



QUCM-O

Routing & Protocol Conversion Application

Now an option module!

Niobrara's Quantum Universal Communications Module (QUCM-O) is a powerful, versatile serial communication module for Schneider Automation's Quantum™ PLC. It has two switch-selectable RS-232/422/485 ports. It can be thought of as a Quantum serial option module (QNOS).

The QUCM changes personalities depending upon the application it is running and comes from the factory with the Routing and Protocol Conversion (RPC) application. The user is free to write his own applications. This document discusses the QUCM-O with RPC. User-programming is discussed in another document.

The serial ports of the QUCM-O running RPC supports all of the important Schneider North American serial protocols:

- Modbus RTU or ASCII, master or slave
- SY/MAX Point-to-Point or Net-to-Net
- Plogic, PNIM and RNIM (master or slave)
- Dual Modbus & RNIM master (drop Modbus devices on RNIM radio networks)
- Dual Modbus & SY/MAX slave



QUCM-O Applications

Using the QUCM-O, serial master devices can:

- Read, write and program the PLC (**additional PLC serial ports**)
- Access additional slave devices on the other port (**repeater**)
- Access slave devices that speak another protocol (**protocol converter**)
- Can exchange data through mailbox registers (**data concentrator**)

The QUCM-O allows:

- Serial slave devices to share data using Auto-transfer (**scanner**)
- On the same or different ports
- With the same or different protocols

New MSTR Functions for the Quantum PLC

The QUCM-O has added a number of new functions to the MSTR function of the PLC. The

The QUCM-O ... can be thought of as a serial option module (QNOS).

All trademarks and registered trademarks are the property of their respective owners.

...standard MSTR...
now (has) the ability to
read 0x, 1x and 3x as well
as write 0x values.

standard MSTR (MB+ or Ethernet) has been limited to reading and writing 4x Holding Registers in external devices. Niobrara has now added the ability to read 0x, 1x, and 3x as well as write 0x values. These new functions may be used with any Modicon programming software package.

- Read 0x Coils
- Write 0x Coils
- Read 1x Input Bits
- Read 3x Input Registers
- Read QUCM Serial Port Configuration
- Write QUCM Serial Port Configuration
- Reset QUCM to Factory Defaults

Using the new Option Module Interface, the configuration of the QUCM-O can be held in the PLC's logic and units can be exchanged without using QUCMSW PC software.

Serial Ports

The QUCM-O has two serial ports with RJ-45 jacks. They are switch-selectable RS-232 or RS-422/485. They have the same pinout as the Modicon Micro which allows the use of familiar cabling. Each port can be independently configured for baud rate, parity and number of data and stop bits. The serial ports can also be individually configured as to protocol.

Internal Registers

There are three kinds of internal registers: mailbox registers, configuration registers and statistic registers. All of the registers appear as 4x registers to Modicon devices and they are available from any port on the QUCM. The first 2048 registers are user-defined mailbox registers. The Quantum PLC can I/O map up to 32 input registers and 32 output registers when the QUCM is used in a local, remote or distributed rack (maximum of 30 input registers in a distributed rack). When Master devices need to exchange information, each can write data into the mailbox registers for the other to read.

PC Configuration

Supplied with the QUCM is PC software that allows configuration of the unit through any communication path between the PC and the QUCM; these configurations can then be saved to disk. The software can make use of a serial or Ethernet connection. The QUCM's firmware is stored in Flash memory and can be updated through a serial port. The QUCM comes with one-year free firmware upgrades, a one-year warranty, and a user manual and configuration software on a CD

Comparison with Previous QUCMs

The QUCM-O replaces the QUCM-L and QUCM-S. The one significant change in the factory defaults between the -O and the -L and -S units is that the -O units default to be an OPTION module while the older units default to an I/O module. If a configuration file is fetched from an old unit and loaded into a new unit the two will be directly interchangeable. The QUCM-O units also have a faster processor than the previous modules.

The serial ports can also
be individually
configured as to
protocol.

The QUCM-0 enables any of these devices: To Access Any:

Serial port initiators

TSX Quantum with XMIT loadable
 Compact 984 with XMIT loadable
 Micro with XMIT loadable
 Momentum with XMIT loadable
 QUCM-S, QUCM-SE
 MEB all versions
 EPE5 all versions
 SPE4 all versions
 UCM all versions
 Modbus RTU Master device
 Modbus ASCII Master device
 SY/MAX PLC
 SY/MAX device
 RNIM master device
 PNIM master device
 Concept programming software
 Modsoft programming software
 Taylor programming software
 POWERLOGIC SMS 3000, 1500, 770, etc.
 HMI or Operator Interface w/ Modbus or SY/MAX
 SCADA package with Modbus or SY/MAX driver
 Building Automation package w/ Modbus or SY/MAX driver

Serial devices

TSX Quantum PLC
 Compact 984 PLC
 Micro PLC
 Momentum PLC
 Momentum I/O with serial comm adapter
 Modbus RTU slave device
 Modbus ASCII slave device
 Altivar Drive with Modbus
 Altivar Drive with SY/MAX
 QUCM-S
 MEB all versions
 EPE5 all versions
 SPE4 all versions
 UCM all versions
 CAT2
 STU2 and STU4
 SY/MAX PLC
 SY/MAX NIM
 SY/MAX device
 POWERLOGIC Circuit Monitor
 POWERLOGIC Power Meter
 PowerLink panel
 RNIM slave device
 PNIM slave device
 Micro-1
 Model 50

SPECIFICATIONS:

| | |
|-----------------------------|--|
| <i>Dimensions</i> | Standard Quantum register module. 1.59" wide by 9.84" tall by 4.09" deep (40 x 250 x 104 mm). Approximately 12 oz. (340 g.) net. All connectors and indicators are front mounted except the Quantum bus card edge connector on the back. |
| <i>Power Requirements</i> | From Quantum bus; 5 VDC, 550 mA max (350 mA typical). |
| <i>Operating Conditions</i> | 0 to 60 degrees C; humidity up to 90% noncondensing; pressure altitude -200 to +10,000 feet MSL. |
| <i>Serial Ports</i> | Two serial data I/O ports. Switch selectable RS-232 or RS-422/485. 50*, 75#, 110, 134.5, 150#, 300, 600, 1200, 1800#, 2400, 4800, 7200*, 9600, or 19,200# baud. NOTE: If one port is set to a baud rate marked (*), the other port cannot be set to a baud rate marked (#). 7 or 8 data bits; odd, even or no parity; 1 or 2 stop bits. RJ-45 female connectors, Modicon Micro pinout. |
| <i>Serial Port Modes</i> | Each I/O port can independently operate in any of the following modes: Modbus RTU (Host or Gate); Modbus ASCII (Master or Slave); SY/MAX; Net-to-Net; PNIM; RNIM (Master or Slave); PLogic; Chevron; Peripheral; Multidrop; IDEC; Gateway; Transparent; Share; Transfer. |
| <i>Indicators</i> | LED indicators for Module Active, Ready, Run, Fault, RN1 (RPC application running), RN2 (auto-transfer running); Serial Port Transmit (2), Receive (2). 10 total indicators. |
| <i>Mailbox Registers</i> | 2,048 4x register and 32 3x registers. Non-volatile. PLC can map up to 32 input and 32 output registers in local or remote I/O racks and up to 30 in, 32 out in distributed I/O racks. |
| <i>Setup Registers</i> | 3x and 4x registers accessible through any port; stored in non-volatile RAM. |