



WIRELESS MONITORING SYSTEM

Piconode

LS-G6-PICO / 1CH + 1 TH ANALOG NODE

Load, displacement, pressure and temperature are critical parameters in many construction and mining projects.

Load cells are frequently used to monitor the stressing force of ground anchors, prestressing tendons and stay cables. The data gathered from the monitoring of the load cells can be used to verify the project design, plan the maintenance or decide on the implementation of additional protective measures to ensure the stability of the site.

Displacement sensors are used to monitor cracks in structures affected by nearby excavations, expansion or contraction of joints, displacements associated with landslides and unstable slopes and projects that require to measure the vertical/lateral displacement during critical activities like lifting, lowering, sliding and underpinning.

Pressure transmitters are installed in civil works, mining or utility infrastructures to monitor water level, ground water pressure, pressure in pipes, level in a tank or silo, pressure in pot bearings, jacking operations.

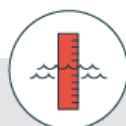
Temperature measurement is required to correlate all the above parameters and is also as a critical parameter in rock fall activation or for concrete maturity monitoring.

The Loadsensing Piconode easily connects load cells, displacement sensors, pressure transmitters and temperature probes to the internet. The Piconode transforms manual and sporadic data collection to a more regular and automatic process making it the most cost-efficient way to capture data from any environment.

The Piconode is capable of gathering data from different sensors and transmitting the data via long-range radio to a gateway connected to the Internet. One gateway can support hundreds of nodes in the same network.

The piconode can also be used as a standalone logger for manual monitoring and can be easily configured and connected with a USB cable and an Android phone.

FEATURES	APPLICATIONS
Two channels: 1 channel configurable + 1 thermistor	Ground anchors surveillance
ANALOG INPUTS	Measurement of axial forces in struts
Full Wheatstone Bridge	Load measurement in bearings and piles
Potentiometer	Crackmeters, extensometers
Ratiometric	Displacement: Deck, joints, heavy-lifting, underpinning
Pulse counter (available upon request)	Pressure: Level sensors, jacking, liquid settlement systems
Thermistor	Water meters, rain gauges (available upon request)
SOFTWARE	Process measurements: Pressure, temperature, displacement, weighing
User-friendly Android configuration app included	ADVANTAGES
Web browser software	High reliability and robustness
Standard CSV download, FTP push and API access	Long-range communications (up to 10 km/6.2 miles)
	Low-power, long battery life (over 5 years)
	Robust, small and weather proof box
	Easy configuration
	Connectivity for individual sensors





SPECIFICATIONS

GENERAL

Battery life – sampling rate 5 min	3.5 months	Life time estimates are based on a model considering Barcelona temperature profile
Battery life – sampling rate 1 h	3 years	
Battery life – sampling rate 6 h	5 years	
Battery type	1 x 3.6V C-Size (recommended Saft LSH 14)	
Sampling rate	30 seconds to 1 day	
Configuration software	Android App	

ANALOG INPUTS

Voltage Excitation	5 VDC	
1 channel configurable (with the exception of thermistor) + 1 channel thermistor		
Internal temperature collected and transmitted at each reading (Accuracy: 2 °C)		
Full Wheatstone Bridge	Measuring range:	± 7.8 mV/V
	Accuracy (-40 to +80°C):	0.13 % FS
Potentiometer/Ratiometric	Input range:	0-5 VDC (0-1 V/V)
	Accuracy (-40 to +80°C):	0.1 % FS
Pulse counter	Pulse count: (available upon request)	
	Pulse rate: (available upon request)	
Thermistor	Measuring range:	0 to 2 Mohms
	Accuracy* (-40 to +80°C):	0.04 °C (0.03 % FS)

MEMORY

Reading capacity 200,000 readings

MECHANICAL

Box dimensions (WxLxH)	113x80x60 mm
Overall dimensions	120x80x60 mm
Operating temperature	-40°C to 80°C (-40°F to 175°F)
Weather protection	IP67
Box material	Polycarbonate

Clamping range Ø 3 - 6 mm

RADIO - ISM sub 1 GHz operating frequency bands adjustable

Range open sight	10 km
Range city street	2 km
Range manhole in a city street	1 km
Tunnel	2 km
Bidirectional communications	Remote sampling rate change / Clock synchronization
Maximum link budget	151 dB / 157 dB
Configuration	Star (no repeaters needed)

*3K Thermistor. Does not include thermistor probe error

