CamBot 520PT Setup Guide

for CamBot 520PT robots to be controlled by SmartShell

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CamBot 520PT Setup Guide

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Welcome

This is the Setup Guide for the CamBot 520PT robotic pan/tilt/zoom head. This Setup Guide describes how to unpack, assemble, mount, cable, and configure your CamBot 520PT.

This Setup Guide is intended for customers who use the SmartShell control system to operate their Ross Robotics system. If you use CamBot MasterPanel to operate your CamBot robotics system, you should refer to the ***CamBot 520PT Setup Guide (5100DR-501-xx)*** instead of this guide.

For information about how to use the SmartShell control system to operate your CamBot 520PT, see the ***SmartShell User Guide (5100DR-002-xx)***.

Documentation Conventions

Text Format Conventions

Special text formats are used in this Setup Guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and submenus that must be followed to reach a particular command.

Text Format	Meaning
Bold text	Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example: In the **Presets** panel, tap **ADD**.
`Courier text`	Courier text is used to identify text that a user must type. For example: In the address bar, type `localhost` and press **Enter**.
Italic text	Italic text is used to identify the titles of referenced guides, manuals, or documents. For example: For more information, refer to the ***SmartShell User Guide (5100DR-002-xx)***.
>	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**Display** > **Widgets**," you would tap the **Display** menu and then tap **Widgets**.

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- **Technical Support:** (+1) 613-652-4886
- **After Hours Emergency:** (+1) 613-349-0006
- **E-mail:** techsupport@rossvideo.com
- **Website:** http://www.rossvideo.com

Unpacking

To unpack your 520PT head:

1. Carefully unpack all boxes and crates. Retain all shipping materials until the installation is complete.
2. Find the packing slip and compare it to the equipment on hand to determine if anything is missing.

Each 520PT head comes with a power supply, corresponding power cord, and lens cable for the particular lens requested. Note that the camera cradle is shown in **Figure 2.1** in its shipping position.

Figure 2.1 *520PT, Power Supply, and Lens Cable*

Assembly and Mounting

The 520PT head can be installed on a wall, a bench, on ceiling mounts, or on a tripod. All necessary brackets should be properly mounted prior to installation of the head. If you've purchased a CamBot mounting accessory, consult the associated documentation for its proper assembly and installation. Also, be sure to keep in mind that local power must be provided for the head when assembling your system.

To assemble the 520PT head:

1. Unbolt the cradle from the tilt hub by removing the four ¼-20 button head screws and washers (**Figure 3.1**).

Figure 3.1 *- Cradle Removed from Head*

2. Examine the pan base. There are four ¼-20 taps for mounting, as seen in **Figure 3.2**. The taps are equally spaced on a 3.000 inch bolt circle.

Figure 3.2 *- Pan Base*

3. To make sure that the tilt hub and pan base are in their correct home positions, it is strongly recommended to "initialize" the head. The tilt hub and/or pan base may have been inadvertently rotated due to handling during the shipping process. If the head is installed prior to initialization, its home position may not be in the desired location. If the tilt hub and pan base are in their correct positions (see **Figure 3.3** and **Figure 3.4**), you may move on to **Step 4** of this section, though initialization is always recommended.

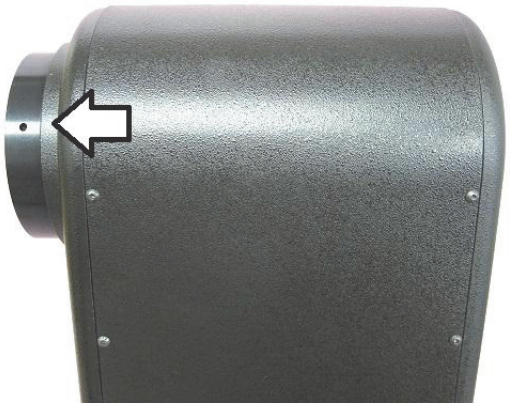

Figure 3.3 *- Tilt Hub in Correct Position*

Figure 3.4 *- Pan Base in Correct Position*

To power up and initialize the head:

a. **POWER** — The power for the head comes from the power supply provided. Notice the end of the power supply is a 4 pin circular plug, with a "keyed" connection. Once the plug has lined up with the power connector on the head's connection panel, insert it and rotate the collar to ensure it is properly secured. Place the head on its side (the side opposite the tilt hub) on a flat surface, and plug the other end of the cable into a 120/240VAC three prong outlet. A green LED will illuminate above the lens connectors to confirm the head is receiving power.

b. **INITIALIZATION** — Initializing can take up to 10 seconds. After the orange LED illuminates, the tilt hub will rotate to find its home position, followed by the pan base. The head will be correctly initialized if the small hole on the pan base faces the rear of the head and the small hole on the tilt hub faces the front (as shown in **Figure 3.3** and **Figure 3.4**).

4. If using a mounting accessory, mount the head using the taps on the pan base head.

   Ross Robotics offers a CamBot bracket for wall mounting as seen in **Figure 3.5**, and a Mitchell Mount adapter and Pedestal Mount for use with most tripods, as shown in **Figure 3.6** and **Figure 3.7**. Consult the associated documentation for directions on proper installation. For your convenience, a properly installed Mitchell Mount adapter and Pedestal Mount is shown in **Figure 3.8**. If any of these items were ordered with the head, the hardware will be included.

Figure 3.5 *- CamBot Wall Bracket*

Figure 3.6 *- CamBot Mitchell Mount*

Figure 3.7 *- CamBot PM-8*

Figure 3.8 *- Head Mounted on Tripod Using Mitchell Mount and Pedestal Mount*

5. Once the head is secured to its mounting bracket, reattach the cradle to the tilt hub using the screws and washers provided (**Figure 3.9**). Make sure that all four screws are tight before proceeding to the next step.

Figure 3.9 *- Cradle Properly Oriented and Attached to Head*

Note: If your camera and/or teleprompter equipment came with mounting supports (e.g. High-Hat Brackets), install them as required by the manufacturer before mounting and balancing the camera assembly.

6. Place the camera on the horizontal plate of the cradle. Line the camera mounting hole up to one of the two slots and secure the camera with at least two bolts, then connect the lens to the camera (**Figure 3.10**). After attaching the camera, you will most likely need to balance the camera/lens assembly, as explained in **Step 7**.

Figure 3.10 *- Camera/Lens Mounted but Out of Balance*

7. Reposition the cradle so that the center of gravity is as close as possible to the center of the tilt hub (**Figure 3.11**). This may require adding dead-weights to the cradle. It is important to balance the cradle so as not to put undue stress on the power train inside the head. The camera/lens assembly may have to be moved back and forth and the cradle itself may have to be moved up or down. Once balanced, the camera will maintain its position at any angle. Be sure to tighten all bolts after properly balancing the camera.

Figure 3.11 *- Camera/Lens Properly Balanced*

Cables

There are three cables that connect to the 520PT head; Power, Data, and Lens. Each of these cables will be connected at the back connection panel, shown in **Figure 4.1**.

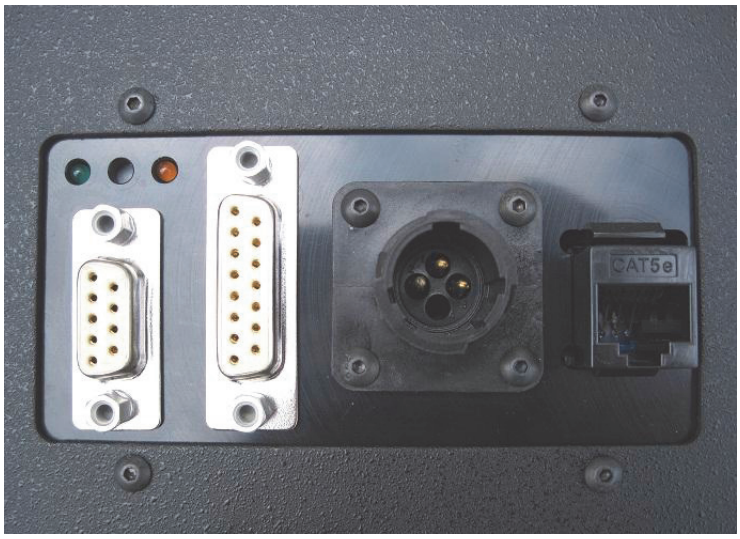

Figure 4.1 *- Connection Panel with Lens, Data, and Power Cable Connections*

As previously stated in step **3** on page 3-2, the power for the head comes from the power supply provided. Notice the end of the power supply is a 4 pin circular plug with a “keyed” connection. Once the plug has lined up with the power connector on the head’s connection panel, insert it and rotate the collar to insure it is properly secured. Place the head on its side (the side opposite the tilt hub) on a flat surface, and plug the other end of the cable into a 120/240VAC three prong outlet. A green LED will illuminate above the lens connectors to confirm the head is receiving power.

The lens cable connects directly from the lens servo junction to either the 15-pin connector (analog) or the 9-pin connector (digital). This cable allows the CamBot system to control the zoom and focus of your camera.

To guarantee proper functionality, make sure that there is power going into the lens from the camera, and set your lens control functions opposite of “manual”; usually “automatic” for analog, and “servo” for digital. Consult your lens manual for additional support.

Data is sent through an RJ-45 Ethernet connection. Stranded cables with plastic cores are best suited for use with CamBot equipment.

Note: Cable management is very important to ensure proper functionality of CamBot systems. Make use of the cable tie thread located below the Connection Panel, and manage all wiring and cables as your studio requires.

Configuration

The 520PT communicates with your network through the TCP/IP Protocol, and runs on Linux, which can be operated on and edited with the vi commands of the Linux command line interface.

Note: Experience with Linux and programming languages is strongly recommended for configuring heads.

Before configuring the head, examine your assembly and make sure all pieces are properly secured, bolts are fully tightened, and cables cleanly managed.

CamBot heads are configured based on your specific order's needs. All CamBot equipment in your order will be labeled with the assigned IP address. The procedure below is a guide to changing the IP address of a 520PT head to accommodate requirements your specific network might have. If you are changing a head's entire IP address, keep in mind that you will most likely need to change the computer's preset IP or DNS address prior to configuration. If no configuration change is required for your CamBot equipment, skip this section of the Setup Guide.

To change the IP address of a 520PT head:

1. To establish a connection, open the command prompt in Windows (**Start>Programs>Accessories>Command** Prompt) and type the following:

   `ping xx.xx.xx.xx`

   where `xx` is the IP address of the head currently being changed or assigned, and then press the **Enter** key.

   This will send a signal to the head, and confirm that the computer is connecting to the device. If the connection fails, make sure all Ethernet cables and ports/connectors are in working order, then check to see if the correct IP address was entered. For the purposes of this example, the head we are editing is set to `192.168.0.126`. The 520PT you are using is likely set to a different IP address.

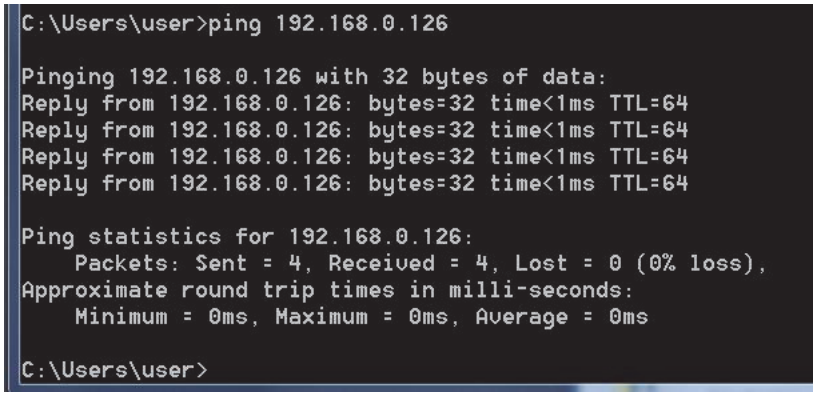

Figure 5.1 *- Command Prompt Screen "pinging" the 520PT*

2. After establishing a connection, type the following into your command prompt:

   `telnet xx.xx.xx.xx`

   where `xx` is the currently assigned IP address, and press the **Enter** key.

   This will create the telnet connection through a virtual terminal, and you will have to enter a login ID to continue. Type root for the login, and press **Enter**.

3. Type the following into the command prompt:

   `vi network.sh`

   and press the **Enter** key.

   This launches the vi command line interface, and calls up an editable file on which you can set the IP address. **Figure 5.2** shows what the command prompt window should look like so far.

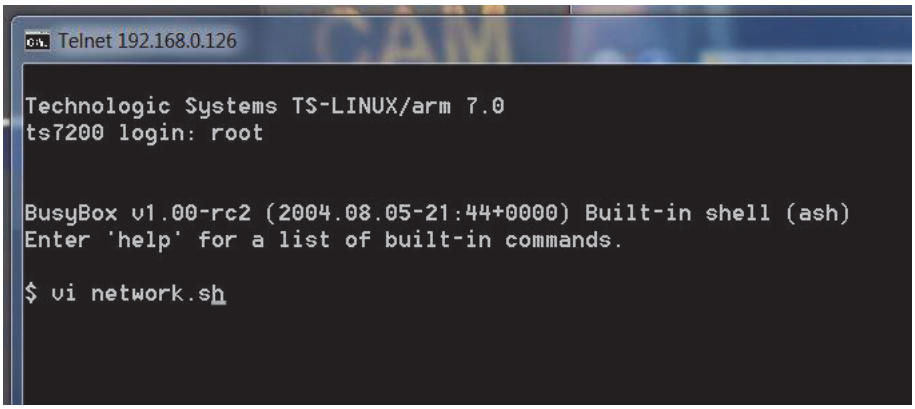

Figure 5.2 *- Command Prompt with "vi network.sh"*

4. You are now using the vi command line interface to edit the IP address. Use the arrow keys on the keyboard to position the cursor under the number(s) you wish to change in the address. For our example, we are only changing the last set from `126` to `90`, so the cursor is under the "**1**" of "**126**" in the IP address line, as shown in Figure 17.

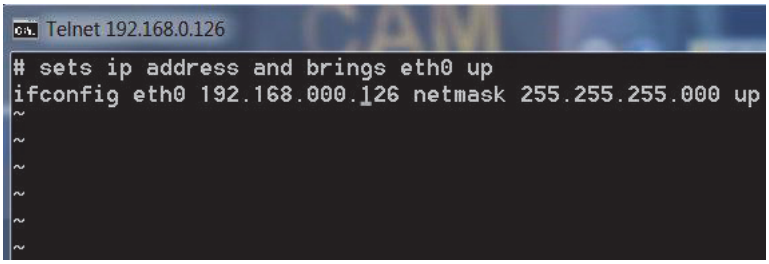

Figure 5.3 *- Cursor Under "1" while Editing "network.sh"*

   With the cursor in position, press "**x**" on the keyboard for each part of the IP address you wish to change. For "**126**", we hit "**x**" three times to remove it. Once the section is removed, press "**i**", and then enter the preferred IP address. Make sure the numbers are formatted exactly as before, or the address will not reassign. This will be the IP address of the head, so be sure to note which head you are assigning which address to. After entering the new address, press the "**Escape**" key on the keyboard. Now press the colon key (shift +semi-colon), and "**x**". Press the enter key on your keyboard to execute the command, and the IP address has been set and saved. Close the command prompt window and proceed to the next step to confirm that the change took place.

5. Turn off all equipment on your assembly (i.e. the 520PT, camera, and lens), and open a command prompt window at the computer where the remote user will be controlling the head (most likely in the control room). After waiting at least twenty seconds to eliminate residual power and memory, power the head back on, and repeat **Step 1** using the newly assigned address, i.e. type `ping 192.168.0.90` where the old address used to be `192.168.0.126`.

If assigned correctly, the computer will connect to the head. If the connection fails, consult the previous steps of this subsection to make sure no errors were made during the assigning process. If you are using multiple CamBot heads in your studio or shooting environment, repeat **Step 1** to **Step 5** until all robotics systems are properly configured.