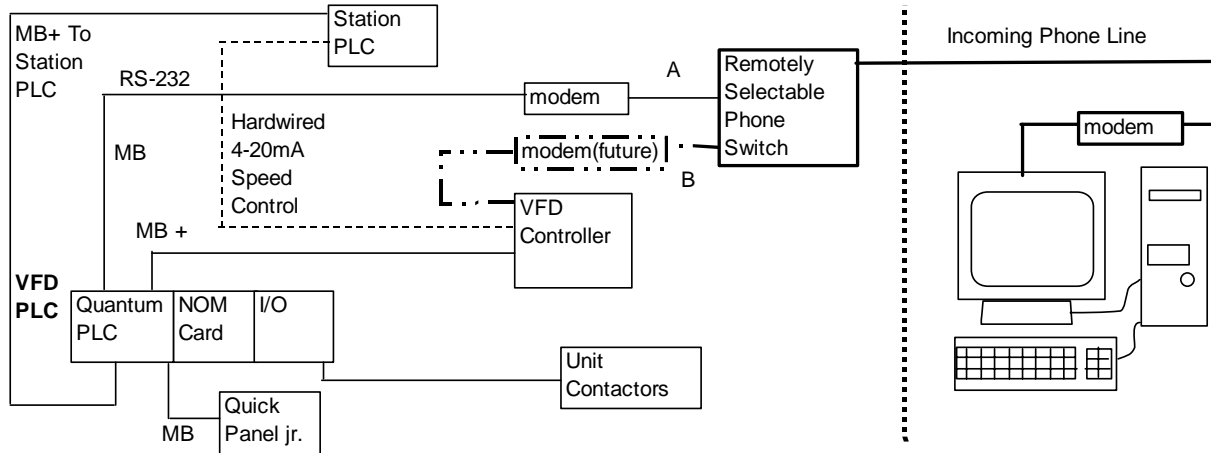
Then the program reads the desired data from the PLC. This is done by reading in the desired Modbus registers from the program, sorting them, and then reading the data from PLC with the smallest possible read block. The user can choose to log the data yielding a time stamp and the register values in a file on the computer's hard drive. Once data has been read, the user can open a screen indicating the status of each bit associated with a trip or alarm. To make this happen, the program converts the registers from decimal to binary and then breaks them into binary bits. The bits are monitored and their value is attached to on screen red and green indicators. Bits in the trip and alarm registers have also been set-aside as spares. To fill a spare the user can select the register, bit, and description, and then save the data to a disk file to load at a later time.



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Typical Robicon VFD - Communication and Control Block Diagram



System Specifications:

- 2 – 56K US Robotics Sportster Faxmodems and cables
- 1 – Windows '95 or Windows '98 based PC

For further information or to contact a Hinz office near you, please check our website at:

www.hinz.com