Upgrading a Furio Robotic Head to use microSD (µSD) Storage

This document describes how to upgrade a Furio robotic head so it uses a microSD (µSD) card for storage, instead of using the internal flash memory on the CPU module. Perform this procedure only if instructed to do so by Ross Video Technical Support.

This procedure applies only to Furio heads that are already in service, and that have a PHYTEC phyCORE CPU module but are not equipped with a µSD card. In very rare instances, the internal flash memory on the CPU module can fail, resulting in data loss. Using a µSD card for data storage prevents this problem from affecting Furio operation.

These instructions are intended for persons who

- have experience using the Furio configuration interface (also known as the Furio web interface).
- have computer networking skills, including the ability to connect to devices using a program such as PuTTY.
- are capable of performing basic hardware disassembly and reassembly tasks.

IMPORTANT: When handling internal electronic components, take precautions against electrostatic discharge (ESD).

Recording Furio Head Data

Before you install the µSD card, it is important to record and back up certain data from the Furio robotic head.

To record Furio head data:

1. Back up the head using the Furio web interface.
2. Download the configuration template file and store it somewhere safe.
3. Note the serial number of the head. You can find this in the Furio web interface.
4. Note the network settings (IP Address, network mask, gateway). You can find these in the Furio web interface.

Installing the µSD Card

To install the µSD-card:

1. Power down the Furio robotic head.
2. Open the head and locate the phyCORE adapter assembly, which includes the CPU module (see Figure 4.1).
   Tip: The CPU module has the word PHYTEC on it.

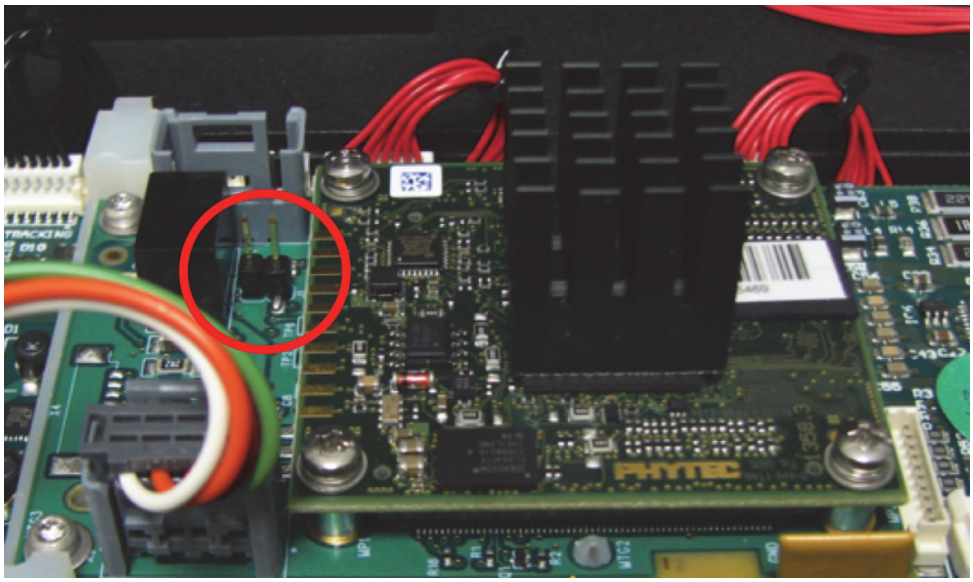

Figure 4.1 *The phyCORE Adapter Assembly, including the PHYTEC phyCORE CPU module*

3. Insert a jumper on the µSD card boot select 2-pin header, beside the CPU module.

   Tip: There is only one 2-pin header on the assembly. In Figure 4.1, the 2-pin header is circled in red.

4. Insert the µSD card in the card slot on the adapter assembly.

   IMPORTANT: Use only the µSD card provided by Ross Video. It contains files that are required for Furio operation.

   Tip: The µSD card slot is located underneath the phyCORE module. It is accessible from the right side of the assembly.

   Note: There is also a µSD card slot on the main Furio motherboard. This card slot is non-functional, and is not accessible when the phyCORE assembly is installed.

5. Reassemble the head and power it up again.

Restoring Furio Head Data

To complete the installation:

1. Connect to the Furio robotic head using a web browser, and then restore the network settings.

   The default IP address of a new unit is either **192.168.3.11** or **10.42.3.64**. If one does not work, try the other.

2. Set the date and time:

   a. Connect to the head using SecureSHell (SSH).

      Tip: On Windows, you can use an SSH program such as **PuTTY**.

   b. Log in as username **`root`**, with an empty password.

   c. To set the clock, use the command: **`date -s "2015-2-24 15:06"`**

      Tip: In the example above, replace **`2015-2-24 15:06`** with the current year, month, day, and time.

   d. To save the current date and time into the RTC chip, use the command: **`hwclock -w -f /dev/rtc0`**

   e. To check the time on the RTC chip, use the command: **`hwclock -r -f /dev/rtc0`**

   f. Remain logged in to the head.

3. Using SSH, set the product ID code and serial number:

   a. Execute the following command: **`vi /furio_metadata.properties`**

      The file opens in the vi text editor. The file contents resemble the following:

      ```
      #
      # Furio metadata
      #
      furio.serialnumber=VR1-Z99-999
      furio.product=vrone
      ```

      Tip: If you see an empty file then you mis-typed the file name or forgot the back slash. Try again.

   b. Edit the file to contain the correct serial number and product ID code.

      You recorded the serial number before you disassembled the head.

      Valid product ID codes are **`vrone`** and **`vr600`**. These are case-sensitive.

      Tip: For help using the vi text editor, find instructions on the Internet. For example, help can be found at http://www.cs.colostate.edu/helpdocs/vi.html.

   c. Save the file.

   d. For the changes to take effect you need to reboot the head. You can do this on the command line with the **`reboot`** command.

4. Log out of the head, and exit the SSH session.
5. Check for firmware upgrades and upgrade the firmware on the head if needed.
6. Restore the configuration template to the head.
7. Restore the backup to the head.

   Your upgraded robot should now be fully functional.