

Multi-Controller Support for MachineMotion 2

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MachineMotion now supports connecting up to 8 controllers together to expand the number of configurable drives available in a single system. This is achieved by connecting all relevant MachineMotions in the system to a central Ethernet Switch or Router (*purchased separately*).

To set up a Multi-Controller system, follow Steps 1 through 3 of the [Power on and set-up](#) section in the [MachineMotion 2 User Manual](#) for each controller, followed by the **Network Connection** configuration found below.

Connecting Controllers using an Ethernet Switch or Router

When connecting to an Ethernet Switch or Router, each LAN1 port of each MachineMotion controller in the system must be configured to different IP addresses, but to the same subnet. The LAN2 port of each controller also need to be configured in **Dynamic Mode**, to ensure that each LAN2 port has a **unique** address on the network that doesn't collide with the addresses set for each LAN1 port.

Example of Network Configuration

LAN 1

MachineMotion Controllers

Ethernet Settings

- LAN 1
- LAN 2
- GATEWAY

Available WiFi Networks

Current Network Settings

LAN 1

IP: 192.168.1.5

Netmask: 255.255.255.0

Use Static Mode

Use Dynamic Mode

SW v2.7.0 & HW V2B2

Figure 1: LAN 1 Configuration for Multi-Controller Support

If connecting to a Switch

- IP: Set to different IP, with the same subnet, for each MachineMotion (e.g. 192.168.1.3, 192.168.1.4, 192.168.1.5, etc.)
 - **Note:** to avoid any conflicts, do not set the IP to **192.168.1.2** as that address is reserved as the default for all newly added controllers.
- Netmask: 255.255.255.0
- Then click: **Use Static Mode**

If connecting to a Router

- Click: **Use Dynamic Mode**
 - Similarly to above, ensure that the IP is not set to **192.168.1.2**.

LAN 2

- MachineMotion Controllers
- Ethernet Settings
 - LAN 1
 - LAN 2
 - GATEWAY
- Available WiFi Networks

Current Network Settings

LAN 2

IP:

Netmask:

SW v2.7.0 & HW V2B2

Figure 2: LAN 2 Configuration for Multi-Controller Support

When connecting to a Switch or Router

- Click: **Use Dynamic Mode**

Once the **Network Connection** configuration is complete, simply connect a standard Ethernet Cable from the switch/router to the LAN1 port of each MachineMotion controller in the system.

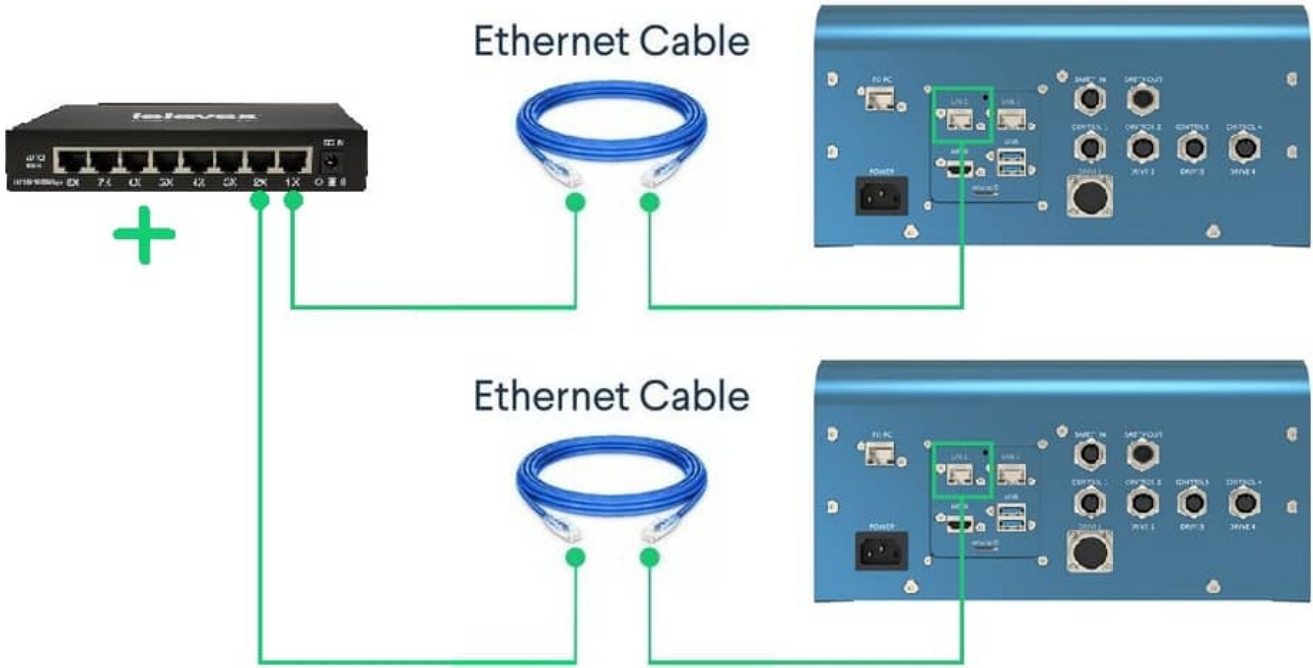


Figure 3: Multi-Controller Hardware Connections

The network settings of all connected controllers can be verified in the **MachineMotion Controllers** tab found under the **Network Connection** tab.

The screenshot shows the VENTION interface. The top navigation bar includes 'Configuration', 'Network' (selected), 'Manual Control', 'MachineLogic', and 'App Launcher'. The left sidebar shows 'MachineMotion Controllers' expanded to 'Ethernet Settings', with sub-items for 'LAN 1', 'LAN 2', and 'GATEWAY'. The main content area displays 'Detected MachineMotion Controllers' with the following information:

Controller	SW	HW
Controller #1 (Parent)	v2.7.0	V2B2
IP Addresses: 192.168.1.5 192.168.2.3		
Controller #2 (Child)	v2.7.0	V2A4
IP Addresses: 192.168.1.3 169.254.134.107		

SW v2.7.0 & HW V2B2

Figure 4: Multi-Controller Detected Controllers

Adding Additional Controllers to the Configuration

By default, a single controller is already present when accessing the **Configuration** tab. If the system in question features more than one MachineMotion controller, it must first be added in the Configuration.

- Step 1: Follow Steps 1 and 2 of the **Power on and set-up** section to connect to one of the MachineMotion controllers in the Multi-Controller system. The current controller tab should show a “Plugged into” label.
- Step 2: In the **Configuration** tab, click on the “+” button that is located directly beside the current controller tab. The **Controller Settings** page should appear for the newly added controller.

The screenshot displays the VENTION software interface. At the top, a dark blue navigation bar contains the VENTION logo and several menu items: Configuration (highlighted), Network, Manual Control, MachineLogic, App Launcher, and a red STOP button. Below the navigation bar, the main content area is divided into a left sidebar and a main panel. The sidebar, titled 'Plugged into: Controll...', contains a green circle with a white plus sign next to the controller name. Below this, the sidebar lists 'Controller Settings' (with a gear icon), 'Actuators' (with a plus icon), 'Inputs' (with a right-pointing arrow icon), and 'Outputs' (with a right-pointing arrow icon). At the bottom of the sidebar is a green 'Apply All Configurations' button and three buttons: 'Add Actuator' (with a plus icon), 'Add Input' (with a right-pointing arrow icon), and 'Add Output' (with a right-pointing arrow icon). The main panel, titled 'Controller Settings', features a green status bar at the top right that reads 'You are plugged into this controller'. Below this, there are two configuration fields: 'Controller Name' with a text input field containing 'Controller #1', and 'Controller Hardware Version' with a dropdown menu currently set to 'V2 FOUR-DRIVE'. In the bottom right corner of the screenshot, the text 'SW v2.5.0-dev & HW V2A1' is visible.

- Step 3: Fill in the **Controller IP Address** field with the IP address of the desired controller previously set in the **Network Connection** tab. Verify that the **Controller Hardware Version** also matches the controller. Optionally, the **Controller Name** can also be changed.

Overview Plugged into: Parent: C... Child: Controller ... ▲ +

Controller Settings ▲ ⚙️


Actuators


→| **Inputs**


↳| **Outputs**

⚠️ Motors will briefly lose power upon clicking apply. Lower vertical actuators to a safe position first.

Apply All Configurations


Add Actuator


Add Input


Add Output

Controller Settings

Controller Name

Controller IP Address Where can I find this?

Controller Hardware Version

Delete controller

SW v2.5.0-dev & HW V2A1

- Step 4: Repeat Steps 2 and 3 for each MachineMotion in the Multi-Controller system.
- Step 5: Verify the **Controller IP address** and **Controller Hardware Version** of the currently “Plugged into” controller is correct. Optionally, the **Controller Name** can also be changed.

Overview Plugged into: Parent:... Child: Controller #2 +

Controller Settings ⚙️

Actuators


Robots


→| **Inputs**


↳| **Outputs**


⚠️ Motors will briefly lose power upon clicking apply. Lower vertical actuators to a safe position first.

Apply All Configurations


Add Actuator


Add Robot


Add Input


Add Output

Controller Settings You are plugged into this controller

Controller Name







Controller IP Address Where can I find this?
 ✓ Connected

Controller Hardware Version


SW v2.7.0 & HW V2B2


- Step 6: Once satisfied with each individual **Controller Settings**, click the “Apply All Configurations” button. If all information was properly inputted, the individual warnings should no longer be displayed.


Overview Plugged into: Parent... Child: Controller #2 +


-  **Controller Settings** 
-  **Actuators**
-  **Robots**
-  **Inputs**
-  **Outputs**


Apply All Configurations


Add Actuator


Add Robot


Add Input


Add Output

 **Controller Settings**
You are plugged into this controller

Controller Name

Controller IP Address [Where can I find this?](#)

 ✓ Connected

Controller Hardware Version

Parent-Child Relationship

Multi-Controller support relies on a **Parent-Child** relationship for communication between controllers. When first setting up a Multi-Controller system, the initial "Plugged into" controller is defaulted to the **Parent**. Every subsequent controller added to the configuration is set as a **Child**. When adding actuators, inputs and/or outputs to the configuration, this relationship becomes important.

- If "Plugged into" the **Parent**, actuators, inputs and/or outputs can be configured on any of the controllers in the system. For this reason, it is highly recommended that the PC or Pendant be always connected to the **Parent** controller.
- If "Plugged into" the **Child**, actuators, inputs and/or outputs can only be configured for the currently "Plugged into" controller.

Note: To change a **Child** to a **Parent**, you must be "Plugged into" the desired **Child** and click "Make this controller parent" in the "Plugged into" **Controller Settings**.

To continue programming in MachineLogic, the computer or pendant should be "Plugged into" the **Parent** controller.