EDGE DEVICES – WIRELESS DATA LOGGERS

Analog Data Logger

LS-G6-ANALOG-4

Worldsensing's Analog data logger is a 4-channel device that admits most inputs from analog sensors, allowing it to easily connect any voltage, current, resistive, transducer such as load cells, strain gauges, pressure cells, pressure sensors, thermometers, flow sensors to your monitoring systems. It transforms manual and sporadic data collection to a more regular and automatic process making it the most cost effective way to capture data from any environment.

The analog data logger is capable of transmitting data via long-range radio to a gateway connected to the Internet up to 9 miles/15 km away. One gateway can also support dozens of data loggers in the same network, depending on the reporting period, through a star or tree network topology.

In terms of energy consumption. Worldsensing data loggers are autonomous battery-powered devices with C-size batteries that can last up to 10 years with minimal to zero maintenance required. The analog data logger is IP68 certified and tested from −40 °C to +80 °C.

The Analog data logger 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 device.

FEATURES

Compatibility with analog sensors interfaces, such as:
- ±10 V single ended and differential
- 4–20 mA
- Ratiometric and potentiometers
- Full weathstone bridge
- Thermistor
- PT100

Low-power, long battery life devices. Mostly does not require external power.

Robust and weather-proof box IP67.

Long-range communication through LoRa network

SOFTWARE

User-friendly Android configuration app included.

Web browser software for network, device and data management.

Data processing with formulas to convert raw readings into engineering unit values.

Single-gateway network setup with CMT Edge software (data server and radio server hosted in the gateway and data access through standard CSV downloads. FTP push. Modbus TCP. API REST and MQTT[1]).

Multi-gateway network setup with CMT Cloud software and advanced features with data access via standard CSV downloads, FTP push. API REST and MQTT push[1].

[1] [1]MQTT available upon request

APPLICATIONS

STRUCTURAL HEALTH

Ground anchors surveillance.

Measurement of axial forces in struts.

Load measurement in bearings and piles.

Crackmeters, extensometers.

Displacement in deck, joints, heavy-lifting, underpinning.

PROCESS CONTROL

Process measurements: pressure, temperature, displacement, weighing.

Pressure: level sensors, jacking, liquid settlement systems.

ADVANTAGES

Allows you to wireslessly connect to a wide catalog of industrial and geotechnical sensors with analog interface

Suitable for unattended, large scale projects

Very low maintenance equipment due to its robustness and low-power consumption

Easy configuration through the Worldsensing mobile application

Customer support from a expert team of geotechnical monitoring

Pioneer company in the field, long history in monitoring large-scale civil infrastructure

TECHNICAL SPECIFICATIONS

GENERAL

Channels	4 channels (isolated)
Input types	Voltage, Current Loop, Potentiometer, Full Weatstone Bridge,
Reporting Period	Selectable from: 30 S, 1, 2, 5, 10, 15, 30 min, 1. 2, 4, 6, 12, 24 h
Time synchronization discipline by radio	Better than ±30 seconds
Battery type	4 x 3.6 V C-size user-replaceable, high energy density batteries[2]
Interfaces	Internal mini USB
Power Output per channel	5 Vdc/ 12 Vdc/ 24 Vdc (up to 60 mA)
Warmup time	Configurable (65 s MAX)
Device configuration	Worldsensing App
App advanced functionalities	• Field sample collection and signal coverage testing when the sensor is connected to the app. • Wiring recommendations to assist on site sensor installation.
Sensor-specific App functionalities	Warmup time configuration (ms or s). Output power options.

INPUT TYPE SPECIFICATIONS

VOLTAGE[3]

Measuring ranges	±10 Vdc

Accuracy	−40° to 85 °C	0 to 50 °C
±10 Vdc	±0.05% FS	±0.05% FS
±2 Vdc	±0.03% FS	±0.01% FS

CURRENT LOOP (2–3 WIRES)

Measuring range	4–20 mA
Accuracy (−40° to 50 °C)	±0.05% FS

RADIOMETRIC AND POTENTIOMETER SIGNALS

Accuracy (0 to 50 °C)	±0.02% FS

FULL WHEATSTONE BRIDGE

Accuracy (0 to 50 °C)	±0.1% FS

THERMISTOR

Accuracy (0 to 50 °C)	±0.2% FS

PT100

Accuracy (50 °C)	±0.8 °C

MECHANICAL

Box dimensions (WxLxH)	100 x 200 x 61 mm
Overall dimensions	145 x 220 x 61 mm
Operating temperature	−40 °C to 80 °C
Housing material	Aluminum Alloy
Weather protection	IP684
Weight (excluding batteries)	1.1 kg
External Antenna	114 mm

MEMORY

Memory Structure	Circular Buffer
Maximum Memory Records	130 000 readings (time and 4 sensors)

RADIO SPECIFICATIONS

Radio band	ISM sub 1 GHz
Operating frequency bands	Adjustable
Bidirectional communications	Remote sampling rate change/ clock synchronization
Maximum link budget	151 dB/ 157 dB
Radio configuration	LoRa/ LoRaWAN

RADIO RANGE

Range open sight	15 km
Range city street	4 km
Range manhole in a city street	2 km
Tunnel	4 km

SENSOR SPECIFIC APPLICATIONS

Durham Geo Slope Indicator	Compatible with Serial HD In-place inclinometer chains of (up to 16) through the control ports from channel 1.

[2] Recommended batteries: Saft LSH 14

[3] Tests performed using differential voltage measurements

[4] Water ingress protection also depends on the quality and condition of the cable coming from the sensor. Additionally, the cable's curvature near the cable gland can reduce this protection.

BATTERY LIFE ESTIMATION[5]

INPUT TYPE	CURRENT	CURRENT	VOLTAGE	FWB/TH/PT100	POTENTIOMETER
Input value	12v | 24 mA	24 V | 24 mA	12 V | 24 mA	5 V | 3500	5 V | 1.5 kΩ
Warmup time	1 s	1 s	1 s	NA	NA
LOAD AND REPORTING PERIOD					
1 CH 5 min 1 CH 6 h 4 CH 5 min 4CH 6 h	6 months >10 years 2.2 months >10 years	4 months >10 years 1.4 months 7.4 years	5.5 months >10 years 2.1 months >10 years	1.5 years >10 years 3.8 years >10 years	1.6 yr >10 years 5.3 months >10 yr

ACCESSORIES

WS-ACC-POLE-PL8	Aluminum plate for pole mounting. Works with both U-bolts of 35 mm or 50 mm.
WS-ACC-U35	U-bolts and nuts for a pole diameter less than 35 mm. To use with WS-ACC-POLE-PL8.
WS-ACC-U50	U-bolts and nuts for a pole diameter less than 50 mm. To use with WS-ACC-POLE-PL8.
LS-ACC-MEC-MP	External mounting brackets (set of 2) for wall mounting.
LS-ACC-CELL-1C	Saft LSH 14 C-size spiral cell 5.8 Ah.
LS-ACC-ANTC	Antenna cable extension RP-SMA to RP-N, 2.5 m.
LS-ACC-MUSB-C	Data logger – mobile cable. USB-C to mini USB cable, 1 m.

[5] Typical Europe radio configuration. Spreading factor 9, radio transmit power 14 dBm. Considering laboratory conditions. Consumption varies depending on the sensor used, sampling rate and environmental and wireless network conditions.

Battery life estimations based on the lifetime mathematical model using recommended batteries Saft LSH 14 and Barcelona weather profile. Average values provided.

FOR MORE INFORMATION
Scan to access the user guide for this device.

NEED MORE SUPPORT?

Get in touch with our Customer Success team

support@worldsensing.com

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