

## Skywatcher Motor Controller Firmware Loader Operation Manual

### 1. Requirements

- A PC running Windows OS with a serial port or a USB-to-Serial adapter.
- Motor Controller with firmware version 2.00 or above. (This is a hardware limitation. Version 1.xx motor controller cannot be upgraded to version 2.xx.)
- A SynScan hand control with EQ firmware version 3.22 or above, or a SynScan hand control with AZ firmware version 3.05 or above.
- SynScan hand control's mount-to-hand control cable and PC link cable.

### 2. Preparation

- Download MCFirmwareLoader application package from [www.skywatcher.com](http://www.skywatcher.com). Extract the contents of the compressed file to a folder on the PC, for example, C:\SynScan.
- Download the latest firmware file for your mount's motor controller from [www.skywatcher.com](http://www.skywatcher.com) and save it into the same folder.

### 3. Update Motor Controller

- 1) Connect a SynScan hand control to the telescope mount. Connect the SynScan hand control to a PC's RS-232 serial port with the PC-link cable (The same cable which is used to update the firmware of the SynScan hand control).
- 2) Turn on the power.
- 3) On the SynScan hand control, finish the initialization but skip the alignment routine.
- 4) On the SynScan hand control, press the UTILITY button, then press the scroll up button to choose menu "PC Direct Mode" and press the ENTER button. Now the SynScan hand control acts like a communication relay between the mount and the PC.
- 5) Run MCFirmwareLoader.exe on PC.
- 6) In the MCFirmwareLoader window, click the "Browse" button to choose a motor control firmware file whose extended file name is "MCF".
- 7) In the MCFirmwareLoader window, click the "MC Version" button. The application will detect the connection to the motor controller and display the firmware version number in the window. Please note that only motor controller with firmware version above 2.00 can be updated.
- 8) In the MCFirmwareLoader window, click the "Update" button. The application will start to program the new firmware into the motor controller.
- 9) The application will show a percentage number in the window to indicate the updating progress.
- 10) After the firmware update finishes, the application will show a green bar in the window.

### 4. Troubleshoot:

- If the application prompts that it cannot connect to a motor controller, click the "MC Version" button or the "Update" button again to try connecting one more time.
- If the update fails halfway, close the pop-up window, wait several seconds and press the "Update" button again. If the application prompts that it cannot connect to a motor controller, turn the power off and repeat the above process again until it succeeds. Ignore the "No link to mount..." message on the SynScan hand control when the power is turned on.