

# NR&D



**“...it can also be thought of as a processor adapter... it can run user-written Neuron ‘C’ code.”**

**“...configured using LonMaker software running on a PC...”**

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# MLWF

## LonWorks® Communication Adapter

### Description

Niobrara's MLWF is a LonWorks Communication Adapter for use with Schneider Automation's TSX Momentum™ bases. It supports all Momentum I/O bases as well as Square D's Seriplex® base and Niobrara's MUCM programmable ASCII base. Power for the MLWF is provided by the attached Momentum base. The MLWF does not support Schneider's option adapters.

At its simplest, the MLWF is a LonWorks communication adapter. It publishes its input registers and sets its output registers according to commands from the network. But it can also be thought of as a processor adapter since it can run user-written Neuron® 'C' code.

### LonWorks Interface

The LonWorks port of the MLWF supports a 78-kbaud free-topology LonWorks network. The port has two removable screw-terminal LonWorks connectors; one for network-in and one for network-out to increase cable connection reliability.

When installing the MLWF on a LonWorks network all rules must be obeyed as to cable topology, length, number of nodes and termination. The MLWF has a built-in network terminator that is controlled by a switch on the top of the unit.

The maximum number of network variables that can be published by a LonWorks node is 63. Momentum has a maximum of 32 words in and 32 words out so not all words can be published on the network. This is not a problem with most Momentum bases since they are limited to just a few words in and/or out.

Each MLWF possesses a unique Neuron ID. LonMaker™ software, running on a PC, is required to configure the MLWF. Additionally, the PC must have a LonTalk® adapter card installed. When configuring the MLWF, a service button near the network connector is pressed to notify LonMaker which unit is prepared for configuration.

The LonTalk Adapter for PC and LonMaker Software are required for the construction of a LonWorks network. The optional NodeBuilder® software is used to compile applications for downloading by LonMaker. These products are available from Echelon®; call (888)324-3566 for purchasing information.

### Processor-like Power

The MLWF is bundled with Neuron 'C' code for communicating with the Momentum base and publishing its I/O registers as network variables. This code can be used "stand-alone" for running the MLWF as a communications adapter using the predefined network variables. Most users will want to utilize this code in developing their own applications.

The MLWF has 2K of RAM and 4K of EEPROM and its Neuron processor runs at 20 MHz. Some of the EEPROM will be used to run the interface with the Momentum base; the rest will be available for user code.

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Example code, written for the ADM 350 15, which publishes one input word and one output word and communicates with the base requires 577 bytes of EEPROM, including address tables and system data tables.

For users with limited engineering resources, Niobrara will offer engineering services for writing Neuron 'C' code. Contact the factory for details.

The MLWF has three LED indicators. One yellow LED (SVC) is on solid when being serviced and flashed when no program is loaded. The other two LEDs, one green and one yellow, are under user-program control but are normally used to indicate base communication (green - RDY) and LonWorks network activity (yellow - NET). Momentum bases have their own LED indicators.

## Ordering Information

### The MLWF is available as:

- **MLWF-001** with 20 MHz Neuron processor and 2K EEPROM, 2K SRAM, 16K ROM
- **MLWF-002** with 40 MHz Neuron processor and 4K EEPROM, 2K SRAM, 12K ROM

**"Most users will want to...develop their own applications."**

## Specifications

Dimensions	4.9" wide x 2.5" tall x 1.2" deep (124.5 x 64 x 30.5mm). Approximately 2.6 ounces (72g) net. Durable polycarbonate enclosure.
Power Requirements	From TSX Momentum I/O base. 5VDC, 100mA max.
I/O Base Interface	12-pinTSX Momentum I/O Base interface supports all Momentum I/O bases. Up to 32 registers in and 32 registers out.
Neuron Processor	3120 <sup>®</sup> @ 20MHz. (MLWF-001); 3120 @ 40 MHz (MLWF-002)
Memory	MLWF-001 - 2 Kbytes EEPROM, minimum 577 bytes reserved for I/O base interface; 2 Kbytes SRAM, minimum 1118 bytes reserved for I/O base interface; 16 Kbytes ROM. MLWF-002 - 4 Kbytes EEPROM, minimum 577 bytes reserved for I/O base interface; 2 Kbytes SRAM, minimum 1118 bytes reserved for I/O base interface; 12 Kbytes ROM.
Transceiver & Medium	FTT-10A transceiver; 78 Kbaud free topology twisted pair network.
LonWorks Connectors	Weidmuller SLA standard connectors (2)
Configuration	Integral service button for installation in network. Compiled programs loaded via LonTalk connection
Indicators	Green LED I/O base communications indicator; yellow LEDs for network communications and network service indicator . Three total indicators.
Operating Conditions	0 to 50 degrees C operating temperature; -40 to 80 degrees C storage. Humidity up to 90% noncondensing. Pressure altitude -200 to +10,000 feet MSL.

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