



L900

WIRELESS DATA COLLECTION

for Geotechnical Monitoring Instrumentation

DT
SERIES
DATA LOGGERS



A wireless data collection system to quickly get you connected to your data.

Minimum per channel cost. Extra long battery life. Long distance data transmission.



innovation in
geotechnical
instrumentation

L900 SYSTEM



RSTAR QUICK FACTS

- Excellent Hub - Node range (up to 14 km in open country).
- Ultra-low quiescent power. RSTAR Nodes powered by 1 lithium 'D' cell (up to 10 years of life).
- Simple star routing - no mesh overhead.
- Up to 255 L900 Nodes per flexDAQ.
- Simple network setup: add node serial number to RSTAR Hub, deploy.
- Based on proven flexDAQ/THREAD experience and technology.
- Multiple telemetry options (cell, modem, LAN, radio, satellite,... see diagram).
- Data can be accessed at multiple locations via WWW.
- Data is protected at all stages by encrypted, error-corrected transmission and storage.
- Fully compatible with RST GeoViewer Software.

FULLY AUTOMATED WIRELESS DATA COLLECTION

The RSTAR Array Radio Series uses wireless technology to provide automated data acquisition. A complete RSTAR L900 System uses L900 RSTAR Nodes at the sensor level, deployed in a star topology from a continuously active L900 RSTAR Hub, which consists of an L900/R2T RTU interfaced to a FlexDAQ datalogger or THREAD Gateway. The RSTAR Array Radio Series is based on the 900 MHz, 868 MHz and 2.4 GHz spread spectrum band (country dependent) with extensive open-country range through use of simple dipole or directional antenna.

A complete RSTAR L900 System is packet-oriented, and consists of slave RSTAR Nodes comprised of sensors and compatible "DT Series" Data Loggers which can accommodate: vibrating wire sensors, potentiometers, MEMS tilt sensors, strain gauge (full bridge) sensors, digitally bussed (DT-BUS) sensors, 4-20 mA sensors, and thermistors. RSTAR also uses a L900 Radio and Antenna kit and a L900 RTU (master) which is a DIN-rail mounted module in the FlexDAQ enclosure or R2T RTU (master) connected to a THREAD Gateway. The RSTAR L900 nodes wake from low power and collect data from their attached sensors. This data, which includes RTU node address, address, node serial number, diagnostics, data, and CRC check, is then sent wirelessly as a packet to the L900/R2T RTU. Upon reception to the flexDAQ or THREAD Gateway, the L900/R2T RTU will issue an ACK signal which may include clock synchronization and rate data.

The L900/R2T RTU stores the data in a temporary register set which is overwritten as new data is received; there is an intermediate data logging function in the RSTAR L900 Node. The datalogger within the flexDAQ has ultimate responsibility for logging data or the Cloud Software for the THREAD Gateway stores data.

Power requirements for a single RSTAR/THREAD L900 node is one lithium 'D' cell. The flexDAQ or THREAD Gateway can be powered by a solar panel, batteries or AC power.



All "DT Series" Data Loggers are equipped with an option to add on a radio antenna and incorporate it into an RSTAR wireless system. The radio antenna can be easily attached in the field. L900 RSTAR radios and antennas can be ordered at a later date, or at time of initial ordering. An L900 RSTAR decal is also supplied for each unit to allow for proper identification.



A flexDAQ enclosure shown with an open lid to reveal an installed RSTAR L900 RTU (on DIN rail), datalogger, radio and power supply.



An antenna cable connects to the R2T to an omni antenna.

The THREAD Gateway uses the 'R2T RSTAR to THREAD RTU' for communication with DT Series Loggers.

A communication cable connects the R2T to the THREAD.



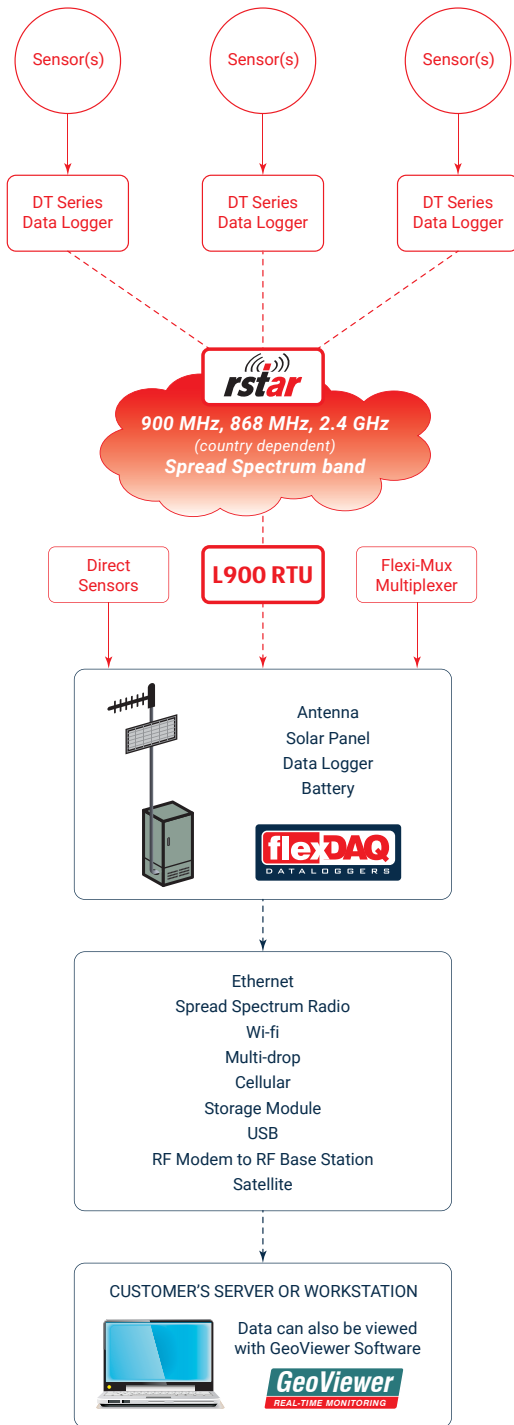
DT2011B Single Channel Vibrating Wire Data Logger attached to an RST Vibrating Wire Piezometer.

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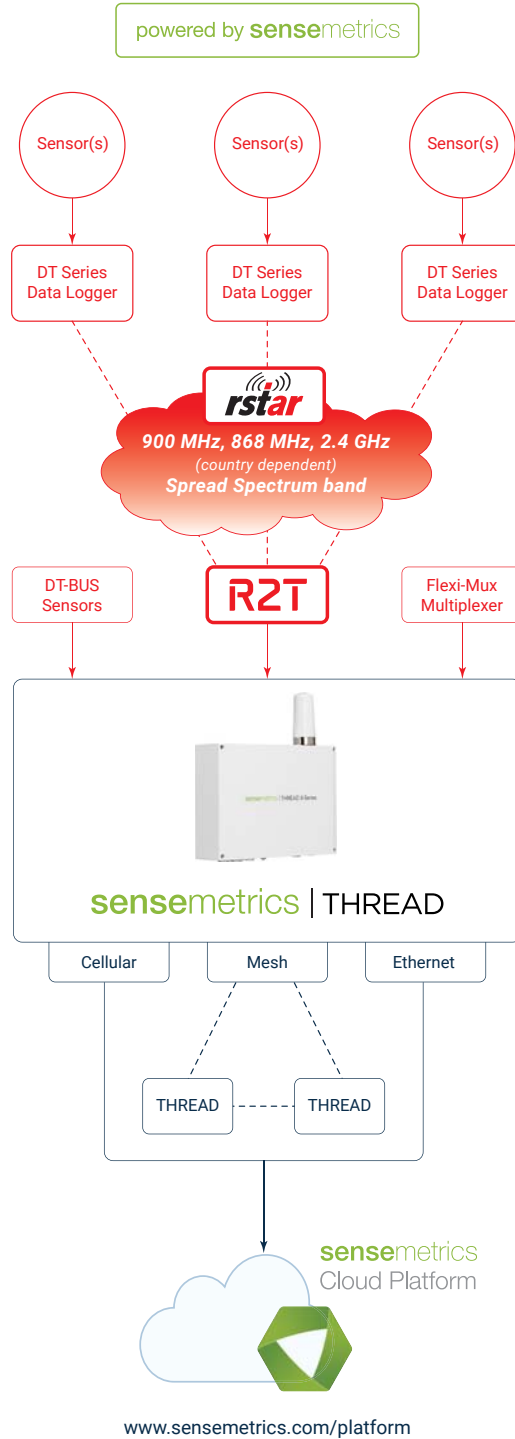


TYPICAL COMMUNICATION METHODS

RSTAR L900



THREAD GATEWAY



DT
SERIES
DATA LOGGERS



The "DT Series" Data Loggers from RST accommodate the RSTAR Data Collection System and use a single lithium 'D' cell which provides up to 10 years of power (model dependent). The DT Series provides reliable, unattended monitoring of various sensor types: **vibrating wire sensors**, **potentiometers**, **MEMS tilt sensors**, **strain gauge (full bridge) sensors**, **digitally bussed (DT-BUS) sensors**, **4-20 mA sensors**, and **thermistors**. More details can be found at: www.rstinstruments.com/DT-Series-Data-Loggers.html



SPECIFICATIONS

L900 SYSTEM

GENERAL SPECIFICATIONS	DESCRIPTION
Operating Frequency (country dependent)	900 MHz, 868 MHz, 2.4 GHz - Spread Spectrum band
Access Frequency	24 hours
Outdoor Range	Up to 14 km in open country depending on antenna
Maximum Nodes	255
Communication	See diagram on inside

L900 NODE

SPECIFICATIONS	DESCRIPTION
Memory	4 MB
Time Format	Month / day / year Hour / minute / second
Power Source	1 lithium 'D' cell
Additional Quiescent Current	15 µA
Battery Life	up to 10 years
Temperature Range	-40°C to 60°C (-40° to 140°F)

Enclosure dimensions will vary according to chosen data logger.



A typical RSTAR Hub enclosure with solar panel. RST specializes in custom setups, contact RST for more details.

ORDERING INFO

L900 COMPATIBLE DATA LOGGERS

DATA LOGGER	DESCRIPTION
DT2011B*	Single Channel Vibrating Wire Data Logger
DT2040*	20/40 Channel Vibrating Wire/Thermistor Data Logger
DT2055B*	5/10 Channel Vibrating Wire/Thermistor Data Logger
DT2306*	Potentiometer Data Logger
DT2350*	2 Channel Load Cell Data Logger
DT2485*	Digital Bus (DT-BUS) Data Logger
DT4205*	5/10 Channel 4-20mA Transmitter Data Logger Thermistor Data Logger
DTL201B*	Uniaxial Tilt Data Logger
DTL202B*	Biaxial Tilt Data Logger
ELGL1430*	FlexDAQ Data Logger 300 (RSTAR Hub)
ELGL1206*	FlexDAQ Data Logger CR6 (RSTAR Hub)

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THREAD GATEWAYS

MODEL	PART #	FREQUENCY	LOCATION
THREAD XC	ELTHREAD-XC	900 MHz	North America
THREAD X	ELTHREAD-X	2.4 GHz	Worldwide
THREAD EC	ELTHREAD-EC	868 MHz	EU Countries/Europe
THREAD E	ELTHREAD-E	900 MHz	Australia
RSTAR to THREAD RTU	R2T	900 MHz	Brazil
		900 MHz	Chile
		900 MHz	Singapore

L900 RSTAR RADIO & ANTENNA KIT

Please specify frequency based on location.

GeoViewer* Software (see at right)

* See brochure at www.rstinstruments.com

GeoViewer

REAL-TIME MONITORING

One platform viewable Anywhere

100's OF Loggers | 1000's OF Sensors | DOZENS OF Sensor Types

A sensor configuration with RSTAR is easily incorporated into RST's GeoViewer Software for multi-sensor management.

powered by sensometrics

Screenshots of sensometrics management software for data-driven decision making with powerful & easy to use tools.



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