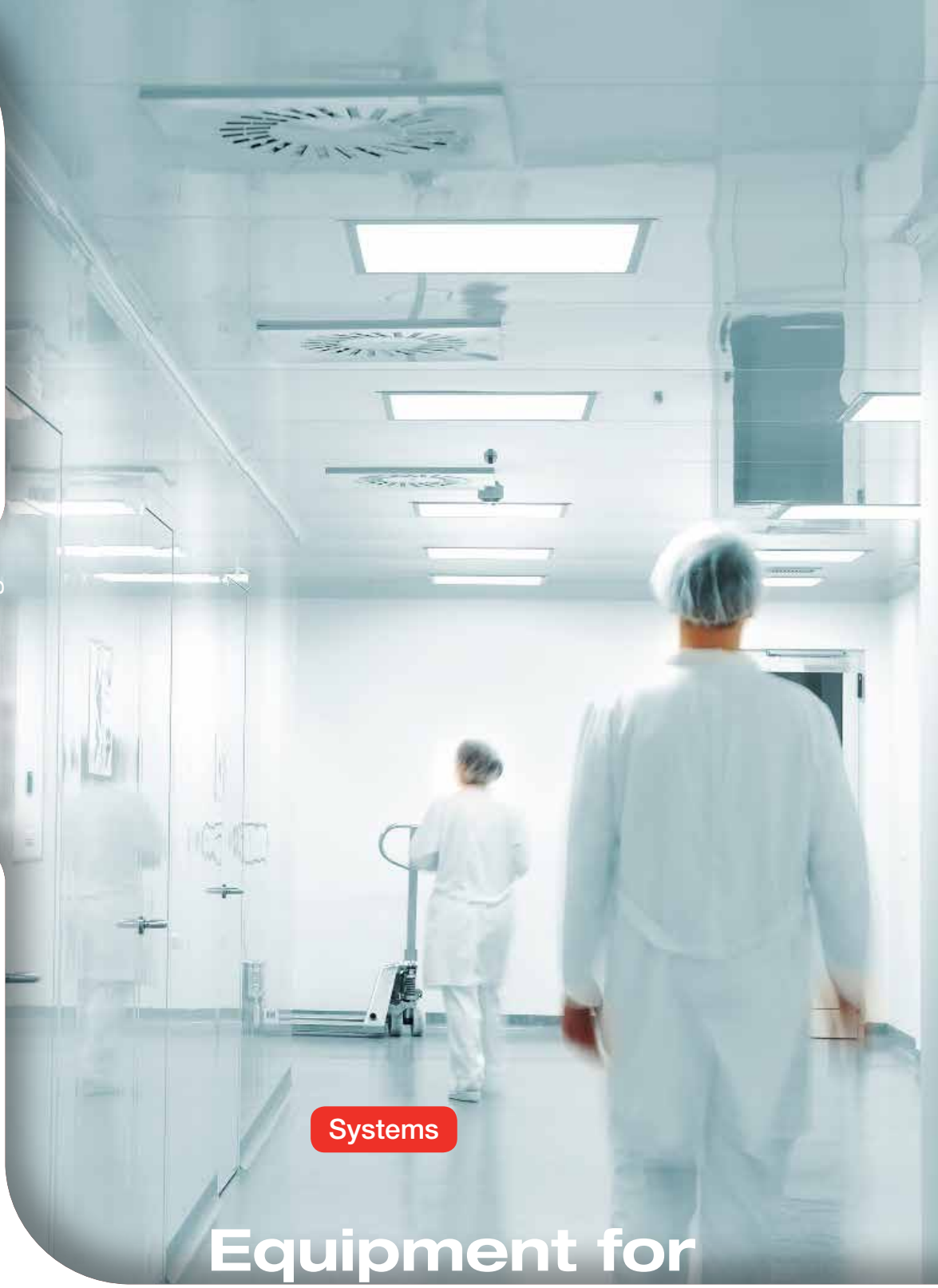
indoor

General Catalog



Systems

Equipment for controlled atmosphere environments monitoring

LSI LASTEM

Milano
ITALIY

> environments monitoring

Equipment for controlled atmosphere environments monitoring

Systems for the monitoring of Temperature, Relative Humidity, Air Speed, Differential Pressure and Indoor Air Quality in controlled atmosphere environments, such as processing and storage environments: clean caves, laboratories, surgery rooms, warehouses, cellars, cold rooms and warehouses, etc.

LSI LASTEM develops and supplies instruments for the monitoring of parameters interfering with the processing and storage of materials. Two types of equipments are available:

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Applications

- Process Air Monitoring in the pharmaceutical, food, research sectors, in laboratories, hospitals, cold chain
- Temperature-Humidity Monitoring
- Overpressure Environments Monitoring
- Indoor Air Quality and Ventilation Monitoring

Particular environments, where the indoor climate is kept stable by thermo-technical systems or by natural conditions, may require the monitoring and/or control of some important parameters in order to keep these environments suitable for the kind of processing carried out and for the maintenance and preservation of stored materials.

Temperature and Relative Humidity, Ventilation, Differential Pressure and Air Quality are the parameters that more often may interfere or influence the particular requirements of the materials. Besides, it may be necessary to monitor the indoor air conditioning quality, in order to protect the workers health in particular situations.

In warehouses and food processing environments, the air treatment system should ensure an atmosphere not altering the organoleptic properties of products.

The environmental conditions in which maturation or aging of some products takes place, must often maintain its defined levels.

It is important to monitor Temperature, Humidity, Oxygen Concentration and Ventilation to ensure that these conditions are met.

In sterile environments or surgery rooms, it can be necessary to maintain an overpressure condition in order to prevent dust and bacteria from penetrating from outside. It may be necessary to check the overpressure level supplied by the thermo-technical system.

Analog Output Sensors

Highlights

- Thermo-hygrometric sensors inside rooms or ducts
- Differential pressure sensors
- Hot wire or vane anemometers
- O2, CO, CO2, VOCs and other gases sensors
- 4-20 mA output, 12 Vdc or 24 Vac power supply
- Interface modules with RS485 output and Modbus RTU protocol
- Cables L = 10, 25, 50, 100 m

LSI LASTEM develops and supplies a range of analog output sensors. These sensors are suitable for connection to third parties systems with analog signal requirements, such as PLC and management systems in general. Sensors supplies analog output (0/4-20 mA) and can be connected to 4/8 inputs interface modules, to obtain an RS485 digital output with Modbus protocol.

Main features

Air Temperature and Relative Humidity Sensors

Thermo-hygrometric sensors equipped with a Pt100 1/3 DIN-sensitive element for temperature and hygro-capacitive element for Relative Humidity with excellent measurement uncertainty (1,5% RH), suitable for applications where it is crucial to ensure a good measurement accuracy. Two models are available: 24 Vca (DME785) or 12 Vdc (DME775) power supply, both for indoor installation (wall) or inside ducts.
The sensitive elements of both models can be replaced with no need of recalibration and are protected by a porous filter.

Industrial Application Anemometers

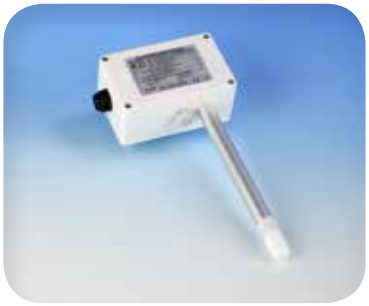
Sensors for the measurement of air speed inside ducts or at vents output. Hot-wire or vane sensors are available. Hot-wire sensors are more appropriate when air speed is low and/or the probe's access dimensions are limited.
Vane sensors are more robust and consequently suitable for ducts with possible presence of dust particles, but have a higher measurement threshold and a lower accuracy.

Data output on Modbus and TTY protocols

Up to 8 (16 single ended) sensors can be connected to an interface module (ELO105) that sends data using Modbus or TTY protocols on RS485 line (with DEA504 RS232/485 converter).
Data output can be programmed as instant value, or as running average on a number of programmable values or calculations of derived quantities (air flow, number of air changes, dew point and many others).

Electric Outputs

Each ELO105 interface module is equipped with 7 outputs designed to turn on/off external devices based on the measurements acquired by the module itself with an overcoming of combination of values programmed with AND/OR logic. The outputs can be enabled not only in relation to the sensor measurements, but also to the derived quantity calculated.



Air Quality Sensors
Sensors for the measurement of the concentration of gases that may speed up or slow down the deterioration of goods and materials: O2, CO, CO2, O2, VOC

Differential Pressure Sensor
Sensors for the measurement of the differential pressure between two spaces to verify the overpressure level with respect to one another. The model which is more appropriate to this application has a measuring range of 0,3 hPa. Models with different measuring ranges are also available:
0-50 hPa, 0-16 hPa, 0-25hPa.
4-20 mA outputs, 11-33 Vdc power supply. All models are equipped with a connector for connection to DWA series cables.

Kit 1.0 4-20 mA output sensors, 12 Vdc power supply

It includes:
- Thermo-hygrometer
- Anemometer
- Differential Barometer
- CO, CO2, 02, VOCs sensors
- MODBUS/TTY Interface

Code	Description	KIT 1
	Wall or duct thermo-hygrometer	
DME775	Thermo-hygrometer 0/4÷20 mA output, 0/1÷5 Vdc, 12 Vdc power supply	●
DME785	Thermo-hygrometer 0/4÷20 mA output, 0/1÷5 Vdc, 24 Vac power supply	Note 1
DWA510	10 m cable	Note 2
DWA525	25 m cable	
DWA526	50 m cable	
DWA527	100 m cable	
	Hot-wire anemometer Sensor	
DNE501	Hot-wire anemometric sensor, 0/4÷20 mA output, 0/1÷5 Vdc, 12 Vdc power supply	●
DNE506	Hot-wire anemometric sensor, 0/4÷20 mA output, 0/1÷5 Vdc, 24 Vac power supply	Note 1
DWA510	10 m cable	Note 2
DWA525	25 m cable	
DWA526	50 m cable	
DWA527	100 m cable	
	Fan anemometric Sensor	Note 3
DND207	Fan anemometric sensor. L = 1 m cable	
DEA207	Converter for DND207 probe, 4÷20 mA output, 12 Vdc power supply	
	Differential pressure Sensor	
DQE523	Differential Pressure Sensor, 0÷0,3 hPa field, 4÷20 mA output, 1÷33 Vdc power supply	●
DWA510	10 m cable	Note 2
DWA525	25 m cable	
DWA526	50 m cable	
DWA527	100 m cable	

continued

Code	Description	KIT 1
	Air Quality Sensors	
DSO102#C	CO Sensor, 0÷1000 ppm field, 4÷20 mA output, 12 Vdc power supply. L = 10 m cable	●
DSOxxxx	CO2 Sensor, 0÷3000 ppm field, 4÷20 mA output, 12 Vdc power supply.	●
DSO140#C	O2 Sensor, 0÷25% field, 4÷20 mA output, 12 Vdc power supply.	●
DSO150#C	VOCs Sensor, 0÷20 ppm field, 4÷20 mA output, 12 Vdc power supply. L = 10 m cable	●
DWA510	10 m cable for DSO181.1#C	Note 2
DWA525	25 m cable for DSO181.1#C	
DWA526	50 m cable for DSO181.1#C	
DWA527	100 m cable for DSO181.1#C	
	Modbus/TTY Interface	Note 4
ELO105	Interface Module with 8 analog inputs (n.16 single ended). 4 digital inputs. Modbus/TTY protocol output and 7 digital outputs	●
DEA504	RS232-485 converter	●
DGD010	ON/OFF relay for digital outputs (qt. according to required ON/OFF outputs)	●
DEA260	220Vac/12Vdc power supply unit	●

Note 1 Alternative with 24 Vac power supply.

Note 2 Choose the cable according to the required length.

Note 3 Choose the type of anemometer according to the type of installation. For dirty and small ducts, it is preferable to use fan models that require less space and have a better resistance to physical agents (dust, condensation, dirty air).

Note 4 Choose it when it is necessary to obtain a RS485 output with Modbus or TTY protocol. It is useful also to obtain electric outputs to turn on/off external units according to programmable logics. If a connection to a fan anemometer sensor is required (DND207), this can be directly interfaced to the impulsive inputs of ELO105 without DEA207 interface.

LSI LASTEM

Wireless systems
for data acquisition
and data management

Wireless systems for data acquisition and data management

Highlights

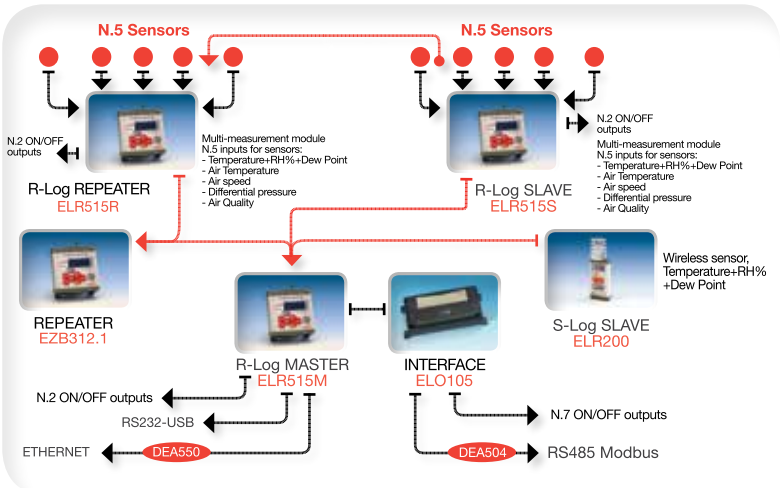
- Networks of wireless thermo-hygrometric sensors (S-Log SLAVE) with real-time wireless communication to a data collection control unit (R-Log MASTER).
- Modules of wireless multi-parametric data concentration (R-Log SLAVE) with real-time wireless communication to a data collection control unit (R-Log MASTER).
- Backup memory on each SLAVE module
- Led alarms and 2 actuated outputs (optional relay) with programmable actuation logic to turn on/off external devices.
- External module for 7 additional actuated outputs and transmission of measurements to a RS485 line using Modbus or TTY protocol.
- Models of data concentration control unit with Ethernet output.
- Channels of derived quantities.

LSI LASTEM develops and supplies monitoring and control systems for controlled atmosphere environments. R-Log modules are suitable for being interfaced with a range of sensors to create multi-measurement networks. Several R-log modules can be positioned in the plant to carry out measurements in different locations wireless-connected to the R-Log MASTER central data collection module. The systems are equipped with local displays and electric outputs providing controls to switch on and off the external devices according to programmable logics. The R-Log MASTER data collection module can be connected to a PC through RS232 (USB, Ethernet); data can be obtained through RS485 with Modbus and TTY protocol as well and sent to supervision systems, such as PLC.

Main features

Types of systems

Several S-Log (ELR200) sensors can be placed into the environment for the measurement of temperature and relative air humidity. They will transmit the instant values to R-Log MASTER central data acquisition module.
When other different quantities are required, multi-measurement R-Log SLAVE and R-Log REPEATERS can be added to the network. These can be physically connected (4 analogue inputs, 1 impulsive input for vane anemometer) to a series of sensors. These modules transmit the measurements to the central data collection module R-Log MASTER where all measurements are stored.
Log MASTER module can be considered as an additional measurement point. R-Log MASTER can be connected to a PC (via RS232, USB or Ethernet) or to a control system via RS485 with Modbus or TTY protocols through an optional module (ELO105).



Radio distances and Repeaters

The maximum distance between R-Log SLAVE and MASTER units is 300 m (Line-of-sight). This distance can be reduced in the presence of obstacles. Repeater units are available, helping to increase the coverage range of a radio. EZB312.1 model is a repeater without measuring capacitance, ELR515R R-Log REPEATER is a device with two functionalities:
1) connection to sensors having capture functionality equal to R-Log SLAVE.
2) Repetition of signals coming from the S-Log and R-Log SLAVE units on the network to increase the distances between these units and the MASTER one.

Data output on Modbus and TTY protocols

An interface module (ELO105) transmitting data with Modbus or TTY protocols to a RS485 line can be connected to a R-Log MASTER (with RS232/485: DEA504 converter).
Data output on Modbus protocol can be programmed as instant values, or as moving average on a number of programmable values. ELO105 is also provided with 7 actuation electric outputs.

Actuation electric outputs

Each R-Log module has 2 actuated outputs to turn on/off external devices on the basis of the measurements acquired by the module itself for the overcoming of a combination of values programmed with AND/OR logic. The measurements deriving from R-Log SLAVE modules are those related to the sensors physically connected; the measurements deriving from MASTER modules come all from SLAVE modules.
Outputs can be enabled not only based on the sensor measurements, but also based on the calculated derived quantities measurements.
(example: air flowrates, dew point) and statistical calculations (example: average of all the temperature measurements media acquired by the network). The interface module ELO105 connected to R-Log MASTER allows also to have 7 additional electric outputs, each with a programmable actuation logic.

Sensors

Each R-Log can be connected to external sensors for the measurement of a large variety of parameters. LSI LASTEM offers a particularly wide range of sensors (see catalogue “Indoor sensors”). Furthermore, R-Log can be interfaced with sensors produced by third parties supporting a variety of analogue signals (voltage, current and resistance).
R-Log can supply those sensors that require energy to operate, with an advance as compared to the programmable acquisition (warm-up).

LSI LASTEM sensors for controlled atmosphere environments

Useful data and LSI LASTEM sensors for controlled atmosphere environments are:

Temperature and Humidity

the range features cable sensors (DMA672.1), to be physically connected to R-Log modules and wireless sensors (ELR200) wireless-transmitting data directly to R-Log MASTER.

Air Temperature

DLE120 probe is a particularly robust solution for air temperature measurements even in severe environments.

Temperature inside materials

DLE041 probe can be introduced inside materials to measure the internal temperature.

Surface Temperature

DLE124 is a flat probe for the measurement of surface temperature.

Air speed

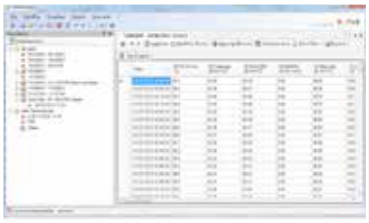
DNE502 probe (hot-wire anemometer) is suitable to be positioned in the environment for omni-directional measurements, or installed indoor or outside ducts. DND207 probe (vane anemometer) is suitable for directional measurements of air speed in severe conditions such as flows in the presence of dust particles.
R-Log modules can directly calculate the air flowrate and the number of air changes, considering the flowrate values coming from different anemometers as well.

Differential Pressure
DQE523 probe with measuring range of 0,3 hPa is particularly suitable for measurements in overpressure environments.

Gas
In this application, the gases concerned are O2 (DSO140#C probe), CO2 (DSO204#C probe), CO (DSO101#C probe), VOCs (DSO150#C probe).

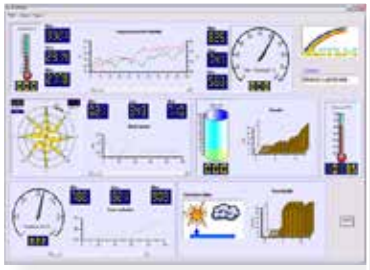
Software

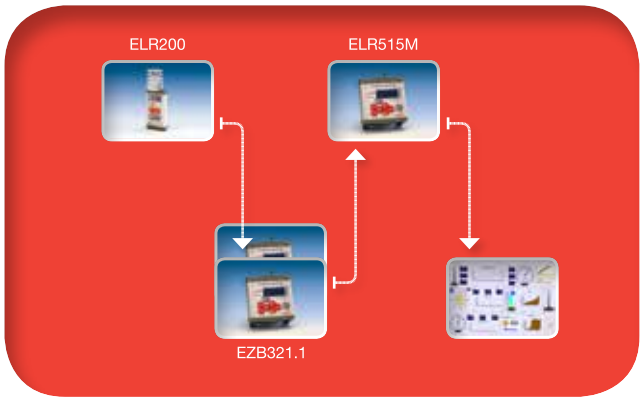
LSI offers a series of software packages for the management of the data acquired by R-Log MASTER.



BSZ311 GIDAS
Gidas Viewer is the program for managing and performing reports and analyses of the data downloaded into a PC.
The user can create tables and graphs, revise data on different time bases and aggregate measurements. Gidas Viewer is based on a SQL database thereby ensuring grate safety and reliability, including instruments for data backup and recovery. Gidas Viewer SQL database can be installed on a local PC or on a network and is also accessible to other programs to develop custom applications via web as well.

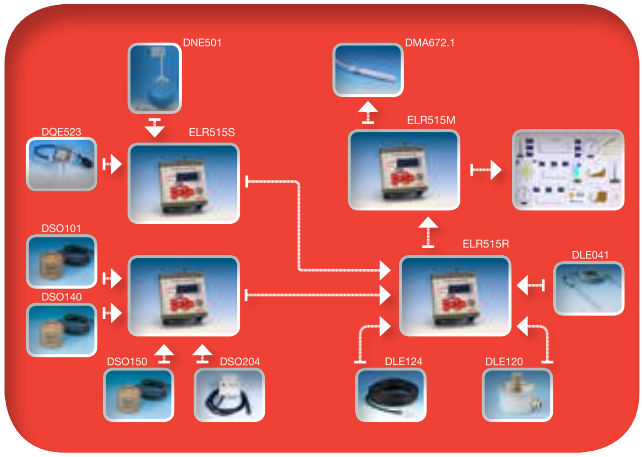
BSZ410 XPanel
XPanel displays dynamically in real time the data coming from R-Log MASTER. It includes a communication module to receive instant data and, if required, transmit them to other computers to obtain information panels on several locations of the network.





Kit 1.0 Network of thermo-hygrometric wireless-connected to R-Log MASTER data loggers.

The number of sensors depends on the number of required measurement points.
This kit presents a solution consisting in:
- 1 Wireless thermo-hygrometric sensor (dew point calculation)
- R-Log MASTER Data Logger
- Data management and on-line data display Software
- 1 Repeater to increase the range of radio signals



Kit 1.1 Network of R-Log SLAVE and R-Log REPEATER wireless connected to R-Log MASTER.

Each R-Log unit can be connected to 4 analogueoutput sensors and 1 vane anemometer. The configuration is based on the parameters to be acquired and on the number of measurement points. This kit presents a solution consisting in:
- R-Log MASTER Data Logger with connected thermo-hygrometric air probe.
- Data management and on-line data display Software
- 1 R-Log REPEATER module with three temperature probes: air, contact, materials
- 1 R-Log SLAVE module with anemometer and differential pressure probes
- 1 R-Log SALVE module with 4 gas probes: CO, CO2, O2, VOC.

Code	Description	KIT 1.0	KIT 1.1
	Acquisition wireless R-Log MASTER module		
ELR515M	R-Log-MASTER Data Logger, 5 inputs. Cable and wireless connection to probes	●	●
DMA672.1	Cable-connected thermo-hygrometric probe. Cable L = 3 m		●
BSC015	220 Vac power supply unit	● Note 4	●
	Wireless Repeater		
EZB321.1	Radio signals Repeater	● Note 1	
BSC015	220 Vac power supply unit	● Note 4	
	Wireless Module – Thermo-hygrometer		
ELR200	Wireless thermo-hygrometric probe	● Note 2	
DYA235	Forced ventilation anti-radiation screen for ELR200	● Note 3	
	Wireless R-Log MASTER module- Air temperature sensors		
ELR515R	R-Log-REPEATER Data Logger, 5 inputs. Cable connection to probes		●
BSC015	220 Vac power supply unit		● Note 4

continued

Code	Description	KIT 1.0	KIT 1.1
DLE120	Air temperature sensor		●
DLE124	Contact temperature sensor		●
DLE041	Temperature sensor within materials		●
	Wireless R-Log MASTER module- Anemometric sensor and differential pressure sensor		
ELR515S	R-Log-SLAVE Data Logger, 5 inputs. Cable connection to probes		●
BSC015	220 Vac power supply unit		● Note 4
DNE501	Hot-wire anemometric probe, 0/4÷20 mA output, 0/1÷5 Vcc, 12 Vcc power supply		●
DWA510	Cable L = 10 m		●
DND207	Vane anemometric probe. Cable L = 1 m		Note 5
DQE523	Differential pressure probe, 0÷0,3 hPa field, 4÷20 mA output, 1÷33 Vcc power supply		●
DWA510	Cable L = 10 m		●
	Wireless R-Log MASTER module- Air quality Sensors		
ELR515S	R-Log-SLAVE Data Logger, 5 inputs. Cable connection to probes		●
BSC015	220 Vac power supply unit	● Note 4	●
DSO101#C	CO Sensor, 0÷1000 ppm field, 60÷300 mV output, 12 Vcc power supply. Cable L = 10 m		●
DSO181.1#C	CO2 Sensor, 0÷3000 ppm field, 4÷20 mA output, 12 Vcc power supply.		●
DSO140#C	O2 Sensor, 0÷25% field, 4÷20 mA output, 12 Vcc power supply.		●
DSO150#C	VOCs Sensor, 0÷20 ppm field, 4÷20 mA output, 12 Vcc power supply. Cable L = 10 m		●
	Accessories	Note 6	Note 6
ELO105	Interface module for Modubus output and7 digital outputs		
DEA504	RS232-485 Converter		
DGD010	Relay for ON/OFF actuation of digital outputs		
BVA313	Stand for 4 sensors and 1 R-Log. Wall mount		
	Software		
BSZ311	GIDAS – data management software	●	●
BSZ410	InfoPanel: on-line data display software	●	●

Note 1 Add one or more repeaters to manage obstacles or long distances of radio signals. Each repeater should be constantly powered through BSC015 power supply unit

Note 2 Add the required sensors. Sensors are battery-operated and will have to be recharged every 6-8 months by means of BSC015 power supply unit

Note 3 Accessory anti-radiation screen for the use of ELR200 probe in conditions of strong radiation sources

Note 4 Add required BSC015 power supply units: R-Log MASTER, R-Log REPEATER and EZB321.1, even if they are provided with back-up rechargeable batteries, it is better if they are constantly powered. R-Log SLAVE can be battery operated (rechargeable battery), but its life depends on the consumption of the connected sensors and on the programmed radio transmission rate. ELR200 operates with rechargeable battery.

Note 5 Choose the type of anemometer based on its application: hot-wire anemometers omni-directional measurements in clean air conditions, vane anemometers are more suitable for measurements performed inside ducts also in the presence of dust particles.

Note 6 Choose when it is necessary to obtain a RS485 output with Modbus or TTY protocol. It is also useful to obtain, in addition to the two electric outputs already available on each R-Log module, 7 additional electric outputs to turn on/off external units based on programmable logics.

Data logger and radio receiver/repeater units
Technical features - MODELS

R-Log MASTER radio data Logger

Data logger for environmental monitoring application. It is connected to sensor by cable and via radio to S-Log and to R-Log SLAVE units directly or by means R-Log REPEATER units. It receives instant values from all the networking units and stores them in statistical values form for further process.

Order numb.	**ELR515M**	
Inputs	*Inputs*	N.5 from cabled connection sensors N.55 total channels from SLAVE, REPEATER units and cabled sensors
	Analog	N. 4
	Digital	N. 1
	Type	Terminals
Output	*Digital*	N.2 (extension 2+7 using ELO105 module)
Power supply	*Power supply*	8-14 Vcc
	Battery	2 A (4,2 V) Lithium rechargeable
Radio	*Function*	Receive measurement from SLAVE and REPEATER units
	Type	ZigBee
	Frequency	ISM 2.4 GHz direct sequence channels
	Power	10 mW (+10 dBm)
General information	*Memory*	2 Mb.Flash
	Display	For instant values and diagnostic
	Data output protocols	LSI LASTEM property Modbus and TTY using ELO105 additional module
	Serial port	N.1 RS232
	Inner calculation	Read MW9001 (Data Logger data sheet)

R-Log Data Logger radio SLAVE

It is wired to sensors, and send radio signals to the MASTER unit.Distance between SLAVE and MASTER unit is 300 m (line of sights), lower in case of obstables, in that cases it is usefull to add some REPEATER units between the units.

Order numb.	ELO510S	
Inputs	*Analogue*	N.4
	Digital	N.1
	Type	Terminals
Power supply	*Power supply*	8-14 Vdc
	Battery	2 A (4,2 V) Lithium rechargeable
Radio	*Function*	Send values to MASTER unit.
	Type	ZigBee
	Frequency	ISM 2.4 GHz direct sequence channels
	Power	10 mW (+10 dBm)
General information	*Memory*	2 Mb Flash
	Display	For instant values and diagnostic
	Inner calculation	Read MW9001 (Data Logger data sheet)

R-Log Data Logger radio REPEATER

It is wired to sensors, receive&repeat radio signals from SLAVE and S-Log units end send all the signals to the MASTER unit. It is usefull when the radio signal coverage is not enought to cover di distance between SLAVE and MASTER units.

Order numb.	ELO515R	
Inputs	*Analogue*	N.4
	Digital	N.1
	Type	Terminals
Power supply	*Power supply*	8-14 Vdc
	Battery	2 A (4,2 V) Lithium rechargeable
Radio	*Function*	Receive measurements from SLAVE and REPEATER units and send them to MASTER unit
	Type	ZigBee
	Frequency	ISM 2.4 GHz direct sequence channels
	Power	10 mW (+10 dBm)
General information	*Memory*	2 Mb Flash
	Display	For instant values and diagnostic
	Inner calculation	Read MW9001 (Data Logger data sheet)

Radio repeater

Ideal to increase the range of transmission between SLAVE and MASTER units. Nominal range is 500 m (line-of-sight). If you are experiencing signal loss due to distances and/or obstacles (like walls), you can add one or more (up to 12) repeaters. Inside buildings, we recommend the installation of repeaters when the distance between SLAVE and MASTER units exceeds 20-40 m. EZB321.1 requires connection to the main power supply for his operation using BSC015 power supply unit.

Order numb.	**EZB321.1**	
Radio	*Function*	Receive measurements from SLAVE and REPEATER units and send them to MASTER unit
	Type	ZigBee
	Frequency	ISM 2.4 GHz direct sequence channels
	Power	10 mW (+10 dBm)
Power supply	*Power supply*	8-14 Vdc
	Battery	2 A (4,2 V) Lithium rechargeable

Air temperature sensor (Pt100 output)

Wall mounted waterproof slatted aluminium probe for fix applications in severe environments.

Order numb.	DLE120	
Temperature	*Principle*	Pt100 1/3 DIN B
	Measurig range	Depending by data acquisition system (M/R/E-Log: -50÷125°C)
	Resolution	0,01°C (M/R/ELog)
	Uncertainty	0,10°C (0°C)
	Output	Pt100 DIN-IEC table 751 (EN 60751)
	Response time (T90 air)	5 min. (0,2 m/s air flow)
General information	*Protection type*	IP54
	Operative temperature	-50÷80°C
	Connection	Free wires (4 wires)
	Cable	MN1025 (not included
	Data logger compatibilty	M-Log (ELO007-008), R-Log (ELR515) E-Log (all models)

Surface temperature sensor (Pt100 output)

Plate made sensor for surface temperature measurements

Order numb.	DLE124	
Temperature	*Principio*	Pt100 1/2 DIN A
	Measuring range	Depending by data acquisition system (M/R/E-Log: -50÷125°C)
	Resolution	0,01°C (M/R/ELog)
	Uncertainty	0,15°C (0°C)
	Output	Pt100 DIN-IEC 751 table (EN 60751)
	Risolution	0,01°C
	Response time (T90)	35 s.
General information	*Protection*	IP54
	Power consumption	None
	Operative temperature	-30÷70°C
	Connector	Free wires (4 wires)
	Cable	L = 20 m
	Data logger compatibiility	M-Log (ELO007-008), R-Log (ELR515) E-Log (all models)

Water and solids temperature sensor (Pt100 output)

Pt100 (1/2 DIN Class A) sensor for temperature inside materials or liquids measurements. AISI304 stainless steel made, waterproof.

Order numb.	DLE041	
Temperature	*Principle*	Pt100 1/2 DIN A
	Measuring range	Depending by data acquisition system (M/R/E-Log: -50÷125°C)
	Resolution	0,01°C (M/R/ELog)
	Uncertainty	0,15°C (0°C)
	Output	Pt100 DIN-IEC table751 (EN 60751)
	Responde time (T90 H2O)	45 s.
General information	*Protection*	IP66
	Power consumption	None
	Operative temperature	-40÷80°C
	Cable	L = 10 m
	Connector	Free wires (4 wires)
	Data logger compatibility	M-Log (ELO007-008), R-Log (ELR515) E-Log (all modelsi)

Thermohygrometer (direct output)

Air temperature and RH% sensor with Pt100 output for temperature and 0-1 Vdc output for RH%.
It is precise and reliable sensor, suitable for a continuous measurement even in severe environments, in presence of deep thermal and hygrometric ranges.

Order numb.	**DMA672.1**	
Temperature	*Principle*	Pt100 1/3 DIN B
	Measuring range	Depending by data acquisition system (M/R/E-Log: -50÷125°C)
	Resolution	0,01°C (M/R/ELog)
	Uncertainty	0,1°C (0°C)
	Output	Pt100 DIN-IEC 751 table (EN 60751)
	Response time	3 min. using protection, 20 sec. without protection (0,2 m/s air flow)
Relative humidity	*Principle*	Capacitive
	Measuring range	0÷100%
	Uncertainty	±1,5% RH (5÷95%)
	Output	0÷1 Vdc
	Response time	10 min. using protection, 1 min. without protection (0,2 m/s air flow)
General information	*Power supply*	6÷18 Vdc
	Connector	Free wires
	Data logger compatibility	M-Log (ELO008) R-Log (ELR515)
	Cable	L = 3 m
	Protection	IP54
	Operative Temperature	-40÷80°C

Thermohygrometer (analog output)

Sensor for measuring air temperature and relative humidity inside pipes or air conduict.

Order numb.	DME775 - DME785	
Temperature	*Principle*	Pt100 1/3 DIN B
	Measuring range	Programmable: -30÷70°C, -50÷50°C, -50÷100°C, 0÷100°C
	Uncertainty	0,2°C (0°C)
	Resolution	0,04°C
	Response time (T90)	3 min. with protection, 20 s. without protection (air flow 0,2 m/s)
Relative humidity	*Principle*	Capacitive
	Measuring range	0÷100%
	Uncertainty	±1,5% RH (5÷95%)
	Response time (T90)	10 min. with filter, 1 min.without filter (0,2 m/s air flowa)
General information	*Power supply*	DME775: 12 Vdc DME785:24 Vac
	Connector	7 pin IP65 watertight connector
	Protection	IP54
	Operative temperature	-40÷80°C
	Protections	Tranzorb and Emifilters
	Programmable output	0/4÷20 mA, 0/1÷5 V
	Power consumption	1 W
	Sensitive element	ML3021 replaceable

Thermohygrometric sensor (radio)

Wireless sensor for measuring temperature (PT100 ½ DIN type) and Relative Humidity (plus Dew Point calculation). This is the ideal solution to save physical inputs on R-Logs, using radio communication with "Master" units.
ELR200 can be equipped with a forced ventilation radiant screen (DYA235) useful in high radiant and low air flow measurement conditions.This is also a very light solution to implement networks of thermohygrometric sensors for on-line monitor either by sending data via radio to a R-Log MASTER data logger, where they are stored, or connected to a receiver (EZB311-312) for the management of data directly on a PC.

Order numb.	**ELR200**	
Temperature	*Principle*	Pt100 1/2 DIN A
	Measuring range	-20÷60°C
	Uncertainty	0,5°C (5÷45°C)
	Resolution	0,01°C
	Response time (T90 air)	30 s. (0,2 m/s air flow)
Relative humidity	*Measuring range*	0-100%
	Uncertainty	±2% RH (5÷95%)
	Resolution	0,01°C
	Response time (T90 air)	8 s.
Radio	*Use*	Send values to MASTER unit
	Type	ZigBee
	Frequency	ISM 2.4 GHz direct sequence channels
	Power	10 mW (+10 dBm)
General information	*Memory*	Flash di 2 Mb (backup)
	Output (programmable)	Inst., Min, Max, Media, Dev.Standard values
	Power supply	8÷14 Vdc
	Power consumption	4 mW
	Battery	2 A (4,2 V) Lithium rechargeable
	Protection type	IP54
	Operative temperature	-20÷60°C
	Local calcultation	Dew Point
	Mounting	Surfaces or BVA311-313 stands

Fan anemometer

Fan anemometric probe for measuring directional flows in inlets and environments.

Order numb.	DND207	
Anemometer	*Principle*	Tachimeter
	Measuring range	0.5÷20 m/s
	Uncertainty	1% FS, 3% reading
	Output	Hz
	Resolution	0,1 m/s
	Fan diameter	11 mm
General information	*E/M/R-Log input type*	N.1 digital
	Protection	IP54
	Operative temperature	-10÷80°C
	Cable	L = 1 m free wires
	E/M/R-Log derived quantities obtained	Air flow, N.air changes
	Data logger compatibility	M-Log (ELO007-008) R-Log (ELR515) E-Log (all models)

Accessories	Order numb.	
	DZC401.S	Calibration certificate. ISO9000 type
	**DEA207**	Converter for analog signal from DND207 sensor Output: 4÷20 mA Power supply: 12 Vdc

Hot wire anemometer for fix applications

Probe for measuring air speed even at low speeds, in ducts, at duct outlets and in rooms. It can be mounted on the walls of the duct by means of a sliding flange or a sliding screwed fitting. The analog output and range are selectable. Version with 12 Vdc or 24 Vac power supply are available.

Order numb.	DNE501 - DNE506	
Air speed	*Principle*	Directional hot wire
	Measuring range	0÷5 m/s, 0÷20 m/s selectable
	Uncertainty	0÷0,5 m/s: ND 0,5÷1 m/s: ±0,15 m/s 1÷20 m/s: 4% reading
	Response time	0,01 sec
General information	*Output*	0/4÷20 mA, 0/1÷5 Vdc selectable
	Power supply	DNE501: 24 Vac DNE506: 12 Vdc
	Installation	On pipe wall using CLO305 or CLO299 flange
	Protection type	IP54
	Power consumption	90 mA
	Operative limits	+10÷+30°C, < 300 m sl altitude
	Cable	Not included. DWAxxx model
	Connector	IP65 watertight 7 pins connector
	Weight	740 gr

Differential pressure sensor for fix applications

Fix applications differential pressure probe for air and non-ionic and non-corrosive gas.

Order numb.	DQE521	DQE522	DQE523	DQE524	DQE525
Measuring range	0÷3 hPa	0÷50 hPa	0÷0,3 hPa	0÷16 hPa	0÷25 hPa
Resolution	0,01 hPa	0,02 hPa	0,001 hPa	0,01 hPa	0,01 hPa
Output	4-20 mA				
Cable + connector	L = 0,5 m with IP65 7 pin connector for DWAxxx cables				
Datalogger compatibility	M-Log (ELO007-008), R-Log (ELR515), E-Log (all models)				

Common features

Pressure	*Principle*	Piezoelectric
	Uncertainty	2% FS (20°C)
	Thermal drift	0,1 hPa/°C
General information	*Output*	4-20 mA
	Power supply	8-33 Vdc
	Power consumption	20 mA
	Zero calibration	Using external trimmer
	Overload	Max 1 Bar
	Operative limit	-10÷50°C, gas non ionici e non corrosivi
	Silicon tubes	N.2 tubes L = 2 m inclusi
	Input type on E/M/R-Log	N.1 analogic
	E/M/R-Log derived quantities obtained	Air speed using Pitot tubes

Accessories

Order numb.	
DZC006.S	Calibration certificate ISO9000 type
BSE010	Pitot tube: L=1000 mm, Ø 8 mm, H.200 mm Threshold: 3 m/s Range: 0-2,54 hPa = 3÷20 m/s 0÷12,5 hPa = 3÷50 m/s
BSE006	Pitot tube L = 500 mm, Ø 7 mm, H 65 mm Other features as BSE010
BSE004	Pitot tube L = 350 mm, Ø 7 mm, H 65 mm Other features as BSE010
DZC006.S	Calibration certificate ISO9000 type
DWA510	Cable L = 10 m for DQE52x sensors
DWA525	Cable L = 25 m for DQE52x sensors
DWA526	Cable L = 50 m for DQE52x sensors
DWA527	Cable L = 100 m for DQE5xx.1 sensors

CO gas sensor

Sensor for measuring Carbon Monoxide in indoor applications.

Order numb.	DSO102#C	
CO sensor	*Principle*	Electrochemical cell
	Measuring range	0÷1.000 ppm
	Detectable threshold	1 ppm
	Repeatibility (% reading)	1%
	Resolution	0,5 ppm
	Operative temperature	-20÷50°C
	Drift signal loss / month	<5% year
	Temp.coeff. (%signal/°C)	<+0,4
	Typical baseline range in pure air	-1÷3 ppm
	Max zero shift (+20+40°C)	9 ppm
	Response time (T90)	30 sec
	Sensor life	3 years
General information	*Output*	4÷20 mA
	Power supply	12 Vdc
	Power consumption	10 mA
	Mounting	On BVA311-313 stands
	Calibration certificate	DZC501.S included
	Cable + Connector	L = 10 m free wires
	Compatibilità data logger	M-Log (ELO007-008) R-Log (ELR515) E-Log (all models)

O2 gas sensor

Sensor for measuring Oxygen in indoor applications.

Order numb.	DSO140#C	
O2 Sensor	*Principle*	Electrochemical cell
	Measuring range	0÷25%
	Detectable threshold	1%
	Resolution	0,1%
	Operative temperature	-20÷50°C
	Drift signal loss / month	<5% year
	Temp.coeff. (%signal/°C)	<+0,2
	Response time (T90)	15 s
	Sensor life	2 years
General information	*Output*	4÷20 mA
	Power supply	12 Vdc
	Power consumption	10 mA
	Mounting	On BVA311-313 stands
	Calibration certificate	DZC501.S included
	Cable + Connector	L = 10 m free wires
	Data logger compatibility	M-Log (ELO007-008) R-Log (ELR515) E-Log (all models)

VOCs gas sensor

Sensor for measuring Volatile organic compounds.

Order numb.	DSO150#C	
VOCs Sensor	*Principle*	PID
	Range	0÷20 ppm
	Uncertainty	3% range
	Resolution	0,01 ppm Isobutylene response
	Operative temperature	-40÷40°C
	Threshold	<0,01 ppm
	Humidity response	<1 ppm at 90RH%
	Sensor life	1 year
General information	*Power supply*	12 Vdc
	Power consumption	30 mA
	Output	60÷300 mV
	Cable	L = 10 m free wires
	Mounting	On BVA311-313 stands
	Output	60÷300 mV
	Calibration certificate	DZC501.S included
	Data logger compatibility	M-Log (ELO009), R-Log (ELR510)

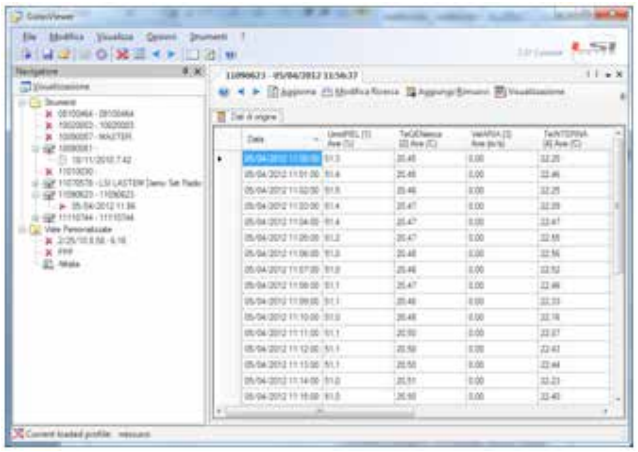
CO2 gas sensor

Sensor for measuring Carbon dioxide. This sensor uses infrared absorption cell methode.

Order numb.	DSO204#C	
CO2 Sensor	*Measurement range*	0÷5000 ppm
	Principle	Infrared absorption cell (NDIR)
	Uncertainty (25°C, 1013 hPa)	± (50 ppm +3% reading value)
	Resolution	1 ppm
	Response time (t90)	< 195 sec
	Temperature dependence	2 ppm CO2/°C (0÷50°C)
	Long term stability	20 ppm / year
	Environmental limits	-20÷60°C, 5÷95UR% (without condensation)
	Measurement	CO2
	Output	4÷20 mA
	Cable + Connector	Connector IP65 for DWAxxx cable
	Power supply	10÷30 Vca/Vcc
	Power consumption	4 mA

SQL-GIDAS VIEWER (BSZ311)

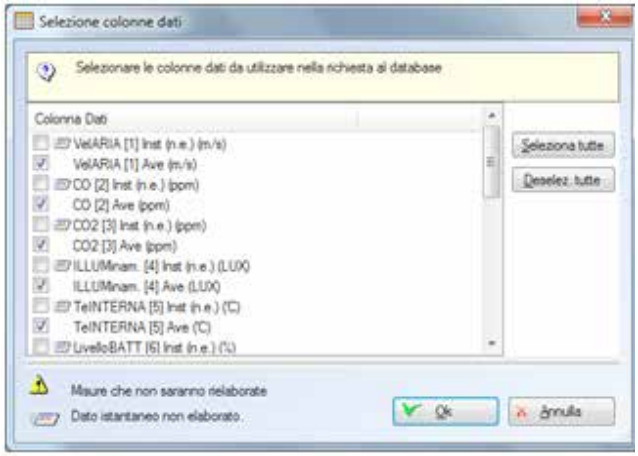
Gidas Viewer is a post-processing solution that allows for data display, management and analysis of the data downloaded by 3DOM and CommNET programs. The user can access data in various tabular and chart form (including Wind Roses), process data using different time bases, joint together data and instruments. Gidas Viewer is based on a powerful SQL Database for better data security and management, including tools for data backup and storage.
Gidas Viewer SQL database can be installed locally or in PC networks and it is also accessible from third-party software for custom-made software applications and web data display.



Main

- Instrument browser, including all data loggers and surveys for easy data selection;
- Selection of one or more time base for displaying statistical data;
- Reports (table and charts) with measurement selection;
- Wind rose option for wind analysis (including Weibull analysis);
- Export data to ASCII table and Excel;
- Fast data query recall for easy reports update using fresh data.

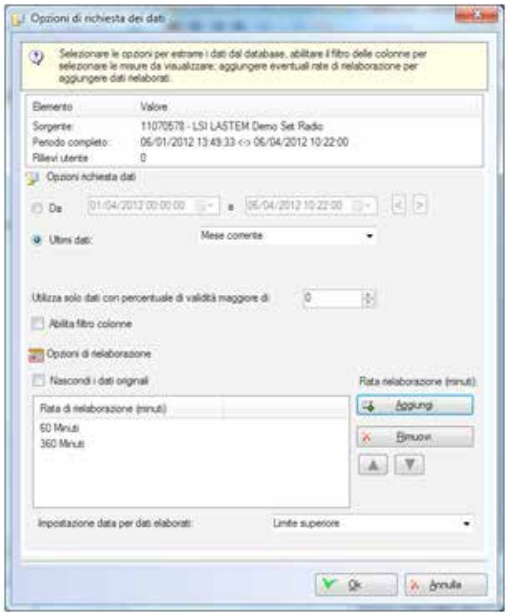
interface - **Gidas viewer**



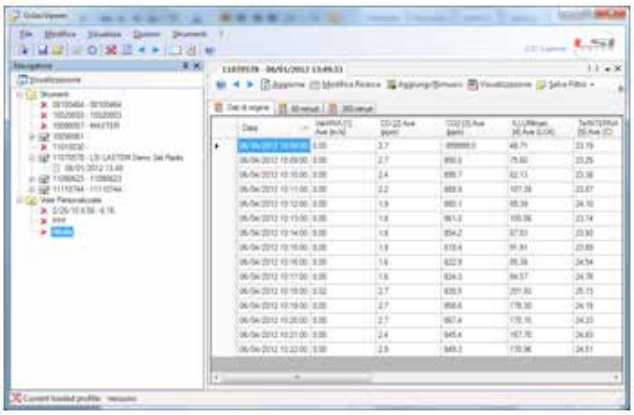
Data selection

- Data selection by date;
- Selection of one or more elaboration time base;
- Selection of measurements to be placed inside the report.

interface - **Data selection**



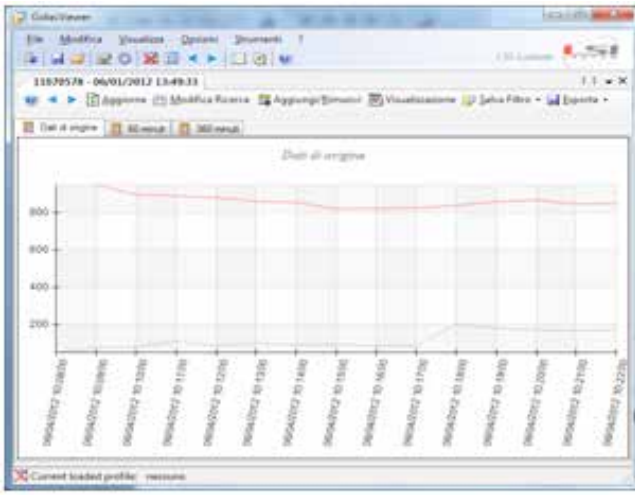
interface - **Data selection**



Data reports

- Table of the selected data;
- Charts: zoom scroll;
- Export: ASCII ed Excel.

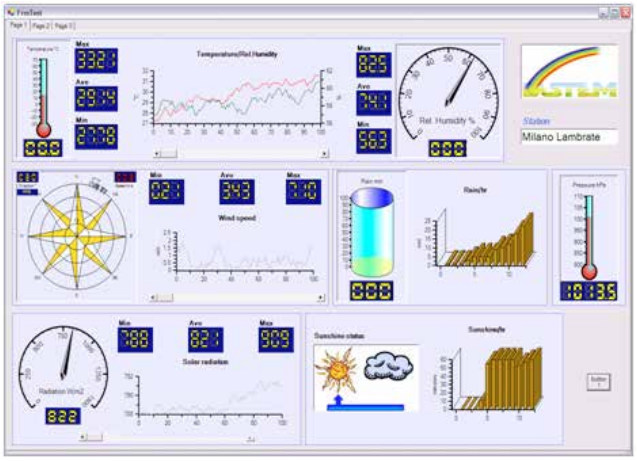
interface - **Data report**



interface - **Data report**

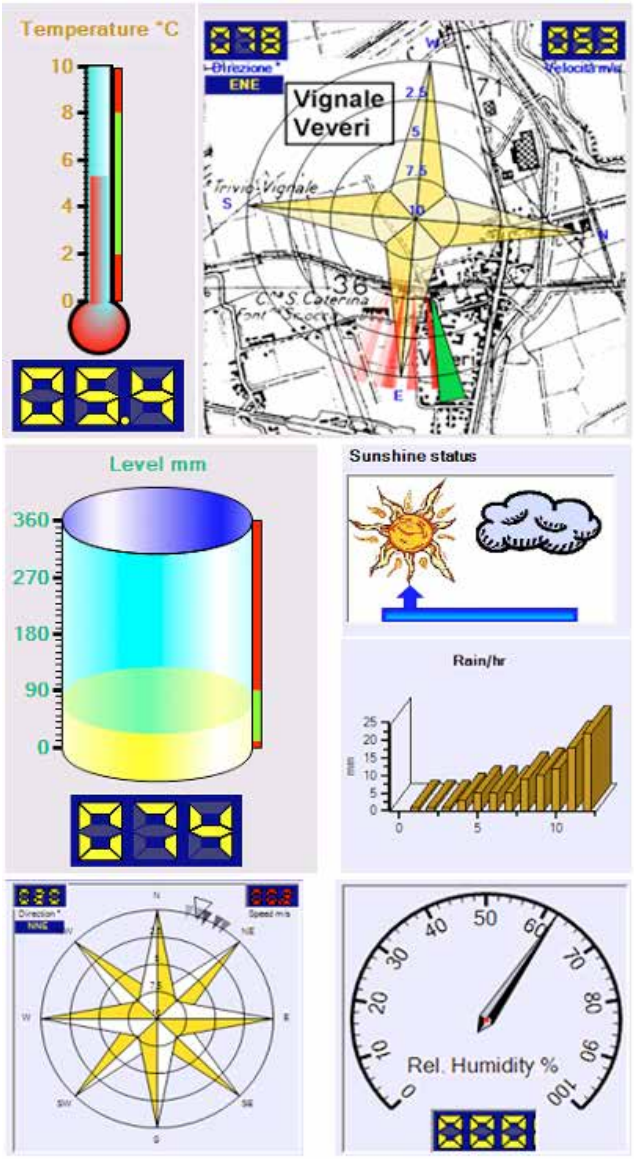
XPanel (BSZ410)

XPanel is a dashboard of the dynamic data for LSI Lastem data-loggers. XPanel includes a communication module for data exchange and update and a display module to create real-time dashboards on one or several PC of the network.



Main

- Digital and numerical controls referred to every measurement, Including dynamic wind rose;
- Real-time charts of the last “n” instant values;
- Alarms features;
- Running over many PC of the network using same data base;
- Auto-change multi-page.



Controls

- Instant values controls;
- Wind rose with background map;
- Single or double charts with scrolling feature;
- Visual alarm setup.

Reference List

Equipment for controlled atmosphere environments monitoring

Some of the clients that have chosen our systems for the monitoring of controlled air environments.

Italy:

-**Consulsud Srl** - Napoli
-**Revi Srl** - Lecce
-**Bio Ing Ferraioli Armando** - Cava De' Tirreni (Sa)
-**Asl Avellino** - Avellino
-**Asl Benevento** - Benevento
-**Medical Farma** - Crotone
-**Co Di Me Spa** - Napoli
-**Steril Spa** - Lecce
-**Studio Chimico Angelo D'agata** - Campobasso
-**Italsistemi Srl** - Crotone
-**Arethusa Srl** - Casoria (NA)
-**Lavoro Salute E Ambiente** - Manfredonia
-**Global Siam** - Manfredonia
-**Studio Consalvo** - Foggia
-**Unibas Dip. Architetura Fisica Tecnica** - Matera
-**Studio Thema Srl** - Napoli
-**Sologea Srl** - Caserta
-**Roas Srl** - Pagani (SA)
-**Edf Fenice Spa** - Pomigliano D'arco (Na)
-**Sun Medicina Preventiva** - Napoli
-**Dr. Morrongiello Marco** - Avellino
-**Geoproject Srl** - Napoli

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