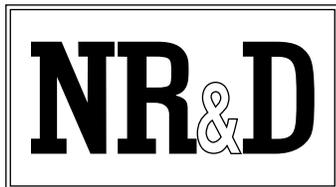


QUCM Simpson Hawk

Installation and Programming Manual

This Manual describes the QUCM application for interfacing Simpson Hawk meters to a Modicon TSX Quantum PLC system.

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Niobrara Research & Development Corporation
P.O. Box 3418 Joplin, MO 64803 USA

Telephone: (800) 235-6723 or (417) 624-8918

Facsimile: (417) 624-8920

www.niobrara.com

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Contents

1 Introduction	5
2 Installation	7
Module Installation	7
Software Installation	7
Serial Connections to the QUCM-L	7
Port 1 and/or Port 2 to Simpson Hawk	7
Port 2 to the Personal Computer	8
Loading the Applications into the QUCM	9
Simpson Device Register List	10

Figures

Figure 2-1 QUCM-S to RS-232 DTE Port (9-pin) (MM3 Cable)	8
Figure 2-2 QUCM-LE Layout	8
Figure 2-3 QUCM-SE to RS-232 PC DCE Port (9-pin) (MM1 Cable)	9

Tables

Table 2-1 Simpson Hawk Register List	11
Table 2-2	11

Introduction

The Niobrara QUCM is a TSX Quantum[®] compatible module that is capable of running multiple applications for performing communication translations between serial protocols. This document covers an application that places data from a Simpson Hawk meter on a TSX Quantum backplane.

One application is required to be loaded into the QUCM: app1.qcm is the Simpson Hawk serial driver and floating point converter.

Port 1 (and optionally Port 2) of the QUCM is to be connected with an RS-232 cable to a Simpson Hawk meter. The Simpson Hawk provides an ASCII serial interface on the upper connector at the rear of the meter. The QUCM will support up to 2 total meters in 232 mode with one Simpson Hawk on each of its ports. These devices are accessed via ASCII protocol generated by the QUCM.

The Hawk can also be ordered with RS422 communication. In this case, the QUCM would be capable of passing the data from as many as 16 meters across the backplane.

A Modicon two (or more) slot Quantum rack and appropriate Quantum power supply is needed for mounting the QUCM.

Installation

Module Installation

- 1 Mount the QUCM in an available slot in the register rack. Secure the screw at the bottom of the module.

Software Installation

The application files for the QUCM are included in the Simpson.ZIP file. This file must be unzipped using PKUNZIP.EXE. A copy of PKUNZIP is included on the standard NR&D software disk and is also available at www.niobrara.com. The latest version of the Simpson Hawk.ZIP file is located at

[ftp.niobrara.com/qucm/simpson/simpson.zip](ftp://ftp.niobrara.com/qucm/simpson/simpson.zip)

The latest version of this document in pdf format is located at:

[ftp.niobrara.com/qucm/simpson/simpson.pdf](ftp://ftp.niobrara.com/qucm/simpson/simpson.pdf)

Serial Connections to the QUCM-L

Port 1 and/or Port 2 to Simpson Hawk

Port 1 of the QUCM-L can be switched to RS-232 so a simple cable is required to connect to the Simpson Hawk. Use the Niobrara MM3 cable to connect the QUCM-L to the Simpson Hawk (See Figure 2-1).

The Hawk can be ordered with RS422 communication. In this case, up to 15 Hawk meters could be connected to the QUCM.

Configure the Simpson Hawk for 9600 baud, 8 data bits, 2 stop bits, EVEN parity. Refer to the Simpson Hawk Owner's Manual for instructions for configuring the Simpson Hawk and connecting it to the source.

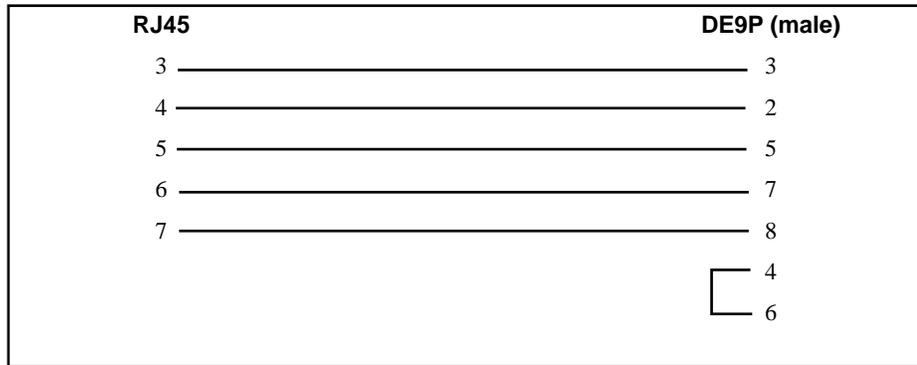


Figure 2-1 QUCM-S to RS-232 DTE Port (9-pin) (MM3 Cable)

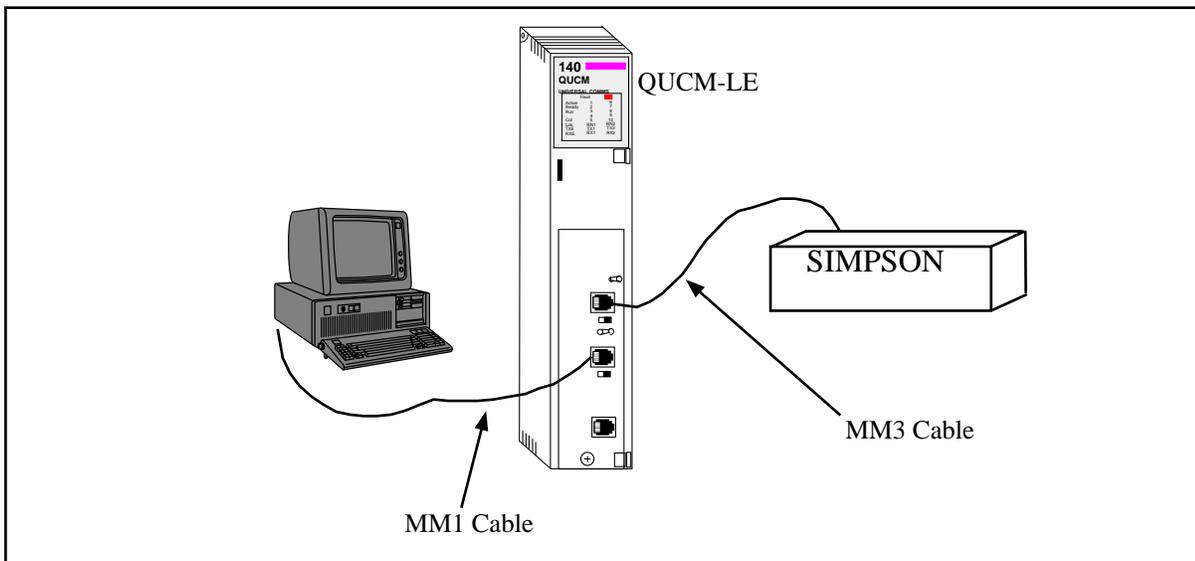


Figure 2-2 QUCM-LE Layout

Port 2 to the Personal Computer

A physical connection must be made from the personal computer to the QUCM in order to download the applications. This link may be a serial connection from a COM port on the personal computer to the RS-232 port on the QUCM-S. The Niobrara MM1 cable may be used for this connection. This cable is shown in Figure 2-3.

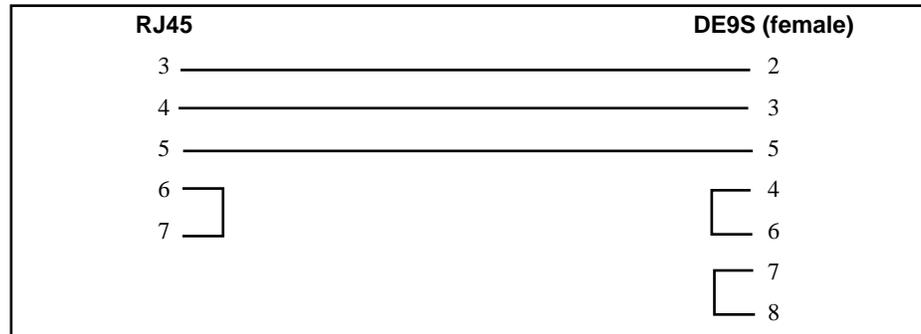


Figure 2-3 QUCM-SE to RS-232 PC DCE Port (9-pin) (MM1 Cable)

Loading the Applications into the QUCM

The QUCM is rapidly evolving so be sure to upgrade the firmware in the module before loading the latest version of APP1.QCC. Most likely the QCOMPILE.EXE has been updated so be sure to use the newest version. Firmware upload is as follows:

- 1 Remove the module from the rack.
- 2 Move the RUN/LOAD switch on the back of the module to LOAD.
- 3 Replace the module in the rack and apply power.
- 4 Only the 3 light should be on. (The Link and RX E-net lights may be on if the E-net port is connected and there is traffic.)
- 5 Connect the PC to QUCM Port 1 with a MM1 cable.
- 6 From the command line enter


```
> fwload qucmtcp.fwl com1:
```

 Be sure to have the colon after the PC's com port name. The download will only take a few minutes and will inform when finished.
- 7 Remove the module from the rack and change the switch back to RUN.
- 8 It is a good idea to press the RESET button after a firmware change.

It is recommended to use the Ethernet capabilities of QLOAD to load APP1.QCC into the QUCM. Set up the IP parameters of the module by the following method:

- 1 Move Switch 1 to Halt.
- 2 Connect the PC to QUCM Port 1 with a MM1 cable.
- 3 From the command line enter

```
>zapreg32 com1:9600,e,8,1 255 -b
```

This will start zapreg32 in Modbus RTU mode to slave address 255. Use the arrow and Page Up/Down keys to move to register 46. The IP parameters are shown below for a unit with the IP = 206.223.51.150 subnet Mask = 255.255.255.0, Default Gate = 206.223.51.1, Modbus/TCP port number = 503, Telnet Port number = 24:

Register	Description	Example (decimal)
-----	-----	-----

46	IP MSByte	206
47	IP	223
48	IP	51
49	IP LSByte	150
50	SN Mask	255
51	SN Mask	255
52	SN Mask	255
53	SN Mask	0
54	Def. Gate	206
55	Def. Gate	223
56	Def. Gate	51
57	Def. Gate	1
58	TCP Control	7 (leave this at 7)
59	Reserved	0
60	Reserved	0
61	Reserved	0
62	TCP backstep	100 (leave this at 100)
63	Modbus Port	503 (this defaults to 502)
64	Telnet Port	24 (this defaults to 23)
65	Quiet Timer	900 (leave this at 900)
66	Clients	-1 (leave this at -1)

- 4 After entering the IP parameters, attempt to ping the module to verify the settings.
> ping 206.223.51.150
- 5 Verify a connection to the internal Modbus/TCP server with zapreg32.
> zapreg32 206.223.51.150:503 255
Should connect to the QUCM on port 503 with Destination index 255.
- 6 Load the APP1 file with qload.
> qload 1 app1 206.223.51.150:503 -a
Will load the file into application 1's flash and set the program to automatically start on power-up.
- 7 Place Switch 1 in RUN. The RN1 light should come on.

If the ethernet connection is not possible, the application can be loaded from COM1 of a PC with the MM1 cable connected to one of the serial ports of the QUCM. Load the program in the following manner:

- 1 Move the switches for Applications 1 and 2 into halt.
- 2 From the command line on the computer, enter:
>qload 1 app1 com1: -a

This will load the application, and set it to automatically start on power cycles. When the application is loaded, move the switch for Application 1 into RUN. This will start the application, and begin polling the meters for the value of the process variable.

Simpson Device Register List

The data from the Simpson device is presented as Modbus Holding Registers (4x) to be accessed by the PLC across the backplane.

The data is presented as 32-bit floating point numbers.

Simpson Hawk Register List

Modbus Holding Register	Discription	Notes
1	Status Register	Bitmap of active devices
2 - 31	Process variables, 15 meters	Floating point value, requires two registers per meter

Table 2-2

Status Register Bit Map

Bits	Discription
1-16	Indicates communication with corresponding meter