MARK ROBERTS MOTION CONTROL

PAN BARS

QUICK START GUIDE

QSG Product code: MRMC-1465-06

Product covered: MRMC-1512-00, MRMC-1460-01

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Contents

Chapter 1 **Quick Start**

Safety

- Do not use around flammable gas. All electrical equipment can generate sparks that can ignite flammable gas.
- Keep the equipment dry. The system has **not** been made weatherproof. Do not use with wet hands.
- Keep cables tidy. Use cable ties to keep them out of harm's way. If you have a head with slip rings then make use of them; avoid running any cables between the base and the rotating head or camera.

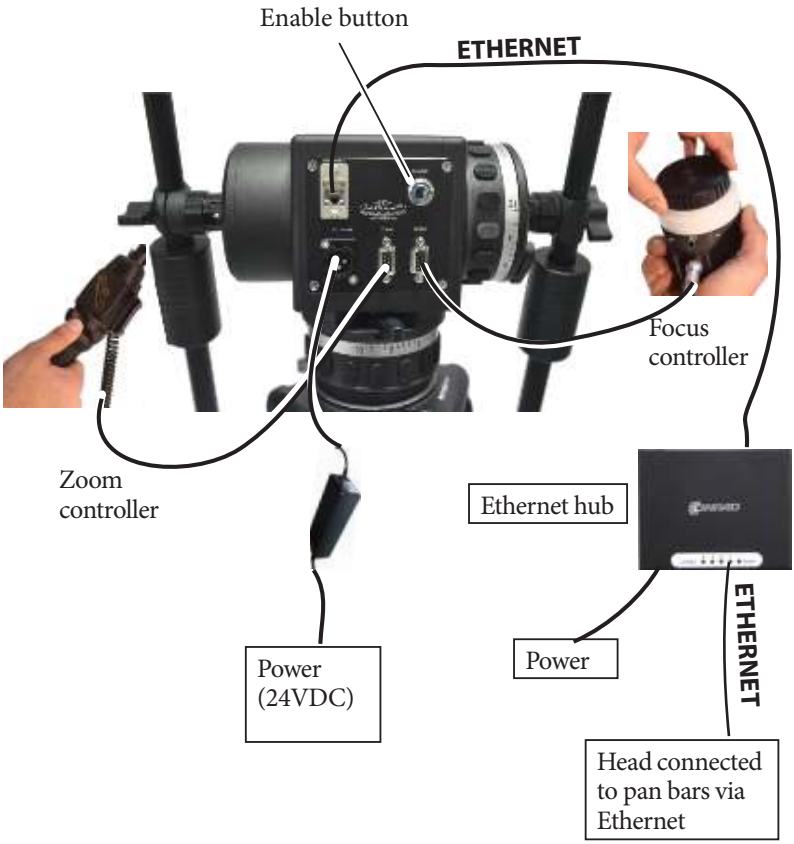
Overview

Thank you for using the Pan Bars from Mark Roberts Motion Control (MRMC). Pan Bars is a Ethernet mimic controller for the MRMC camera head. It gives you a smooth, precise and real-time control over your choice of camera axes —pan and tilt, and camera control — zoom or focus or both. Pan Bars are designed to work well with both Flair motion control and MHC software systems by MRMC.

Pan Bars can have the following configuration:

- Basic Pan and Tilt over Ethernet to either a Flair or MHC computer with Zoom or Focus or both - page 2
- As a mimic controller in which the encoder output is sent to RT-14 connected to the head - page 4
- As a mimic encoder output to a Datalink system using a mimic box (Flair): The Mimic Box is used to convert the raw encoder data and provide Ethernet (redundant function as already on basic Pan Bars) or Datalink which is needed for legacy systems - page 5
- Pan Bars with an Ethernet or Datalink MSA joystick controller: The Pan Bars provide mimic encoder inputs via Ethernet to the MSA Joystick which then controls the Head via Ethernet or Datalink.

Pan Bars — With Ethernet Connectivity



Connecting the cables

1. Connect the Focus controller cable to the **FOCUS** port in the Pan Bars panel and Focus controller. Ensure that the red markers on the plug and socket are aligned.

2. Connect the Zoom controller cable to the **ZOOM** port on the Pan Bars panel.

> Note
>
> If you are not using the Zoom controller, disable it in the software.

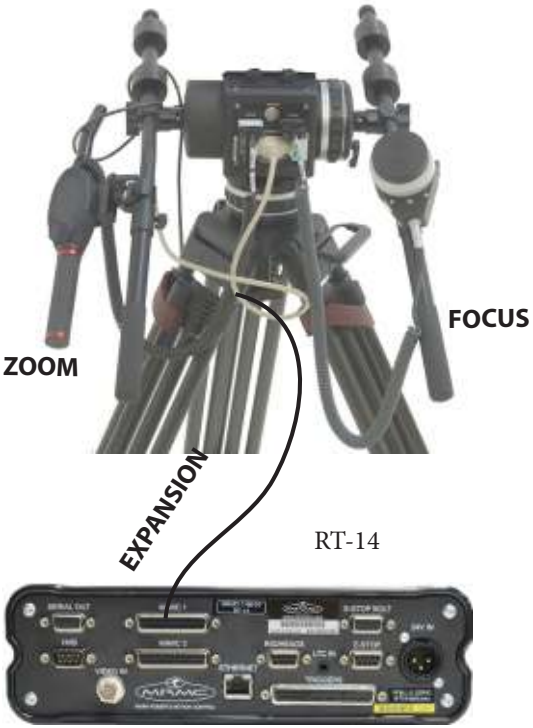
3. Connect the Ethernet and power cables, as shown. Your Pan Bars configuration can have an MHC or Flair PC which is in turn connected to the head via Ethernet or you can use MSA Joystick controller from MRMC via Ethernet which need not be connected to a PC.
4. Add the Pan Bars as a device in MHC Admin login (if applicable). For more information on this, refer to the MHC Quick Start Guide.

   You can now use the Pan Bars to control the currently active head in MHC.

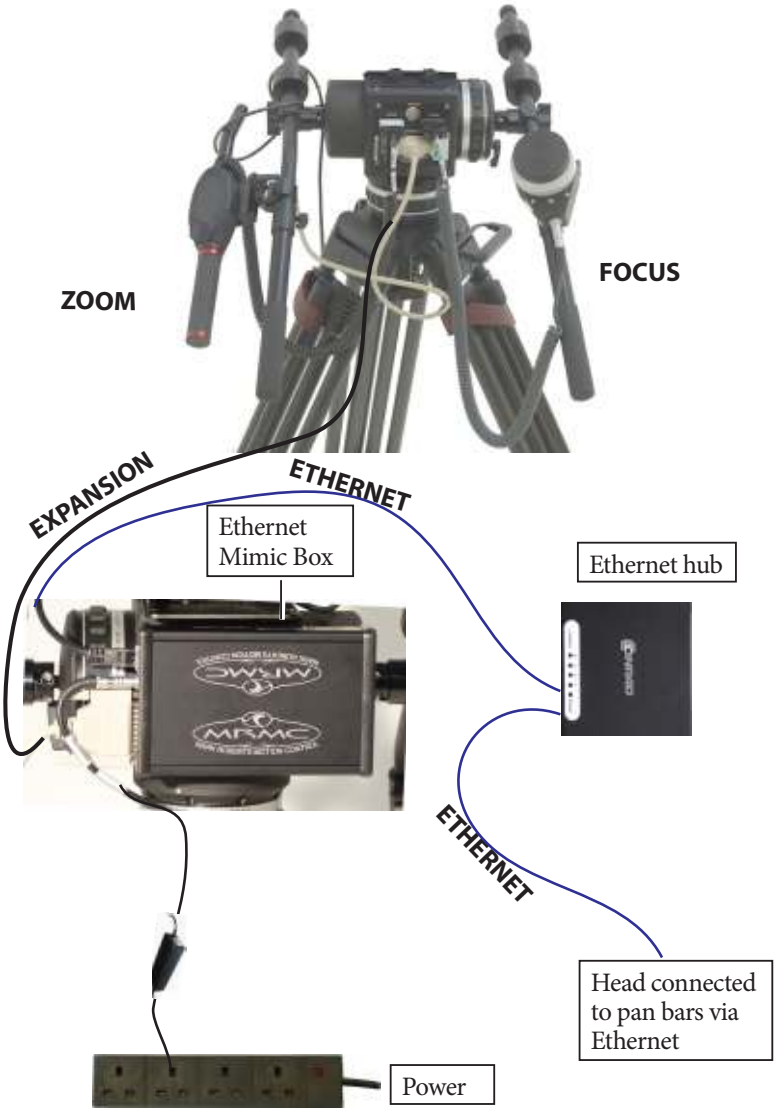
Enable button

Enable is a toggle button; pressing it allows the head to be controlled by Pan Bars. Releasing this button allows you move the Pan Bars without changing the head position.

Pan Bars - Mimic Only



Mimic only Pan Bars with Ethernet Mimic box



Connecting the cables

1. Connect the Focus controller cable to the **FOCUS** port in the Pan Bars panel and Focus controller. Ensure that the red markers on the plug and socket are aligned.

2. Connect the Zoom controller cable to the **ZOOM** port on the Pan Bars panel.

> Note
>
> If you are not using the Zoom controller, disable it in the software.

3. Use the Expansion cable to connect the **EXPANSION** port on the Pan Bars panel and the Expansion port on the Ethernet Mimic box.
4. Connect Surface Pro, the Ethernet Mimic box, and the MRMC head with the Ethernet hub using network cables.
5. Connect the power cable to the **POWER** socket in the control box. Ensure that the red markers on the plug and socket are aligned.

6. Connect the devices in the system – Surface Pro, Ethernet hub, and head – to power.

Your first session

Instructions for using the head with a specific controller, are beyond the scope of this manual. When you want to use the Pan Bars, you typically need to perform the steps given below. Refer to the manual that came with your head for details.

1. Attach the cables to the Pan Bars, Ethernet Mimic box, Surface Pro and head, as described in the previous section. Make sure the relevant indicators light up; for example, the power indicator LEDs on all 24Volt power supply bricks (), and the power indicator LED on the head ().

   > Note
   >
   > It is a good idea to attach the power cables last, after all the other cables are in place.
   >
   > It is also recommended that you power up Surface Pro last, after powering up the head, as powering up two devices simultaneously on the same Ethernet network can cause communication problems.

2. Focus control has to be physically set to zero before booting up the PC. To do this, fully rotate the Focus knob anticlockwise on the joystick to zero the focus axis.
3. Press the **POWER** button on Surface Pro.
4. Set up the head using MHC software installed on Surface Pro.

Turning off the system

There's no power switch on the Pan Bars; power is turned off by removing the power cable for Ethernet Pan Bars or removing the Expansion cable for Mimic only Pan Bars.

Notes

Notes

Chapter 2 **Pan Bars Flair Setup**

Setting up Ethernet Pan Bars as Mimic Device in Flair

> Hint
>
> When connecting a Flair PC with the Pan Bars using an Ethernet connection, you might need to temporarily disable the **Wi-Fi** connection on the laptop so that Flair does not try to use it to connect to the Pan Bars. (In the laptop's Network and Sharing Center, click on **Change Adapter settings**, right-click on **Wireless Network Connection** and in the pop-up menu choose **Disable**.)

You can use the Ethernet connected Pan Bars as mimic device in Flair. You can add up to two mimic devices in Flair, which Flair refers to as MimicBoard1 and MimicBoard2. Each mimic device has upto eight mimic control axes allocated to it in Flair, and Flair automatically numbers these using the next available numbers. For example Mimic Axis 9, Mimic Axis 10, etc.

The procedure below tells you how to configure Flair to recognise the Pan Bars.

1. Make sure the relevant cables are attached as described in the previous section.
2. Edit the file **`C:\Flair\Flair6\Flair.ini`**. This file is a text file that you can edit with any text editor such as Notepad, either directly or by using the Flair menu option **Help > View .ini File**. You need to add or edit some lines in the file similar to the following lines.

```
*NetworkBoards: 3
*NodeProgram3: Uni6Ether_II.btl
*MimicBoard1: 3
*Autorecalibrate:True
*LoadfromHC:True
```

If using a Mimic box to covert raw encoder data to Ethernet, insert the following lines in Flair.ini:

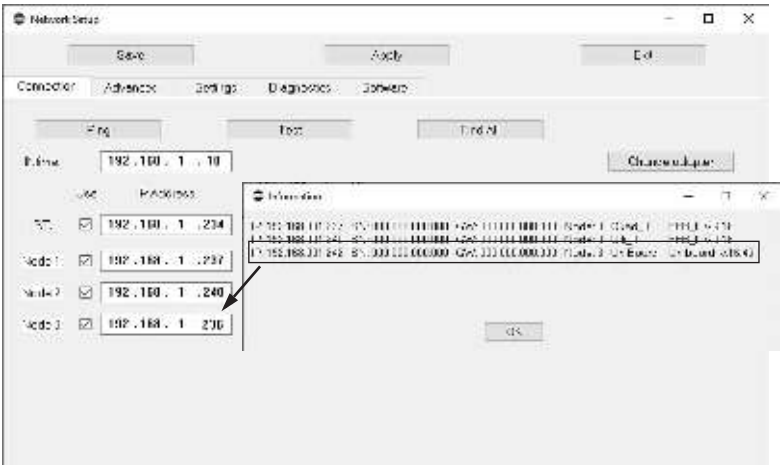
```
*NetworkBoards: 3
*NodeProgram3: Quad6Ether_II.btl
*MimicBoard1: 3
*Autorecalibrate:True
*LoadfromHC:True
```

The keywords used in the above table are described below:

- **`*NetworkBoards`**: The number of network boards (nodes) in the system. You need to increase this by one (1) to cater for the new board in the Pan Bars mimic device.
- **`*NodeProgram3`**: For the node to which you assigned the mimic (node 3 in this case), add a reference to the **`.btl`** file that you want Flair to load into the mimic device on that node when starting up. The **`.btl`** file is already supplied with Flair so you don't need to copy or download it from elsewhere.
- **`*MimicBoard1`**: Assigns mimic board 1to an available node. You need to specify a node that is not already used by another board. In this example nodes 1 to 2 are already used by other boards so **`*MimicBoard1`** is assigned to node **`3`**. If you need to add another mimic board, you can add a line **`*MimicBoard2: 4`**.

Remember to save the file after you have edited it.

3. In the Flair menu, click on **Setups** > **Network Setup**.
4. In the pop-up, click on the **Find** button.
5. In the Find results, find the IP address of the Pan Bars (**192.168.1.236** in this example), and copy it into the node that you assigned to the Pan Bars mimic device (**Node 3** in this example):



6. In the Network Setup pop-up, click on the buttons **Save** and **Apply**.
7. Click **Load** and exit the Network Setup.

   On the next restart, Flair should automatically recognise the Pan Bars and load the `.btl` file into them.
8. Check that Flair is receiving data from the encoders in the Pan Bars by using Flair menu option **Setups > Test Mimic Inputs** and making sure that the relevant mimic axes numbers change when you move the Pan Bars:

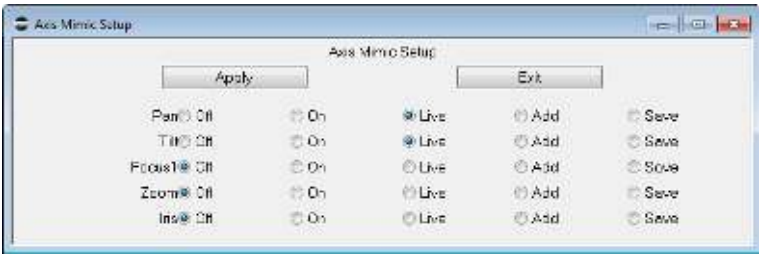
Mimic Ax 9	1.177	1176	Zero
Mimic Ax 10	0.199	199	Zero
Mimic Ax 11	-0.421	-420	Zero
Mimic Ax 12	0.000	0	Zero

9. In the Flair window, right-click on one of the axes buttons along the top of the screen, such as **Pan**, and in the pop-up menu choose **Axis Setup**.
10. On the **Control** tab, specify which wheel you want to use to control this axis, by setting the **Controller** to the mimic axis that you want to use, for example **Mimic 9**:

(The mimic axis numbers are the same ones listed earlier in the **Setups > Test Mimic Inputs** pop-up.)

11. Specify the other Mimic Settings that you want to use for this control (in the same section of the pop-up), then click on **Save**, **Apply**, and **Exit**.

12. In the Flair window, right-click on one of the axes buttons along the top of the windows, such as **Pan**, and in the pop-up menu choose **Mimic Setup**. You can also access this through the menu option **Mimic > Axis Mimic**.



13. Specify **Live** for the axes that you have assigned the Pan Bars to, then **Apply**. After you have tested the mimic operation you can use other settings; see the Flair manual for details.

Moving the Pan Bars should now move the associated axis and change the axis position numbers on the Flair screen. You can access the Axis Mimic Setup dialog box again to assign the third and fourth mimic axis whenever device is plugged into the **ZOOM** and **FOCUS** ports, such as a Zoom controller and a FIZ pot.

Subsequent sessions

Once you have configured Flair to work with the Pan Bars, the start-up procedure for subsequent sessions is as follows:

1. Make sure all cables are attached.

2. Power up the Windows PC but do not start Flair yet.

3. Power up the Pan Bars.
4. Start Flair.
5. Enable the mimic controls in Flair, either by right-clicking on the relevant axes buttons at the top of the Flair window and choosing **Mimic Setup** in the pop-up menu, or by using the main menu option **Mimic > Axis Mimic**.

> Hint
>
> Flair does not store the **Mimic > Axis Mimic** settings from one session to the next, so you need to do this step at the start of every session. This is for safety reasons, as it would be dangerous to start up a robotic system with the mimic devices in an unknown state and fully enabled.

Setting up Pan Bars (Encoder output only) as a Mimic Device in Flair

Once you plugged the Pan Bars to RT-14 using the Mimic1 or Mimic2 ports, you can start controlling the axis using the Pan Bars via the Flair Motion Control Software.

You can add up to two mimic devices in Flair using RT-14 called the **RIC Mimic**, or **Root Mimic** devices. Each Root mimic device has four mimic control axes allocated to it in Flair as Rt Mimic Axis1, Rt Mimic Axis2 etc. The procedure below tells you how to configure Flair to recognise the Pan Bars.

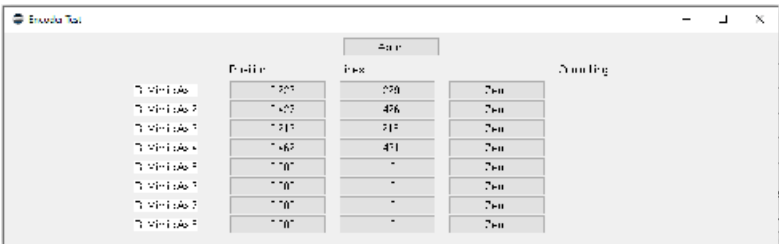
1. Make sure the relevant cables are attached as described in the previous section.
2. Edit the file **`C:\Flair\Flairx\Flair.ini`**. This file is a text file that you can edit with any text editor such as Notepad, either directly or by using the Flair menu option **Help > View .ini File**. You need to add or edit some lines in the file similar to the following lines.

   `*RICMimic: True`
   This allows you to use the Root Mimic inputs.

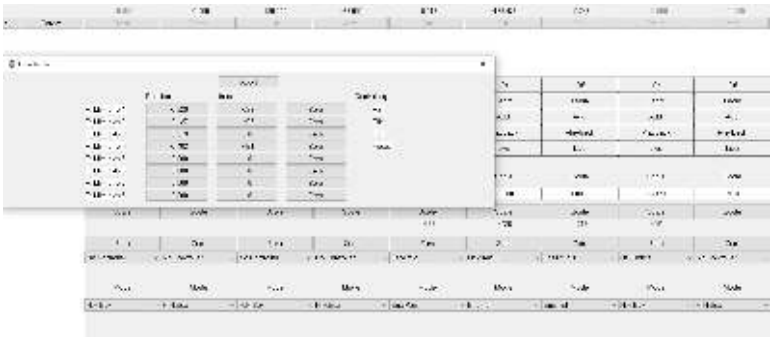
   Remember to save the file after you have edited it.

3. With the Windows PC running but with Flair **not** running, attach the power cables the head, and the RT-14 unit.
4. When the RT-14 unit has finished starting up, start Flair by double-clicking on the Flair icon on the Windows Desktop.

   At this point, ignore any Flair error messages.
5. Check that Flair is receiving data from the encoders in the Pan Bars by using Flair menu option **Setups > Test Mimic Inputs** and making sure that the relevant Root mimic axes numbers change when you move the pan bars:



   - Typically pan is assigned to Pan axis on the head and appears as Ric Axis 1.
   - Typically, tilt is assigned to Tilt axis on the head and appears as Ric Axis 2.
   - If a Zoom controller is plugged into the **ZOOM** port, then this will appear as Ric Axis 3.
   - If a FIZ pot or Zoom controller is plugged into the **FOCUS** port, then this will appears as Ric Axis 4.
6. In the Flair window, click **Show Mimic**. The additional Root Mimic options appear below each rig axis.
7. In the Controller drop-down, specify which Root Mimic axis you want to control this axis, for example to assign Pan axis on the head to Pan on the Pan Bars, select the Controller as **Rt Mimic 1**, or **RIC Mimic 1**:



(The mimic axis numbers are the same ones listed earlier in the **Setups > Test Mimic Inputs** pop-up.) Note that after you assigned the Root Mimic Axes the axes names appear in the **Controlling** column in the Test Mimic Inputs dialog box.

8. Specify the other Mimic Settings that you want to use for this control.

9. Click **Live** for the axes that you have assigned the Pan Bars to. After you have tested the mimic operation you can use other settings; see the Flair manual for details.

Moving a Pan Bars should now move the associated axis and change the axis position numbers on the Flair screen.

Notes

Chapter 3 **Setting up the Pan Bars unit in MHC**

System configuration and startup

> Hint
>
> When connecting an MHC Server PC with the Pan Bars using an Ethernet connection, you might need to temporarily disable the **Wi-Fi** connection on the PC so that MHC does not try to use it to connect to the Pan Bars. (In the PC's Network and Sharing Center, click on **Change Adapter settings**, right-click on **Wireless Network Connection** and in the pop-up menu choose **Disable**.)

Two types of Pan Bars can be added in MHC v2.3: Pan Bars with an internal Uniboard and Pan Bars with an external Quad box. There is only a slight difference in the way they are added in MHC. The uniboard Pan Bars are added as an Ethernet connected device in MHC. The Pan Bars with external quad box are added as a mimic device in MHC. Once added, they operate and function in exactly the same way.

Pan Bars can be assigned to a single user, and NOT All users. Only that user can then use the Pan Bars to control a selected head in MHC. As of MHC v2.3, you can add only one Pan Bars for each MHC system; in other words, one per MHC Server installation.

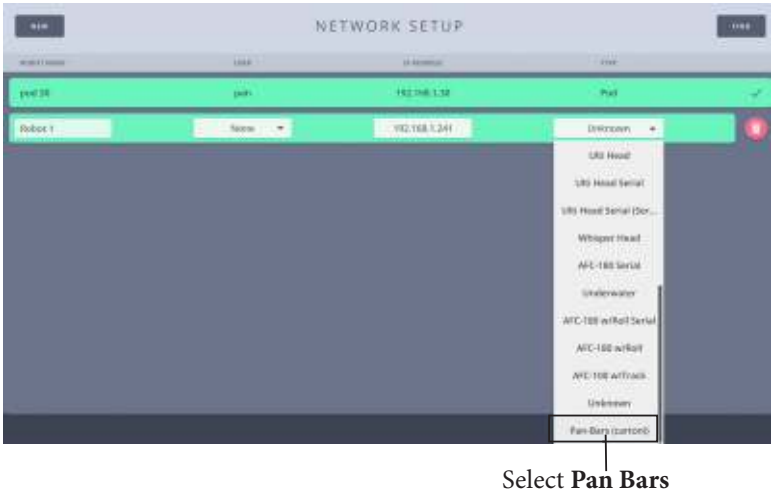
The procedure below tells you how to configure MHC to recognise the Pan Bars.

1. Make sure the relevant cables are attached as described in the previous section.
2. Log in to the MHC Client as Admin.
3. In the Network Setup page, click the **FIND** button.

4. Click **ADD** for the IP address of the Pan Bars and click **DONE**.

5. For uniboard Pan Bars: Note that the rig Type is auto selected as Pan Bars.

For Pan Bars with external quad box: Select the Rig Type as **Pan Bars**.



6. Assign a user in the User drop-down.

7. Log out and log in as the user that you assigned the Pan Bars to You should now be able to control the active head with Pan Bars.

Note

If you have assigned the Pan Bars to a user without assigning any heads to that user, the User login page will show an error message.

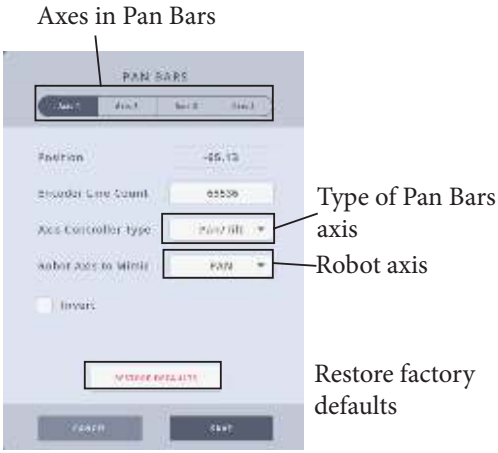
Changing the axis settings

> Note
>
> It is recommended that you contact MRMC for assistance in changing default axis settings.

You can also change the axis settings an assign 4 mimic axes in Pan Bars to an axis in the head.

For example, Axis 3 in Pan Bars is of type FOCUS by default and mimics the Focus axis on the head. If you want to use two zoom controllers, one for zooming the robot and the other for roll, you can change Axis 3 to zoom type that mimics the robot roll axis. To do so:

1. Double-click the rig **Type** box.
2. Select the axis tab that you want to change. Pan Bars have four mimic axes that you can change: Pan, Tilt, Focus and Zoom.



> Note
>
> At any point, if you want to revert to the original settings, click the **RESTORE DEFAULTS** button.

3. Change the Axis Controller Type to **Zoom** and Robot Axis to Mimic to **ROLL**.

Notes

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