

## Quick Start Guide

### Device Setup

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#### Apply 12–30 V DC to the DXM100 Controller

Follow these instructions to apply 12–30 V dc power to the controller using a wall plug.

Equipment used:

- **DXM100-B1R1** Wireless Controller
- **MQDMC-501** 0.3 m (1 ft) cordset with a 5-pin M12/Euro-style quick disconnect fitting
- **PS24W** Wall plug power supply; 24 V dc, 1 A



**Important:** Verify the antenna has been installed before applying power to any DX80 product.

1. Connect the brown wire from the **MQDMC-501** cordset to the DXM100's terminal 2 (PWR).
2. Connect the blue wire from the **MQDMC-501** cordset to the DXM100's terminal 3 (GND).
3. Connect the **PS24W** power supply to the **MQDMC-501** cordset.
4. Plug in the **PSD24W** wall plug power supply.  
On the DXM, the orange LED near the power terminals turns on and the LCD turns on after about 10 seconds.

#### Binding and Conducting a Site Survey with the ISM Radio

The DXM Controller internal ISM radio will either be a MultiHop master radio or a DX80 Gateway radio.

Before the ISM radio can communicate, the DXM Controller must be bound to the other radios in the wireless network. Use the DXM Controller LCD menu to bind radios to the internal ISM radio.

The LCD and the processor applications share the external Modbus connection. If the processor is configured to constantly interact with Modbus, it may cause issues with the LCD attempting to use the functions of the ISM radio. To alleviate the contention do one of these things:

- Load a DXM configuration file that slows down the read/write rules.
- Disable the DXM configuration file from loading into the processor by setting DIP switch 4 to ON (on the processor board). Reboot the device. When the processor reboots, it will not load the configuration file and remains idle. See the DXM100 Controller Instructional Manual (190037) for the processor DIP switch location.

#### Bind a DX80 Node to a DXM Gateway and Assign the Node Address

Before beginning the binding procedure, apply power to all the devices. Separate radios by 2 meters when running binding procedure. Put only one DXM Gateway into binding at a time to prevent binding to the wrong Gateway.

1. Enter binding mode on the DXM radio:
  - a) Use the arrow keys to select the **ISM Radio** menu on the LCD and click **ENTER**.
  - b) Highlight the **Binding** menu and click **ENTER**.
2. Assign the Node address to the Node.
  - For Nodes without rotary dials: Use the DXM arrow keys to select the Node address to assign to the DX80 Node about to enter binding mode. The DXM assigns this Node address to the next Node that enters binding mode. Only bind one Node at a time.
  - For Nodes with rotary dials: Use the Node's rotary dials to assign a valid decimal Node Address (between 01 and 47). The left rotary dial represents the tens digit (0 through 4) and the right dial represents the ones digit (0 through 9) of the Node Address.
3. Start binding mode on the DXM radio by clicking **ENTER** on the DXM radio.
4. Enter binding mode on the DX80 Node.
  - For housed radios, triple-click button 2.
  - For board-level radios, triple-click the button.
  - For Nodes without buttons, refer to the Node's datasheet for instructions on entering binding mode.

The left and right red LEDs flash alternately and the Node searches for a Gateway in binding mode. After the Node binds, the LEDs stay solid momentarily, then they flash together four times. The Node exits binding mode.

5. Label the Node with the assigned address number for future reference.
6. Click **BACK** on the DXM to exit binding for that specific Node address.



7. Repeat steps 2 through 5, for as many DX80 Nodes as are needed for your network.
8. When you are finished binding, click **BACK** on the DXM until you return to the main menu.

## Bind a MultiHop Radio to a DXM and Assign the Device ID

Before beginning the binding procedure, apply power to all the devices. Separate radios by 2 meters when running binding procedure. Put only one DXM MultiHop master radio into binding at a time to prevent binding the slave radios to the wrong master radio.

1. Enter binding mode on the DXM radio:
  - a) Use the arrow keys select the **ISM Radio** menu on the LCD and click **ENTER**.
  - b) Highlight the **Binding** menu and click **ENTER**.
2. Assign the device address to the repeater or slave radios.
  - For MultiHop radios without rotary dials: Use the DXM arrow keys to select the device ID to assign to the MultiHop radio about to enter binding mode. The DXM assigns this device ID to the next radio that enters binding mode. Only bind one slave radio at a time.
  - For MultiHop radios with rotary dials: Use the repeater or slave's rotary dials to assign a valid decimal device ID (11 through 60). The left rotary dial represents the tens digit (1 through 6) and the right dial represents the ones digit (0 through 9) of the device ID.
3. Start binding mode on the DXM radio by clicking **ENTER** on the DXM radio.
4. After entering binding mode on the DXM Controller, put the MultiHop repeater or slave radio into binding mode.
  - For housed radios, triple-click button 2.
  - For board-level radios, triple-click the button.
  - For radios without buttons, refer to the radio's datasheet for instructions on entering binding mode.

After binding is completed, the MultiHop slave automatically exits binding mode and begins operation.
5. Click **BACK** on the DXM to exit binding for that specific device address.
6. Label the MultiHop slave radio with the assigned address number for future reference.
7. Repeat steps 2 through 6, changing the device address for as many MultiHop slaves as are needed for your network.
8. When you are finished binding, click **BACK** on the DXM until you return to the main menu. All radio devices begin to form the network after the master data radio exits binding mode.

## Conduct a Site Survey

Although the MultiHop and DX80 devices are architecturally different, the site survey process is similar when conducted from the DXM LCD menu.

For a DX80 network, the Gateway controls the site survey and the results display on the LCD. Running Site Survey on a DX80 network does not affect the throughput of the DX80 network.

For a MultiHop network, the master device passes the site survey request to the intended Modbus slave device. The Site Survey runs and the results display on the LCD. Running Site Survey on a MultiHop network stops all network traffic to that device.

1. From the **ISM Radio** menu, use the down arrow to highlight the **Site Survey** menu. Click **ENTER**.
2. Use the Up or Down arrows to select the Node number (DX80 network) or Modbus Slave ID (MultiHop network). Click **ENTER** to run the site survey with that Node or slave.

## Set the IP Address

Change the IP Address of the DXM100-B1R1 to connect to a Modbus TCP/IP or Ethernet/IP Host Controller.

Equipment needed:

- DXM100-B1R1 Wireless Controller

There are two ways to set the IP address: using the DXM's LCD menu or using the DXM Configuration Tool to change the XML file.

Entering IP Addresses using the LCD menu system overrides the IP addresses in the XML configuration files. To use the IP addresses set in the XML configuration file, clear the IP addresses from the menu system.

1. On the DXM, use the arrows and move to the **System Config** menu. Press **Enter**.
2. Use the arrow keys to select the **Ethernet** menu. Press **Enter**.
3. Use the arrow keys to select **IP**. Press **Enter**.  
The octet of the IP address displays.
4. Use the up and down arrows to change the IP address. Press **Enter** to move to the next octet.
5. Press **Enter** on the final octet to accept the changes.
6. Cycle power to the DXM Controller.  
The changes are saved on the DXM Controller and the new IP address will be used.

Use this same procedures to set the Subnet Mask (SN) and Default Gateway (GW) to match your network requirements.

## Configuration Instructions

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### Configuring the DXM Controller

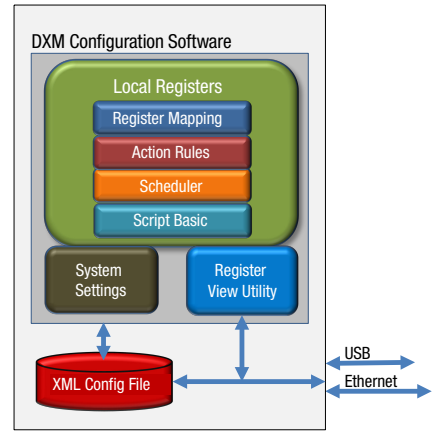
The DXM Controller must be configured using the DXM Configuration Tool *software*.

To configure the DXM Controller, connect the DXM Controller's USB or Ethernet port to a computer.

The DXM Configuration Tool allows the user to define parameters for the DXM Controller, then saves the configuration in an XML file on the PC.

After the configuration file is saved, upload the XML configuration file to the DXM Controller for operation.

This quick start guide outlines the basic operations to set up a DXM Controller using the configuration software. For a more comprehensive explanation of features, refer the DXM Controller Instruction Manual or to the DXM Configuration Tool Instruction Manual.



### Configuration Example: Reading Registers on a Modbus Slave Device

The opening page of the DXM Configuration Tool displays the **Local Registers** tab. The local registers are the main global pool of registers that are defined by the user to store data within the DXM Controller. The bottom status bar displays the communications status, application status, and the DXM Configuration Tool version.

In this short example, we will configure the DXM Controller to read six registers on an external Modbus Slave device and save the data into the local registers.

#### Step 1: Define the Local Registers

Change the name and parameter settings for each Local Register under the **Local Register Configuration** tab.

You may change them individually or by using the Modify Multiple Registers feature.

This example screen uses the Modify Multiple Registers feature.

Figure 1. Modify Multiple Registers - Configuration Example

1. Click on the **Modify Multiple Registers** tab. Use this screen to quickly modify multiple local registers at a time.
2. Select the range of registers to change.
3. Select the fields to change in each local register. In our example, registers one through six will be changed and the names will be GPS Reg followed by an auto-incremented number. This example will also change the LCD permissions flag to *read* to allow the values of the local registers to display on the DXM Controller's LCD.
4. Click **Change Registers** to change the registers.

## Step 2: Read the Registers

Under **Register Mapping**, the **Read Rules** or **Write Rules** interact with the Local Registers to exchange data with external Modbus devices.

This example screen shows a read rule created to read six registers (address 1 through 6), from Modbus Slave 4. The results are stored in the Local Registers 1 through 6.

Figure 2. Read Rules - Configuration Example

1. Change to the **Register Mapping > Read Rules** tab to define a Modbus read.
2. Click **Add Read Rule**.
3. Click the arrow next to the new rule to expand the information.
4. Type in a name into the name field.
5. Select the slave address. In this example, we will read from Slave ID 4.
6. Select the starting register and ending register. In this example, we will read from register 1 through register 6.
7. Select the beginning local register on the DXM Controller.

8. Enter a polling frequency. In this example we have entered five seconds.
9. If necessary, select the error condition. For this example, if the read function fails after three attempts, the read rule writes 12345 to the DXM Controller local registers. Notice the list of local register names this read rule is using.

**Step 3: Define the Time Zone and Set the Time Clock**

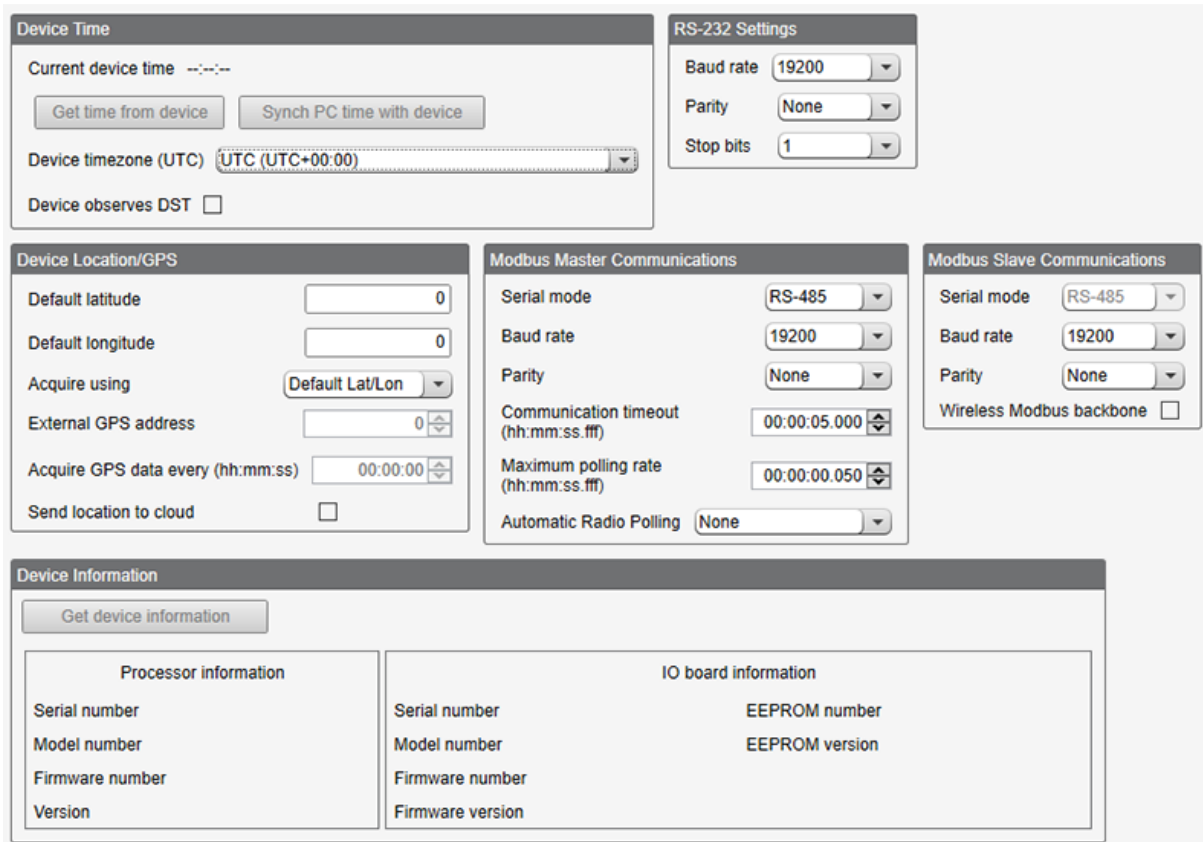


Figure 3. Settings > General

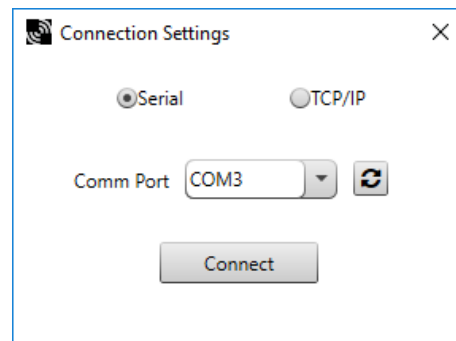
Use the **Settings > General** tab to define the time zone and daylight saving option. The time zone and DST options are saved into the configuration file. If you connect the DXM Controller to a computer, click **Synch PC Time with Device** to set the time on the DXM Controller to match the time of the computer.

**Step 4: Save the Configuration File**

To save your configuration file, go to **File > Save As**. Enter a file name and save the file. The file name cannot contain spaces or special characters.

**Step 5: Connect the DXM Controller**

1. Connect the DXM Controller to the computer using the USB port.
2. From the **Device** menu, select **Connection Settings**.
3. From the dialog box, select the appropriate com port for the DXM communications.
4. Click **Connect** to connect to the DXM Controller.



**Step 6: Send the Configuration File to the DXM Controller**

1. From the **Device** menu, select **Send XML Configuration to Device**.

- Select the configuration file to load. The program will have pre-selected the file name you have previously saved.



**Important:** The program only loads a file to the DXM Controller. The internal parameter settings are not sent to the device, only the saved configuration file is sent to the DXM Controller.

After the file is selected, the configuration program begins uploading the file to the DXM Controller. The DXM configuration program reboots the controller after the program finishes uploading the configuration file. The new configuration is only read at startup and always requires a reboot or power cycle to take effect.

It will take a few seconds to the DXM Controller to reboot.



**Important:** If the power cycles to the DXM Controller while the DXM Configuration Tool is connected, close the USB port from the software and unplug the USB cable. Reconnect the Controller by plugging the USB cable into the Controller, then select **Device > Connection Settings**.

The DXM Controller is now running the new configuration. On the DXM Controller's LCD screen, select the **Registers** menu by clicking the **Enter** button with the **-> Registers** menu highlighted. The local registers defined in the configuration tool display.

### Tips and Tricks - Register View Screen

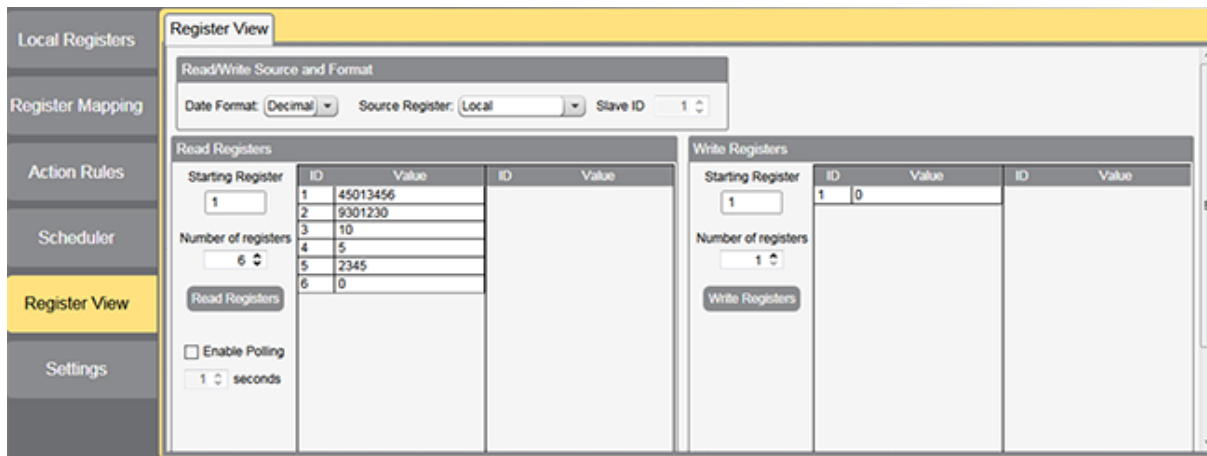


Figure 4. Register View

The **Register View** screen displays the results of a Modbus read/write utility built into the DXM Configuration Tool. Use this screen to read or write internal local registers or the registers of remote slave devices connected to the DXM Controller. Use this utility to debug DXM configurations and remote device problems.