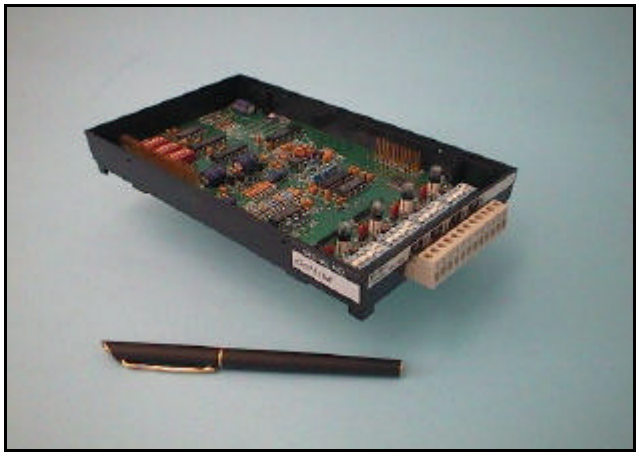
LOGIC BEACH Inc.

ModuLogger™ Interface Modules

MODULOGGER™ DATA LOGGER INTERFACE MODULES



Overview

The ModuLogger™ Interface Module (I/M) family is an assortment of I/Ms that plug onto the ModuLogger CPU. The I/M's provide various functions ranging from digital and analog signal-conditioned input, to alarm outputs to special applications such as modem and PCMCIA memory card interface.

Analog / Digital Interface Modules

Analog and digital signal/sensor I/M's allow for direct connection and data recording from a full spectrum of input signals and sensor types.

Various modules provide excitation, filtering, transient protection, amplification, and software codes as required by the connected sensor/transducer or sensed parameter. True differential inputs with precision Instrumentation Amplifiers insure high signal to noise ratio performance.

Special Function Modules

Additional interface modules are available that include special functions such as on board low-power telephone modems, special serial communications, and removable PCMCIA memory card interface.

A PCMCIA memory card I/M is offered, allowing for data collection to a removable `credit card style' memory module with additional memory.

Interface Module Installation / Configuration

I/M's plug on top of one another to form a stack of I/0. Each I/M provides a plugable terminal strip on the side to provide access to I/O wiring.

Each I/M contains encoded identification and calibration information for immediate self-configuration. Upon installation of the I/M into the HyperLogger System Base, the microprocessor reads the module type and stores calibration information for use during readings.

The Interface Modules are then configured for application and signal type via the HyperNet™ icon based visual programming method supplied within HyperWare™.

Many analog and digital modules include field configurable (via switch settings) hardware front-ends such as burden resistors, voltage dividers, etc. which add flexibility and minimize User demands for interface to real-world signals.

Performance and Reliability

Precision trimmed, temperature stabilized references insure accurate Cal-Check™ performance over time and temperature. All I/M's are calibrated, burned-in, and tested ready for immediate installation into the ModuLogger CPU. Thorough instructions for each module can be found in the ModuLogger manual.

Specifications

MLIM-1 Analog Interface: Provides 4 individually programmable channels of the following analog signal input. Any combination of the following types/ranges can be configured on a module.

Thermocouple:

Type:	J, K, E, T, R, S
Accuracy:	+/- 0.2 to 1.0°C depending on range and type (+/-5°C for R and S type)

Cold Junction Compensation (CJC) Range: -10 to 60°C

CJC Accuracy (see System Base spec) +/-0.5°C

DC Voltage:

Full Scale Ranges:	+/- 20mV, +/-40mV, +/-50mV, +/-60mV, +/-100mV, +/-200mV, +/-1V, +/-2V, +/-5V, +/-10V, +/-30V
Accuracy:	+/-0.3% F.S., +/-0.5% FS on Med & Hi Ranges

Common Mode Range: 3.5 VDC, Full Differential Input

Input Resistance: >2.5M for 5, 10, and 30VDC; >10M for all other ranges

DC Current:

Full Scale Ranges:	+/-200uA , +/-400uA, +/-500uA, +/-1mA, +/-2mA, +/-11mA, and +/-22mA
Accuracy:	+/- 0.3% of rdg.

Input Resistance: 100 ohms (all current ranges)

MLIM-2 Digital Interface: Provides 8 channels. 4 channels can be individually programmed for Event, Count, Frequency and 4 channels are provided for use as Output only.

Frequency:

Input Range:	5Hz to 30KHz(Square), 5Hz to 65kHz(Sine)
Input Waveform:	AC; 300mVp-p Minimum, 15 Vp-p Maximum

Event:

Time Resolution:	1 second or 5mS in sub-second mode.
Input Signal:	Contact closure or TTL (0 to 15VDC max)
Debounce:	50mS; Software enable / disable

Count:

Input Signal:	Contact closure or TTL (0 to 15VDC max); 20Khz maximum input freq.
Debounce:	50mS; Software enable / disable
Maximum Count:	16 million; maximum accumulated counts between reads

Digital Output:

Output Signal:	Low output = tri-state (floating)
	High Ouput= 4.0VDC @ 1mA
	= 3.2VDC @ 10mA

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Current Limit:	Short circuit protected. Max current = 12mA (apx.) per channel.

MLIM-4 RTD, Thermistor, and Resistance Interface: Provides 4 individually programmable channels of the following resistance type signal input. Any combination of the following types/ranges can be configured on a module.

RTD:

Type:	100 and 1000 ohm @ 0°C
Curve (alpha):	Am (0.00392) and Eu (0.00385)
Ranges:	-200 to 300°C; -200 to 850°C
Accuracy:	+/- 0.1 to 0.4°C depending on range and wiring configuration

Configurations Supported: 2-Wire, 3-Wire, and 4-Wire. (3 and 4-Wire configs require 2 channels to implement)

Thermistor:

Thermistor Type:	10Kohm @25°C, Fenwall #16 or eq.
Ranges:	-32 to 180°C; -4 to 180°C; +10 to 180°C; +25 to 180°C
Accuracy:	+/-0.2 to 0.5°C depending on range

Resistance:

Ranges:	12 ranges; from 200 ohm Full Scale. to 400,000 ohm Full Scale
Accuracy:	+/-0.1 to 0.3% of Rdg depending on range and wiring configuration

Configurations Supported: 2-Wire, 3-Wire, and 4-Wire. (3 and 4-Wire configs require 2 channels to implement)

MLIM-5 PCMCIA and Modem Interface: Module has integral socket for memory cards and interface for modem module.

NOTE: The MLIM-5 module will accept both a memory card and a modem. Order memory card(s) or modem and card interface below.

Socket:	PCMCIA Type II socket with button ejector
Card Compatibility:	Logic Beach MC-50, MC-200 and MC-400 SRAM cards

MLIM-5-14.4 Modem: MLIM-5 with 14.4KBaud telephone Modem Module option. Allows for direct connection to telephone lines for auto-answer and Pager Dial out alarm functions. Low-Power design for operation from ModuLogger internal batteries. Includes MILM-5 interface module.

Baud Rates: 1200, 2400, 9600, 14.4K

MC-xxx Memory Cards: PCMCIA Memory Cards for use with the HLIM-5 PCMCIA Socket Interface Module. Low-Power SRAM medium for data storage and transport.

Capacity:	MC-50; 50,000 to 80,000 Samples
	MC-200; 200,000 to 300,000 Samples
	MC-400; 400,000 to 600,000 Samples
Power:	Replaceable internal lithium cell. Cell lasts apx. 1 year.
Dimensions:	apx. 2.1" x 3.4" x 0.15"

MLIM-7 Isolated Analog Interface: Provides 4 fully isolated inputs or 8, 4 pairs of 2 with a shared common. Each input is individually programmmable for the following analog signal input. Any combination of the following types/ranges can be configured.

Input Types/Ranges:

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

DC Voltage:	High Range: +/-30Vdc Low Range: +/-2.4Vdc, +/-1.2Vdc, +/-100mVdc, +/-55mVdc, +/-23mVdc
DC Current:	+/-22mA, +/-11mA, +/-2mA, +/-1mA, +/-500uA

Input Impedance:

Thermocouple / Low Vdc:	>15Gigohm
30Vdc Range:	>2.5Mohm
Current:	100 ohm shunt

Accuracy:

Thermocouple:	+/-0.2C to 1.0°C depending on range
DC Voltage:	+/-0.03%FS (note 1)
DC Current:	+/- [0.1% Rdg +2.5uA]

Resolution:

Signal resolution is 18 bit, 1 part in 262,144

Thermocouple:	0.1°C
DC Voltage:	<400nV on 23mV FS Range
	<200uV on 30Vdc Range
DC Current:	<100nA on 22mA Range

Common Mode Range: 150Vac, 200Vdc (note 2)

Input Protection:

Current Inputs:	Fused and transient clamped
Voltage Inputs:	Transient voltage clamped
Thermocouple:	Transient voltage clamped

Note 1: Maximum settling time enabled.

Note 2: The ModuLogger system is designed for Class 2 inputs maximum (i.e. <32Vdc). Voltages above this level are potentially lethal.

MLIM-8 Eight Channel Digital I/O: Eight channel I/O Module allows for User configuration of 8 channels as Inputs or Outputs (individually selectable).

Input Signal:	Contact Closure or TTL input (0 to 26VDC max.
	1 sec. resolution, 5mS is sub second mode. 50mS software enabled debounce.
Output Signal:	OFF = Tri-State (Floating)
	ON = 4.0 VDC @ 3 mA. Short Circuit protected. Max Current = apx. 3mA per channel.

ML-DISP: 2 line x 16 character display for display of system information, real-time values and user-defined alarms and messages. Duplicates function switches on face.

ML-BATT: 6 x "D" alkaline batteries for up to 4 weeks of operation.

ML-BATT-PSM-2: 6 x "D" alkaline batteries with regulated power supply, 10, 15 24 VDC selectable, for sensor excitation.

Ordering Information:

ModuLogger™: The ModuLogger CPU includes 4 analog channels, specifications are identical to the MLIM-1. Add up to five additional I/O Interface Modules from the MLIM-1, -4, -5, -7, or –8 to configure your system specifically for your application. Order only one MLIM-5 and the ML-TOP or ML-DISP and ML-BAK or ML-BATT to complete the system.

ModuLogger™ MINI: The ModuLogger MINI CPU includes 4 analog channels, specifications are identical to the MLIM-1. The ModuLogger MINI I/O is limited to the 4 on-board channels, optional interface modules available are: MLIM-5, ML-DISP, or ML-BATT, ML-BATT- PSM-2.

Contact the factory for configuration assistance.

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