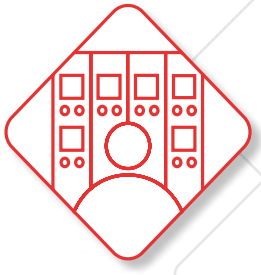
pizzi instruments

Datalogger CUM3000



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Instruments and Systems for Geotechnical and Structural

Datalogger CUM3000

Description

The Data Logger CUM 3000 is entirely developed and manufactured by Pizzi Instruments for applications in geotechnical and structural monitoring.

It can read and acquire data from almost all monitoring instruments available on the market today including vibrating wire, analog (voltage and current), potentiometers and pulse etc.

Among the instruments readable with the Datalogger CUM3000 are also Maihak and Carlson sensors, still present in different structures in Italy and elsewhere. Our Multiplexer, expands the number of channels that can be read by our Datalogger CUM3000.

The CUM3000 can be configured and managed via keyboard and integrated display or remotely via PC using specific Sentinel software. It automatically acquires data from instruments using preconfigured scan sequences, or remotely via manual command for single instrument measurements.

Remote single instrument measurement, via the real-time functions of the Sentinel software, is a particular feature of our data logger and is useful for the real-time monitoring of some remote sensors.

The parameters of each sensor connected to CUM3000 can be configured and stored directly in the data logger allowing communication of data both in electrical and physical form.

Measurements and configurations are automatically transmitted via modem or other remote communication system, or locally transferred via PC connection or other portable device.

The CUM3000 can function either as a stand-alone unit or connected to the data logger network (multilogger systems).

Depending on the number and type of connected sensors, it can be provided in low consumption configuration with type D power supply batteries.

In automatic monitoring systems the data-logger CUM3000 is usually integrated with the following accessories and components:

- Multiplexers

- 12V Power supply or solar panel
- Overvoltage protection
- Modem for data transmission

Applications

Main applications are:

- **RCC dams, concrete and earthfill dams**
- **Tunnels**
- **Bridges and viaducts**
- **Railway and road embankments**
- **Walls and diaphragm walls**
- **Monuments**
- **Residential and historical buildings**
- **Archaeological structures**
- **Mines and excavations**
- **Underground works**
- **Landslides**
- **Others**

In addition:

- **Structural monitoring**
- **Geotechnical monitoring**
- **Load test on piles**
- **Laboratory tests**

Any application where analog, vibrating wire or digital sensors (with known protocol), are requested.

Caratteristiche e benefici

- **Fully developed and produced by our company in Florence**
- **Flexibility in configuration**
- **Easy to use**
- **Stand-alone or network multilogger**
- **Management and reading of all geotechnical and structural monitoring instruments**
- **Robust and compact**
- **Low consumption and standby functions**
- **Functioning test for connected sensors**
- **Possibility to manage and configure both locally and remotely**
- **Possibility of implementing measurements in both automatic and manually from remote**
- **Local and remote alarm**
- **Individual configuration and settings for each datalogger sensor**
- **Return of engineered data**
- **Watchdog functions and self-diagnosis**

Operation

Our experience in the design and construction of vibrating wire instruments has enabled us to design and create the datalogger CUM3000, characterized by the most actual electronic components available today combined with tested and reliable measurement methods.

The unit uses high-resistance components, meeting the security requirements of the most important institutions, such as testing for electromagnetic compatibility required by ENEL.

The data logger is designed to ensure maximum reliability and durability in harsh environments and difficult conditions such as those found in the monitoring of dams.

Protection to the entrance of signals (input signals), and power source, and multiplexers with relay in a nitrogen environment, ensure hardware settings have maximum security and reliability.

The data logger is configured and managed through both the display and integrated keypad or through the configuration function of the Sentinel monitoring software suite.

It can be configured for automatic acquisitions with adjustable frequency or perform precise measurements with both local commands from the keyboard and remotely through the application of real-time Sentinel software.

The parameters of each sensor connected to CUM3000 can be configured and stored directly in the data logger enabling the communication of measurements in electrical format and physical units.

The measurements and configurations are automatically transmitted via modem or other remote communication systems or locally transferred through the connection of a PC or other portable device.

The CUM3000 can function either as a stand-alone unit or connected to the data logger network (multilogger systems).

Depending on the number and type of connected sensors, it can be provided in low power configuration power supply batteries mod D.

The CUM3000 is capable of reading almost all instrumentation present today on the geotechnical and structural market, including:

- **Level meters**
- **Automatic coordimeters**
- **Crackmeters**
- **Strain gauges**
- **Piezometers**
- **Meteorogical sensors**
- **Thermometers**
- **Inclinometers**
- **Vibrating wire sensors**
- **Analog sensors**
- **Potentiometric sensors**
- **Sensors and systems with digital output**

HOW THE CUM3000 IS ASSEMBLED IN THE DAC3000 UNIT

Technical specifications

N° of Channels	0 ÷ 128
A/D Converter	24 bit
Type of selector	Relay with 2 or 4 contacts, current of contact 1A, contact resistance < 50mΩ, insulation tension : between contacts and open circuit 1500 Vdc, between contact and coil 2000 Vdc, insulation resistance 1000 MΩ
Memory	15360 measurements
Communication Ports	N° 1 Serial Port of Communication with PC: RS-232 / RS485 / RS422. (1 bit of start, 1 bit of stop, 8 bit of data, no parity, velocity 75 ÷ 19200 baud) Communication Serial Port with sensors (channels MUX): RS-232 / RS485 / RS422. (1 bit of start, 1 bit of stop, 7/8 bit of data, parity E/0, velocity 75 ÷ 19200 baud)
Interval of acquisition	2min. / 5min ./ 20min. / 1hour / 6hours / 8hours / 12hours / 24hours / 48hours / 1week
Clock	Clock Accuracy 1 minute / month
Type of modem	GSM; GPRS; 2G;Satellite;ADSL; Analogic for phone line PSTN; Radio 2,4Ghz; Radio VHF;
Alarms	Adjustable thresholds
Power Supply	12 Vdc
Absorption	5 VA max
Consumption	20 micro Ampere in Stand by and 60 mA in full uses
Chassis	Painted aluminum ; thickness 2mm
Operation temperature	- 40 °C + 85 °C
Umidity	0 ÷ 95% max
Display	Alphanumeric LCD (20 digits x 4 rows), Led backlid
Keyboard	Composed by 6 function keys; momentary button protected by polycarbonate film thickness 175 µm
Input Protection Sensor	Transzorber Overvoltage Protection on relay board for each sensor
Autonomy	At least 6 months with 4 acquisition a day and 24 VW connected sensors
Data Output	In physical units after appropriate programming
Dimensions of chassis	162 mm x 114 mm; h = 85,6 mm

Technical specifications for different type of sensor

Measurable Sensors	Accuracy Measurement	Measuring Range	Resolution
Vibrating Wire (350 ÷ 6000) Hz	0,01% F.S.	350÷6000 Hz	0,01 Hz
Voltage ± 5Vdc	0,003% F.S.	± 5000 mv	0,010 mv
Current 4 ÷ 20 mA	0,02% F.S.	4 ÷ 20 mA	0,762 µA
Potentiometer Magneto Resistive 1 ÷ 10 KΩ	0,001% F.S.	±50%	0,001%
Thermo – resistance PT100	0,06% F.S.	-50 ÷ +99 °C	0,06 °C
Thermo – resistance CU30	0,06% F.S.	-50 ÷ +99 °C	0,06 °C
Pulse counting	1 pulse	0 ÷ 65.536 pulse	1 pulse
Potentiometer Resistive 1KΩ ÷ 10 KΩ	0,001% F.S.	±50%	0,001%
Resistance 0 ÷ 1000 Ω	0,02% F.S.	0,000 ÷ 99,999 Ω	0,001 Ω
Resistive Bridge	0,003% F.S.	±9 mv/V	0,0001 mv/V
NTC	0,06 °C F.S.	-20 ÷ 80 °C	0,06 °C
Vibrating Wire GALILEO (350 ÷ 6000 Hz)	0,01% F.S. ra	350 ÷ 6000 Hz	0,01 Hz
Vibrating Wire Maihak	0,01% F.S.	350 ÷ 6000 Hz	0,01 Hz
Carlson/C°	0,06% F.S.	-50 ÷ +99,9 °C	0,06 °C
Carlson/Ratio	0,003% F.S.	70 ÷ 130%	0,001%
Carlson/Ohm	0,02% F.S.	20 ÷ 80 ohm	0,001 Ω

Accessories and related products

Multiplexer	Mux 8 canali
Power Supply Module	220 Vac/12 Vdc
Protections	Protections against overvoltages
Solar panel	To be provided according to the system specifications
Data Transmission Module	GSM, GPRS, 2G, Satellite, ADSL, Analogue for phone line PSTN, Radio 2,4 Ghz, Radio VHF
Junction Boxes	Different dimensions and protection degrees
Selection and Measure Box	Measure Box with MUX Cards for automatic selection
Measure Box	Simple Measure Box

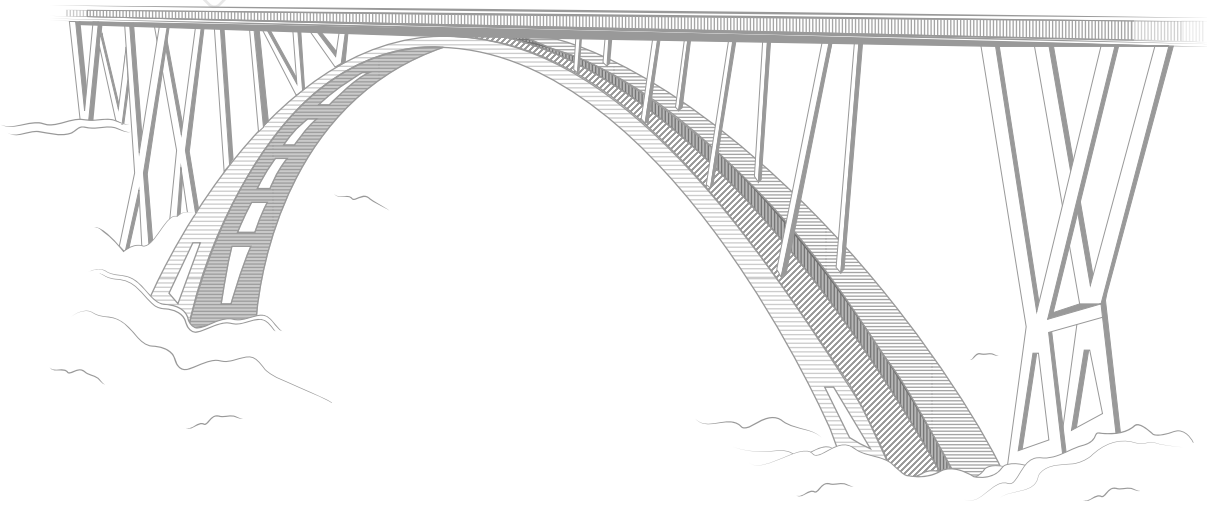
Multiplexer - MUX 8

Number of channels	8
Type of internal relay	2 or 4 contacts
Resistance to insulation a.c.	At least 1000MΩ
Insulation Voltage a.c.	1500V between contacts; 2000V between contacts and coil
Conduction Resistance	Less than 50mΩ
Maximum contact current	1 A
Protections from overvoltages	Protections from overvoltages on transzorber on relay card for each sensor
Power Supply	12 V
Material	Painted aluminum – thickness 2m
Protection Degree	IP 40 (EN60529)
Operation temperature	- 40 to 85 °C
Installation	Connection on a DIN bar

The Company

For more than 40 years we have been designing and producing precision instruments for monitoring large structures sold all over the world.

Accuracy in design, efficiency in construction, reliability in management, these are the prerogatives that every big project must have and that structural monitoring systems must guarantee



Technical assitance

If you have any requests or questions about our instruments or if you have special needs that require different solutions from the standard, please contact us. Our team will provide all the necessary information and will be very happy to work with you to study, develop and customize instruments and solutions suitable for your specific needs.

All data present in the sheets could change without notice.
Please check the release carefully and for more details contact Pizzi Instruments.

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