

# MLWF

## Installation and Programming Manual

---

This Manual describes the MLWF (Momentum LONWORKS<sup>®</sup> Free Topology), its uses and set up.

Effective: 21 March, 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

Internet: <http://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

<b>1 Introduction</b> .....	5
Specifications .....	5
LED Indicators and Descriptions .....	6
<b>2 Installation</b> .....	7
Module Installation .....	7
LONWORKS installation .....	7
Screw Terminal Connector .....	7
Software Configuration .....	7
Editing and Compiling Programs .....	7
Add the MLWF to the Network .....	8
Browse the MLWF .....	8
<b>3 Examples</b> .....	9
Example 1, Simple I/O Base Configuration .....	9
Example 2, Placing Serial Data on LONWORKS .....	9
<b>4 Trouble Shooting</b> .....	11
MLWF Lights .....	11
<b>Appendix A NR&amp;D Internet</b> .....	13
<b>Figures</b>	
Figure 1-1 MLWF Front Panel .....	6
<b>Tables</b>	
Table 4-1 MLWF Light Definitions .....	11



# Introduction

The Niobrara MLWF allows Modicon TSX Momentum Automation Series I/O to interact on a LONWORKS<sup>®</sup> network. The MLWF supports 78Kbaud, Free Topology.

The MLWF connects to the LONWORKS<sup>®</sup> network through a pair of removable screw terminal connectors.

The MLWF interfaces to the Momentum I/O module as a communication tophat. Thus, the MLWF gets its power from the I/O base. The MLWF is capable of reporting all of the 32 Input (3xxxxx) registers and 32 Output (4xxxxx) registers as network variables on LONWORKS. It can also report the module ID from the base. The MLWF supports all Momentum bases, including the Niobrara MUCM-002. It does not support option adapters.

## Specifications

### Mounting Requirements

Must be mounted on a Modicon TSX Momentum-compatible base.

### Maximum Addressing From Base

32 Words In

32 words Out

### Current Draw on Momentum base power supply

100 mA max.

### Processor

20 MHz in the MLWF-001 or 40 MHz in the MLWF-002

### Operating Temperature

0 to 50 degrees C operating. -40 to 80 degrees C storage.

### Humidity Rating

up to 90% noncondensing

### Pressure Altitude

-200 to +10,000 feet MSL

### LONWORKS Communication Port

FTT-10A transceiver; Weidmuller SLA standard connectors. 78 Kbaud Free Topology.

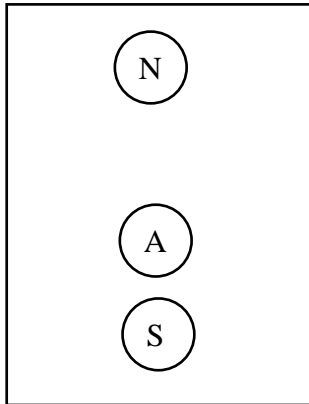
## Indicator lights

3 LEDs: Amber Network Active, Green Base Active, and Amber Service

## Physical Dimensions

Wt.: 2.6 oz. (72g) net  
 W: 4.9 in. (124.5mm)  
 H: 2.5 in. (64mm)  
 D: 1.2 in. (30.5mm)

## LED Indicators and Descriptions



LED	Color	Description
N	Amber	Network. Indicates network activity (the MLWF is sending or receiving a message)
A	Green	Active. Flashes when the MLWF scans the base
S	Amber	Service. Flashes when no program is loaded. Lights when the service pin is pressed, or when a program is being loaded.

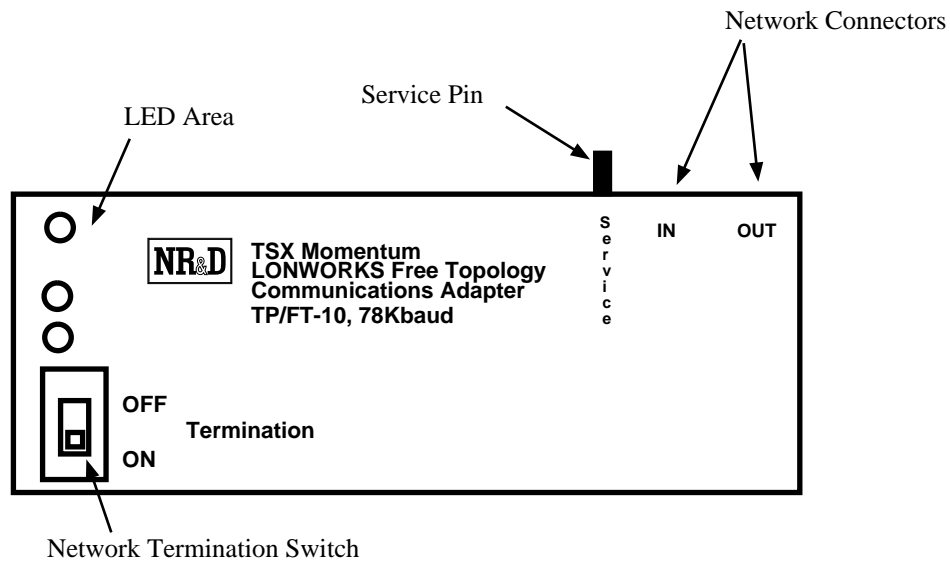


Figure 1-1 MLWF Front Panel

## Module Installation

Note: Like all Momentum tophats, the MLWF must be mounted to a Modicon TSX Momentum base.

- 1 Snap the MLWF onto a Momentum base.
- 2 Apply appropriate power to the base.
- 3 Until a program is loaded, the S LED will blink.
- 4 Once a program is loaded, the A LED will begin to flash when the MLWF is communicating with the base.

## LONWORKS installation

### Screw Terminal Connector

The MLWF connects to the network using its two screw terminal connectors. The transceiver is transformer coupled, and the data is Manchester encoded, so the connector are not polarity sensitive. An IN and an OUT connector is provided for easy daisy chaining.

## Software Configuration

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<sup>®</sup> NodeBuilder<sup>®</sup> software to edit and compile the programs, and LonMaker<sup>™</sup> software to create and monitor the network.

On the disk provided with the MLWF is a .zip file which contains several files necessary to configure the MLWF properly. These files include mlwf20.nc, mlwf20.apb, mlwf20.xif, and mlwf20.nxe. Place these files in a location that is easily accesible to the LONWORKS software.

### Editing and Compiling Programs

Although it is not necessary to alter the files provided on the disk, it may become desirable to change items in the code such as network variable quantities and names. To do so, start the NodeBuilder software, then open the mlwf20.nc file. Edit the program by clicking the "Edit" button near the name of the file. Once the program has been edited, compile the program by either pressing CTRL+F9 or by choosing "Compile File" from the Build menu. Once the program will comile, build the program by choosing "Build" from the Build menu.

## Add the MLWF to the Network

Begin by opening the LonMaker software, then creating a new network, or opening an existing one. 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 the name of the base. 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 MLWF placed on the network. Any subsequent MLWF's with the same desired program 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. The network variables should be displayed in a format appropriate for the type of network variable.

### **Example 1, Simple I/O Base Configuration**

This example covers placing any standard Momentum I/O base on a LONWORKS network.

Connect an MLWF to a base, and connect the MLWF to the LONWORKS network. Open the LONWORKS software, and add the MLWF to the network. Press the service pin.

### **Example 2, Placing Serial Data on LONWORKS**

This example covers a LONWORKS network where it is desirable to incorporate data from a serial device, such as a Square D Powerlogic CM2000 series meter. For this example the MLWF is connected to a Niobrara MUCM. The MUCM is, in turn, connected to the serial device. A special program is then loaded in both the MLWF and the MUCM. For more details on this installation, refer to the CMLW application note located at [http://www.niobrara.com/mucm\\_apn.html](http://www.niobrara.com/mucm_apn.html).

For other serial devices to be connected to LONWORKS, contact the factory for custom programming.



## Troubleshooting

### MLWF Lights

The MLWF has 3 lights that indicate the status of the module. The meaning of these lights is shown in Table 4-1.

**Table 4-1 MLWF Light Definitions**

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



---

## Appendix A

### NR&D Internet

Niobrara is on the World Wide Web! Visit our home page at **<http://www.niobrara.com>** to see product information, cutsheets, application notes, and ftp current software releases.

Technical support questions may be E-mailed to

[techsupport@niobrara.com](mailto:techsupport@niobrara.com)

Marketing questions may be E-mailed to:

[marketing@niobrara.com](mailto:marketing@niobrara.com)

Additional information about LONWORKS may be found at **[www.echelon.com](http://www.echelon.com)**

Additional information about the Momentum may be found at **[www.modicon.com](http://www.modicon.com)**.