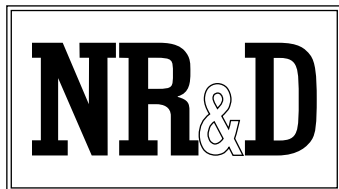


MUCM G3LW

Installation and Programming Manual

This Manual describes the MUCM application for interfacing PowerLink G3 panels to LON-
WORKS[®].

Effective: 03 June 2003



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

Modicon, TSX Momentum Automation, Modbus, Modbus Plus are registered trademarks of Schneider Automation.

POWERLOGIC is a registered trademark of Square D Company.

NodeBuilder and LONWORKS are registered trademarks of Echelon Corporation.

LonMaker is a trademark of Echelon Corporation.

Subject to change without notice.

© Niobrara Research & Development Corporation 2002,2003. All Rights Reserved.

Contents

1 Introduction	5
2 Installation	7
Module Installation	7
Software Installation	7
Serial Connections to the MUCM	7
Port 1 to the Personal Computer	7
Port 2 to PowerLink	8
Loading the Application into the MUCM	8
QLOAD MUCM Firmware Update	8
FWLOAD MUCM Firmware Update	9
QLOAD APP1	10
3 LONWORKS to PowerLink	13
Configure the MLWF	13
Add the MLWF to the Network	13
Browse the MLWF	13
PowerLink Configuration	14
Operation	14
4 Troubleshooting	15
MUCM Module Lights	15
MUCM User Lights	15
MLWF Lights	15
Figures	
Figure 2-1 MUCM to RS-232 PC DCE Port (9-pin) (MU1 Cable)	8
Figure 2-2 RS-485 Connection	8
Figure 2-3 MUCM Layout	8
Figure 2-4 QLOAD of APP1	10

Tables

Table 3-1 PowerLink Network Variables	14
Table 4-1 Module Lights	15
Table 4-2 User Light Definitions	15
Table 4-3 MLWF Light Definitions	16

Introduction

The Niobrara MUCM is a TSX Momentum[®] compatible module that is capable of running multiple applications for performing communication translations between serial protocols. It can also perform automatic polling and data concentration for access by a tophat. This document covers an application that allows up to five PowerLink[®] panels to be placed on a LONWORKS network via the Niobrara MLWF.

One application is required to be loaded into the MUCM: `app1.qcm` contains the serial driver, and the routine to make the data available to the MLWF. This application must be running for the system to properly perform.

Port 2 is to be connected to the PowerLink panel(s). The panel(s) must be set to 19200 baud, none parity, and must be in the range of address 1 through 5.

A Niobrara MLWF must be connected to the MUCM. The MLWF will be connected to the LONWORKS network.

The MUCM may be mounted on a DIN rail, or directly to a wall via mounting holes.

Installation

Module Installation

- 1 Mount the MUCM in an appropriate location on a DIN rail or in a cabinet.

Software Installation

The necessary application is already loaded into the MUCM. The following instructions pertaining to loading the MUCM are only necessary if the application is to be upgraded.

The application files for the MUCM are included in the G3LW.ZIP file. This file must be unzipped using an application like 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 G3LW.ZIP file is located at www.niobrara.com/ftp/mucm/G3LW/G3LW.zip

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

www.niobrara.com/ftp/mucm/G3LW/G3LW.pdf

When all of the files are unzipped, move the .nc, .xif, .apb, and .nxe files to a folder easily accessible to the LONWORKS[®] software.

Serial Connections to the MUCM

Port 1 to the Personal Computer

A serial connection must be made from a COM: port on the personal computer to the MUCM in order to download the application. The Niobrara MU1 cable may be used for this connection. This cable is shown in Figure 2-1.

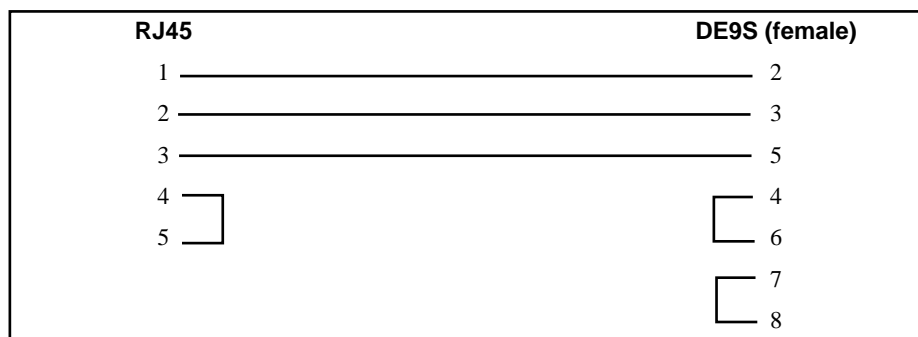


Figure 2-1 MUCM to RS-232 PC DCE Port (9-pin) (MU1 Cable)

Port 2 to PowerLink

Since both the MUCM and the PowerLink have screw terminal serial ports, the user may simply use a two- or three-conductor twisted pair cable. This cable pinout is described in Figure 2-2.

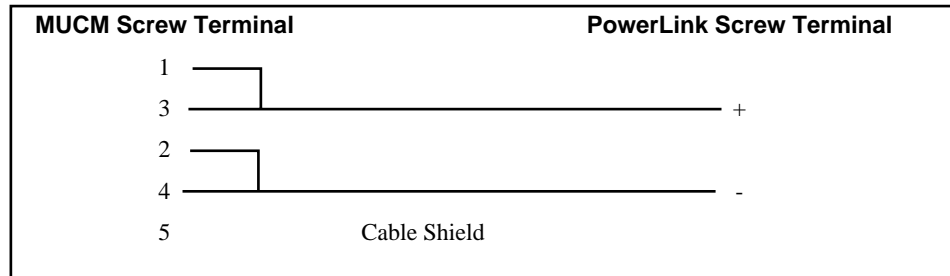


Figure 2-2 RS-485 Connection

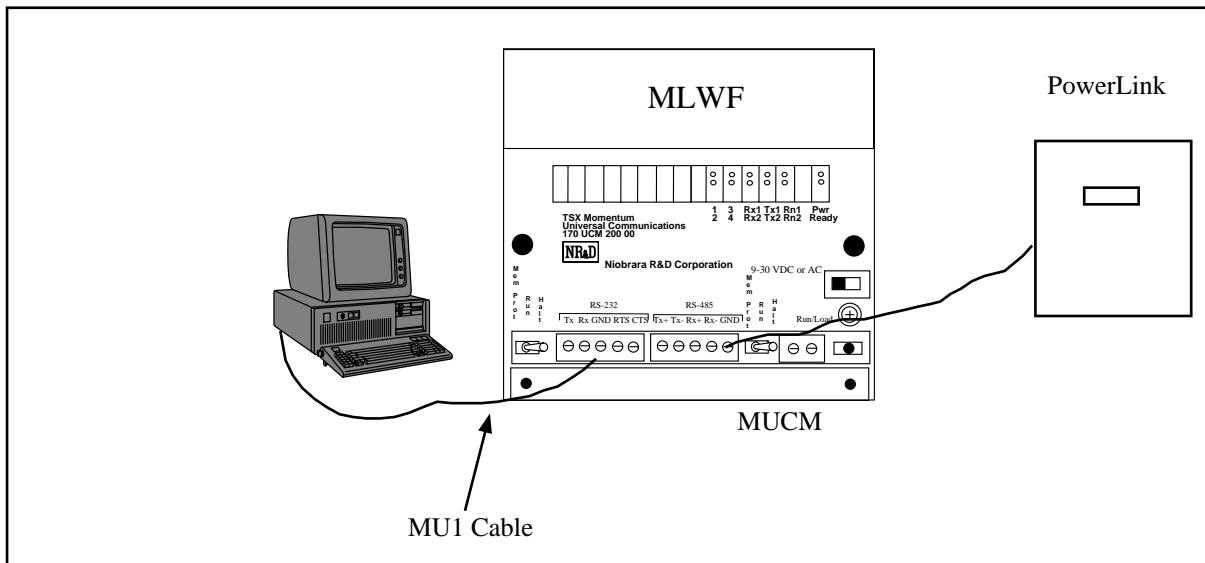


Figure 2-3 MUCM Layout

Loading the Application into the MUCM

The MUCM-002 must use the mucm.fwl or mucm.qcc firmware included in the g3lw.zip file. This firmware is dated 28Oct2002 or later. There are two ways to upgrade the firmware of the MUCM-002: QLOAD and FWLOAD.

QLOAD MUCM Firmware Update

QLOAD is a convenient method for upgrading the firmware of a MUCM. A direct serial connection to either port1 or port 2 on the MUCM is required.

- 1 Application 1 and 2 Switches must be in HALT

- 2 Start QLOAD.EXE
- 3 Click on the Browse button and select the file mucm.qcc.
- 4 Select the Application 1 Radio Button.
- 5 Verify the following:
 - a. Status Register = 1.
 - b. Run Pointer Register = 33.
 - c. Auto Start is checked.
 - d. Erase Flash is checked.
 - e. Load File is checked.
 - f. The Modbus Serial tab is selected.
 - (1) The COM port of the PC is selected in the pull-down.
 - (2) The baud rate is set to 9600.
 - (3) The Modbus Drop is set to 255
 - (4) The ASCII box is not checked.
 - (5) The 8 Bits button is checked.
 - (6) The Parity is set to EVEN.
- 6 Connect the PC to MUCM Port 1 with a MU1 cable..
- 7 Press the Start Download button. QLOAD will open a progress window to show the status of the download.
- 8 Move switch 1 to RUN. Wait approximately 20 seconds for the upgrade to finish after the download is complete. The unit should be ready to receive the new version of app1.qcc.

FWLOAD MUCM Firmware Update.

If the QUCM has corrupt firmware or completely non-responsive then the old method of using FWLOAD may be required.

Firmware upload is as follows:

- 1 Move the RUN/LOAD switch to LOAD.
- 2 Connect the PC to QUCM Port 1 with a MU1 cable..
- 3 From the command line enter

```
> fwload mucm.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.
- 4 Remove the module from the rack and change the switch back to RUN.

QLOAD APP1

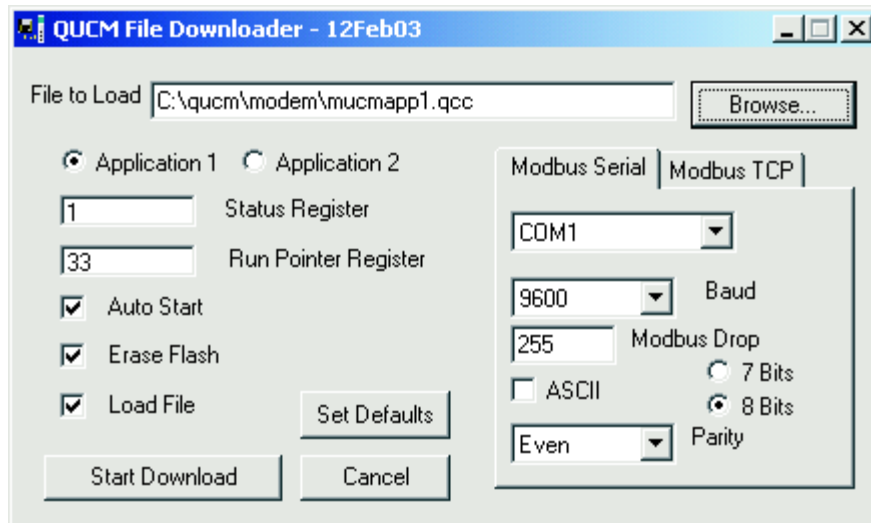


Figure 2-4 QLOAD of APP1

- 1 Application 1 and 2 Switches must be in HALT.
- 2 Start QLOAD.EXE
- 3 Click on the Browse button and select the file app1.qcc.
- 4 Select the Application 1 Radio Button.
- 5 Verify the following:
 - a. Status Register = 1.
 - b. Run Pointer Register = 33.
 - c. Auto Start is checked.
 - d. Erase Flash is checked.
 - e. Load File is checked.
 - f. The Modbus Serial tab is selected.
 - (1) The COM port of the PC is selected in the pull-down.
 - (2) The baud rate is set to 9600.
 - (3) The Modbus Drop is set to 255
 - (4) The ASCII box is not checked.
 - (5) The 8 Bits button is checked.
 - (6) The Parity is set to EVEN.
- 6 Connect the PC to MUCM Port 1 with a MU1 cable..
- 7 Press the Start Download button. QLOAD will open a progress window to show the status of the download.
- 8 Select the Application 2 Radio Button.

- 9 Verify the following:
 - a. Status Register = 3.
 - b. Run Pointer Register = 33.
 - c. Auto Start is NOT checked.
 - d. Erase Flash is checked.
 - e. Load File is NOT checked.
 - f. The Modbus Serial tab is selected.
 - (1) The COM port of the PC is selected in the pull-down.
 - (2) The baud rate is set to 9600.
 - (3) The Modbus Drop is set to 255
 - (4) The ASCII box is not checked.
 - (5) The 8 Bits button is checked.
 - (6) The Parity is set to EVEN.
- 10 Press the Start Download button. QLOAD will open a progress window to show the status of the download. This step is to simply erase the FLASH for application 2 to make sure that a previous program is not accidentally running.

After downloading both applications, move the Application Switch 1 to RUN. The RN1 light should be on.

LONWORKS to PowerLink

After the software has been loaded, flip the Application 1 switch to RUN, and the RN1 LED will light. The MUCM will then begin polling PowerLinks at addresses 1 through 5 via the RS-485 port. The rest of the configuration must be done in the MLWF.

Configure the MLWF

The MLWF must be loaded with the proper program for the data to be read properly. For this example, we will configure the MLWF using Echelon's® LonMaker™ software.

Add the MLWF to the Network

With the desired network open, add the MLWF to the network by dragging the device icon into the layout drawing. The "New Device Wizard" will open, allowing the user to add the MLWF to the network. In the first window, choose a name for the new device, such as MLWF or PowerLink. Click the "Commission Device" checkbox. Then click Next. The second window allows the user to pick the Device Template for the MUCM. The user should choose "Load XIF," and browse to the folder where the .xif file was unzipped and moved. Then click Next. The third page lets the user select the transceiver type for the device being added. Scroll down, and pick "TP/FT-10." Then click Next. The fourth page can be left at the default settings. Then click finish. LonMaker will then ask the user to press the service pin on the device. Press the service pin on the MLWF. The MLWF will then be added to the network.

NOTE: The "Load XIF" command will only be used for the first G3LW system placed on the network. Any subsequent Circuit Monitors added to the network must use the existing template, which will be listed in the pull-down menu.

Browse the MLWF

Once the MLWF has been added to the network, right-click on it, and choose "Browse." This will open the LonMaker Browser. The Browser will display all of the network variables reported by the MLWF. Most, if not all, of the network variables should be displayed in Integer format. The network variables and their descriptions are listed in Table 3-1.

NOTE: The Browser may, by default, list the variables in alphabetical order. This may not be desirable. To display the variables in the order they are declared, go to the Browse menu, and choose Options. In the General tab, uncheck the "Sort NVs by Name" box. Then click OK. The Browser must then be closed and reopened for the changes to take effect.

Table 3-1 PowerLink Network Variables

Name	Description
nvoBreakerStatus[0-39]	All breaker information for panels 1-40
nviDesiredState	Variable to command breakers from LONWORKS.

PowerLink Configuration

The Powerlink panels must be set to 19200 baud, none parity, and address 1 through 5. For any changes to this configuration, contact the factory.

Operation

For information on operation of this application, see Square D's product specification for POWERLINK G3 Modbus to LONWORKS Gateway.

Troubleshooting

MUCM Module Lights

The MUCM has several lights that indicate the status of the module. Table 4-1 shows the meanings of these lights.

Table 4-1 Module Lights

Light	Meaning
Pwr	This light will be on while there is power to the module.
Ready	This light will be on while the MLWF is communicating to the MUCM.
RN1	This light should be on to indicate app1 is running.
TX1	Comes on when the module is transmitting on serial port 1.
RX2	Comes on when the module is receiving on serial port 1.
RN2	This light should not come on since there is no app2 loaded.
TX1	Comes on when the module is transmitting on serial port 1.
RX2	Comes on when the module is receiving on serial port 1.

MUCM User Lights

The MUCM has 4 application driven lights numbered 1-4. The meaning of these lights while the APP1 program is running is shown in Table 4-2.

Table 4-2 User Light Definitions

Light	Meaning
1	Toggles when a read is sent
2	Toggles when a write is sent from LONWORKS.
3	Lights when an error or timeout has occurred.
4	Toggles when Port 1 is being used

MLWF Lights

The MLWF has 3 lights that indicate the status of the module. The meaning of these lights is shown in Table 4-3.

Table 4-3 MLWF Light Definitions

Light	Meaning
N	Lights when the MLWF transmits on the network.
A	Lights while communicating to the MUCM.
S	Blinks when no program is loaded. Lights while service pin is pressed, and while a program is being loaded into it.