

OCS Firmware Update Manual

OCS - Boot Loader Guide

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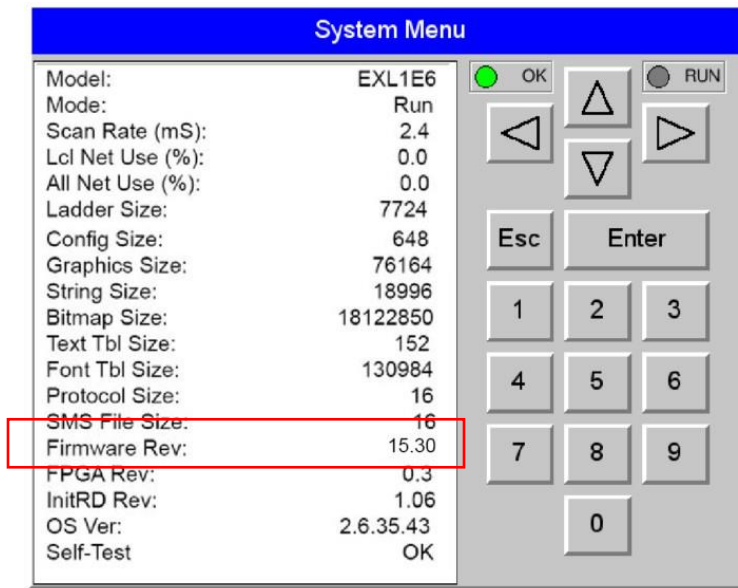
Introduction

This guide details how to update or change firmware on the Horner OCS Controllers. Updating firmware to the newest version adds new benefits to the controller. Also, changing firmware is necessary when changing communications between CsCAN and CANopen.

WARNING: Firmware updates should only be performed when the equipment being controlled by the OCS is in a safe, non-operational state. Communication or hardware failures during the firmware update process can cause the controller to behave erratically resulting in injury or equipment damage. Make sure the functions of the equipment work properly after a firmware update before returning the device to an operational mode.

How to Check for Current Firmware Revision

To check the firmware revision on a controller, open System Menu → View Status.



Details

Note: Updating firmware will clear the application program, screens, configurations, and register data. If required, make sure to backup program and register data before updating firmware. The controller's User Manual has instructions for doing backups.

There are two methods for updating firmware. The method used depends on the type of controller being updated.

Method A: Removable Media Method - The controller firmware is updated by a bootloader, using a microSDcard or USB Flash drive (**not through the Cscape Firmware Update Wizard**). To update or change firmware:

- 1) Download desired Firmware set from the Horner APG website. (Verify CsCAN or CANopen communications.)
- 2) Save Firmware files to microSD card or USB, these are the removable media devices.
- 3) Update the firmware through the controller's Firmware Update function

NOTE: Files from the Horner website come as a .ZIP file which need to be unzipped and placed in the root of the drive for them to function properly.

Method B: RS232 Serial Connection - Serial firmware updates are done from Cscape software to the controller's primary serial port, MJ1 in most cases.

Method C: Mini USB Port - The mini USB port can be used to update firmware in the X2, X4 & X7 as well as the XLE and XLT series. This is quicker than doing so via MJ1.

STEP ONE:

In North America, visit <https://hornerautomation.com> Then click **Support > Downloads > Controller Firmware** and download the most recent firmware set with the correct communication protocol.

-OR-

In Europe, visit <http://www.hornerautomation.eu> and click **Support > Firmware** tab and download the desired firmware (an account is required to access firmware updates, create one if necessary).

1. FIRMWARE UPDATE FOR XL4, XL7 OR EXL10

Update firmware in an XL4, XL7, EXL6, or EXL10 by completing the following steps:

- a. Unzip all files from downloaded .zip file (Step One, p.1) onto removable media.
- b. Plug the removable media into a powered-up OCS controller.
- c. Press and hold the **SYSTEM** key until the **Boot Installer Screen** appears.
- d. Press the **Install Bootloader** button and then press **Yes**.
NOTE: DO NOT press the "Install Firmware" option. This has the potential to create a scenario where the unit will not boot up. If this is pressed by mistake, contact Tech Support for the recovery procedure.
- e. When **Operation Completed** appears, press **OK**.
- f. Power-cycle the OCS controller and wait for it to boot up.
- g. Press **SYSTEM** key, select **View Status** and press the **Enter** button.
- h. Scroll down to see the version numbers.
- i. If any of the version numbers are incorrect, verify the correct files were copied to the removable media device and repeat the steps above.

2. FIRMWARE UPDATE FOR EXL6, EXLW or X5

Update firmware in an X5, EXL6 & EXLW by completing the following steps:

- a. Unzip all files from downloaded .zip file (Step One) onto removable media.
- b. Plug removable media into a powered-up controller.
- c. Touch the upper-right-hand screen corner to slide out the control panel.
- d. Press and hold the **SYSTEM** key until the **Boot Installer** screen appears. Select System upgrade option. Boot Installer screen appears. **EXL6:** Press and hold the **SYSTEM** key until system recovery screen appears. Select System upgrade option. Boot Installer screen will appear.
- e. Press the **Install Bootloader** button and then press **Yes**.
- f. When **Operation Completed** appears, press **OK**.
- g. Power-cycle the controller and wait for it to boot up.
- h. Touch the upper-right-hand screen corner to slide out the control panel.
- i. Press **SYSTEM** key, select **View Status** and press the **Enter** button.
- j. If any of the version numbers are incorrect, verify the correct files were copied to the removable media device and repeat the steps above.

3. FIRMWARE UPDATE FOR XL+

Update firmware in an XL+ (From FW15.32 onwards) by completing the following steps:

- a. Make a bootable SD card for XL+ controller. (Refer to MAN1150-02-EN_XL+_FW_Restore.pdf).
- b. Plug removable media (bootable microSD card) into XL+ controller.
- c. Power down the controller.
- c. While pressing the load / boot switch, power up the XL+ controller. Release the switch.
- d. This starts a firmware load and takes the controller to Boot Installer screen.
- e. Press the **Install Bootloader** button and then Press **YES**.
- h. Once operation is completed, "Re-installed the system" message appears. Press **OK**.
- f. Power-cycle the controller and wait for it to boot up.

4. FW UPDATE FOR GEN. 2 XLE, XLEe, XLT, XLTe, X2, X4 OR X7

Gen 2 XLE, XLEe, XLT, XLTe units feature a mini USB port physically located between the MJ1 & MJ2 serialports.

- a. Establish communication between Cscope and the controller using a direct serial connection to MJ1 or USB.
- b. Make sure your application is available on your PC or upload the application.
- c. Make sure the machinery connected to the OCS is in a safe state for firmware update.
- d. Start the firmware update by selecting **File > Firmware Update Wizard**.
- e. The correct product type should be selected, if it is not select the type of controller from the drop-down list.
- f. Press the Start button.
- g. Wait for the firmware update to complete.
- h. If there is a communication failure check the cable, connections and comm. port setting and try again.
- i. Firmware updates typically delete the user applications to ensure compatibility. You will need to reload your application.
- j. Test the operation of the equipment with the new firmware before returning the OCS system to an operation mode.

5. FIRMWARE UPDATE FOR RCC CONTROLLERS

LED - Normal Functionality

LED	Off	ON	Flash (1Hz)
PWR	No power applied	10-30Vdc applied	
OK	Self-test fail	Self-test pass	I/O forcing enabled.
RUN	Stop mode	Run Mode	Do I/O Mode.

Switch - Normal Functionality:

A. Load Switch

1. Pressing the LOAD switch during power-up boots from the microSD card. This starts a Firmware Load if the microSD is bootable and valid firmware files are found on it.
2. After boot-up, pressing the LOAD switch for three (3) seconds will load an Application file stored on the microSD. The application file name must be DEFAULT.PGM. When loading an application file from microSD, there should not be firmware files present on the microSD card. NOTE: When pressing the LOAD switch for three seconds after boot-up, if firmware files present on the microSD card, it can trigger a firmware update that may not properly complete.

B. Run/Stop Switch

1. After boot-up, pressing the **RUN/STOP** switch for three (3) seconds toggles the RCC between RUN and STOP modes.

6. FIRMWARE UPDATE FOR THE XLE/XLT (GEN. 1), RX371, NX, RCS, RCX, XL6, OR XL10

Update firmware in an XLE/XLT (Gen. 1), RX371, NX, RCS, RCX, XL6, or XL10 by completing the following steps:

Gen 1 XLE/XLT units do not feature a mini USB port.

- a. Connect to the MJ1/Port 1 programming port with Cscope software.
- b. Run the executable file downloaded from the Horner website (Step One, p.1), which will place firmware files in default folder locations.
- c. In Cscope open a new or existing project .csp file, click **File > Firmware Update Wizard**.
- d. In **Firmware Update Wizard**, verify that the product type matches the connected device. Then select the appropriate CAN network option. The default option is CsCAN; if unsure, leave as default. Click Ok.
- e. You may receive a Warning window referring to firmware updates using high-speed communications. Click Ok.
- f. In the **Firmware Update** window, click Start.
- g. Once the download has completed, click Close. Click Ok in the Update Complete window.
- h. Verify in **View Status** in the **System Menu** that the desired firmware has been loaded.

7. FIRMWARE UPDATE FOR ZX

Update firmware in a ZX by completing the following steps:

- a. Unzip all files from downloaded .zip file (Step One, p.1) onto a USB Flash drive.
- b. On the USB Flash drive, rename one of the following files to syslinux.cfg:
 - syslinux.cfg_zx452** [to upgrade a 7" ZX452]
 - syslinux.cfg_zx752** [to upgrade a 15" ZX752]
 - syslinux.cfg_zx1152** [to upgrade a 22" ZX1152]
- c. Plug the USB Flash drive into a powered-up ZX.
- d. Touch the upper-right-hand screen corner to slide out the control panel.
- e. If ZX firmware is 14.00 or later, press and hold the **SYSTEM** key until the **Boot Installer** screen appears.
- f. If the ZX firmware is less than 14.00, press and hold the **F5** key until the **Boot Installer** screen appears.
- g. Press the **Install Bootloader** button and then press Yes.
- h. When **Operation Completed** appears, press OK.
- i. Power-cycle the ZX and wait for it to boot up.
- j. Touch the upper-right-hand screen corner to slide out the control panel.
- k. Press **SYSTEM** key, select **View Status** and press the **Enter** button.
- l. If any of the version numbers are incorrect, verify the correct files were copied to the USB Flash drive and repeat the steps above.

Technical Support

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CHANGE LOG

Change Log			
Date	Rev #	Description of Revision	Location in Doc
7/1/2021	5	Added firmware update steps for the XL+. (Mantis 2536)	FW Update for XL+