

Intech Wireless Z-2400 SCADA Series Communication Modules for MicroScan



Intech INSTRUMENTS LTD

ZigBee® Technology
New Turbo RF Transmitter
SCADA Wireless Communications
Configuration & Specifications

www.intech.co.nz

ZigBee®

The New Wireless Network Standard

ZigBee® Technology empowers the Intech MicroScan SCADA.

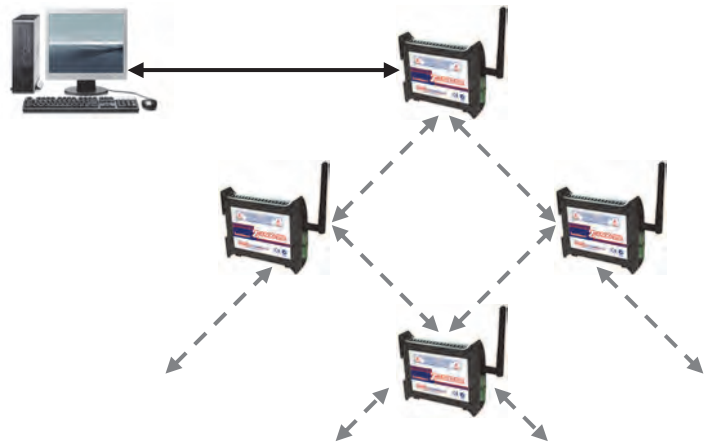
ZigBee® is a specification for a suite of high level communication protocols using small, low-power digital radios based on the IEEE 802.15.4-2006 standard for wireless personal area networks (WPANs). ZigBee® is targeted at radio-frequency (RF) applications that require a low data rate, secure networking, and low power consumption - especially good for battery powered nodes.

If you are looking for wireless monitoring and/or remote control solutions, Intech's Z-2400 nodes may be the answer.

Intech Z-2400 devices integrate ZigBee® technology to form a **Mesh Network** between nodes. This technique allows the range of an individual node to be expanded and multiplied, covering a much larger area. When the mesh network discovers a new Z-2400 node, it will automatically incorporate it into the current network. Mesh networking is also designed for good redundancy. e.g. if a node malfunctions, the mesh network will direct the data through an alternate path using another node.

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Z-2400 Mesh Network



Z-2400 Nodes

The **Z-2400** nodes below are specifically designed for the MicroScan SCADA package.

MODEL	DESCRIPTION
Z-2400-RB-T (Turbo)	The Z-2400-RB-T nodes are configurable either as Base or Remote devices, by a single DIP switch. Base Z-2400-RB-T configured as a Base node, is the master of the wireless network connected to it. This node connects to the computer via RS485/422/232 and automatically keeps track of all other nodes and manages the wireless network. Remote Z-2400-RB-T configured as a Remote node, forms part of the mesh wireless network, plus allows connection of the Intech Micro family of field stations via RS485/422/232.
Z-2400-TCP-T (Turbo)	The Z-2400-TCP-T is a Base node and is the master of the wireless network connected to it. This node connects to the computer network via Ethernet, and automatically keeps track of all other nodes and manages the wireless network.
Z-2400-A2I (Turbo)	The Z-2400-A2I node is a wireless remote station in it's own right. Fitted with two isolated universal inputs, four digital inputs, and four digital outputs. Like the Z-2400-RB remote this node also forms part of the mesh sending and repeating wireless network signals. (Requires XU-USB for programming universal inputs).
Z-2400-SLEEPER	The Z-2400-SLEEPER is battery a powered node for those applications where monitoring of isolated or mobile equipment is required. The Sleeper node is equipped with two universal inputs. A plug pack power supply can be added for permanent monitoring. (Requires XU-USB for programming universal inputs).

Software for Z-2400 SCADA Series

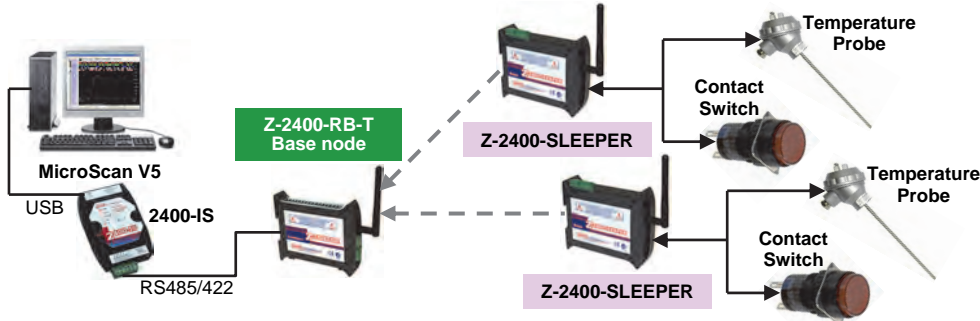
The Z-2400 SCADA series of units require the following software for operation:

MicroScan version 5.1 (or later) - SCADA software for all nodes.

XU Setup version X.X (or later) - Programming software for setting up inputs and outputs of the Z-2400-A2I and Z-2400-SLEEPER.

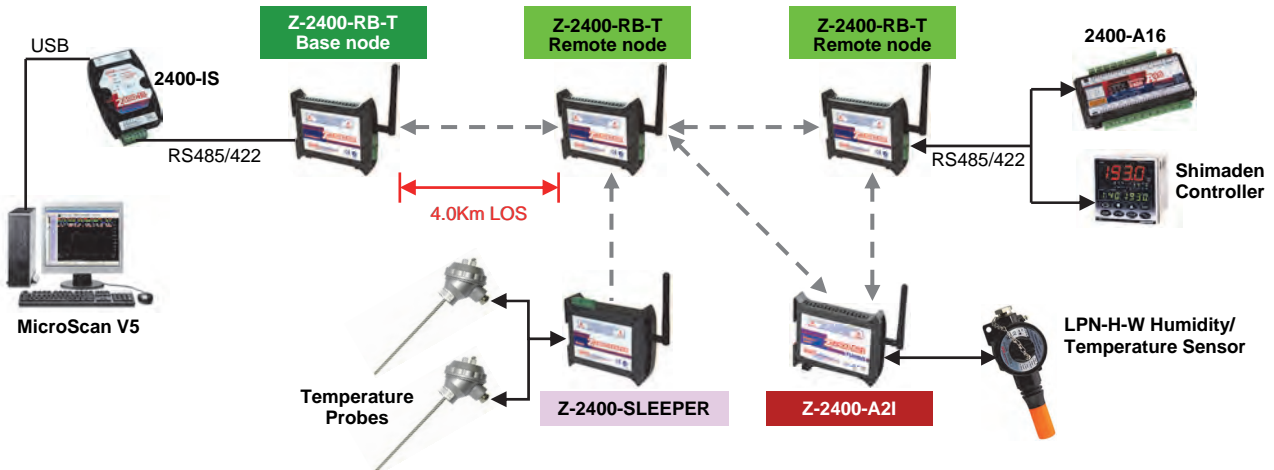
Z-2400 Series Configuration Examples

1. Z-2400 wireless network using Sleeper nodes only

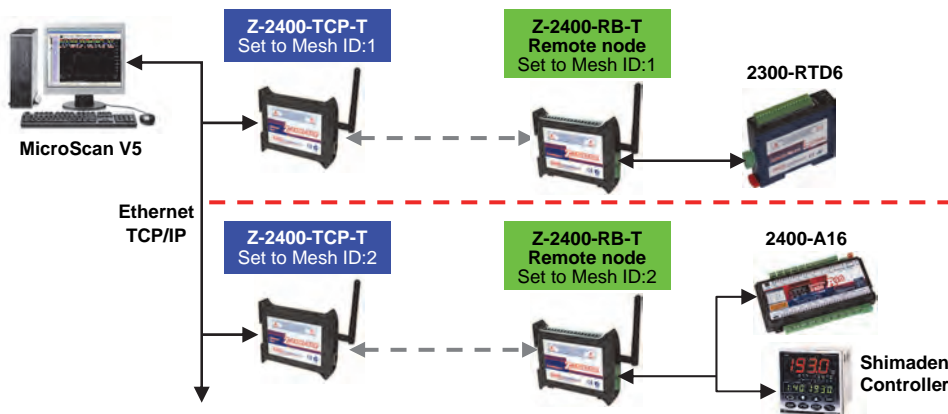


Note: The Z-2400-SLEEPER can only transmit input readings directly to the Base unit when there are no Remote nodes in the wireless network. Otherwise it must transmit data via a remote node first. (*dip switch B3 on base*)

2. Z-2400 wireless network - repeater, remote, sleeper, and A2 remote station.



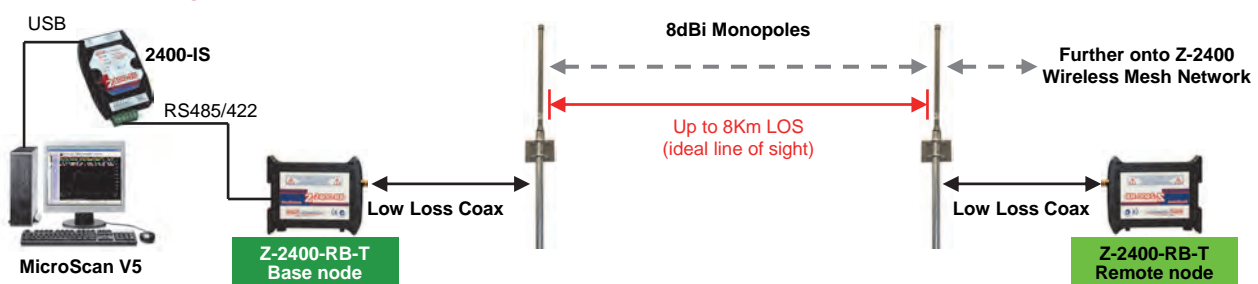
3. Z-2400 setup with two Ethernet Base nodes.



Multiple Z-2400 mesh networks may be required when:

- Large distances separate each network site.
- To avoid a large number of stations in a network.
- 2100/2400 stations, and Shimaden controllers must always operate on a separate network to the 2300 Stations series (*as illustrated*).

4. Extending your Z-2400 wireless network.



Z-2400 Series Specifications

General Specifications

Wireless standard: IEEE 802.15.4-2006.
Wireless range: Between Turbo nodes 4.0Km LOS, Between a Turbo node and a Sleeper node 2.5Km LOS.
(LOS refers to ideal **line of sight** conditions, with no surrounding trees, buildings or RF interference.)
Wireless Frequency: 2405~2485MHz.
Frequency Hopping: 15 Channels.
Wireless Power: Turbo Nodes 100mW, SLEEPER Node 1mW.
Intech Devices Compatible with the Remote node:
2400-A16, 2400-M-R, 2100-XX (2100-A16,D,A4,A4e).
2300-XX stations (base & remote set to MODBUS).
Shimaden Standard Protocol Controllers SR90, SR80, SRS10A, FP93, FP23, SR23, SD16A, SD24.

Z-2400-RB-T (Turbo Base/Remote)

Communications: RS232, RS422, RS485.
Duty: Configurable as Base or Remote.
Embedded protocol support: MicroScan.
Power Supply: 9~36Vdc.
Power consumption: 2VA.
Router data rate typical: 2400-A16 = 2sec accumulative.
Shimaden = 1sec accumulative.

Z-2400-TCP-T (Turbo Base)

Communications: MicroScan ASCII.
Duty: Base only.
Embedded protocol support: MicroScan TCP.
Power Supply : 9~36Vdc.
Power consumption: 2VA.

Z-2400-SLEEPER

Number of universal inputs: 2 channels (not isolated).

- RTD, Pt100 and Pt1000.
- Thermocouple B,E,J,K,N,R,S,T.
⇒ RTD & Thermocouple output linearised.
- mA, mV and V.
- Pseudo Digital.

High Accuracy: 0.1%
Reverse polarity protected.

Scan Rate: 1, 2, 5, 15, 30 or 60min. Dip-switch selectable.
Optional external Power Supply: 9~36Vdc.
XU-USB required for programming universal inputs.

Z-2400-A2I (Turbo Remote Station)

Number of universal inputs: 2 isolated channels.

- RTD, Pt100 and Pt1000.
- Thermocouple B,E,J,K,N,R,S,T.
- mA, mV and V.
- Pseudo Digital.

Number of digital inputs: 4.
Number of digital outputs: 2.
Number of relay outputs: 2.

Power Supply: 9~36Vdc.
Power consumption: 2.5VA.
XU-USB required for programming universal inputs.

Z-2400-Sleeper Power Saving Notes:

- Because of the sleep function, the Sleeper cannot repeat other Z-2400 mesh signals.
- The Sleeper node is not turbo, and therefore has a smaller wireless range.
- Typically 2 years battery life when wake up interval is set to 2 minutes. (Poor signal strength may reduce battery life.)

Laws of Z-2400 wireless networks:

- Z-2400-SLEEPER nodes can transmit directly with the Base node only when there are no Remote nodes present in the wireless network. If however, Remote nodes are present in a Z-2400 network, then all Sleeper node data must be directed through the Remote nodes. (*Network type selectable via dip switch on base*).
- Maximum Z-2400 network capacity:
 - Up to 32 Base nodes. Base nodes can be combination of RS485/422/232 or Ethernet TCP/IP.
 - Up to 32 Remotes per Base node.
 - Up to 32 Sleepers per Remote/Base node.**Note:** *Wireless speed will drop as more Remote & Sleeper nodes are added.*
- Multiple Base Nodes within range of each other will need to be setup with unique Mesh IDs.
- Adequate wireless signal strength is required for reliable data speed and communications. Add additional interposing Remote nodes where inadequate wireless signal strength is experienced.

Product Liability. This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25°C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.

Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independent fail-safe back-up system must always be implemented.

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