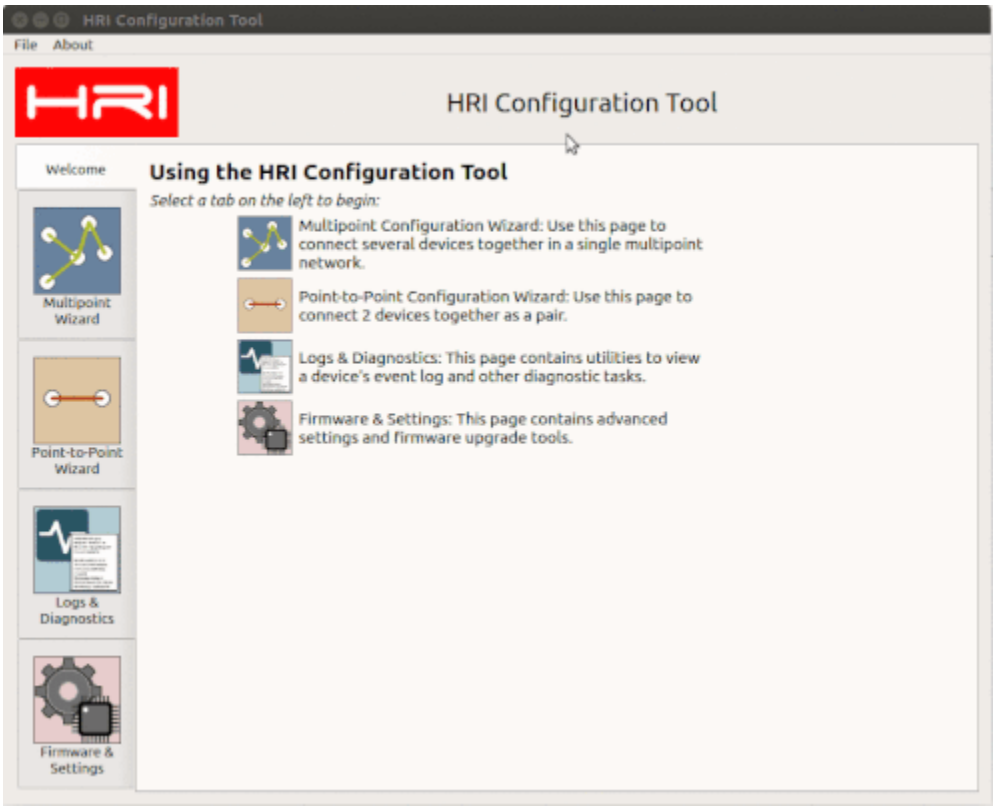
Configuring a Multipoint System

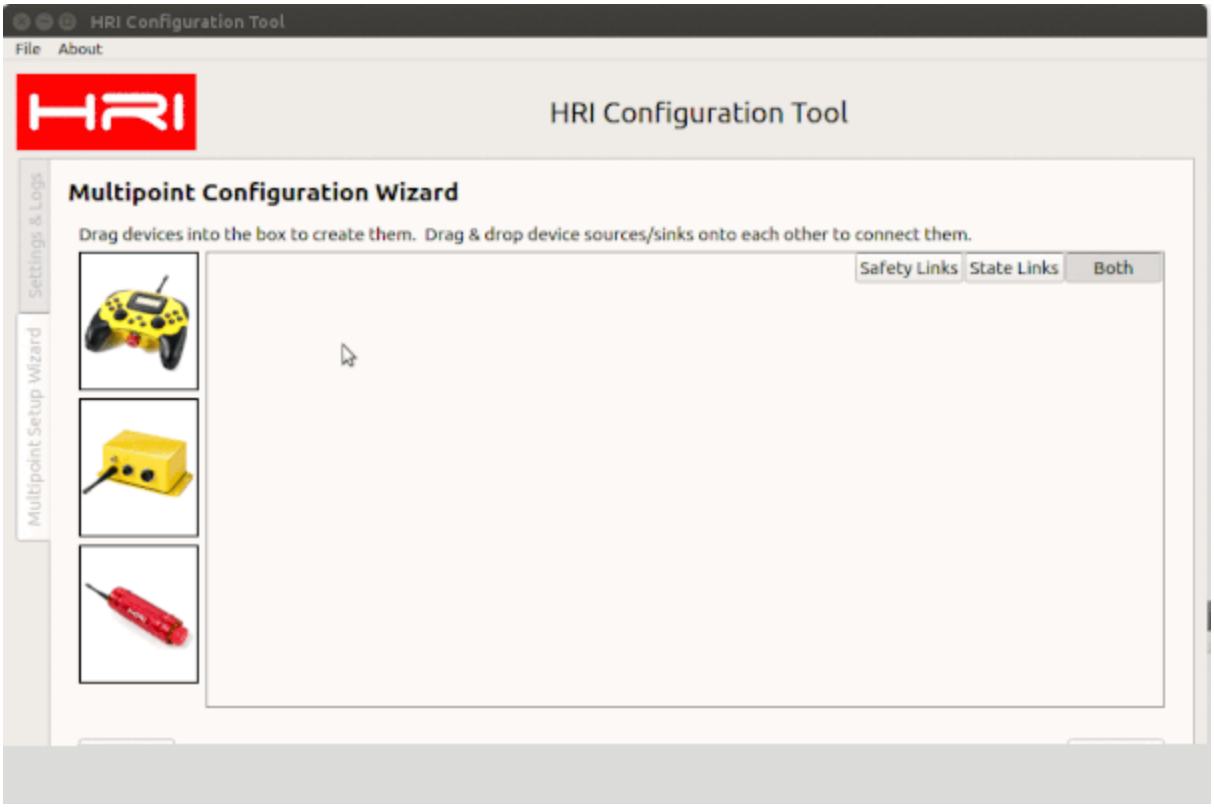
Opening the Multipoint Wizard

Open the HRI Config Tool, and enter the multipoint wizard by selecting the "Multipoint Setup Wizard" tab on the lefthand side of the screen.

> **Obtaining the Latest Configuration Tool**
> The latest version of the configuration tool can be downloaded here: Using the HRI Configuration Tool



Creating a Multipoint System



For each device in your desired multipoint network (**currently up to 8 devices supported**), drag its icon from the device tray on the left and drop it in the system frame on the right.

Connecting Sinks and Sources

Sinks are physical outputs on a device, such as the master enable outputs on a VSC, and can have their enable state change based on the safety data from one or more ***sources.***

Sources are physical or logical safety inputs that a device can emit over the multipoint network, such as the Estop button on a WES or the Estop inputs on a VSC. A single source can supply data to any number of ***sinks***.

In the example above, we place a VSC and an SRC in the frame, and connect the SRC's Estop button source to the VSC's master enable sink. This will cause the VSC's master enable output to be stopped if the SRC's Estop button is pressed. We then place a WES in the frame and connect its Estop button to the VSC's master enable output. This will now cause the VSC's master enable output to be stopped if either the SRC or WES Estop is pressed.

Note: By default, the VSC will always link its own wired Estop input to its master enable output. Currently this behavior cannot be changed.

> **VSC Estop Input Behavior**
> By default, the VSC will always link its own wired Estop input to its master enable output. Currently this behavior cannot be changed.

Connecting States

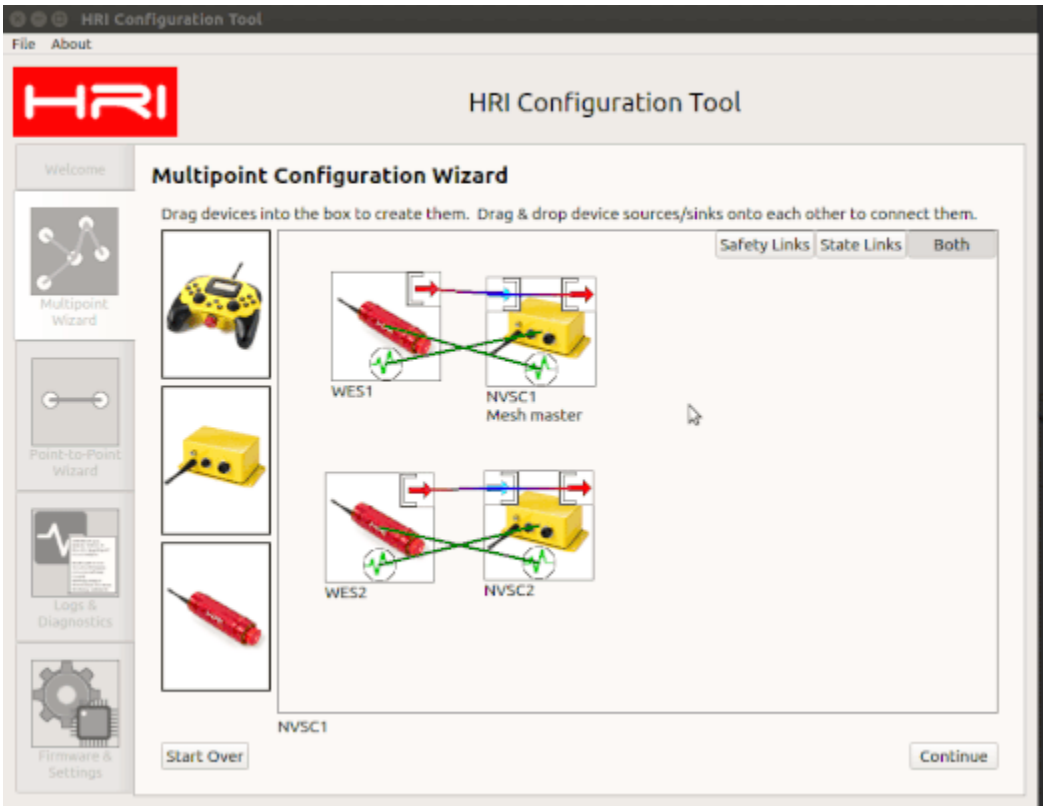
State data is non-safety data that still affects the behavior of another device. For example, the SRC can emit joystick and other status data ("active", "paused", "in menu"). A device can only use a single state data source, but a single state data source can be used by multiple devices.

> **SRC State Limitation**
> SRC state data can only currently be associated with a single VSC data output (CAN, USB, or RS-232).

In the example above, after placing the SRC and VSC we connect the SRC's state data to the VSC, and vice versa. This will allow the SRC to display a connection on its screen, and will let the VSC emit joystick data from its USB HID interface (or CAN or RS-232, depending on its configuration). We then add the WES, and set it to use the VSC's state data, which will allow the WES to signal the VSC's connection strength and Estop condition via its Estop LED.

Enabling the RS485 Wired Network Backbone

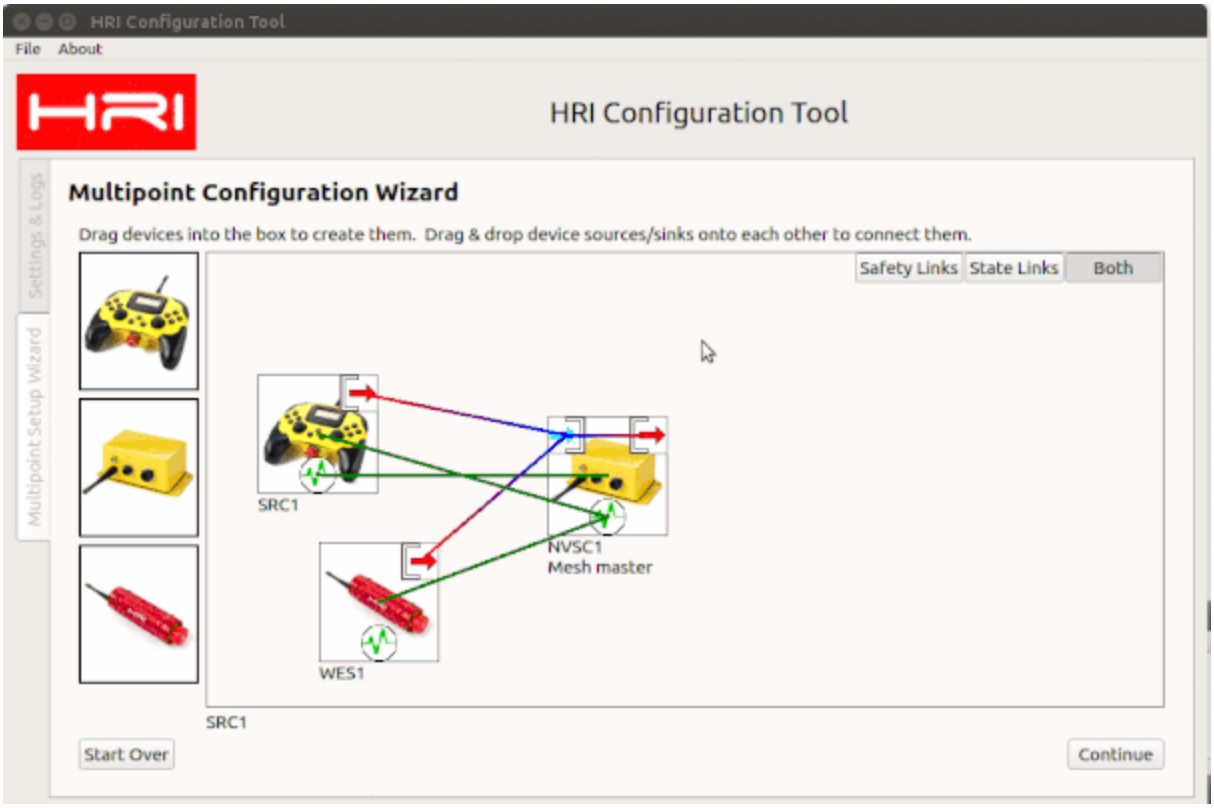
In some situations, it can be helpful to connect VSCs over a wired RS485 link. When set to the "Network Backbone" mode, a VSC will enable its RS485 pins in order to listen for safety data, and also forward any messages received via its radio out over the RS485 link to any other VSCs that may be connected.



To enable this mode when setting up a multipoint network, right-click a VSC and enter the "Serial Configuration" menu, then select "Network Backbone (RS485)".

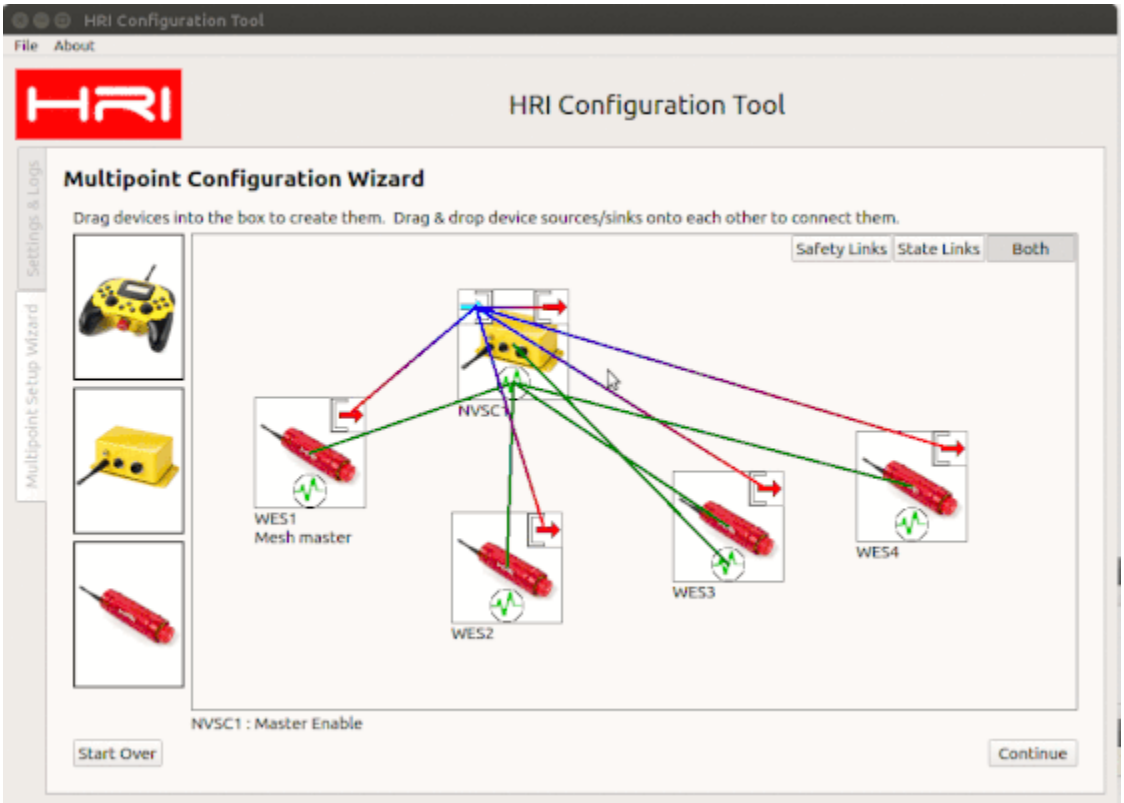
> **Wired Configuration**
> Selecting the RS485 network backbone mode will disable the RS232 serial pins.

Changing Views



In a multipoint system with many devices and connections, the system frame can become cluttered and confusing. To change the displayed connections, to show only safety or state data connections, click on the view buttons located at the upper-right corner of the system frame.

Setting the Mesh Master and Deleting Devices

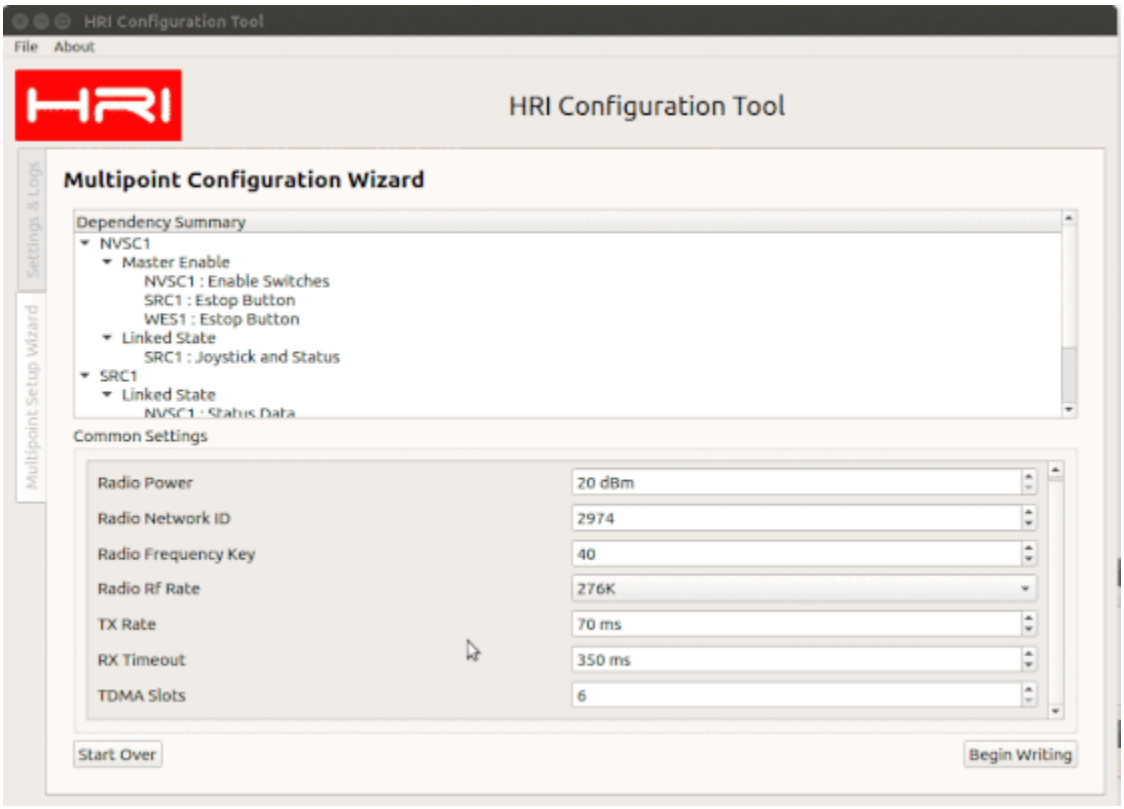


The mesh master is the device that coordinates the mesh network, and therefore must be powered on for any of the other devices to

communicate. By default this is the first device to be dropped into the system frame. To select a different device as the mesh master, right-click the device and select "Set as mesh master".

If a device has been added to the system frame by mistake, it can be removed by right-clicking the device and selecting "Delete".

Writing the Configuration



Summary Page

Once the devices in the multipoint system have been placed and connected, click on the Continue button to enter the Summary page. This lists all the devices in the network, their sinks and what sources their sinks depend on, and what linked states are used. It also displays the common network settings that will be used by all devices. Typically no changes are needed to these settings.

Write Page

The left pane of the Write page shows all the individual device settings of the multipoint system, and whether they have been written to their corresponding physical devices yet. The right pane displays a list of the devices connected via USB, which can be refreshed by clicking the "Rescan" button, a button to intiate writing settings to a connected device, and a progress bar and debug log window.

For each device:

- Select an unwritten device from the left pane.
- Power on a device of the right type and connect it over USB, and hit the Rescan button. The device should appear in the dropdown list.
- Select the USB device to write to and click "Write Configuration", then wait for writing to complete.
- Once the write completes, the device will be marked with a green border and listed as "Write Completed", and will also display the serial number of the physical device its settings were written to.

Once all devices have been successfully written, click the "Save All Configurations to File" button to save all the settings that were just written.

At this point, the multipoint network has been successfully created. Power cycle all the written devices, and click "Return to Start" to exit the write page.

Related articles

- Configuring a Multipoint System

- RS-485 Multipoint Wiring