Extended Address Mode and Binding

Using Extended Address Mode

Using extended address mode isolates networks from one another by assigning a unique code, the extended address code, to all devices in a particular network. Only devices sharing the extended address code can exchange data.

In addition to isolating networks, using extended addressing mode allows you to use up to 47 Nodes with a single Gateway. Without extended addressing, only 15 Nodes can communicate with a single Gateway.

The extended address code in the Gateway defaults to a code derived from its serial number, although the code can be customized using the manual binding procedure. Binding DX80 devices "locks" Nodes to a specific Gateway by teaching the Nodes the Gateway's extended address code. After the devices are bound, the Nodes only accept data from the Gateway to which they are bound.

> ☞ Important: All SureCross Performance Gateways and Nodes are preconfigured for extended addressing mode and cannot use rotary dial address mode. Skip this step in the installation procedure for Performance products.
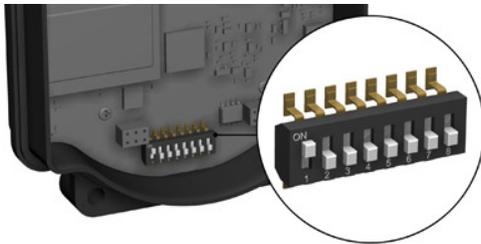
For all other SureCross DX80 models, follow these steps to activate extended address mode. After making any changes to DIP switch settings, you must cycle power to the device or the DIP switch changes will not be recognized.

1. Disconnect the Gateway and its Nodes* from their power source.
2. Remove the top covers of all radios.
3. Move DIP switch 1 to the ON position. (Refer to the Device Configuration section of the device's data sheet for instructions on accessing the DIP switches.)
4. Apply power to the radios.

* To cycle power to devices with batteries integrated into the housing, remove the battery for one minute.

More Details About Extended Address Mode

During automatic binding, the Gateway broadcasts the extended address code to all Nodes currently in binding mode. To manually bind, enter the extended address code manually into each network device. Manually binding is particularly useful when replacing or upgrading network devices.

Users of the DX80 product do not need to be aware of other nearby networks to ensure their network does not unintentionally exchange data with other networks. However, assigning different NIDs to different networks improves collocation performance in dense installations; this is true whether the network is in standard addressing mode or extended addressing mode.

> ☞ Important: The extended addressing code is independent from the system network ID (NID). Consequently, multiple networks can share a NID and will not exchange data; the networks are completely isolated from one another.

	Rotary Switch Mode	Extended Address Mode
Menus		There are more menu options in extended address mode.
Rotary Dials	The left rotary dial sets the Network ID and the right dial sets the Device ID/Address.	On the Gateway, both rotary dials, while in the (NID) menu, set the Network ID. On the Node both rotary dials are used to set the Device ID.
Nodes in Network	A maximum of 15 Nodes can be used in the wireless network	A maximum of 47 Nodes (48 total devices) can be used in the wireless network.

Binding Mode: What does it do?

Binding Nodes to a Gateway ensures the Nodes only exchange data with the Gateway they are bound to. After a Gateway enters binding mode, the Gateway automatically generates and transmits a unique extended addressing (XADR), or binding, code to all Nodes within range that are also in binding mode. The extended addressing (binding) code defines the network, and all radios within a network must use the same code.

After binding your Nodes to the Gateway, make note of the binding code displayed under the *DVCFG > XADR menu on the Gateway's LCD. Knowing the binding code prevents having to re-bind all Nodes if the Gateway is ever replaced.

Bind Radios to Form Networks

Binding Nodes to a Gateway ensures the Nodes only exchange data with the Gateway they are bound to. For a more detailed definition of binding mode, refer to the *Advanced Setup* section of the *SureCross Wireless I/O Networks* instruction manual.

Apply power to the Gateway and Nodes.

1. Enter binding mode on the Gateway.

   > If you have a two-button Gateway, triple-click button 2
   > If you have a one-button Gateway, triple-click the button
   > If you have a Gateway with no buttons, remove the rotary dial access cover and set both the right and left rotary dials to 0, then set both the right and left rotary dials to F.

   The red LEDs flash alternately when the Gateway is in binding mode. Any Node entering binding mode will bind to this Gateway.
2. Enter binding mode on the Node.

   > If you have a two-button Node, triple-click button 2.
   > If you have a one-button Node, triple-click the button.
   > If you have a Node with no buttons, remove the top cover and set both the left and right rotary dials to F to enter binding mode. [1]

   The Node enters binding mode and locates the Gateway in binding mode.

   For two LED models, the red LEDs flash alternately. After binding is complete, both LEDs are both solid red for a few seconds.

   For one-LED models, the red and green LED flashes alternately while the Node searches for the Gateway. After binding is complete, the LED is red and green for four seconds (looks orange), then the red and green flash simultaneously (looks orange) four times.

   The Node automatically exits binding mode, cycles its power, then enters RUN mode.
3. 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.
4. Repeat steps 2 and 3 for all Nodes that will communicate to this Gateway.
5. Exit binding mode on the Gateway.

   > If you have a two-button Gateway, single-click either button.
   > If you have a one-button Gateway, single-click the button.
   > If you have a Gateway with no buttons, change the Gateway's rotary dials to a valid Network ID.

   Valid Network IDs are 01 through 32, in decimal, established using the rotary dials. The left dial may be set to 0, 1, 2, or 3. The right dial may be set from 0 to 9 when the left dial is at 0, 1, or 2; or set to 0 through 2 when the left dial is at 3. (Positions A through F are invalid network ID numbers.)

When installing special kits with pre-mapped I/O, indicated by device model numbers beginning in DX80K, return the rotary dials to their original positions after binding. If the rotary dials are not returned to their original positions, the I/O mapping will not work.

Manually Choosing an Extended Address Code - Gateway

Manually choosing the extended address code is useful when replacing components of an existing wireless network.

To determine the existing extended address code, access the DINFO (Device Information) menu of either the existing Gateway or another Node in the network. Follow the submenu structure to the XADR display for that device.

1. Remove the Gateway's top cover.

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[1] Some older M-GAGE Nodes (models DX80N*X1W0P0ZR) may require F-F binding despite having a single button.

2. Move DIP switch 1 to the ON position to activate Extended Addressing Mode.
3. Apply power to the Gateway.
   The Gateway's LCD shows POWER, then RUN.
4. On the Gateway, single click button 1 to advance across the menus, stopping at the DVCFG menu.
   The Gateway's LCD shows (DVCFG).
5. Single click button 2 to select DVCFG. Single click button 1 to select from the available menu options, stopping at XADR.
6. Single click button 2 to enter the XADR menu.
   AUTO is automatic binding mode and uses the Gateway's serial number as the extended address code.
7. Single click button 1 to select manual mode.
8. Single click button 2 to enter manual mode.
   MANUAL allows the user to manually enter an extended address code.
9. Single click button 2 to advance to the extended address code entry step.
   After entering manual mode, use the right rotary dial to select the digits of the extended address code. The LCD shows SET XADR 000000.
10. Use the right rotary switch to begin setting the extended address code. Digit selection begins with the left most digit.
   After selecting the first digit, single click button 1 to advance right to the next digit. All six digits must be filled, even if it is with leading zeros. For example, to use 2245 as the code, enter 002245 into the device.
   To use the Gateway's serial number, enter 000000 as the extended addressing code.
11. Continue entering the code using a single click of button 1 to advance from left to right.
   After reaching the sixth digit, the curser returns to the first digit.
12. Single click button 2 when code entry is complete.
   The Gateway LCD displays the entered value for confirmation by showing CONFRM XADR, then repeating back your value.
13. Single click button 2 to save the code and exit the XADR menu.

When entering the extended address code, the digits auto fill with whatever position the rotary switch is currently in. For example, after entering the 00 part of the extended address code 002245, the third digit auto fills with a 0 until the rotary dial is rotated to 2.

After manually changing the extended address code on a Gateway in an existing network, change the extended address code for all Nodes in that network by either manually setting the code on all Node(s) or by beginning the automatic binding sequence on the Gateway and auto-binding all the Node(s).

Manually Choosing an Extended Address (Binding) Code - Node

Manually select the extended address, or binding, code when replacing components of an existing wireless network.

To determine the existing extended address code, access the DINFO (Device Information) menu of either the existing Gateway or another Node in the network. Follow the submenu structure to the XADR display for that device.

1. Remove the Node's top cover.
2. Move DIP switch 1 to the ON position to activate extended address mode.
3. Apply power to the Node.*
   The LCD displays POWER, then RUN.
4. On the Node, single click button 1 to advance across the menus, stopping at the DVCFG menu.
5. Single click button 2 to select DVCFG. Single click button 1 to select from the available menu options, stopping at XADR.
6. Single click button 2 to enter the XADR menu.
   AUTO is automatic binding mode and uses the Gateway's serial number as the extended address code.
7. Single click button 1, stopping at manual mode.
   MANUAL allows the user to manually enter an extended address code.
8. Single click button 2 to enter manual mode.
9. Single click button 2 to enter the extended address code entry step.
   The LCD shows SET XADR 000000.
10. Use the right rotary switch to begin setting the extended address code. Digit selection begins with the left most digit.
   After selecting the first digit, single click button 1 to advance right to the next digit. All six digits must be filled, even if it is with leading zeros. For example, to use 2245 as the code, enter 002245 into the device.
11. Continue entering the code using a single click of button 1 to advance from left to right.
   After reaching the sixth digit, the curser returns to the first digit.
12. Single click button 2 when code entry is complete. The Node LCD displays the entered value for confirmation.
   The LCD shows CONFRM XADR XXXXXX.
13. If the rotary dial hasn't been returned to the previous Node address (device address or ID), the LCD displays the prior setting as a reminder. Return the rotary dial to its previous Node address.
14. The new Node address setting displays (NEW NADR XX).
15. The Node confirms the new Node address by displaying CONFRM NADR XX.
16. Double click button 2 to exit the XADR menu and to return to RUN mode.

When entering the extended address code, the digits auto fill with whatever position the rotary switch is currently in. For example, after entering the 00 part of the extended address code 002245, the third digit auto fills with a 0 until the rotary dial is rotated to 2.

* For devices with batteries integrated into the housing, remove the battery for one minute to cycle power to the device.

Automatic Binding Using the Menu Navigation

The easiest way to bind the Gateway to its Nodes is by triple clicking button 2 to enter automatic binding mode. If you would prefer to begin automatic binding mode using the menu structure instead of the buttons, follow these steps.

Before making any changes to the DIP switches, disconnect the power to the devices. For devices with batteries integrated into the housing, remove the battery.

1. On the Gateway: remove the top cover.
2. Move DIP switch 1 to the ON position.
   Extended Addressing Mode is activated using DIP switch 1.
3. Apply power to the Gateway.
   The Gateway's LCD displays POWER, then *RUN.
4. On the Gateway, single click button 1 to advance across the menus, stopping at the DVCFG menu.
   The Gateway's LCD displays (DVCFG).
5. Single click button 2 to select DVCFG. Single click button 1 to select from the available menu options, stopping at XADR.
   The Gateway's LCD displays (XADR).
6. Single click button 2 to enter XADR mode. When the display reads (AUTO), single click button 2 again to begin the automatic binding mode.
   The LEDs flash alternately when the Gateway is in binding mode. Any Node entering binding mode will bind to this Gateway. The Gateway's LCD displays NETWRK BINDNG.
7. On the Node: remove the top cover.
8. Move DIP switch 1 to the ON position.
   Extended address mode is activated using DIP switch 1.
9. Apply power to the Node.
   The Node's LCD displays POWER, then *RUN.
10. On the Node, single click button 1 to advance across the menus, stopping at the DVCFG menu.
    The Node's LCD displays (DVCFG).
11. Single click button 2 to enter the DVCFG menu.
12. Single click button 1 to select from the available submenu options, stopping at XADR.
    The Node's LCD displays (XADR).
13. Single click button 2 to enter the XADR submenu.
14. When the display reads (AUTO), single click button 2 to begin the automatic binding mode.
    The Node enters binding mode. The Node's LCD displays NETWRK BINDNG. When the Node is bound, the LEDs are both solid red for a few seconds. The Node cycles its power, then enters RUN mode.
15. Use both of the Node's rotary dials to assign a decimal Node address between 01 and 47.

The left rotary dial represents the tens digit (0–4) and the right dial represents the ones digit (0–9) of the device address.
16. Repeat steps 7 through 15 for each additional Node that needs to communicate to that Gateway.
17. On the Gateway: single click button 1 or button 2.
    When button 1 or 2 is pressed, the Gateway exits binding mode and reboots. The Gateway's LCD displays POWER, then *RUN.

For devices with batteries integrated into the housing, remove the battery for one minute to cycle power to the device. After making any changes to DIP switch settings, you must cycle power to the device or the DIP switch changes will not be recognized.

Setting the Network ID in Extended Addressing Mode

Use the menu system to set the Network ID when using extended address mode.

1. From the top level menus, single-click button 1 to advance through the menus, stopping at DVCFG (Device Configuration).
   The Gateway's LCD displays *DVCFG
2. Single-click button 2 to enter the DVCFG menu options and stop at (NID).
   The Gateway's LCD displays (NID)

3. Single-click button 2.
   Enters the (NID) menu option.
4. Using both rotary dials on the Gateway, select a Network ID. The left rotary dial acts as the left digit and the right
   rotary dial acts as the right digit of the Network ID. In extended addressing mode, the Network ID can only be set from
   the rotary dials while in the (NID) menu.

Any Nodes bound to this Gateway 'follow' the Gateway to the new Network ID automatically. The current Network ID
and the new Network ID display on the LCD panel.
5. Single-click button 2.
   Saves the new values.
6. Double-click button 2.
   Exits this submenu and the LCD displays (NID).
7. Double-click button 2.
   Exits to the main menu system and returns to RUN mode. The LCD displays *DVCFG.

Setting the Maximum System Devices

To set the maximum number of devices in your system, use the MAXN submenu, located under the *DVCFG (Device
Configuration) menu.

Selecting the maximum number of system radio devices (Gateway and all Nodes) changes the timing for the wireless
network. For example, if you are running four Nodes in your wireless network, set the system's maximum device count to
8. This allows up to 8 radio devices, including the Gateway, in the wireless network and offers the highest throughput,
62.5 milliseconds, for each Node. The choices are 8, 16, 32, and 48 devices.