



Data Mobile Solution is a complete solution for automatic monitoring of geotechnical and structural instruments.

■ DMS Analogue

■ DMS Vibrating Wire

■ DMS Digital

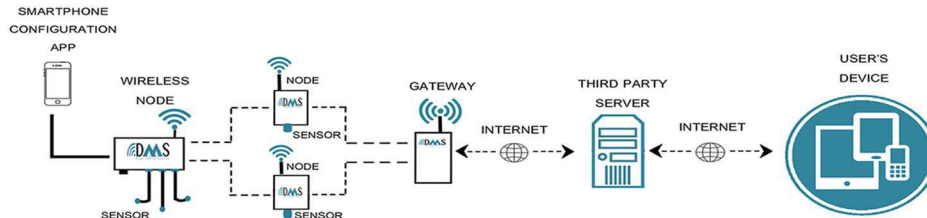
■ DMS Tilt

■ DMS Gateway

- Long-range communication of over 15 km
- Truly low-power, 5 years of unattended runtime
- Remotely monitor hard-to-access infrastructures
- Eliminate the need for manpower
- User-friendly web software

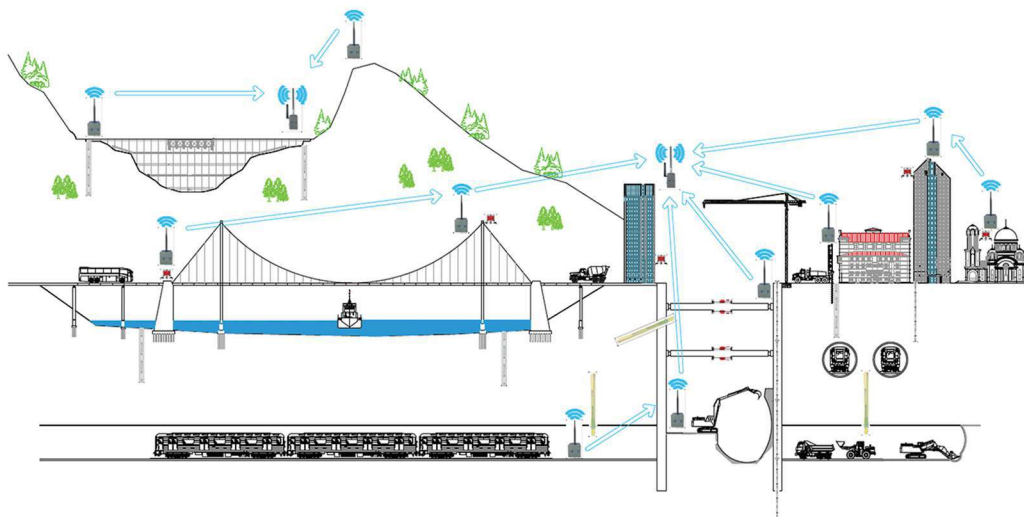
# Data Mobile Solution

**DMS (Data Mobile Solution)** is a wireless solution to automate the geotechnical and structural instruments for monitoring construction sites like dams, tunnels, bridges, undergrounds, buildings and mines. Nodes to which the instruments are connected and transferred their data to Gateway by using Mesh, a patent-pending long-range wireless mesh communication protocol, compose the system. On-board software on the Gateway manages data and configure the project. DMS Android App is used to configure the nodes.



## Why use Mesh?

Even if a Node can't reach the Gateway directly, it can still send its data to the gateway via other Nodes in the network. This is possible with DMS Mesh, a patent-pending, wireless mesh data collection protocol that ensures reliable sensor data collection even in the harshest of environments like in deep tunnels and very large construction sites without using numerous gateways and signal amplifiers. It automatically mitigates well-known wireless problems like signal blockages and interference, allowing the Nodes to reliably send their data to the Gateway every time.



Moreover, DMS is a low power utilization framework that can reach up to 5 years battery life. The gateway can push data on a FTP server; remote connection to gateway is allowed for data download and set up.

**15 km**  
in line-of-sight  
environments

**3 km**  
in tunnels and  
underground setting

**4 km**  
in cities and urban  
environments

# Software & Configuration Mobile

DMS, data management and configuration software, can be used to visualize and analyze the data. The software system also allows to manage the sensor network, automate reporting, set smartphone push notifications or email alerts if readings cross pre-set thresholds and even upload the sensor data to a third-party server.



All DMS Nodes can be set up at the site using smartphone application that comes free with the system.

1. Provides step by step instructions on setting up sensors.
2. Displays whether the radio signal is good enough for nodes to reach other Nodes or the Gateway.
3. Takes on-site sensor readings to help with sensor verifications and recording initial sensor readings
4. Shows the battery conditions of the Nodes.
5. Automatically obtain the geocoordinates of the Nodes in the site while setting up.



# DMS Analogue

DMS Analogue is able to manage up to 4 instruments with different output such as Voltage, current loops (mA), Wheatstone bridges and Thermistors. Each channel can be individually configured by the user and the power supply to the sensors is given by the node.

## MODELS

<b>ODMS0AN0100</b>	One Channel DMS Analogue Node + T
<b>ODMS0AN0400</b>	Four Channels DMS Analogue Node + T

## TECHNICAL SPECIFICATIONS

<b>Memory</b>	8 MB ( 500,000 Readings)	
<b>On board sensors</b>	Internal temperature sensor (accuracy 0.1°C)	
<b>Analog differential</b>	Voltage (Uni-axial) Voltage (Bi-axial) 4-20 mA Current loop (2 wires) 4-20 mA Current loop (3-4 wires) Thermistor Wheatstone bridge (6 wires)	
<b>Measuring Range</b>	±10 VDC to 1.25, 4-20 mA	
<b>Accuracy</b>	Voltage	±0.05% FS
	Current Loop	0.05% FS
	Potentiometric	±0.025% FS
	Wheatstone bridge	±0.1% FS
<b>Voltage</b>		
Power supply	5v/12v/24v	
Measuring ranges (V DC)	±5 to ±1.25	
Accuracy (-40C to +85C)	±0.05% FS	
<b>Current Loop</b>		
Measuring range	4-20mA	
Accuracy(0C to +50C)	0.05% FS	
<b>Potentiometer</b>		
Accuracy(0C to +50C)	±0.025% FS	
<b>Full Wheatstone Bridge</b>		
Accuracy(0C to -50C)	±0.1% FS	
<b>Display / Keyboard</b>	LED – System status indication Push button key – for system test function execution	
<b>USB Device Port</b>	USB 2.0 full speed (A connector) 5V, max 500 mA for Mobile OTG	
<b>Long range RF Module</b>	ISM Band 863 -928MHz @ 30dBm Extended temperature range (-40° to 85°C) 1/4λ stub antenna with SMA connector	



## PHYSICAL FEATURES

### Box Dimension(W×L×H)

<b>ODMS0AN01</b>	100×100×80mm
<b>ODMS0AN04</b>	220×140×80mm

<b>Operating temperature</b>	-30 to +70°C (batteries -20 to +60°C)
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<b>Storage temperature</b>	- 40 to +85°C (batteries 0 to +40°C)
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<b>Protection</b>	IP66
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<b>Humidity</b>	+80%
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<b>Overvoltage category</b>	I
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<b>Pollution degree</b>	2
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<b>Sound Levels</b>	< 74dBA
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<b>Maximum height of use</b>	3000m
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## TYPICAL BATTERY LIFETIME

Node Type	Number of Batteries	Expected Battery Life		
		5 min Sampling	15 min Sampling	1 hour Sampling
<b>ODMS0AN01</b>	1	6 months	2 years	5 years
<b>ODMS0AN04</b>	2	6 months	2 years	5 years

# DMS Vibrating Wire

DMS Vibrating Wire Nodes come in two formats : 1sensor (DMS-VW-1) and 8 sensor (DMS-VW-8)  
It can be used to monitor many types of vibrating wire sensors.

## MODELS

**0DMS0VW0100** One Channel DMS VW Node + T

**0DMS0VW0800** Eight Channels DMS VW Node + T

## TECHNICAL PECIFICATIONS

<b>Memory</b>	8 MB ( 500,000 Readings)
<b>On board sensors</b>	Internal temperature sensor (accuracy 0.1°C)
<b>Analog differential</b>	Vibrating wire sensor Thermistor
<b>Excitation wave</b>	±5V
<b>Measurement range</b>	450 Hz to 6000Hz
<b>Resolution (-40° to +85°C)</b>	0.06Hz
<b>Accuracy (-40° to +85°C)</b>	0.015% FS
<b>Display / Keyboard</b>	LED – System status indication Push button key – for system test function execution
<b>USB Device Port</b>	USB 2.0 full speed (A connector) 5V, max 500 mA for Mobile OTG
<b>Long range RF Module</b>	ISM Band 863 – 928MHz @ 30 dBm Extended temperature range (-40° to 85°C) 1/4λ stub antenna with SMA connector

## TYPICAL BATTERY LIFETIME

Node Type	Number of Batteries	Expected Battery Life		
		5 min Sampling	15 min Sampling	1 hour Sampling
<b>0DMS0VW01</b>	1	1 years	3 years	>5 years
<b>0DMS0VW08</b>	2	8 months	>2 years	>5 years



## PHYSICAL FEATURES

### Box Dimension (W×L×H)

**0DMS0VW01** 100×100×80mm

**0DMS0VW08** 220×140×80mm

**Operating temperature** -30 to +70°C  
(batteries -20 to +60°C)

**Storage temperature** -40 to +85°C  
(batteries 0 to +40°C)

**Protection** IP66

**Humidity** +80%

**Overvoltage category** I

**Pollution degree** 2

**Sound Levels** < 74dBA

**Maximum height of use** 3000m

# DMS Digital

DMS digital node can manage 3 channels of maximum 2 digital sensors per channel for RS232,RS485,and SDI-12

## MODELS

**0DMS0DIG000** Digital DMS Node,RS485,RS232,SDI

## TECHNICAL PECIFICATIONS

<b>Memory</b>	8 MB ( 500,000 Readings)
<b>On board sensors</b>	Internal temperature sensor (accuracy 0.1°C)
<b>Digital Inputs</b>	RS232 Serial Port RS485 Full / Half Duplex Serial port 2 SDI-12 Bidirectional Ports or Programmable Interrupt driven GPIO Digital communication supported sensors
<b>Power Supply</b>	12V DC to 200mA
<b>Display / Keyboard</b>	LED – System status indication Push button key – for system test function execution
<b>USB Device Port</b>	USB 2.0 full speed (A connector) 5V, max 500 mA for Mobile OTG
<b>Long range RFModule</b>	ISM Band 863 – 928MHz @ 30dBm Extended temperature range (- 40° to 85°C) 1/4 $\lambda$ stub antenna with SMA connector



## PHYSICAL FEATURES

<b>Box Dimension (W×L×H)</b>	220×140×80mm
<b>Operating temperature</b>	-30 to +70°C (batteries -20 to +60°C)
<b>Storage temperature</b>	-40 to +85°C (batteries 0 to +40°C)
<b>Protection</b>	IP66
<b>Humidity</b>	+80%
<b>Overvoltage category</b>	I
<b>Pollution degree</b>	2
<b>Sound Levels</b>	< 74dBA
<b>Maximum height of use</b>	3000m

## TYPICAL BATTERY LIFETIME

Sensors	Number of Batteries	Expected Battery Life		
		5 min Sampling	15 min Sampling	1 hour Sampling
10	2	6 months	1.5 years	5 years
20	2	4 months	10 months	2.5 years
30	2	2 months	6 months	1 year

# DMS Tilt

Integrated MEMS Biaxial Sensor with node for wireless inclination reading of structural health monitoring.

## MODELS

**ODMS2TILT15** DMS Biaxial Tiltmeter Node +/-10DG + T

## TECHNICAL SPECIFICATIONS MEMS TILT SENSOR

<b>Sensor</b>	Self-compensated MEMS inclinometer
<b>Number of axes</b>	Biaxial
<b>Measuring range</b>	$\pm 2.5^\circ$ , $\pm 5^\circ$ , $\pm 10^\circ$
<b>Accuracy</b>	$\pm 0.004^\circ$ for $\pm 2.5^\circ$ range $\pm 0.006^\circ$ for $\pm 5^\circ$ range $\pm 0.010^\circ$ for $\pm 10^\circ$ range
<b>Sensor resolution</b>	0.01% FS
<b>Offset temperature</b>	$\pm 0.003^\circ\text{C}$ (From $-20^\circ\text{C}$ to $+70^\circ\text{C}$ )
<b>Temp. operating range</b>	from $-30^\circ\text{C}$ to $+70^\circ\text{C}$
<b>On-board temp. sensor</b>	NTC 3 k $\Omega$ Thermistor
<b>Measuring range</b>	from $-50^\circ\text{C}$ to $+150^\circ\text{C}$
<b>Accuracy</b>	$\pm 0.5^\circ\text{C}$ (0 to $+50^\circ\text{C}$ )

## TECHNICAL SPECIFICATIONS NODE

<b>Memory</b>	8 MB ( 500,000 Readings)
<b>On board sensors</b>	Internal temperature sensor (accuracy 0.1 $^\circ\text{C}$ )
<b>Analog Differential</b>	Voltage ( Bi-axial) Thermistor
<b>Measuring Range</b>	$\pm 5\text{VDC}$ to 1.25
<b>Power supply</b>	5v/12v/24v
<b>Measuring ranges (VDC)</b>	$\pm 5$ to $\pm 1.25$
<b>Accuracy ( -40C to +85 <math>^\circ\text{C}</math>)</b>	$\pm 0.05\%$ FS
<b>Display/Keyboard</b>	LED-system status indication Push button key-for system test function execution
<b>USB Device Port</b>	USB 2.0 full speed ( A connector) 5V, max 500 mA for Mobile OTG
<b>Long range RF Module</b>	ISM Band 863 - 928MHz @ 30dBm Extended temperature range ( $-40^\circ$ to $85^\circ\text{C}$ ) $1/4\lambda$ stub antenna with SMA connector



## PHYSICAL FEATURES

<b>Box Dimension(W×L×H)</b>	100×100×80mm
<b>Operating temperature</b>	$-30$ to $+70^\circ\text{C}$ (batteries $-20$ to $+60^\circ\text{C}$ )
<b>Storage temperature</b>	$-40$ to $+85^\circ\text{C}$ (batteries $0$ to $+40^\circ\text{C}$ )
<b>Protection</b>	IP66
<b>Humidity</b>	$+80\%$
<b>Overvoltage category</b>	I
<b>Pollution degree</b>	2
<b>Sound Levels</b>	$< 74\text{dBA}$
<b>Maximum height of use</b>	3000m

## TYPICAL BATTERY LIFETIME

Node Type	Number of Batteries	Expected Battery Life		
		5 min Sampling	15 min Sampling	1 hour Sampling
ODMS0AN01	1	6 months	2 years	5 years

# DMS Gateway

The gateway receive readings from the nodes and push data through the internet or third party servers.

## MODELS

**0DMS0GWLOG** Gateway DMS 902-928 MHz

**Box Dimension (W×L×H)** 160×100×80 mm

## TECHNICAL SPECIFICATIONS

<b>Memory</b>	512MB LPDDR2 SDRAM
<b>On board sensors</b>	Internal temperature sensor (accuracy $\pm 2^{\circ}\text{C}$ )
<b>Display / Keyboard</b>	4 LEDs – System status indication Push button key – for system test function execution
<b>Network interfaces</b>	Integrated 3G Modem & Antenna (HSDPA,EDGE,GPRS ) quad band Ethernet over USB 2.0
<b>GPS</b>	GNSS High Sensitivity GPS module (excluding antenna)
<b>Long range RF Module</b>	ISM Band 863 – 928MHz @ 30dBm Extended temperature range (-40° to 85°C) 1/2 $\lambda$ stub antenna with N type connector
<b>USB Device Port</b>	USB 2.0 full speed (A connector) 5V
<b>Software</b>	DMS Management Server built on top of Linux OS
<b>Typical battery</b>	Backup battery will support standby mode
<b>Operating time</b>	(RF only) for 6 Weeks



## DMS Relay Node

DMS Relay nodes can be used in setting where nodes are in disengage areas, and hence unable to discover a system path to reach to the gateway. A Relay Node can be put between nodes and gateways to permit the nodes to transmit with the gateway.

<b>0DMS0EXT</b>	Amplifier signal node
<b>Box Dimension (W×L×H)</b>	100×100×80 mm
<b>Operating temperature</b>	-40 to +85°C (batteries -20 to +60°C)

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We reserve the right to change our products without prior notice.  
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