G TEC link

WIRELESS MONITORING SYSTEM

soil INSTRUMENTS

Description

GTecLink is a data acquisition and monitoring system which combines state-of-the-art wireless monitoring and advanced software tools. It is widely recognised as the leading solution for connecting and monitoring infrastructures in remote locations.

GTecLink devices are battery-powered and equipped with long-range, low-power wide area network (LoRa) radio communications and are compatible with a wide range of geotechnical sensors. The software suite is web-based and facilitates real-time data

capture and analytics. It is also possible to set automatic alarms to make operations safer.

Mining and construction companies and operators of bridges, tunnels, dams, railways and many other inaccessible assets can now work with reliable data. Having access to this information and real-time insights enables operators to anticipate needs, manage their workforce, diminish risks, and even prevent disasters.

Features

- Long-range communication of over 9 miles / 15km

- Low-power, up to 10 years of unattended runtime

- Wireless LoRa communication

- Supports most structural and geotechnical sensors (vibrating wire, digital, analog)

- Integrated alarm system

- User-friendly web software

- Compatible with the Connectivety Management Tool (CMT) EDGE software

Benefits

- Remotely monitor hard-to-access infrastructures

- Cover a wide area of installed geotechnical sensors

- Easily add or remove sensors to an existing installation

- Save resources through fast implementation

- Decrease costs through easy maintenance

- Diminish risks and make operations safer

Comprehensive information about this product and our full range is available at soilinstruments.com
If you would like to speak with someone directly please call +44 (0)1825 765044 or email sales@soilinstruments.com

PRECISELY MEASURED
instrumentation and monitoring

Digital Node

Channels

RS485	1 Full or Half duplex
SDI-12	2

Power Supply

V DC	12
Max. Current mA	200mA

Supported Sensors

GeoSmart	Up to 10 sensors, or 50 sensors with solar or A/C charging
Smart IPI-PRO	Up to 30 sensors, or 50 sensors with solar or A/C charging*

Other

Sampling Rate	30 seconds to 1 day
Data Storage	Up to 200,000 readings
Time Sync	Better than +/-30 seconds
Operating Temperature	-40ºC to 80ºC
IP Rating	67

Battery Life estimation** Soil Instruments Inclinometer Systems

Number of sensors	6 hour frequency	30 minute frequency	3 minute frequency
10 (GeoSmart)	2.9 Years	3.9 Years	15 Days
10 (Smart IPI-PRO)	8.5 Years	8.469 Months	25.78 Days
30 (Smart IPI-PRO)	2.9 Years	2.9 Months	8.8 Days

Gateway

Base Station

Frequency	ISM Sub 1 GHz band, sensitivity: down to -137 dBm
Antenna	Integrated internal antennas for 4G and LoRa (peak gain 2.6dBi)
GPS	GNSS High Sensitivity GPS module, intergrated antenna

Power

Supply	48V DC PoE
Power	Nominal 4.5 Watts
Power supply	Solar, wind, battery or mains power (110 - 240V AC)

Network interfaces

	10/100 Ethernet Wan (RJ45 PoE)
	Integrated 4G modem & antenna (LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage)

Other

Size	265 x 165 x 100mm (without external LoRa antenna)
Weight	1.4KG (including mounting kit)
Operating Temperature	-40°C to 60°C
IP Rating	67

*Up to 30 sensors depending on installation requirements.   ** estimations for 4 x Saft LSH 14 batteries . Based on laboratory conditions.

◆ Associated products

For details on:	Catalogue Number:
Vibrating Wire Sensors	E7, E10, E13, E17, J1, J2, J3, J4, L2, P6, P9, P10, S8, ST1, ST2, ST3, ST4, ST5, T3, W4, W9 & W16
In-Place Inclinometers	C2 & C12
4-20 mA Sensors	L3, T2 & W12

View our full product range on soilinstruments.com

Configuration App

4G Gateway

THE TECHNICAL RATING FOR THIS PRODUCT: **INTERMEDIATE** ◇ ◇

As the correct installation of any monitoring sensor or system is vital to maximise performance and accuracy, Soil Instruments makes the following recommendations, for the skill level of the installation contractor.

ADDITIONAL SUPPORT
We offer installation and monitoring services to support this system. For more information please email : **sales@soilinstruments.com** or call
+44 (0) 1825 765044

ADVANCED ◇ ◇ ◇   The installer is trained and experienced in the installation of this type of instrument or systems, and is ideally a specialist Instrumentation and Monitoring contractor.

INTERMEDIATE ◇ ◇   The installer already has previous experience and/or training in the installation of this instrument or system.

BASIC ◇   As a minimum the installer has read and fully comprehends the manual, and if possible has observed these instruments or systems being installed by others.

Vibrating Wire Nodes 1 or 5 CH

Vibrating Wire

Excitation	+/-5V
Range	300-7000Hz
Resolution	<0.01Hz
Accuracy	0.018%FS

Thermistor

Range	0 ohm to 4 Mohm
Resolution	1 ohm
Accuracy (20ºC)	0.05ºC (0.04% FS)

Barometer

Range	300-1100hPa
Relative Accuracy[2]	+/-0.12hPa

Other

Sampling Rate	30 seconds to 1 day
Data Storage	Up to 200,000
Time Sync	Better than +/-10 seconds
Operating Temperature	-40ºC to +85ºC
IP Rating	67

Battery Life estimation*

Channels and Sampling	Batteries*	Life Estimation*
1 CH 5 min	1 Cell	0.9 Years
1 CH 1 hr	1 Cell	3.5 Years
1 CH 6 hr	1 Cell	4.6 Years
5 CH 5 min	4 Cells	2.2 Years
5 CH 1 hr	1 Cell	7.1 Years
5 CH 6 hr	4 Cells	>10 Years

Tiltmeter Node

Tiltmeter

Range	+/-90°
Type	MEMS Triaxial
Accuracy (+/-4°)	+/- 0.005°
Accuracy Full Range	+/- 0.06°
Resolution	0.0001°
Repeatability	>0.003°
Temperature Sensor Accuracy	+/-0.5ºC
Temperature Sensor Resolution	0.1ºC

Battery Life estimation*

Sampling Rate	Barcelona Temperature Profile*	Singapore Temperature Profile*
5 min	3.3 Years	3 Years
1 hr	>10 Years	>10 Years
6 hr	>10 Years	>10 Years

* estimations for 2 Saft LHS 14 batteries

5 Wire Node

Analog Node 4 CH

Power Selectable for Each Channel

V DC	5, 12, 24
Max mA	60

Voltage

Range V DC	+/-10, +/-1.25 (8x)
Accuracy (-40 to +85ºC)	+/-0.05%FS

Current Loop 2-3 Wire

Range	4-20mA
Accuracy (0 to +50ºC)	+/-0.05%FS

Potentiometer

Accuracy (0 to +50ºC)	+/-0.02%FS

Full Wheatstone Bridge

Accuracy (0 to +50ºC)	+/-0.1%FS

Thermistor

Accuracy (0 to +50ºC)	+/-0.2ºC

PT100

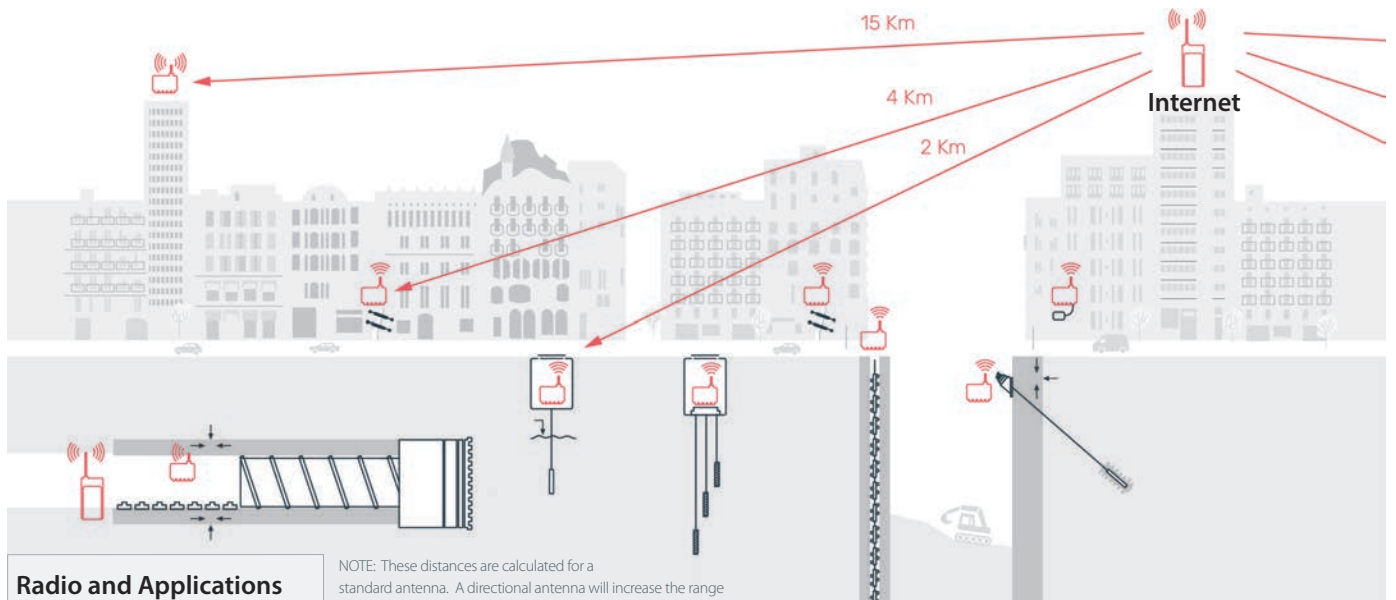|	
Accuracy (20ºC)	+/-0.8ºC

Other

Sampling Rate	30 seconds to 1 day
Data Storage	Up to 200,00
Time Sync	Better than +/- 10 seconds
Operating Temperature	+40ºC to +50ºC
IP Rating	67

Battery Life estimation**

Channels and Sampling	Current @12V @24mA	Current @24V @24mA	Voltage @12V @24mA	FWB @5V @0.7k	Pot @5V @1.5k
Warm up time	1 Second	1 Second	1 Second		
1 CH 5 min	6 Months	4 Months	5 Months	1.5 Years	1.5 Years
1 CH 6 hr	>10 Years	>10 Years	>10 Years	8.5 Years	>10 Years
4 CH 5 min	1.5 Months	39 Days	2 Months	1.5 Months	7 Months
4 CH 6 hr	8 Years	6.5 Years	>10 Years	8.5 Years	>10 Years

* estimations for Saft LSH 14 batteries Typical europe radio configuration. Spreading factor 9, radio transmit power 14dBm. Based on laboratory conditions. Consumption varies depending on the sensor used. Sampling rate and enviromental and wireless network conditions.
** estimations for 4 x Saft LSH 14 batteries . Based on laboratory conditions. [2]950-1050 hPa at 25ºC.

Soil Instruments has an ongoing policy of design review and reserves the right to amend these specifications without notice.
D9—GTecLink System—Rev 1.0

NOTE: These distances are calculated for a standard antenna. A directional antenna will increase the range

Radio and Applications

Long Range Radio

Open Field	15 km
City Street	4 km
Manhole in a City	2 km
Tunnel	4 km

Radio Specs

ISM sub 1 GHz operating frequency bands adjustable to each territory requirements
No repeaters needed
High sensitivity: down to -137dBm
Transmission: +14 dBm high efficiency / + 20 dBm
Maximum link budget: 151 dB / 157 dB
Remote sampling rate change
Bidirectional communications capabilities

Ordering Information

Nodes

D9-VW-5	GTecLink Vibrating Wire Node - 5 Channels
D9-VW-1-ALUM	GTecLink Vibrating Wire Node - 1 Channel (alum)
D9-ANALOG-4	GTecLink Analog Node - 4 Channels
D9-DIGITAL	GTecLink Digital Node
D9-DIG-SOL	GTecLink Digital Node with Rechargable battery(solar panel not included)
D9-TILT-TRIAX	GTecLink Wireless Tiltmeter - Triaxial
D9-LASER	GTecLink Wireless Laser Distance Node

Gateways

D9-GATE-868	GTecLink Gateway 868 MHz (CE)
D9-GATE-915	GTecLink Gateway 915 MHz (FCC/IC)
D9-GATE-923	GTecLink Gateway 923 MHz (Asia/Pacific)

Accessories

D9-BATT-BOX	GtecLink battery box for Gateway, pole mounted, 110A battery and solar regulator
D9-BOX-SOL	Solar panel for battery box, 100W, pole mounted
D9-MAINS-SOL	GtecLink Mains Power Box for Gateway, pole mounted
D9-EX-WM	GTecLink External Mounting Brackets (set of 2) for wall mounting
D9-POLY-WM	GTecLink Wall Brackets (4 poly brackets and screws)
D9-PM-35	GTecLink Alum Plate for pole mount < 35mm
D9-PM-50	GTecLink Alum Plate for pole mount < 50mm
D9-CPM-50/70	Universal Pole/Casing Mount 50mm/70mm for Gateway & Digital Node
D9-COM-NM	GTecLink Comm Cable - Type B Mobile to Node
D9-COM-NM1	GTecLink Comm Cable - Type C Mobile to Node
D9-GATE-LPANT	GTecLink Gateway Lightning Protection for Antenna
D9-GATE-LPETH	GTecLink Gateway Lightning Protection for Ethernet
D9-TILT-HZM	GTecLink Wireless Tiltmeter Horiz Mounting Plate
D9-TILT-VTM	GTecLink Wireless Tiltmeter Vert Mounting Plate
D9-TILT-VTPM	GTecLink Wireless Tiltmeter Vert Pole Mounting Plate
D9-BATT-C	Saft LSH 14 C Lithium Battery

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