DATASHEET

Wi-SOS 480 Wireless Monitoring System

Long-range 800MHz radio No system planning No repeaters Instant data access Android technology Saves installation costs









Overview



The Wi-SOS 480 (Wireless Sensor Observation System) provides a system to transmit, receive and data log remotely signals from any sensor with a vibrating wire, voltage, 4-20mA, SDI12 or resistance output over long ranges up to 15 km.

Stand-alone Wireless Tilt Meters are also available which can be integrated into the system, together with any type of Node. The user can configure, diagnose, and download from a mobile device using android technology.

The Wi-SOS 480 is a star network consisting of a series of wireless nodes and a gateway. The gateway collects the data from the long-range star network, stores it locally and it is available to view and/or download via GPRS, wired Ethernet or Wi-Fi. No system planning is required and repeaters are not required, saving on installation costs.

What makes Wi-SOS 480 different to other wireless systems is the use of data modulation via the Worldsensing G6 Platform which uses the latest LoRa spread spectrum technology. This technology means long range, low cost, low power consumption and high connectivity.

Software is embedded in the gateway, which allows it to be fully configurable over air or Ethernet and a fast mode allows full diagnostics to ensure correct operation of the system.

The Wi-SOS 480 Web Centre provides a platform to download data and view it on PC, tablet or mobile phone; or the data can be forwarded to any FTP for inputting into most visualisation software.

The Wi-SOS 480 offers a highly flexible and cost-effective solution for projects where a cabled solution is not possible due to physical barriers and/or access restrictions and where near realtime monitoring is required.

APPLICATIONS

Wireless connection to sensors such as:
Tilt meters
Crack meters
Piezometers
Strain Gauges
Load cells
Total pressure cells
NATM stress cells
Rod extensometers
Crack meters
Joint meters
Settlement cells
Temperature sensors
V-Notch weirs

FEATURES

Long-range 868/915MHz radio
Low-power LoRa® spread spectrum technology
Easy configuration
No repeaters
Instant data access
Android technology
Long range communication up to 15 km
Up to 10 years battery life
User-friendly configuration with Android device
Vibrating wire, Digital & Analogue sensor input options
Robust, small and weather-proof box for harsh environments

Specifications

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Measuring ranges [V DC]±10; ±125 (8x)Accuracy (40 to +85°C)±0.05 % FSCURRENT LOOP (2-3 WIRES)±0.20 MAMeasuring range4-20 mAAccuracy (0 to +50°C)±0.05 % FSPOTENTIOMETER±0.02 % FSFULL WHEATSTONE BRIDGE±0.02 % FSFULL WHEATSTONE BRIDGE±0.1 % FSAccuracy (0 to +50°C)±0.1 % FSAccuracy (0 to +50°C)±0.1 % FSAccuracy (0 to +50°C)±0.2 % CHERMISTOR±0.2 % CAccuracy (0 to +50°C)±0.2 % CPT 100±0.2 % CYIBRATING WIRE±0.8 % CVIBRATING WIRE NODE 1 CH AND 5 CHVIBRATING WIREEmbedded algorithms increasing immunity to noiseExcitation wave±5 VMeasurement method101 % FSAccuracy (-40 to +85°C)0.101 % FSAccuracy (-40 to +85°C)0.101 % FSFIERMISTORIMeasurement range0.001 to 2.000 HzResolution (-40 to +85°C)0.018 % FSCuracy (-40 to +85°C)0.018 % FSHERMISTORIMeasurement range0.00 m to 4 MohmResolution 10hmSResolution 10hmSResolution 10hmSResolution 10hmSResolution 10hmIResolution 10hmIResolution 10hmIResolution 10hmIResolution 10hmIResolution 10hmIResolution 10hmIResolution 10hmIResolution 10hm <td< th=""><th>Each channel is individually configured by the</th><th>user. Equipped with a control port for operating a distributed multiplexer.</th></td<>	Each channel is individually configured by the	user. Equipped with a control port for operating a distributed multiplexer.	
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THERMISTORMeasurement range0 ohm to 4 MohmResolution1 ohm	Resolution (-40 to +85°C)	0.12 Hz	
Measurement range0 ohm to 4 MohmResolution1 ohm	Accuracy (-40 to +85°C)	0.018 % FS	
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Accuracy (20°C)0.05°C (0.04 % FS)BAROMETER300 to 1,100 hPa	Measurement range	0 ohm to 4 Mohm	
BAROMETER Pressure Range 300 to 1,100 hPa	Resolution1 ohm		
Pressure Range 300 to 1,100 hPa	Accuracy (20°C)	0.05°C (0.04 % FS)	
	BAROMETER		
Relative Accuracy (950 to 1,050 hPa at 25°C)±0.12 hPa	Pressure Range	300 to 1,100 hPa	
	Relative Accuracy (950 to 1,050 hPa at 25°C)	±0.12 hPa	





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Specifications

DIGITAL NODE



DIGITAL NODE				
Channels	One RS485 channel and t	wo SDI-12 channels		
Power supply	12 V DC up to 120 mA	12 V DC up to 120 mA		
RS-485	Full or half duplex supported			
Suitable for a chain of up to 30 biaxial in-place	inclinometers			
ModbusRTU RS485				
WIRELESS TILT METER (NODE)				
Range	±15°			
Accuracy (±5°)	0.3% FS / 0.004°			
Accuracy full range	0.17% FS / 0.025°			
Resolution	0.001°			
Axes	Biaxial			
DATA STORAGE & POWER				
INTERNAL DATA STORAGE				
Up to 72,500 readings, including time and 5 se	ensors			
Up to 200,000 readings, including time and 1 s	sensor			
POWER				
Internal standard C-size batteries. 1 to 4 batter	ies, depending on usage			
BATTERY LIFE ESTIMATION	5 MIN INTERVALS	HOURLY INTERVALS		
5 - channel vibrating wire	7 years	>10 years		
4 - channel analogue (FWB/TH/POT/PT100)	6 months	> 5 years		
Digital bus (15 biaxial sensors)	3 months	~ 2.5 years		
SIZE				
1 channel	145 x 105 x 61 mm			
2 to 5 channels	145 x 220 x 61 mm	145 x 220 x 61 mm		
WEIGHT				
1 channel	850g without batteries			
2 to 5 channels	1100g without batteries	1100g without batteries		
ENCLOSURE	Aluminium alloy			
TEMPERATURE RANGE	-40 to +85 °C			
RATING	IP67, Higher protection o	n request		

Specifications

GATEWAY
ISM Sub 1 GHz band, sensitivity up to -137 dBm
Detachable omnidirectional ½ λ dipole
Integrated GPS antenna
GNSS High Sensitivity GPS module
POWER
Power supply: 48 V DC PoE
Nominal: 3 Watts
DC power supply (ex.: solar panel use): 11 to 30 Volts
PHYSICAL PROPERTIES
Size: 210 x 310 x 170 including mounting kit
Weight: 2 kg including mounting kit
IP67 rating
Operating range: -20 to + 60 ℃
NETWORK INTERFACES
10/100 Ethernet WAN (RJ45 PoE)
Integrated 3G Modem & Antenna (HSDPA, EDGE, GPRS) quad band
CONFIGURATION APP
Simple and fast connection to datalogger
Runs only on Android devices
Easy sensor configuration: ID, sampling rate, sweep, etc.
Checks radio signal coverage & records coordinates (GPS)
Downloads data & sends by e-mail or saves it on the Android device
Takes current reading
Updates datalogger firmware

Specifications



WEB PLATFORM/SOFTWARE

NETWORK AND ASSET MANA	IEMENT SOFTWARE
Network communications configu	tion and control
Datalogger and sensor attributes of	play
Datalogger configuration	
Sensor data in real time	
Conversion of raw sensor data in e	gineering units
Manual and automatic data down	ad in .csv
Data transmitted in a secure mann	r
Sensor data visualisation and dow	oad (tables and graphs)
Topological view	
Creation of virtual variables	
Configuration of alarm thresholds	
Alarms sent to stakeholders by em	1
Automatically generated reports (bles, graphs and notes)
RADIO SPECS	
ISM sub 1 GHz operating frequence	bands adjustable to territory requirements
No repeaters needed	
Sensitivity : up to -137 dBm	
Transmission: +14 dBm high efficie	cy / +20 dBm
Maximum link budget: 151 dB	
Remote sampling rate change	
RANGES	
LONG RANGE RADIO	
Open field	15 Km
Urban	4 Km
Manhole (Urban)	2 Km
Tunnel	4 Km





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