WiSI™

OUTDOOR INDUSTRIAL WIRELESS DATA COLLECTION

RUGID

Flexible

Solutions

For A

Wireless

Sensor

Network

WiSI™ (Wireless Sensor Interface) from Rugid Computer provides a completely integrated and fully featured solution for wireless data acquisition. WiSI is designed for rapid deployment of a wireless sensor network (WSN) to monitor and control* remote sensors.

Made in USA

*Additional equipment needed to perform control logic

WiSI combines a license-free 2.4GHz radio, integrated solar panel with a lead-free super capacitor* for maintenance-free operation and multiple sensor interfaces in a waterproof IP-67 package. WiSI's self-configure into a robust wireless sensor network, adapts to changing environmental conditions and securely passes data up to two miles per hop with 128-bit AES encryption. WiSI provides flexible solutions for a wireless sensor network.

Features:

Internal	Serial	Analog Inputs	Analog Outputs**	Digital Inputs	Digital Outputs	Sensor Supply
Temperature	Modbus RTU	0 – 20 mA	0-20 mA	Pulse	2 A - Sinking	5 V
Low-Power Detection	RS232	0 – 5 V	0-5 V	Status		18 V (SP)
Transmit LED	RS485	±1.8 V	0-10 V	Event		24 V (EP)
Switch/Force Transmission		0 – 2.2 V				

- Up to 2 mile range per hop at 2.4GHz

- 128-bit AES encryption

- Sensor non-specific

- Solar power with back-up super capacitor*

- Zero maintenance / no batteries to change*

- 5 volt and 18 volt supply for powering sensors

- Modbus interface provides flexibility - view collected data and dynamically adjust system

- Modbus master - poll modbus slave sensors

- Low power indication

- Environmental protection IP67 rated enclosure

- User definable alarming conditions for AI & DI channels

- I/O mapping - 2 nodes

- User-definable report rate

- Transmit LED

- Onboard switch to force transmission

- Serial port for modifying settings and sending data

- Easily integrates with Rugid RTUs - automatic array generation

- Easily integrates with any modbus master device - RTU, PLC, HMI, SCADA, etc.

- Easy installation - only need to attach local signal wires

- Easy network setup through FREE configuration software

- Low power, suitable for energy harvesting applications

- Viewable signal strength for installation and debugging

- Fits inside standard 2-inch ID pipe

*SP package
**EP Package

No Sun

No Power

No Problem

WiSI-SP provides a completely integrated and fully featured solution for wireless data acquisition without the need for an external power source.

With a 10-year maintenance-free energy system consisting of an integrated solar panel and a lead-free super capacitor, WiSI-SP can communicate up to a week without sunlight.

Powerful

and

Outdoor Ready

WiSI-EP not only eliminates the need for costly and vulnerable wiring, but also reduces the time and complication of putting together an entire outdoor data acquisition package... and for a fraction of the price.

|	Solar Powered (SP)	Externally Powered (EP)
Radio:	2.4 GHz IEEE 802.15.4	
Range	Up to 4 KM / 2.5 miles	
Transmit Power	+19 dBm, (79 mW)	
Receiver Sensitivity	-100 dBm	
Antenna	Embedded 2.5 db gain omni antenna OR reverse polarity SMA connector, 50 ohms	
Encryption	128 bit AES, user selectable key	
Data Rate	250 kbps	
General:		
Power	+5 – 15 VDC	+5 – 30 VDC
Average Power Draw (12 / 24 VDC)	--	19 mA / 9.5 mA
Operating Temperature	-20 to 70° C	
Weight	EA – 8.2 oz. SMA – 7.6 oz.	EA – 5.8 oz. SMA – 5.2 oz.
Mounting	2 inch ID pipe	2 inch ID pipe, 2 x 8-32 screws
I/O Connections	Reverse voltage protected	
Connector	HD DB26, crimp and poke OR solder cup	
Certifications	FCC, CE - Pending	
Sensor Supplies:	2 non-isolated, switched	
	+18 volt supply +5 volt regulated 25 mA max combined load	+24 volt supply, 100 mA +5 volt regulated, 100 mA
Digital Inputs:	4 non-isolated, sinking, wetted 3.0V	
Input Voltage Rating	0 – 24 VDC	
Input Current	2 mA max at 24 VDC	
Pulse Frequency	150 Hz max	150 Hz max– sleeping nodes
Pulse Width	50 µs	
Digital Outputs:	4 FET, sinking	
Voltage Rating	42 V max	
Current Rating	2 A max	
Analog Inputs:	4 non-isolated 12-bit, single ended	
0 – 40 mA (up to 4)	0.04 mA min, 45 mA max	
0 – 5 Volts (up to 4)	0.025 V min, +5.15 V max	
-1.8 Volts to +1.8 Volts (up to 4)	-1.8 V min, +1.8 V max	
0 – 2.2 Volts (up to 4)	0.02 V min, +2.30 V max	
Analog Outputs:	--	2 x 4-20 mA, 0-5 V, or 0-10 V
Serial Port:	RS232 or RS485	
Protocols	Modbus RTU master	Modbus RTU master (Coordinator node RTU slave)

Wow, these specs are amazing!
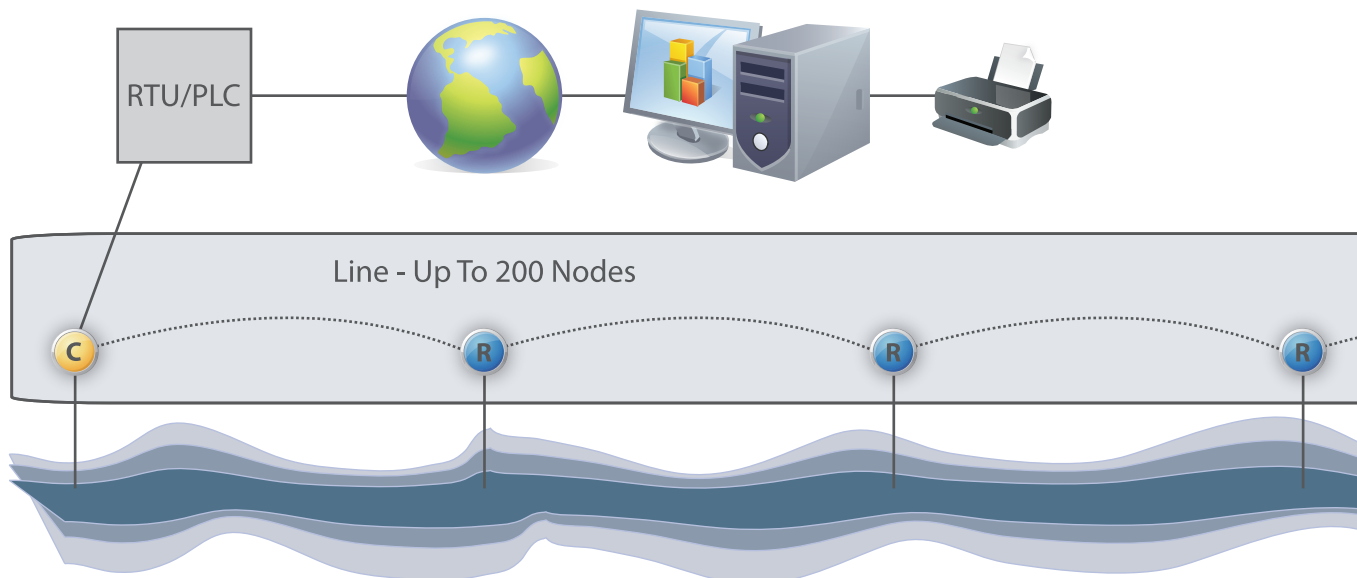
WiSI can do it all!

WiSI Networks

C / R =

E =
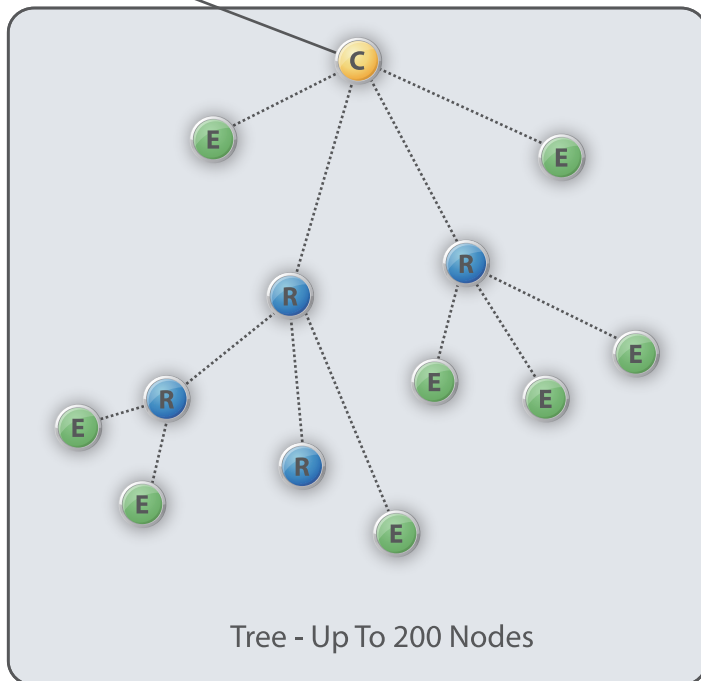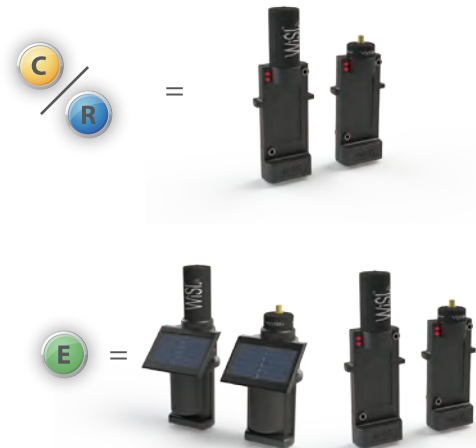
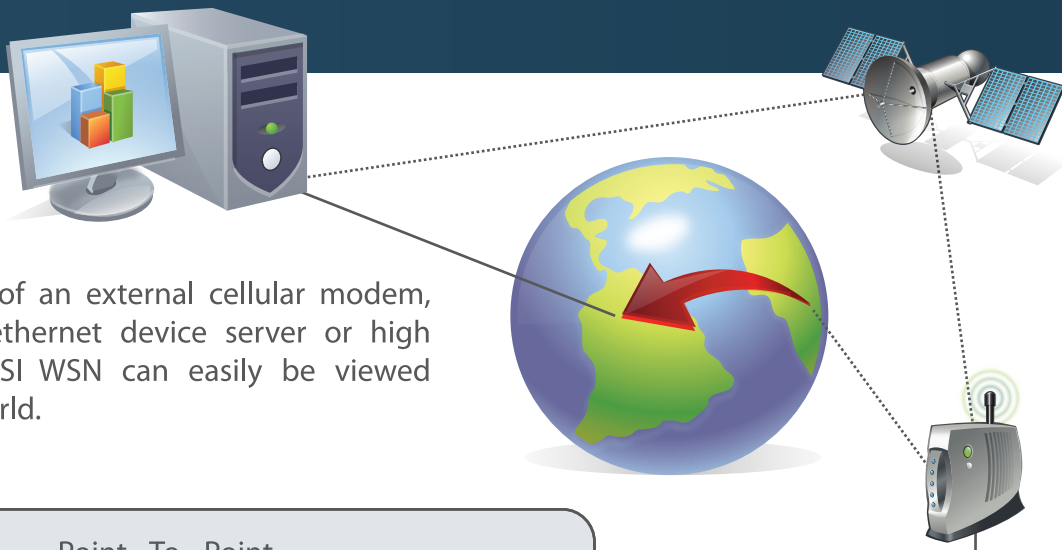Pick the package that works best with your design.

Tree - Up To 200 Nodes

From simple to complex, small to large, a WiSI WSN is the solution you have been waiting for!

For control applications, the addition of a RTU/PLC can transorm data collection to total system control.

RTU/PLC

Line - Up To 200 Nodes

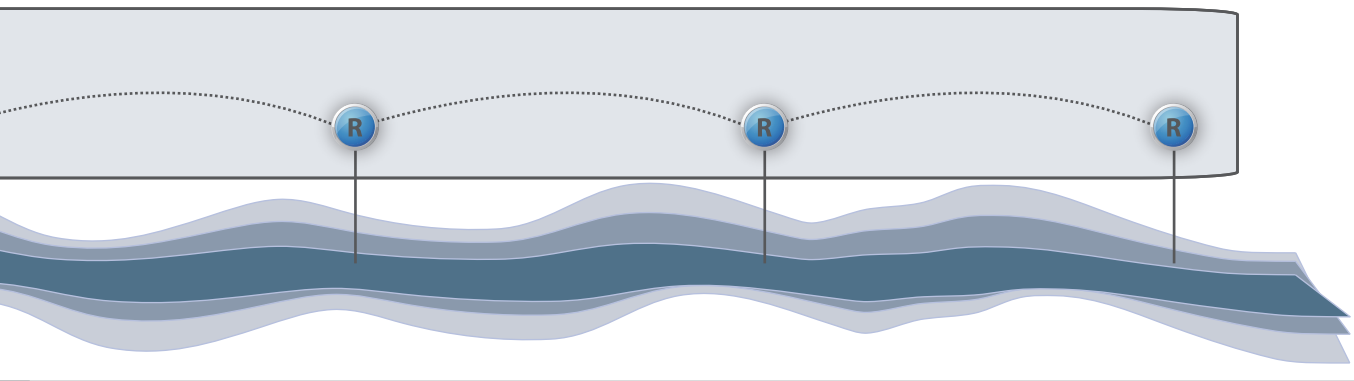C   R   R   R

6

With the addition of an external cellular modem, satellite modem, ethernet device server or high power radio, a WiSI WSN can easily be viewed anywhere in the world.
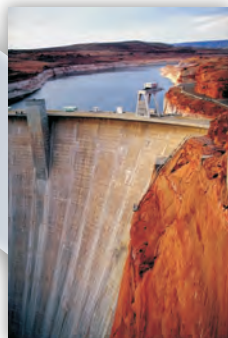
Point - To - Point

DI → DO
DO ← DI
AO ← AI

AI → AO

RTU/PLC

Star - Up To 16 Nodes
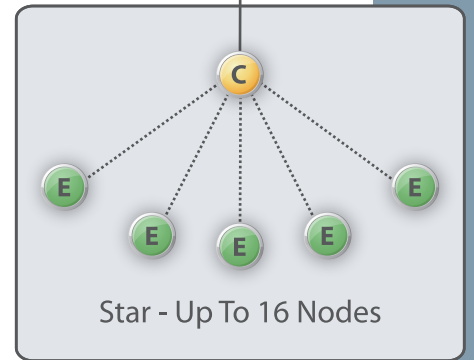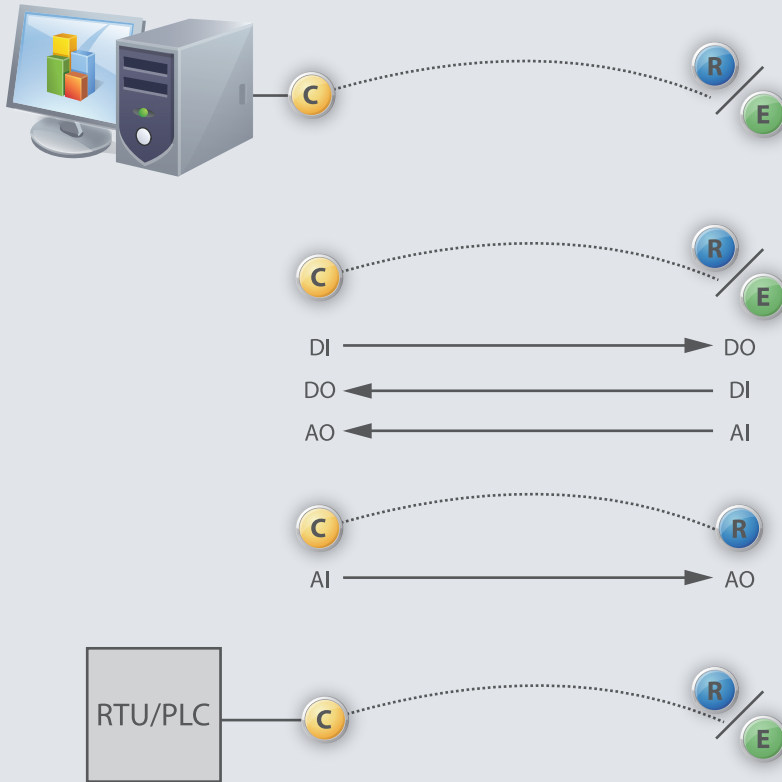
With I/O pairing between two nodes, you can replace wire runs for analog and digital signals.

A

World

Of

Possibility

Water and Wastewater

- Tank Level Monitoring and Pump Control
- Flow Meter Monitoring
- Retention/Overflow Pond Monitoring
- Waterway Gate Controls
- Canal Monitoring
- Tank Sites
- Lake and Stream Monitoring

Other

- Wire Replacement
- Security - Perimeter Monitoring
- Transportation - Over-Sized Load Proximity Detection
- Mining - Dust Suppression Monitoring

Envrionmental Monitoring

- Measuring Wind Speed With an Anemometer
- Measuring Wind Direction with a Weathervane
- Measuring Rainfall with a Tipping Bucket
- Soil Moisture
- Air Pollution Monitoring
- Forest Fire Detection
- Greenhouse Monitoring
- Landslide Detection

Oil and Gas

- Cathodic Detection
- Wellhead Safety
- Tank Farms
- Gas Flow
- Fuel Level/Flow
- Spill Detection

Agriculture

- Pivot Pump Monitoring
- Flow Meter Monitoring
- Soil Moisture and Smart Watering
- Frost Detection

Industrial

- Gas Leak Detection
- Alarm Monitoring
- Gas Meter Monitoring
- Electricity Meter Monitoring
- Intrusion Detection

CONFIGURATION CONSOLE

With the FREE WiSI Configuration Console software the user can setup an entire network of WiSIs and configure specific device parameters in minutes.
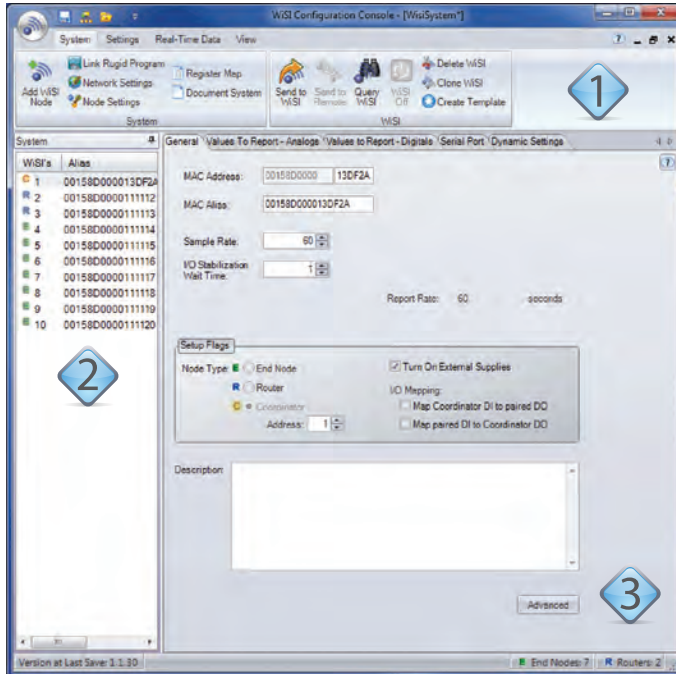
The WiSI Configuration Console is divided into 3 easy-to-navigate sections:

1 Tools and Settings

2 WiSI Network

3 Individual WiSI Settings

Remotely configure nodes over the network.

Create templates of standard node configurations to assist in large or duplicate configurations.

Query function to easily add nodes to the WSN.

View and log real-time-data for each node in the WiSI wireless network.

Use a WiSI USB docking station* to upload and communicate to WiSI nodes from any Windows-based PC.

Individual node I/O configuration allows customization for engineering units, alarm thresholds, and report rates.

Software auto-generates random network key for new systems eliminating conflicting WiSI networks.

*Minimum of one docking station required to program WiSIs.
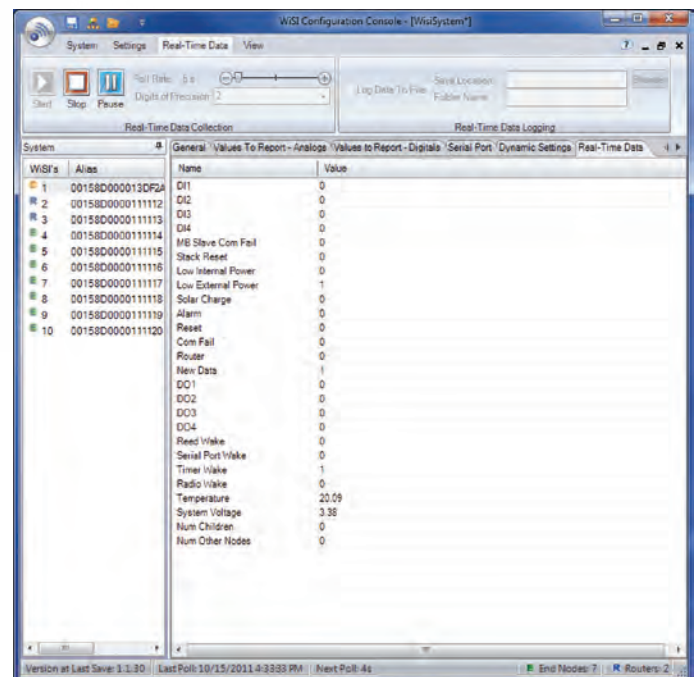
Green In Black

All WiSIs are molded in an ecologically friendly material produced from renewable raw materials. No chemical reactions take place during the molding process and no solvents are released. All molding waste is completely recyclable.
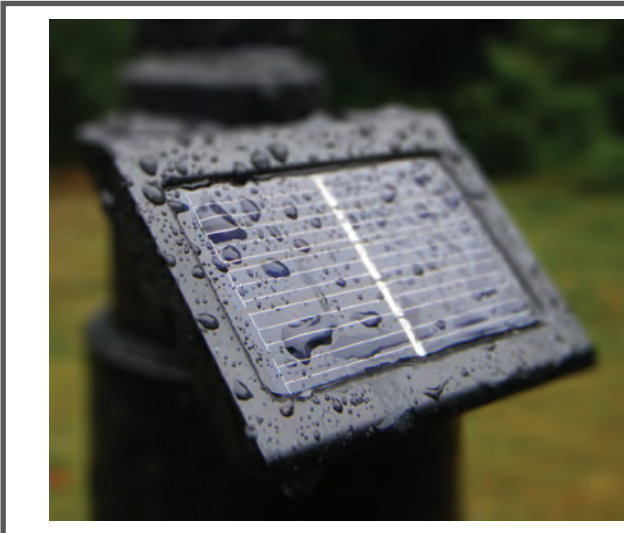
Love-It And Leave-It

The unique packaging of the WiSI makes it 100% waterproof. Piece of mind goes a long way knowing you can have an "install and forget about-it" attitude.

Making A Connection

Connections to the WiSI are made through the IP-67 rated water-tight backshell. Solder-cup or crimp-and-poke HD DB-26 connectors securely mate and seal to the WiSI.
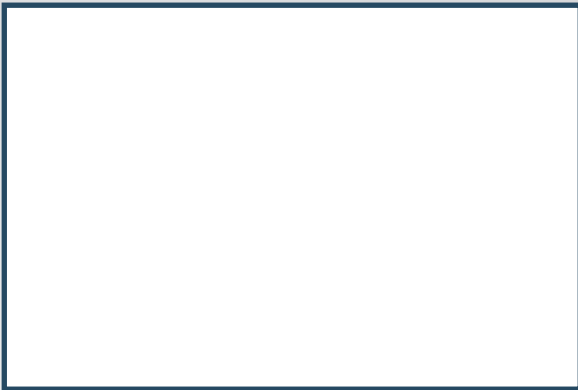
www.rugidcomputer.com

WiSl is perfect for our next project!

Made in USA

RUGID COMPUTER, INC.

9730 Lathrop Industrial Dr. SW, F1 • Olympia, WA 98512, USA

P: 360-866-4492 • F: 360-866-8074

www.rugidcomputer.com

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WHEN YOU MUST STAY IN CONTROL