

OCS Firmware Update Manual

OCS – Boot Loader Manual

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Introduction

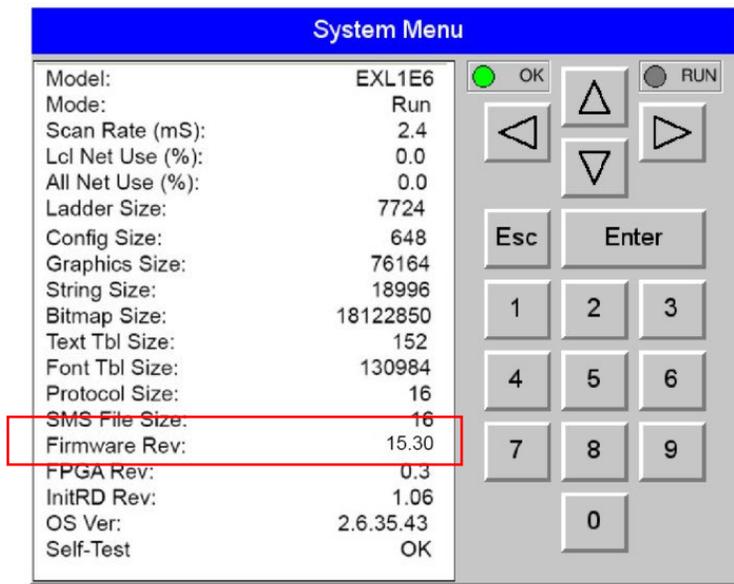
Use this manual to update or change firmware on the Horner OCS Controllers.

- Updating firmware to the newest version adds new benefits to the controller.
- Changing firmware is necessary when changing communications between CsCAN and CANopen.

WARNING: Only perform firmware updates 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. Confirm that the functions of the equipment work correctly after a firmware update before returning the device to an operational mode.

How to Check for a Current Firmware Revision

To check the firmware revision on a controller, go to **System Menu** → **View Status**.



Updating Firmware

Warning: Updating firmware will clear the application program, screens, configurations, and register data.

It is recommended that the user backup all data, including register data, before updating firmware. Locate the instructions for performing controller backups in its user manual.

Available Methods for Updating Firmware

There are three 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 microSD card or USB Flash drive. It is not available through the Cscape Firmware Update Wizard.

To update or change firmware:

- 1) Download the firmware from the Horner APG website.
Note: Files from the Horner website download as a .ZIP file. It is necessary to extract the zipped contents to the root of the drive for them to be usable when updating firmware.
- 2) Save the firmware files to a removable media device (microSD card or USB).
- 3) Update the firmware using the Firmware Update function of the controller.

- **Method B: RS232 Serial Connection**

Normally, serial firmware updates are performed to the primary serial port (MJ1) of the controller.

- **Method C: Mini USB Port**

The mini USB port can be used to update firmware in the X2, X4 & X7 , the XLE series, and the XLT series. This method can be faster than using the MJ1 port.

Before You Begin: Download the Firmware Zip Files

Location	Steps
North America	Visit https://hornerautomation.com , select Support > Downloads > Controller Firmware, and download the most recent firmware and communication protocol.
Europe	Visit http://www.hornerautomation.eu select Support > Firmware and download the firmware (an account is required to access firmware updates).

FIRMWARE UPDATE FOR XL4, XL7 OR EXL10

Complete the following steps to update the firmware in an XL4, XL7, or EXL10.

1. Unzip the files from the [downloaded .zip file](#) onto removable media.
2. Plug the removable media into a powered-up controller.
3. Press and hold the **SYSTEM** key until the **Boot Installer Screen** appears.
4. Press the **Install Bootloader** button and then press **Yes**.
Warning: Controllers running on older firmware have a Firmware Update option. **DO NOT** use the Firmware Update option as it updates the firmware only and may result in a system file mismatch which could result in functionality issues. **Always select Install Bootloader.**
5. When the **Operation Completed** message appears, press **OK**.
6. Power-cycle the controller and wait for it to boot up.
7. Press the **SYSTEM** key, select **View Status**, then press the **Enter** button.
8. Scroll down to see the version numbers.
9. If any of the version numbers are incorrect, verify the correct files were copied to the removable media device and repeat these steps.

FIRMWARE UPDATE FOR EXL6, EXLW or X5

Complete the following steps to update the firmware in an X5, EXL6 & EXLW.

1. Unzip the files from the [downloaded .zip file](#) onto removable media.
2. Plug the removable media into a powered-up controller.
3. Touch the upper-right screen corner to slide out the control panel.
4. Press and hold the **SYSTEM** key to open the **Boot Installer** screen, then select **System upgrade**.
(EXL6-only): Press and hold the **SYSTEM** key to open the **System Recovery** screen, then select **System upgrade** to open the **Boot Installer** screen.
Press the **Install Bootloader** button and then press **Yes**.
Warning: Controllers running on older firmware have a Firmware Update option. **DO NOT** use the Firmware Update option as it updates the firmware only and may result in a system file mismatch which could result in functionality issues. **Always select Install Bootloader.**
5. When the **Operation Completed** message appears, press **OK**.
6. Power-cycle the controller and wait for it to boot up.
7. Touch the upper-right screen corner to slide out the control panel.
8. Press the **SYSTEM** key, select **View Status**, then press the **Enter** button.
9. If any of the version numbers are incorrect, verify the correct files were copied to the removable media device and repeat these steps.

FIRMWARE UPDATE FOR XL+

Complete the following steps to update firmware in an XL+ (from FW15.32 onwards).

1. Make a bootable SD card for the XL+ controller.
 - a. Download the new firmware [from the Horner APG website](#).
 - b. Save the firmware files to a microSD card.
 - c. Update the firmware through the XL15+ Firmware Update function.
2. Plug the bootable microSD card into the XL+ controller.
3. Power down the controller.
4. While pressing the **load / boot switch**, power up the XL+ controller then release the switch.
Note: This starts a firmware load and opens the controller **Boot Installer** screen.
5. Press the **Install Bootloader** button and then press **YES**.
6. When the **Re-installed the system** message appears, press **OK**.
7. Power-cycle the controller and wait for it to boot up.

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 and MJ2 serial ports and a hardware rev between T and Z. **Note:** Compatibility is currently limited to FW versions 15.XX.

1. Use a direct serial connection to MJ1 or USB to establish communication between Cscape and the controller.
2. Confirm your application is available on your PC or upload the application.
3. Confirm the machinery connected to the controller is in a safe state for firmware update.
4. Start the firmware update by selecting **File > Firmware Update Wizard**.
5. Select the controller type from the drop-down menu.
6. Press the **Start** button and wait for the firmware update to complete.
7. If there is a communication failure, check the cable, connections and COM port setting and try again.
8. Firmware updates typically delete the user applications to ensure compatibility so it is necessary to reload the affected applications.
9. Test the operation of the equipment with the new firmware before returning the controller system to an operation mode.

FW UPDATE FOR GEN. 3 XLT AND XLTe

Gen 3 XLT, XLTe units feature a mini USB port physically located between the MJ1 & MJ2 serial ports. It will also have a three letter revision on the label. **Note:** Compatibility is currently limited to FW versions 17.XX. Also only compatible with Cscape 9.9 SP10 or above.

1. Use a direct serial connection to MJ1 or USB to establish communication between Cscape and the controller.
2. Confirm your application is available on your PC or upload the application.
3. Confirm the machinery connected to the controller is in a safe state for firmware update.
4. Start the firmware update by selecting **File > Firmware Update Wizard**.
5. Select the controller type from the drop-down menu.
6. Press the **Start** button and wait for the firmware update to complete.
7. If there is a communication failure, check the cable, connections and comm. port setting and try again.

8. Firmware updates typically delete the user applications to ensure compatibility so it is necessary to reload the affected applications.
9. Test the operation of the equipment before returning the controller system to an operation mode.

FIRMWARE UPDATE FOR RCC CONTROLLERS

The following table contains the values of the 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:

Load Switch

1. Press the **LOAD switch** during power-up to boot 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, press the **LOAD switch** for three (3) seconds to 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 are present on the microSD card, it can trigger a firmware update that may not complete.

Run/Stop Switch

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

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

Complete the following steps to update firmware in an XLE/XLT (Gen. 1), RX371, NX, RCS, RCX, XL6, or XL10. (Gen 1 XLE/XLT units do not feature a mini-USB port.)

1. Connect to the MJ1/Port 1 programming port with Cscope software.
2. Export the [downloaded .zip file](#) from the Horner website and run the executable file. This places the firmware files in their default folder locations.
3. In Cscope open a new or existing project .csp file, click **File > Firmware Update Wizard**.
4. In the **Firmware Update Wizard**, verify that the product type matches the connected device and select the appropriate CAN network option. (The default option is CsCAN; if unsure, leave as default.)
5. Click **Ok**. (Click OK to bypass the firmware updates using high-speed communications warning window.)

6. In the **Firmware Update** window, click **Start**.
7. Once the download has completed, click **Close** then **Ok** in the **Update Complete** window.
8. Verify in **View Status** in the **System Menu** that the firmware has been loaded.

FIRMWARE UPDATE FOR ZX

Complete the following steps to update firmware in a ZX.

1. Unzip Export the [downloaded .zip file](#) from the Horner website onto a USB drive.
2. On the USB drive, rename one of the following files to `syslinux.cfg`:

<code>syslinux.cfg_zx452</code>	[to upgrade a 7" ZX452]
<code>syslinux.cfg_zx752</code>	[to upgrade a 15" ZX752]
<code>syslinux.cfg_zx1152</code>	[to upgrade a 22" ZX1152]
3. Plug the USB drive into a powered-up ZX.
4. Touch the upper-right screen corner to slide out the control panel.
5. Choose one of the following:
 - If ZX firmware is 14.00 or later, press and hold the **SYSTEM** key until the **Boot Installer** screen appears.
 - If the ZX firmware is less than 14.00, press and hold the **F5** key until the **Boot Installer** screen appears.
6. Press the **Install Bootloader** button and then press **Yes**.
7. When the **Operation Completed** message appears, press **OK**.
8. Power-cycle the ZX and wait for it to boot up.
9. Touch the upper-right screen corner to slide out the control panel.
10. Press the **SYSTEM** key, select **View Status**, and press the **Enter** button.
11. If any of the version numbers are incorrect, verify the correct files were copied to the USB drive and repeat these steps.

Technical Support

North America:

Tel: 1-877-665-5666

Fax: 317 639-4279

Web: <https://hornerautomation.com>

Email: techspt@heapg.com

Europe:

Tel: +353-21-4321266

Fax: +353-21-4321826

Web: <http://www.hornerautomation.eu>

Email: tech.support@horner-apg.com