LPDL – Multichannel Low Power Dataloggers (Rev.3 280923)

General description

LPDL dataloggers are data acquisition systems, entirely designed and built by Geoves, for monitoring environmental, meteorological, hydrological, industrial parameters

Thanks to their low consumption, they can be used in sites where the power supply is not present, such as in the open countryside or in the high mountains.

The LPDL dataloggers have different analog and digital input channels therefore they can easily interface with sensors with analog output in current or voltage, or with digital output in frequency, pulse, on / off or with serial output.

The data is displayed on an LCD display to allow you to check the measurements both during installation and maintenance and for simple functional checks. Multifunction buttons allow you to configure the main operating parameters of the data logger and to activate diagnostic functions.

The data are stored in CSV text format on an SD Card memory and are then transmitted wirelessly via GPRS on a protected FTP area or wired (via cable) RS232, RS485 or LAN.

Main applications and configurations of the data logger

The data loggers of the "LPDL" series, depending on the type of application in which they are used, can be customized both in hardware and software to obtain various configurations that meet different environmental monitoring and alarm needs. Below are the general technical data underline common to all models and therefore the specific characteristics of each individual configuration:

General technical data (common to all configurations)

Base model	LPDL
Date clock	Inside on board RTC; automatic update with GPRS link (if present) on NTP server
Sampling rate	2s
Data storage	Programmable 5-10-15-30-60' (1' or other on request) on 2GB SD Card with circular data management (500 days)
Communication ports	n.1 RS232 n.1 switched serial port n.1 I2C port
Data transmission	Wireless: GSM/GPRS via FTP (via e-mail on request) Wired: RS232, RS485, LAN 10/100Mbit with free software Geodesk for data download Programmable 5-10-15-30-60' (1' or other on request)
Local HMI	n.3 multifunction keys 2r. 16 crt. display LCD with sliding pages
Working temperature	-40...+80°C
Power	10...14.4Vdc (typical 12Vdc) On-board battery charger, input from photovoltaic panel, with battery monitoring (deactivation of the load <10,5Vdc, restart >12Vdc)
Consumption	<10mA@12Vdc
Protection	IP20 (for indoor)
Mounting	DIN bar
Dimensions (Lxhxp)	105x110x55mm
Sensor connection	removable terminals with screw contacts
Conformity	WMO, IEC60904, D.Lgs.36/2003

ACCESSORIES		
Photovoltaic panel power supply	}	n.1 20W Photovoltaic panel (or 30W), Vnom. 12Vdc, Vmax 21Vdc@1000W/m^2 @ 25°C
	}	n.1 12Vdc/12Ah (or 7, 18Ah) backup sealed battery
Mains (220Vac) power supply	}	n.1 2A sectionalising switch
	}	n.1 12Vdc/2Ah backup sealed battery
	}	n.1 power supply unit with integrated battery charger; IN:220Vac / OUT:12Vdc@2A

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Enclosures	1. IP65 enclosure, in polycarbonate with anti-radiation treatment, key enclosure, crossarms for fastening on poles (ø50…150mm) or on walls. <u>Dimensions (Lxhxp)</u> *Box1:* Box1: 270x305x170mm, *Box2:* 325x430x185mm, *Box3:* 435x505x215mm. 2. IP65 plastic box, transparent lid with screws closure, brackets for wall fastening. <u>Dimensions (Lxhxp)</u>: 240x190x90mm 3. IP65 plastic box with anti-radiation treatment, lid with screw closure, bracket for pole fixing (ø50…150mm). Dimensions (Lxhxp): 240x190x100mm 4. 19" standard rack
	❶ ❷ ❸ ❹
	Expa8 Expansion with n.8 4…20mA or 0…5Vdc analog channels. Din bar mounting
	Int-ISS Interface for wired ISS sensors mod. Davis for connection to LPDL datalogger
	ISO420-I Interface with n.1 0-4…20mA/0-4…20mA analog channel with galvanic insulation. DIN bar mounting **ISO420-V** Interface with n.1 0-4…20mA/0-1…5Vdc analog channel with galvanic insulation. DIN bar mounting
	ISODIG Interface with 2 digital channel (frequency, pulses) with galvanic insulation. DIN bar mounting

Technical data of the datalogger configuration for METEOROLOGICAL, ENVIRONMENTAL and the WATER QUALITY monitoring stations

Configuration name	*MicroMET3*
I/O channels	**8 analog inputs** (+ 8 optionnals on Expa8 interface) for meteorological sensors such as pyranometers, hydrometers, thermometers, barometers or chemical sensors **2 insulated digital inputs (pulse counter)** for sensors with "high" frequency up to 50KHz (anemometers, flow gauges, ecc…) and with "low" frequency output (rain gauges), sensors that requires the time counting (sunshine duration, leaf wetness,…), on/off signal (free-contacts) **1 diagnostic input** for battery voltage **1 serial input** for smart sensors connection (**n.1 multiparametric probe** mod. SMx for water analysis)
Data elaborations	Min, max (gust), arithmetic average, standard deviation, turbulence; trigonometric average; sum; diagnostic measure for battery voltage. Calculable measurements (if the weather sensors that allow the calculation are present): Evapotranspiration Et0, TD Dew point temperature, TWB wet bulb temperature
Alarm management	ʃ **Locally**: NO ʃ **Remotely**: By using MeteoGraph web software (with GPRS-FTP data transmission)
Average autonomy of a weather station with 7 measures	ʃ **15days**: with 12Vdc/12Ah battery, 20W photov. panel, storage: 5' transmission: 60' ʃ **25days**: with 12Vdc/18Ah battery, 30W photov. panel, storage: 5' transmission: 60'
Typical applications	Meteorological stations, Weather-climatic monitoring of dams, Landfill monitoring, Agriculture, Plants with biofilters, Photovoltaic plants, monitoring of ground and surface water quality, monitoring of industrial plants and power plants, monitoring of roads and railway networks

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Technical data of the datalogger configuration for WATER QUALITY monitoring stations up to 3 connected multiparametric probes

Configuration name	*LPDL-3SMP7*
I/O channels	**1 diagnostic input** for battery voltage
	1 serial input for the connection of max **3 multiparametric probes** mod. SMx for water analysis
Data elaborations	arithmetic average, sum, diagnostic measure for battery voltage
Alarm management	**Locally**: NO
	Remotely: By using MeteoGraph web software (with GPRS-FTP data transmission)
Average autonomy of a monitoring station with 3 multiparametric probes	**>8days**: with 12Vdc/12Ah battery, 20W photov. panel, storage: 5' transmission: 60'
	>12days: with 12Vdc/18Ah battery, 30W photov. panel, storage: 5' transmission: 60'
Typical applications	Dam monitoring, dumps, quality of groundwater and surface water

Technical data of the datalogger configuration for LEVEL MONITORING AND ALARM

Configuration name	*MicroHYD3 (for n.1 hydrometric or snow level sensor)*
I/O channels	**4 analog inputs** for n.1 hydrometric sensor, n.3 inputs for other measures (meteorological, geotechnical, etc…)
	2 insulated digital inputs (pulse counter) for sensors with "low" frequency output (rain gauges) and sensors that require the time counting (sunshine duration, leaf wetness,…), on/off signals (free-contacts)
	2 insulated digital outputs for power supply/command outdoor relais
	1 diagnostic input for battery voltage
Data elaborations	arithmetic average, sum, diagnostic measure for battery voltage
Alarm management	**Locally**: via SMS and by command of 2 relais (pre-alarm and alarm) with double contact; change of storage/transmission rate every 5'
	Remotely: By using MeteoGraph web software (with GPRS-FTP data transmission)
Average autonomy of a hydrometric station with n.1 no contact sensor	**20days**: with 12Vdc/12Ah battery, 20W photov. panel, storage: 15' transmission: 60'
	30-35days: with 12Vdc/18Ah battery, 30W photov. panel, storage: 15' transmission: 60'
Typical applications	Watercourse monitoring for flood warning (road construction sites, road or railway line monitoring, population alert, hydrological studies, civil protection) or minimum vitality (hydroelectric power plants, regional environmental protection agencies, reclamation consortia, basin authorities) ; snow level monitoring and warning

Configuration name	*MicroHYD3-2L (for n.2 hydrometric sensors)*
I/O channels	**4 analog inputs** for n.2 hydrometric sensors, n.2 inputs for other measures (meteorological, geotechnical, etc…)
	2 insulated digital inputs (pulse counter) for sensors with "low" frequency output (rain gauges) and sensors that require the time counting (sunshine duration, leaf wetness,…), on/off signals (free-contacts)
	2 insulated digital outputs for power supply/command outdoor relais
	1 diagnostic input for battery voltage
Data elaborations	arithmetic average, sum, diagnostic measure for battery voltage
Alarm management	**Locally**: via SMS and by command of 2 relais (pre-alarm and alarm) with double contact; change of storage/transmission rate every 5'
	Remotely: By using MeteoGraph web software (with GPRS-FTP data transmission)
Average autonomy of a hydrometric station with n.2 no contact sensors	**15days**: with 12Vdc/12Ah battery, 20W photov. panel, storage: 15' transmission: 60'
	20-30days: with 12Vdc/18Ah battery, 30W photov. panel, storage: 15' transmission: 60'
Typical applications	Watercourse monitoring for flood warning or minimum vitality

Technical data of the datalogger configuration for METEOROLOGICAL and ENVIRONMENTAL MONITORING and ALARM stations

Configuration name	*Butterfly*
I/O channels	**8 analog inputs** for meteorological sensors such as pyranometers, hydrometers, thermometers, barometers or chemical sensors
	2 insulated digital inputs (pulse counter) for sensors with "high" frequency up to 50KHz (anemometers, flow

	gauges, ecc…) and with "low" frequency output (rain gauges), sensors that requires the time counting (sunshine duration, leaf wetness,…), on/off signal (free-contacts) **1 diagnostic input** for battery voltage
Data elaborations	Min, max (gust), arithmetic average, standard deviation, turbulence; trigonometric average; sum; diagnostic measure for battery voltage. Calculable measurements (if the weather sensors that allow the calculation are present): Evapotranspiration Et0, TD Dew point temperature, TWB wet bulb temperature
Alarm management	) **Locally**: via SMS (pre-alarm and alarm) and by changing of storage/transmission rate every 5') **Remotely:** By using MeteoGraph web software (with GPRS-FTP data transmission)
Average autonomy of a weather station with 7 measures	) **>15days**: with 12Vdc/7Ah battery, 20W photov. panel, storage: 5' transmission: 60') **>30days**: with 12Vdc/18Ah battery, 30W photov. panel, storage: 5' transmission: 60'
Typical applications	Weather alarm stations (rain, high temperature, etc …) and for agriculture, forest fire alarm, fine dust alarm or exceeding air pollution thresholds

Technical data of the datalogger configuration for WIND MONITORING and ALARM stations

Configuration name	*MicroVEN-Alarm*
I/O channels	**1 analog input** for wind direction sensor **1 insulated digital input** for wind speed sensor
Data elaborations	Min, max (gust), arithmetic average, standard deviation, turbulence; trigonometric average; diagnostic data of mains presence
Alarm management	) **Locally**: command of 2 relais (pre-alarm and alarm) with double contact for sirens and signal lamps
Typical applications	Anemometric alarm stations for building and shipyards, cable cars, inflatable structures, cement factories and crushing plants, structures for shows, tents, container depots, cranes, etc …