Connection of an Optimation OptiMate Panel to a Triangle Research Industries PLC

Needed software: OM-WINEDIT OptiMate Configuration Software
(OM-WINEDIT can be downloaded from www.optimate.com)
Triangle Research International TRILOGI PLC software V4.1

Compatible OptiMate panels: All OM1000A Series panels.
All KM600 Series panels (alternate P/N: OM6XXH)
All KM400 Series panels (alternate P/N: OM4XXH)

Reference files: 420-TRI.ocf
1000 to TRI PLC.jpg
400 to TRI PLC.jpg
KM420 EX.PC4

The following application note is a general overview containing information using OptiMate operator interface panels with Triangle Research International PLCs. For more detail about a particular OptiMate panel than is shown here, read the panel's manual. The manual is available from Optimation or you can download it from our web site www.optimate.com.

1. The first time you configure an OptiMate panel, perform this step. After the first time, this step can be skipped. Using Windows Explorer, find the directory containing the OptiMate WinEdit software.
    a. For WinEdit V2.36 or below. Open the file "plcinfo.ini". Scroll down the file until you see the "[Modicon]" section. On the line "BaseReg = 1-617" change the 617 to 5000 so that the line reads "BaseReg = 1-5000". Save the file and close it.
    b. For WinEdit V3.01 or above. Open the file "PLCLink.ini". Scroll down the file until you see the "[Modicon]" section. On the line "BaseReg = 1-617" change the 617 to 5000 so that the line reads "BaseReg = 1-5000". Save the file and close it.

2. Configure your OptiMate panel using the WinEdit software. See the file "420-TRI.ocf" for an example. OptiMate panels use Modbus RTU protocol to communicate with TRI PLCs.
    a. Configure the panel to communicate with a Modicon PLC using the Modbus protocol.
    b. Set the PLC address to 1 (PLC Address must match PLC ID in PLC).
    c. Set PLC timeout to 5.
    d. Set the baud rate to 9600.
    e. Set parity to NONE. Panel is automatically configured for 8 data bits and 1 stop bit.
    f. Set the base register address between 1001 and 5000 (1001 corresponds to register 41001 for Modbus which corresponds to register DM[1] for a TRI PLC). Do not set the base register address below 1001 or the panel will not communicate with the DM area of memory. See the TRI PLC manual for information on mapping Modbus registers to the TRI PLC registers.
    g. Configure the specific parameters for your panel such as pushbutton type, messages, field points, etc.

   h. Download the configuration to the panel. You will need the cable OM-ACBL-1 for the 1000 or 600 Series panels or the cable OM-CCBL for the 400 Series panels. Also, pinouts for OptiMate panel communications ports are shown in the OptiMate panel manuals.

3. TRI PLC to OptiMate panel cabling.
   a. For 1000/600 Series panels, see the figure "100/600 Series OptiMate to TRI PLC Cable Diagram" on the next page.
   b. For 400 Series panels, see the figure "400 Series OptiMate to TRI PLC Cable Diagram" on the next page.

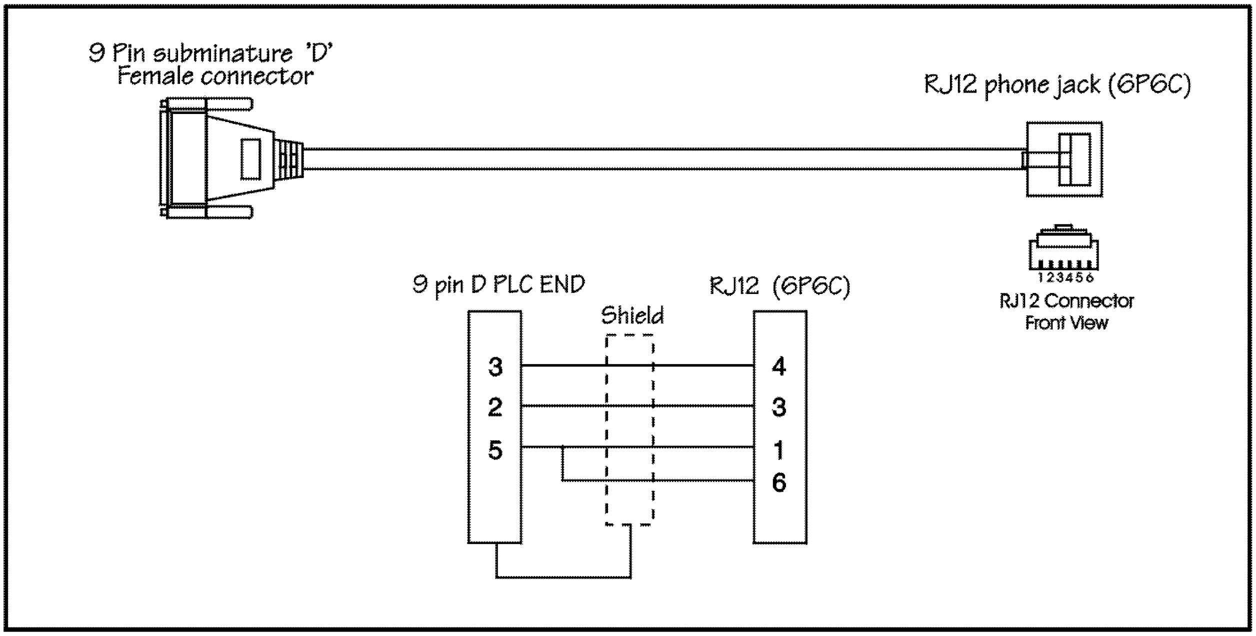
4. Configure the PLC comm port. As shown in the sample program "KM420 EX.PC4", a rung must be added to the program using the *SetBaud* instruction to configure the communications port in the PLC. The port must match the settings downloaded the OptiMate panel. As shown in the sample program, "SetBaud 1, 03" will configure comm 1 to 9600, 8, NONE and 1.

5. Memory mapping rung. Lamps, pushbuttons or any parameters in the OptiMate panels that use a single bit for control or status instead of a 16 bit word can be mapped to or from internal relays to or from the data memory area.
   As shown in the sample program "KM420 EX.PC4", a rung must be added to the program to map the "Status Register" (Pushbuttons) to the internal RELAYS. This is done in a Custom Function. The memory mapping rung must be active every scan. The purpose of the memory map is to map the pushbutton status to internal relays from the data memory so the pushbuttons can be used as contacts within the PLC program.
   If the panel has "Control Register" or a lamp/flash register, you must allocate an internal RELAY register and copy it to the appropriate data memory register.

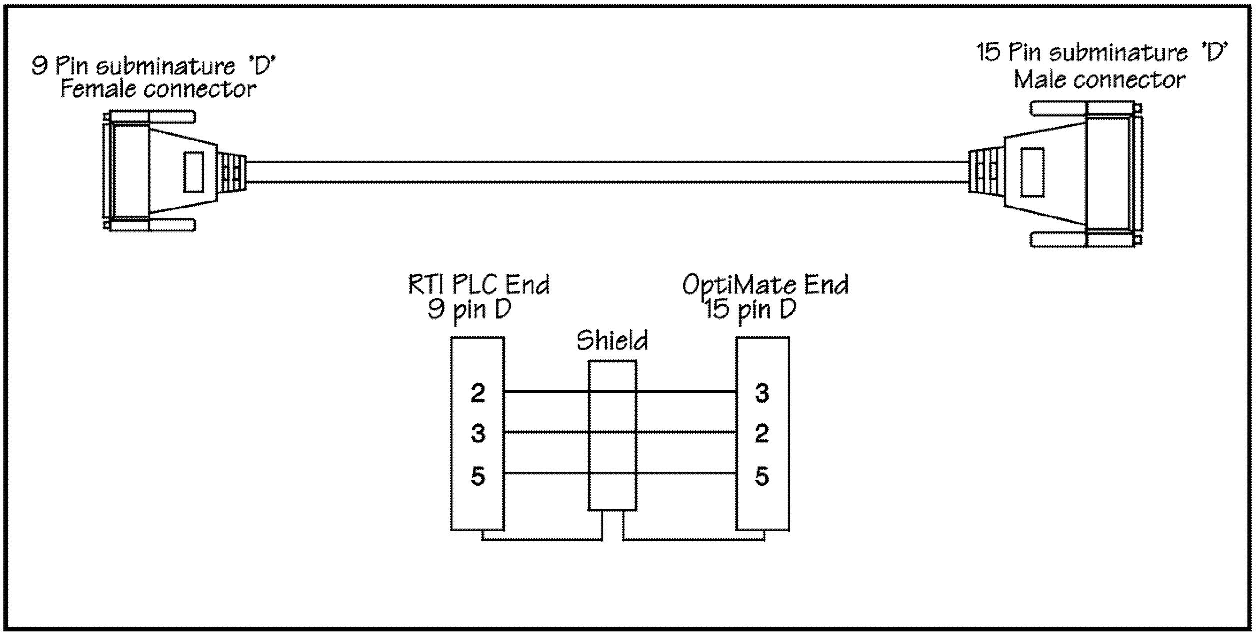
6. Examples using various capabilities of the KM420 are shown in the example program as well. Examples are shown with using the pushbuttons and messages. Read the KM420 manual for more information on using the panel with a PLC.

See the next page for cabling diagrams.

400 Series OptiMate to TRI PLC Cable diagram



1000/600 Series OptiMate to TRI PLC Cable diagram


9 Pin subminature 'D'
Female connector
15 Pin subminature 'D'
Male connector
RTI PLC End
9 pin D
OptiMate End
15 pin D
Shield
2
3
5
3
2
5