Highlights

- N.4/8 analog inputs, n.1 digital input, n.1 RS232 input;
- Very low power consumption (< 4 mW);
- N.50 total channels for acquisition and calculations;
- 2 MB Flash data memory;
- LSI-LASTEM, Modbus RTU, TTY communication protocols;
- N.2 RS232 serial ports (1200 bps to 115.2 kbps);
- Built-in calculation library for derived quantities;
- Built-in mathematical calculations library;
- Digital outputs for external device activation over programmable logics and/or events;
- Sampling rate 1 sec. to 12 hrs;
- Elaboration time-base 1 sec. to 24 hrs;
- PC connection via RS232/radio/modem PSTN/GSM/GPRS/Ethernet;
- Display and keyboard;
- Compatibility with CommNET, GIDAS and XPanel softwares.

M-Log is a compact data logger for environmental monitoring, suitable for both indoor and outdoor purposes. It can be mounted on a tripod for portable applications or installed inside an IP65 box for long-term outdoor applications. Small and flexible, while powerful and durable, M-Log can be used in virtually unlimited environmental applications.

Main Features

Inputs

N. 4 (8 single-ended) inputs for analogue signals (voltage, current and resistance).
N. 1 digital input. It can be configured for frequency or digital on/off signals.
N.1 input for RS232 sensors

Models with mini-Din inputs and sensors self-recognition feature and models with terminal input board are available

Derived environmental and mathematical calculations

M-Log has an internal library of derived environmental quantities. These calculated quantities can use inputs from monitoring measures, user-defined constants and other derived quantities.
This library also includes mathematical calculations (see ***Calculated Quantities - p. 22***)

Sampling rate

Programmable for each sensor (1 sec -12 hrs). M-Log manages up to n.4 channels from sensors and n.16 derived quantities in 1 sec.

Data storage

M-Log stores statistical elaborations with time bases from 1 sec. to 24 hrs:
- instant values
- arithmetical average, minimum, maximum, standard deviation
- totalization and integration time measurements
- wind elaborations:
  resulting/prevailing direction, resulting speed, direction standard deviation (sigma-theta), calm percentage.

Memory structure is circular.

Output actuation at event/time

M-Log (ELO007-008) has three digital outputs to power up external systems or alarm devices. Outputs are activated according to user-defined actuation logics.
- Greater/less than, within a range;
- Wind alarm;
- Alarm for beginning of precipitations;
- Flood Alarm;
- Scheduled event;
- Snow level alarm;
- Error state of the unit.

Sensors power supply actuation

M-Log can feed sensors requiring power supply for their operation, with user-defined warm-up time.

Battery

M-Log comes with an internal (2 Ah, 4.2 V) Lithium rechargeable battery. For long-term operation, additional batteries are normally included in ELF enclosures (see Accessories). LSI-LASTEM supplies 2-15-40 Ah rechargeable battery packs and 1,5-V, D-shaped disposable battery packs. Batteries can be recharged using main power supply or solar panels.

Power supply

M-Log runs at 12 Vdc input voltage power supply and features an extremely low power consumption (< 4 mW).

Serial ports for data communication

M-Log is equipped with two RS232 serial ports. Both of them can be used for local or remote communication for data download or real-time update of instantaneous and diagnostic values.
Serial Port n. 2 can also be used to connect sensors with RS232 output (see ***Data output protocols***).

Direct connection to PC

M-Log can be directly connected to a PC with the following interfaces:
- USB, using included adapter;
- RS485 line drivers: distances up to 1 km, using DEA504 converter;
- Ethernet, using DEA550 converter (ELO007 features a built-in RJ45 port);
- Bluetooth, using DEA300 adapter.

Remote connection to PC

M-Log can be remotely connected to a PC with the following interfaces:
- Telephone System: GSM modem;
- GPRS net: GSM/GPRS modem;
-Long distances UHF radio communication;

CommNetEG software can help managing both direct and remote connections with automatic/ scheduled communications.

Installation

M-Log can be easily mounted on stands, placed on portable tripods or wall-arm for indoor applications.

For outdoor applications M-Log is normally installed in IP65 protection box, either LSI LASTEM ELF series (see Accessories) or third party's, for protection against shocks, water, dust and atmospheric agents; the IP65 box normally hosts also power supply systems, communication devices, additional batteries and, when present, barometric sensors.

Data output protocols

Serial port COM1:
- LSI LASTEM native (CISS)

Serial port COM2:
- Reduced native (CISS);
- TTY: valori istantanei (spontanea o richiesta esterna);
- Modbus RTU: valori istantanei e informazioni diagnostiche.

Data input protocols

E-Log Serial port COM2 can also be used to connect sensors with RS232 interface. Supported protocols include:
-Gill: Sonic Gill anemometers (Gill format Polar, continuous).
- HYDROLAB water quality probes
- CLIMATRONICS: AIO probe
- AEROQUAL: AQM60 base module
- LUFF: UMB

Order numb.	ELO007	ELO008	ELO009	ELO010
Inputs	Terminals		Mini-Din	
Analog inputs	N. 4 (n. 8 single ended)		N. 4	
Digital input	N. 1 (on/off or frequency/counter)			
Sensors self-recognizing	NO		YES	
Digital output actuation on event	YES		NO	
RS232 ports	N. 1	N. 2	N. 2	N. 1
Ethernet port RJ45 connector, TCP/IP socket server	N. 1	-	-	N. 1
Display back-light	NO		YES	
Tripod use	NO		YES	
GPRS communication	NO	YES	NO	

continued

Common features		*Range*	*Resolution*	*Accuracy (@ 25°C)*
Analogue inputs	*Voltage*	-300 ÷ 1200 mV	40 µV	±100 µV
		±78 mV	3 µV	±35 µV
		±39 mV	1.5 µV	±25 µV
	Pt100	-50 ÷ 125°C	0.003°C	±0.05°C
		-50 ÷ 600°C	0.013°C	±0.11°C
		0 ÷ 6000 Ω	0.19 Ω	±1.5 Ω
	Thermocouples	E-IPTS 68	< 0.1°C	±1.5°C
		J-IPTS 68	< 0.1°C	±1.2°C
		J - DIN	< 0.1°C	±0.1.2°C
		K-IPTS 68	< 0.1°C	±1.9°C
		S-IPTS 68	0.22°C	±4.9°C
		T-IPTS 68	< 0.1°C	±1.4°C
	Inputs number (see MODELS)	N. 4 (n. 8 single-ended)		
	ESD protections	±8 kV contact discharge IEC 1000–4-2		
	Max input signal	1.2 Vdc		
	EMC filters	on all inputs		
	Temperature error (@ -10÷30°C)	300 ÷ 1200 mV < ±0.01% FSR; ±39 mV < ±0.01% FSR ±78 mV < ±0.01% FSR		
Digital inputs	*Inputs number*	N. 1		
	Functions	Frequency (Max 5 kHz); ON/OFF (0 ÷ 3 Vdc)		
	Max error	3 Hz @ 5 kHz		
	Protection	Transient voltage suppressor 600 W, <10 µs		
Digital outputs (see MODELS)	*Outputs number*	N. 3 (n. 1 sensors power-up, n. 2 on events)		
	Max current on each output	150 mA		
	Protection	Thermal and over current (> 0.15 A)		
Power supply	*Power supply*	8 ÷ 14 Vdc		
	Power consumption	Display ON: 60 mA, OFF: 20 mA		
	Power consumption (Stand-by)	Stand-by: 0,2 mA (n.9 months battery life)		
	Protections	Transient voltage suppressor: 600 W, t = 10 µs; on polarity inversion		
Battery	*Type*	2 A (4.2 V) Lithium rechargeable		
	Recharging time	~ 8 hrs		
Other features	*Internal clock*	Accuracy 30 s/month (T=25°C)		
	Display	LCD 4 x 20 car		
	Keyboard	N. 8 keys		
	Processor	1 RISC 8 bit, clock 16 MHz		
	ADC resolution	16 bit		
	Sampling time	80 ms (rejection 50 Hz)		
	Environmental limits	-20 ÷ 60 °C, 15 ÷ 100 % RH (not condensing)		
	Protection	IP 40		
	Weight	500 g		
	Dimensions	140 x 120 x 50 mm		
RS232 ports (see MODELS)	*Speed*	1200 ÷ 115200 bps		
	Type	9 pin/Female/Male/DTE/DCE		

Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.

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