

Wireless technology providing automated data acquisition

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 RTU interfaced to a FLEXDAQ datalogger. The RSTAR Array Radio Series is based on the 900 MHz and 2.4 GHz spread spectrum band (country dependent) with extensive open-country range through use of simple dipole or directional antennae.

A complete RSTAR L900 System is packet-orientated, and consists of slave RSTAR Nodes (DT2011B, DT2055B, DT2040 for VW instruments, DT4205 for 4-20mA transmitters and DTL201B (uniaxial) & DTL202B (biaxial) Tilt Loggers, with L900 Radio and Antenna kit) and a L900 RTU (master) which is a DIN-rail mounted module in the flexDAQ enclosure. The RSTAR L900 nodes wake from low power and collect data from their attached sensors, such as Vibrating Wire Piezometers. 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 RTU. Upon reception to the flexDAQ, the L900 RTU will issue an ACK signal which may include clock synchronisation and rate data.

The L900 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.

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



The radio antenna can be easily attached.

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.

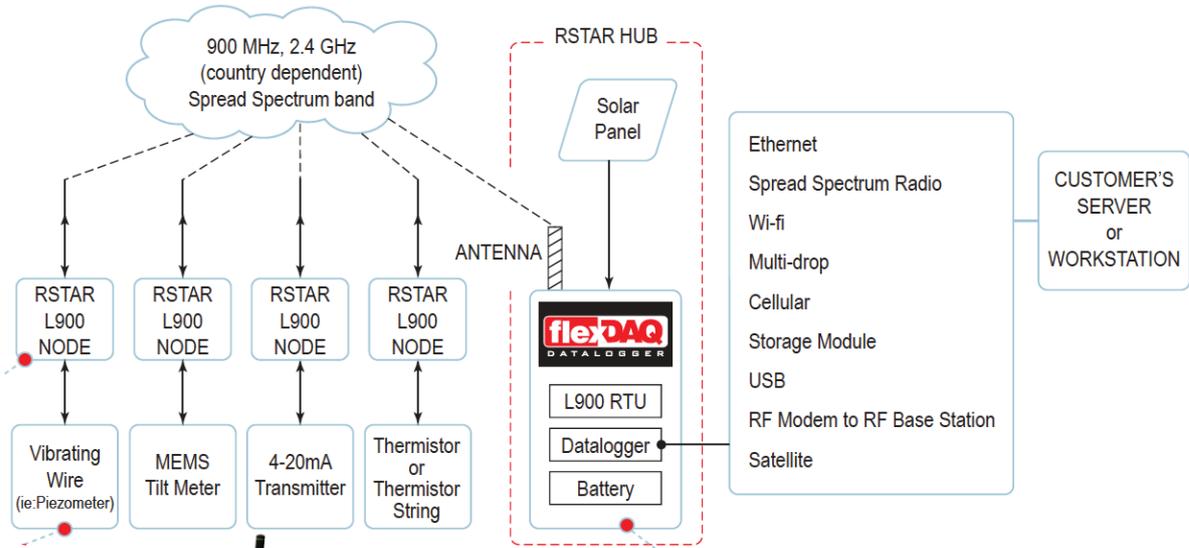
The DT2011B, DT2055B and DT2040 Data Loggers are all equipped with an option to add on a radio antenna and incorporate it into an RSTAR wireless system.



As shown in the diagram on the right, a typical RSTAR L900 NODE consists of a data logger (DT2011B, DT2055B, DT2040 or DT4205) connected to a vibrating wire sensor such as an RST Vibrating Wire Piezometer, and a L900 RSTAR Radio & Antenna Kit.

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

APPLICATIONS	To allow remote wireless data connection from nodes (sensors) to a datalogging hub.	FEATURES	<p>Excellent Hub - Node range - up to 14 km in open country.</p> <p>Ultra-low quiescent power. RSTAR Nodes powered by 1 lithium 'C' or 'D' cell (up to 7 years of life).</p> <p>Simple star routing - no mesh overhead.</p> <p>Up to 255 L900 Nodes per flexDAQ.</p>	<p>Simple network setup: add node serial number to RSTAR Hub, deploy.</p> <p>Based on proven flexDAQ experience and technology.</p> <p>Multiple telemetry options (cell, modem, LAN, radio, satellite,... see diagram).</p>	<p>Data can be accessed at multiple locations via WWW.</p> <p>Data is protected at all stages by encrypted, error-corrected transmission and storage.</p> <p>Fully compatible with RST GeoViewer Software.</p>
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+ Shown here is an **RST DT2040 Data Logger** with an attached antenna and an applied rstar L900 decal.

The DT2040 Data Logger is a low cost, battery powered data logger, designed for reliable, unattended monitoring of up to 40 sensors which may be any mix of vibrating wire sensors and thermistors, typically 20 vibrating wire sensors with their associated thermistors and/or thermistor strings.



+ An **RST DT2055B Ten Channel Data Logger** with an attached antenna and an applied rstar L900 decal.

The DT2055B Ten Channel Data Logger is a low cost, battery powered data logger, designed for reliable, unattended monitoring of up to 10 sensors which may be any mix of vibrating wire sensors and thermistors, typically 5 vibrating wire sensors with their associated thermistors.



+ **DT4205 Ten Channel Data Logger**
Monitors up to 10 channels which may be any mix of 4-20mA sensors or thermistors.



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

SYSTEM + NODE

SPECIFICATIONS

L900 SYSTEM

GENERAL SPECIFICATIONS	DESCRIPTION
Operating Frequency (country dependent)	900 MHz, 2.4 GHz - Spread Spectrum band
Access Frequency	10 mins. to 4 hrs.
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 'C' or 'D' cell
Additional Quiescent Current	15 μ A
Battery Life	up to 10 years
Temperature Range	-40°C to 60°C (-40° to 140°F)
Enclosure	NEMA 4X (IP65)
Dimensions (for housing only, excludes cable and USB connectors and antenna)	3.0" W x 7.50" D x 2.25" H

ORDERING INFO

L900 COMPATIBLE DATA LOGGERS

DATA LOGGER	DESCRIPTION
DT2011B*	Single Channel Vibrating Wire Data Logger
DT2055B*	Ten Channel Data Logger (VW & thermistor)
DT2040*	Data Logger (up to 40 sensors, VW & thermistor)
DTL201B*	MEMS Uniaxial Tilt Logger
DTL202B*	MEMS Biaxial Tilt Logger
DT4205*	4-20mA & thermistor Data Logger (up to 10 channels)
ELGL1300*	flexDAQ Data Logger 800
ELGL1200*	flexDAQ Data Logger 1000

L900 RSTAR RADIO & ANTENNA KIT

Please specify frequency based on location.

FREQUENCY	LOCATION
900 MHz	North America
2.4 GHz	Worldwide
2.4 GHz	EU Countries/Europe
900 MHz	Australia
900 MHz	Brazil
900 MHz	Chile
900 MHz	Singapore

GeoViewer* Software (see at right)

* See separate brochure at www.rst-instruments.com



A typical L900 pedestal enclosure with solar panel. RST specialises in custom setups, contact RST for more details.

GeoViewer
REAL-TIME MONITORING

One platform viewable Anywhere

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

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



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