

## ModuLogger™ Modular Data Logging and Alarming System

### Features

- Modular design...plug-on modules to meet your application requirements
- Portable or fixed site use
- OEM package design for low-cost integration into your equipment
- Utilizes revolutionary HyperWare™ software for graphic programming, communications, data plotting, real-time trending and more
- Expandable to 44 analog or 48 digital inputs
- Fully user-programmable
- Conditional logging, math, integrals, delta logging and much more
- Programmed graphically by drag and drop of icons
- PCMCIA removable memory option
- Modem option with Pager Alarm Output
- Real-Time trending to a PC via modem or RS-232 serial link
- 15,000 Sample capacity standard (600,000 opt.)



### ModuLogger™ Overview

The ModuLogger is a modular, self-contained data logging and alarming system. Designed for long-term field, production floor and lab data collection, its' modular design is also a perfect data acquisition fit for system integration.

As a self-contained, battery or line-powered, stand-alone unit, the ModuLogger can be deployed at a location or incorporated into equipment where it samples digital and analog inputs, storing them to internal or PCMCIA memory. Easily programmed, the ModuLogger has extremely powerful processing capabilities for data reduction (averaging, min/max, etc), mathematical manipulation (algebraic, trig, time integrals, etc), as well as unlimited, user-programmable, intelligent data logging capabilities.

Using Logic Beach's HyperWare™ for Windows software, the ModuLogger is a powerful, user-programmable data logging and alarming system. HyperWare provides for graphic programming of the ModuLogger, serial communications, real-time trending, plotting and spreadsheet conversion of collected data. See separate HyperWare data sheet.

#### ModuLogger Hardware

The ModuLogger consists of a user-specified stack of ruggedly packaged, pluggable, modules. To meet your specific application additional expansion modules, communication, additional analog input, digital I/O, display and memory expansion modules are added to the main CPU module. The required CPU module, contains the microprocessor, data storage memory, 13-bit Analog to Digital converter, basic User switches and indicators, RS-232 port, and Cold Junction Compensation circuitry. It also includes four alarm outputs, four universal analog inputs, and one digital count/event input.

The provided analog inputs are software configurable for 6 thermocouple types, 11 ranges of DC voltage or 7 ranges of DC current (identical function/specs as MLIM-1). Each of the analog input channels sports full differential inputs, software programmable configuration, front-end completion circuitry and rugged suppression protection circuitry to insure reliable accurate readings.

The CPU module also includes a Cold Junction Compensation input for thermocouple or temperature applications, a General Purpose Digital Input for logging of events or counting

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Logging**



## ModuLogger™ Modular Data Logging and Alarming System

### ModuLogger™ Overview (continued)

digital outputs from flow meters, encoders, or other pulse-train type sources, and two isolated alarm relay outputs, a TTL alarm output, a 5VDC output, all controllable under software.

Enable, Stop and Reset switches as well as LED status indicators are provided on the CPU module. Input and Output wiring is handled through pluggable terminal strips which allow for mass connection and disconnection of wiring.

### Expansion Modules

Available Modules are: additional analog inputs, digital I/O, modem communication, PCMCIA memory card interface, user-interface/display, battery power and regulated sensor power supply.

Self-identifying modules stack onto the CPU and are configurable via the HyperWare software for input type and range.

### Specifications

#### CPU MODULE:

**Data Storage Memory:** Apx 15,000 samples internal, expandable to 80,000 samples. Lithium cell backup.

**Memory Utilization:** Stop when full or Rotary (FIFO) memory

**A/D Converter:** 12-bit plus sign (13-bit) SAR converter.

**A/D Accuracy:** +/- 0.1% Rdg + 1 bit

**Sample Rate Throughput:** 150+ Samples per second max. Rate is dependent on number and type of channels and program.

**Analog Input Channels:** CPU module contains 4 individually programmable channels. Function and specs are identical to MLIM-1

**Cold Junction Compensation(CJC) Input:** Range/Accuracy: -10 to 60°C, +/-0.5°C Max, 0.1°C typ.

**Digital Input:** One General Purpose Digital Input channel. User programmable for event or high-speed Counter applications. Contact closure or TTL driven signal input (15VDC max)

**Outputs:** 2 - low-voltage N/O relays; 500mA rated 1 - Current limited TTL digital outputs 1 - 100mA 5VDC regulated output

**Real-time Clock:** Date and Time, 24 hour, battery backed up.

**Power Consumption:** 9 VDC nominal. 5mA idle - 50 mA active

**External Power:** 9-24V/12-32V Fuse and Transzorb protected.

**Operating Temperature/Humidity:** -10 to 60°C (14 to 140°F). 90% non-condensing.

**Dimensions/Weight:** 8.8"W x 4.8"H x 2.2"H (3.8"H w/battery pack). 1.5 lbs. (3 lbs. with battery pack). Add 0.8" per add-on module. Dust Sealed.

**Shock and Vibration:** Normal commercial shipping and handling.

Note: See ModuLogger™ Interface Module data sheet for complete specs.

### Interface Modules

#### CPU ANALOG INPUTS (4):

##### MLIM-1: 4 Channel Analog Interface Module:

###### Input Types:

*Thermocouple:* Type J, K, E, T, R, S

*DC Volts:* +/- 20mV to +/- 30V, 11 Ranges

*DC Current:* +/- 400µA to +/- 22mA, 5 Ranges

###### Accuracy:

*Thermocouple:* +/- 0.2 to 1.0°C (depending on range and type)

*DC Volts:* +/- 0.3% of F.S.

*DC Current:* +/- 0.3% of Rdg.

##### MLIM-2: 4/4 Channel Digital Interface Module:

*Frequency:* 5hz to 22Khz (Square) 5hz to 65Khz (Sine).

*Event:* Contact closure or TTL (0 - 15VDC max).

*Count:* Contact closure or TTL (0 to 15VDC max) input. 20Khz maximum input freq.

*Digital Input (4 Channels):* Low output = tri-state (floating); High Output = 4.0VDC @ 1mA, 3.2VDC @ 10mA.

##### MLIM-4: 4 Channel RTD/Resistance Interface Module:

**RTD:** 100 and 1000 ohm @ 0°C; Am (0.00392) and Eu (0.00385)

**Thermistor:** 10Kohm @25°C, Fenwall #16 or equal

**Resistance:** 12 ranges; from 200 ohm Full Scale. to 400k ohm

##### MLIM-5: PCMCIA Memory Card Module:

Card socket for SRAM removable memory expansion cards, accepts LBI Memory Cards P/N: MC-50 (50k to 80k Smpls), MC-200; (200k to 300k Smpls) and MC-400; (400k to 600k Smpls).

##### MLIM-5-144: PCMCIA Memory Card Module w/14.4K Modem:

Provides PCMCIA memory card socket and 14,400B modem capability in a single module. Modem does not use PCMCIA slot.

##### MILIM-7: Isolated Analog Interface Module:

8 inputs, 4 fully isolated inputs or four pairs of 2 (shared common).

###### Input Types/Ranges:

*Thermocouple Types:* J, K, E, T, R and S

**DC Voltage:** High Range: +/-30Vdc (max. 1 per channel),

Low Range: +/-2.4Vdc, +/-1.2Vdc, +/-100mVdc, +/-55mVdc, +/-23mVdc

**DC Current:** +/-22mA, +/-11mA, +/-2mA, +/-1mA, +/-500µA

##### MLIM-8: 8 Channel Digital Interface Module:

*Input Signal:* Contact closure or TTL (0 to 26VDC max) input.

*Output Signal:* Low output = tri-state (floating); High Output= 4.0VDC @ 3mA.

##### MLIM-DISP: Front Panel Display and User Buttons:

2 line x 16 character display and full user interface buttons.

##### ML-BATT: Battery Pack Module:

6 alkaline D-Cells, up to 4+ wks logging.

**ML-BATT-PSM2:** Power supply for field excitation of sensors (including 4-20mA) from logger D-cells. Selectable outputs 5, 10, 15, 24Vdc. Includes ML-BATT.

**ML-PSM2:** Same as ML-BATT-PSM-2 but excludes batteries.

Contact Logic Beach for configuration assistance.

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