NI Wireless Sensor Network (WSN) Starter Kit

Thank you for purchasing the NI WSN Starter Kit. You can use this kit to set up a National Instruments wireless sensor network (WSN) and evaluate NI LabVIEW software and WSN technology.

>> Consult the "Getting Started with NI Wireless Sensor Networks" tutorial at **ni.com/wsngettingstartedguide** for more information.

1 Unpack Your NI WSN Starter Kit

Unpack the contents and make sure you have the following parts:

- NI WSN-9791 Ethernet gateway
- NI WSN-3202 ±10 V programmable analog input node
- NI WSN-3212 programmable thermocouple input node
- LabVIEW Wireless Sensor Network (WSN) Module Pioneer evaluation CD (includes NI-WSN software installer)
- LabVIEW evaluation CD
- Desktop power supply for WSN-9791
- Two sets of 4 AA batteries for NI WSN measurement nodes
- Ethernet cable
- J-type thermocouple (quantity 2)
- Potentiometer (voltage sensor)
- NI screwdriver

2 Install the Software

The NI WSN Starter Kit requires a PC running Windows Vista/XP OS to act as the host controller in the system.

1. Insert the LabVIEW CD and install the software by following the on-screen instructions.

The NI WSN Starter Kit includes programmable measurement nodes that can be targeted and programmed with the LabVIEW WSN Module Pioneer. Use the LabVIEW WSN Module Pioneer to customize node behavior and extend battery life, increase acquisition performance, and embed local decision making.

2. Insert the LabVIEW WSN Module Pioneer evaluation CD and install the software by following the on-screen instructions.

3 Set Up the Hardware

WSN-9791 Ethernet Gateway

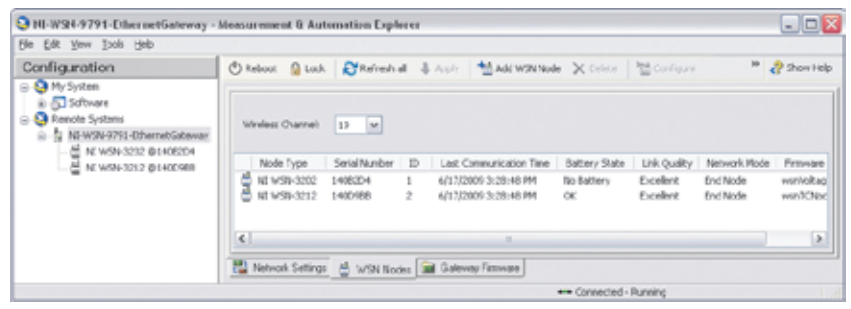
1. Attach the antenna to the WSN-9791 and connect the Ethernet cable between the WSN-9791 and your network router or directly to your PC (may require the use of an Ethernet crossover cable).
2. Connect the desktop power supply to the WSN-9791.

NI WSN Measurement Nodes

1. Attach the antenna, 18-position screw-terminal connectors, and screw-terminal labels to the measurement nodes.
2. Connect the potentiometer and thermocouple to your measurement nodes.
   a. Connect the Signal and GND wires from the potentiometer to the WSN-3202 AI0 and AI GND screw terminals, respectively. Connect the power wire to the SEN PWR terminal. Connect the positive (white) wire of your thermocouple to the TC0+ screw terminal on the WSN-3212 and the negative (red) wire to the TC0- screw terminal.
3. Insert the batteries and secure the compartment covers.

4 Configure Network

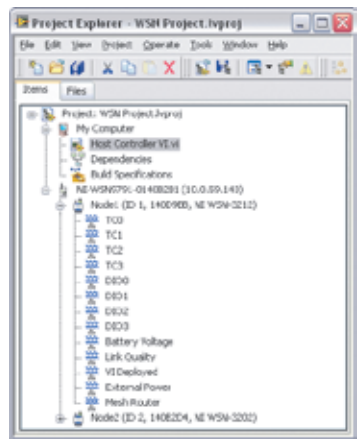
You must configure your WSN in NI Measurement & Automation Explorer (MAX) before using LabVIEW to take measurements.



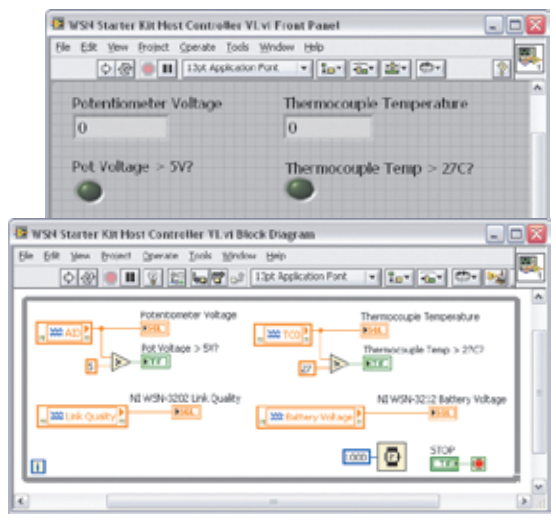
1. Launch MAX and expand **Remote Systems** to confirm that MAX has autodetected the WSN-9791. If the gateway does not appear, consult the "Getting Started with NI Wireless Sensor Networks" tutorial at **ni.com/wsngettingstartedguide** for more information. Confirm or change the default settings on the **Network Settings** tab. Be sure to click **Apply** to save any changes that you made.
2. Add the two measurement nodes to your wireless network by selecting the **WSN Nodes** tab and clicking the **Add WSN Node** button.
   a. Enter the type, serial number, and ID number for your two measurement nodes.
   b. Click **Apply** to save your changes.
   c. To establish a connection with the gateway, press the **Signal Strength** button on each node for at least five seconds.
   d. Upon connection, you can select **Refresh all** on the **WSN Nodes** tab to view the last communication time, battery state, link quality, and network mode of your measurement nodes.

5 Extract Measurement Data with LabVIEW and NI-WSN

Monitoring your WSN measurement data is easy with LabVIEW and NI-WSN software.



1. Start LabVIEW and create a New Project.
2. Add your WSN-9791 to the project by right-clicking on the project name and selecting **New»Targets and Devices**.
3. To monitor the potentiometer voltage and thermocouple temperature, create a Host Controller VI by right-clicking on **My Computer** and selecting **New»VI** and dragging the corresponding I/O variables to the LabVIEW block diagram.
4. Build your Host Controller VI and click **Run** to instantly acquire measurements from your WSN.
5. Turn the knob on the potentiometer or pinch the end of the thermocouple to see the data update on your LabVIEW front panel.



Continue Your Experience

Use the LabVIEW WSN Module Pioneer to customize and enhance the behavior of your programmable measurement nodes. Learn more at **ni.com/lvwsn**

>> Learn more about NI WSN at **ni.com/wsn**

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