



## Highlights

- For portable use or continuous system;
- Multi-position measuring system using wireless communication from MASTER to SLAVE units;
- N.4 analog inputs, n.1 digital inputs;
- Inputs extension using MASTER/SLAVE units via radio;
- Wireless connection to Radio sensors;
- ZigBee radio 2.4 GHz frequency;
- N.50 channels for acquisition or calculation;
- 2 MB flash data memory;
- Derived quantities calculation;
- Math calculations;
- Outputs actuation over programmable events to activate external devices;
- Sampling rate 1 sec. to 12 hrs;
- Elaboration rate 1 sec. to 24 hrs;
- PC connection via RS232/radio/modem PSTN/GSM/GPRS/Ethernet
- Display and keyboard;
- Compatibility with CommNET, GIDAS and XPanel programs.

R-Log data logger is a line of devices for environmental measurements in indoor and outdoor applications; it gives the utmost flexibility in terms of multiple measurement design. It can manage a large variety of sensors and, thanks to its radio technology, it's also a multi-position measurement system. The two features make the system extremely flexible in terms of typology, position and number of managed sensors.

## ► Main Features

### MASTER/SLAVE logic

R-Log MASTER can be connected to cabled sensors to its physical inputs and, using radio communication, to one or more SLAVE units. The R-Log series includes SLAVE satellite units with physical inputs for cabled sensors and SLAVE radio sensor (S-Log).

#### 1. Standard sensors

More than 70 different probes available for connection by cable to SLAVE and MASTER units.

#### 2. Radio sensors

Sensors for measurement and data transmission of quantity by radio.

#### 3. SLAVE satellite units

Direct radio communication, or through repeaters, to MASTER units.

#### 4. MASTER data logger

Storage of values measured by "standard" sensors directly connected to its physical inputs, and storage of values received via radio from SLAVE units and radio sensors.



### Portable applications

R-Log is very suitable for short and long terms portable environmental applications. Each MASTER and SLAVE units can be mounted on tripods in specific locations or inside portable IP65 ELF enclosures. The MASTER unit stores all the measurements in its memory using a multi-survey logic.



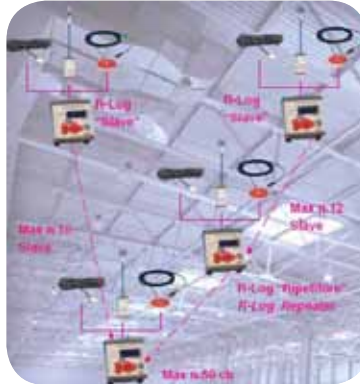
### Continuous applications

R-Log can be used also for long-term continuous installations. Each MASTER and SLAVE unit can be mounted on wall arms or inside ELF enclosures. MASTER units can also be connected to a local or remote PC for real-time data display or download (via TCP/IP or GPRS/GSM).



### R-Log network

R-Log MASTER receives measures by radio from SLAVE units. R-Log MASTER can store up to 55 channels including sensors directly connected to its physical inputs and measures from SLAVE units. When a PC is connected to R-Log MASTER, it can read and download measures only from this system. When the network includes more than 55 channels, it is possible to use R-Log sub network or "Communicators" unit instead of MASTER data logger – an interface between SLAVE units and PC for direct data download.



### R-Log sub-network

One or more Log MASTER can be connected in a local network via TCP/IP to one or more PCs. In this case each PC can read and download measures from each R-Log Master. It is also possible to use TCP/IP Communicators, in this case every PC can read and download data from each R-Log SLAVE linked to the Communicator.



### Multi-parameter measurements

R-Log allows the management of a wide quantity and variety of sensors. Every MASTER module can manage up to 55 channels, including sampled and calculated quantities.

The range of sensors supplied by LSI LASTEM includes more than 70 different models for the measurement of environmental quantities. R-Log is also able to acquire signals coming from third-party sensors having compatible electrical output.

### Data storage

R-Log MASTER 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.
- R-Log SLAVE units have backup data memory.

### Sampling rate

Programmable for each sensor (1 sec - 12 hrs). R-Log manages up to n.5 channels from sensors and n.8 derived quantities in 1 second.

### Sensors power supply actuation

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

## Inputs

MASTER and SLAVE units have the same number and type of inputs:

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

## Direct connection to PC

MASTER units 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
- Bluetooth, using DEA300 adapter

## Remote connection to PC

MASTER units can be remotely connected to a PC with the following interfaces:

- Telephone System: GSM modem
- GPRS net: GSM/GPRS modem.
- Long distances UHF radio communications

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

## Derived environmental and mathematical calculations

R-Log has an internal library of derived environmental quantities. For their calculation R-Log can use inputs from monitoring measures,

user-defined constants and other derived quantities This library also includes mathematical calculations (see *Calculated Quantities*).



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

## Installation

R-Log can be installed in IP65 protection box, such as LSI LASTEM ELF series (see Accessories), for protection against shocks, water, dust and atmospheric agents; the IP65 box normally hosts also power supply systems, communication devices and additional batteries R-Log can also be mounted on a tripod or wall arm.

## Output actuation at event/time

R-Log (ELR515-516) has three 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.

MASTER data loggers can also activate outputs using measurements from SLAVE units. SLAVE units can activate their outputs using only their own measurements.

## Power supply and battery

R-Log runs at 12 Vdc input voltage power supply. It has an extremely low power consumption (< 4 mW). LSI LASTEM offers a wide range of power supply systems and battery packs according to the requested power source and autonomy.

## Radio distance

The distance between MASTER and SLAVE is 300 m (Line-of-sight) and it may decrease in presence of obstacles. LSI LASTEM supplies SLAVE units with “repeater” feature to increase radio distance.



*Wall mounting, tripod and IP65 box mounting accessories.*



## MASTER UNITS



Order numb.	ELR510M	ELR515M	ELR516M
Inputs numb.	4 analog, 1 digital	4/8 analog, 1 digital	
Inputs type	Mini-DIN	Terminals	Terminals
Sensors auto-recognizing	YES	NO	NO
RS232 port	YES	YES	NO
Ethernet port RJ45 connector, TCP/IP socket server	NO	NO	YES
Digital outputs	NO	YES	YES
GPRS	NO	YES	NO



## SLAVE UNITS



Order numb.	ELR510S	ELR515S
Inputs numb.	4 analog, 1 digital	4/8 analog, 1 digital
Inputs	Mini-DIN	Terminals
Sensors auto-recognizing	YES	NO
Digital outputs	NO	YES



## REPEATER UNITS



Order numb.	ELR510R	ELR515R	EZB321.1
Inputs numb.	4 analog, 1 digital	4/8 analog, 1 digital	
Inputs	Mini-DIN	Terminals	NO
Sensors auto-recognizing	YES	NO	NO
Digital outputs	NO	YES	NO
GPRS	NO	YES	NO



## COMMUNICATOR UNITS



Order numb.	EZB311.1	ELR312.1
RS232 port	YES	NO
Ethernet port RJ45 connector, TCP/IP socket server	NO	YES



## Common features

		Range	Resolution	Accuracy (@ 25°C)
Analogue inputs	<i>Tension</i>	-300 ÷ 1200 mV	40 µV	±160 µV
		±78 mV	3 µV	±30 µV
		±39 mV	1.5 µV	±15 µV
	<i>Pt100</i>	-50 ÷ 70 °C	0.003 °C	±0.1 °C
		-50 ÷ 600 °C	0.011 °C	±0.3 °C
		0 ÷ 6000 Ω	0.1 Ω	±1.5 Ω
	<i>Thermocouples</i>	E-IPTS 68	< 0.1 °C	±0.6 °C
		J-IPTS 68	< 0.1 °C	±0.6 °C
		J - DIN	< 0.1 °C	±0.6 °C
		K-IPTS 68	< 0.1 °C	±0.5 °C
		S-IPTS 68	0.22 °C	±2.0 °C
		T-IPTS 68	< 0.1 °C	±0.5 °C
		<i>Inputs number (see MODELS)</i>	N. 4 (see Models)	
	<i>ESD protections</i>	±8 kV contact discharge IEC 1000-4-2		
	<i>Max input signal</i>	1.2 V		
	<i>EMC filters</i>	on all inputs		
	<i>Temperature error (@ -10÷30°C)</i>	300 ÷ 1200 mV < ±0.01% FSR; 39 mV < ±0.01% FSR ±78 mV < ±0.01% FSR		
Digital inputs (see MODELS)	<i>Output number</i>	N. 3 (n. 1 sensors power-up, n. 2 on events)		
	<i>Max current on each output</i>	150 mA		
	<i>Protection</i>	Thermal and over current (> 0.15 A)		
Digital outputs (see MODELS)	<i>Output number</i>	N. 3 (n. 1 sensors power-up, n. 2 on events)		
	<i>Max current on each output</i>	150 mA		
	<i>Protection</i>	Thermal and over current (> 0.15 A)		
Power supply	<i>Power supply</i>	8 ÷ 14 Vdc		
	<i>Power consumption</i>	Display ON: 60 mA, OFF: 20 mA		
	<i>Power consumption (Radio ON)</i>	TX ON: 180 mA, RX ON: 30 mA		
	<i>Power consumption (Stand-by)</i>	Stand-by: 0.2 mA (n. 9 months)		
	<i>Protections</i>	Transient voltage suppressor: 600 W, t = 10 µs; on polarity inversion		
Battery	<i>Type</i>	2 A (4.2 V) Lithium rechargeable		
	<i>Recharging time</i>	~ 8 hrs		
	<i>Battery life</i>	Standby: 9 months, Radio OFF: 48 hrs, Radio ON: 24 hrs		
Radio	<i>Type</i>	ZigBee		
	<i>Frequency</i>	ISM 2.4 GHz direct sequence channels		
	<i>Power</i>	10 mW (+10 dBm)		
Other features	<i>Internal clock</i>	Acc. 30 sec/month (T=25°C)		
	<i>Display</i>	LCD 4 x 20 car		
	<i>Keyboard</i>	N. 8 keys		
	<i>Processor</i>	1 RISC 8 bit, clock 16 MHz		
	<i>ADC resolution</i>	16 bit		
	<i>Sampling time</i>	80 ms (rejection 50 Hz)		
	<i>Environmental limits</i>	-20 ÷ +60 °C, 15 ÷ 100 % RH (not condensing)		
	<i>Protection</i>	IP 40		
	<i>Weight</i>	500 g		
	<i>Dimensions</i>	140 x 120 x 50 mm		
RS232 ports (see MODELS)	<i>Speed</i>	1200 ÷ 115200 bps		
	<i>Type</i>	9 pins/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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Please note - Product designs and specifications are subject to change without notice. The user is responsible for determining the suitability of this product.