

XLS DriveCore™ 2 Series Operation Manual



XLS 1002

XLS 1502

XLS 2002

XLS 2502

Product Registration: Register your new product at <http://warranty.harmanpro.com>.

Obtaining Other Language Versions: To obtain information in another language about the use of this product, please contact your local HARMAN Professional Distributor. If you need assistance locating your local distributor, please visit www.crownaudio.com/where_to_buy.

This manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance.

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred. To obtain the latest version of this manual, please visit the Crown website at www.crownaudio.com.

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Warranty & Product Registration: Register your new Crown amplifier at <http://warranty.harmanpro.com>

Some models may be exported under the name Amcron[®]

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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.



12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Use the mains plug to disconnect the apparatus from the mains.



16. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
17. DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.
18. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.



TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP OR BOTTOM COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

WATCH FOR THESE SYMBOLS:



The lightning bolt triangle is used to alert the user to the risk of electric shock.



The exclamation point triangle is used to alert the user to important operating or maintenance instructions.



IMPORTANT

XLS Series amplifiers require Class 2 output wiring.

MAGNETIC FIELD

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.

FCC COMPLIANCE NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

DECLARATION OF CONFORMITY

Issued By: HARMAN International Inc.
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FOR COMPLIANCE QUESTIONS ONLY: Sue.Whitfield@harman.com

European Representative's Name and Address:

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Cranborne Road Potters Bar,
EN6 3JN United Kingdom

Equipment Type: Power amplifiers

Family Name: XLS DriveCore 2 Series

Model Names: XLS 1002, XLS 1502, XLS 2002, XLS 2502

EMC Standards:

EN 55103-1:2009 +A1:2012 Electromagnetic Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 1: Emissions

EN 55103-1:2009 +A1:2012 Magnetic Field Emissions-Annex A @ 10 cm and 1 M

EN 61000-3-2:2006 +A1:2008 +A2:2009 Limits for Harmonic Current Emissions (equipment input current ≤16A per phase)

EN 61000-3-3:2013 Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems Rated Current ≤16A

EN 55022:2012 Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE: Radiated, Class B Limits; Conducted, Class B

EN 55103-2:2009 Electromagnetic Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity

EN 61000-4-2:2009 Ed 9 Electrostatic Discharge Immunity (Environment E2-Criteria B, 4k V Contact, 8k V Air Discharge)

EN 61000-4-3:2010 Ed 3.2 Radiated, Radio-Frequency, Electromagnetic Immunity (Environment E2, Criteria A)

EN 61000-4-4:2012 Ed 12 Electrical Fast Transient/Burst Immunity (Criteria B)

EN 61000-4-5:2014 Surge Immunity (Criteria B)

EN 61000-4-6:2009 Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A)

EN 61000-4-11:2004 Voltage Dips, Short Interruptions and Voltage Variation

Safety Standard:

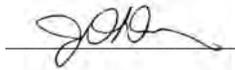
IEC 60065: 2002 +A12:2011, IEC 60065:2001 Ed 7 +A1:2010 Safety Requirements - Audio Video and Similar Electronic Apparatus

CAN/CSA 60065-03 incl. A1 Safety Requirements - Audio, Video, and Similar Electronic Apparatus

UL Std No. 60065-2007 Safety Requirements - Audio, Video, and Similar Electronic Apparatus

I certify that the product identified above conforms to the requirements of the EMC Council Directive 89/336/EEC as amended by 92/31/EEC, and the Low Voltage Directive 73/23/EES as amended by 93/68/EEC.

Signed



Jeff Denman

Title: Sr. Director of Operations

Date of Issue: April 1, 2015

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Welcome



Crown XLS DriveCore 2 Series amplifiers define the standard for portable PA systems with unmatched performance, technology and affordability that effortlessly deliver night after night. We packed XLS with enormous flexibility, thanks to a wide range of features ranging from Peak™ Limiters to DSP functionality that allows Band Pass filters on each channel. The XLS weighs less than 11 lbs (5 kg), making it the most featured packed amplifier for the weight on the market.

Beyond the amazing technology and performance, we wanted to make these high performance amplifiers the best looking in any environment. The new XLS DriveCore 2 Series has a finely crafted aluminum bezel that now allows you to turn off lighting for a stealth look and remotely trigger sleep mode for remote applications through a contact closure.

Features

- High performance, lightweight Class-D amplifier powered by DriveCore Technology
- XLR, ¼", RCA inputs ensure compatibility with any source
- Expanded DSP with Band Pass filters
- User controllable lighting and a display sleep function
- Selectable 1.4Vrms or .775Vrms input sensitivity to drive any source to full power
- Remote power control through a contact closure
- Crown No-Fault Fully-Transferable 3-year Warranty completely protects your investment

How to Use This Manual

This manual provides you with the necessary information to safely and correctly setup and operate your amplifier. It does not cover every aspect of installation, setup or operation that might occur under every condition. For additional information, please contact technical support, your system installer or retailer.

We strongly recommend you read all instructions, warnings and cautions contained in this manual. Also for your protection, please save your bill of sale — it's your official proof of purchase.

Front Panel Features

Cooling Vents:

Front to rear forced air flow.

Indicators:

Signal Presence Indicator: Two green LED's, one for each channel, illuminate when the channel input signal exceeds -40dBu.

-20 Indicator: Green LED flashes when output signal level exceeds -20dB below clip.

-10 Indicator: Green LED flashes when output signal level exceeds -10dB below clip.

Clip Indicator: Two red LED's, one for each channel, illuminate when the channel's output is being overdriven.

Thermal Indicator: Two red LED's, one for each channel, illuminate when thermal compression begins.

Blue LEDs:

LEDs will illuminate when power is turned on or blink while in sleep mode.



Gain (Level) Controls:

Two black rotary level controls, one for each channel.

Menu/Prev/Next:

Three buttons located near the LCD screen that are used to configure and access the integrated processing.

LCD Screen:

Back-lit LCD screen allows for crossover configuration, amplifier mode configuration, and system configuration.

Power Button

Turns amplifier power on and off.

Back Panel Features

Binding Post Output Jacks:

One pair per channel, accepts banana plugs or bare wire. Note: Binding post outputs on European models come with safety plugs installed to prevent European power plugs from being inserted. The side entry positions for these connectors should be used with European models.

Circuit Breaker:

Provides overload protection.

Fans:

Provide front to back forced airflow for cooling.

RCA (Phono) Inputs:

Two RCA inputs are provided (one per channel).



AC Power Connector

AUX Connector

Allows sleep mode with a contact closure between pins 1 & 2. Amp status signal available at pin 3.

4-Pole Speakon® Output Connectors:

Two - 1/4 inch input connectors accept 2-pole or 4-pole Speakon connectors. The Channel 1 connector is wired for both channels so it can be used for BRIDGE mode wiring or stereo wiring of two speakers to a single Speakon.

1/4 Inch Inputs:

2 - 1/4 Inch input connectors are provided (one per channel). These inputs can also be used to loop-thru signal to additional amplifiers.

Balanced XLR Inputs:

Two 3-pin XLR input connectors are provided (one per channel).

Get Started

Stereo Mode

This is the default mode the amplifier is set to from the factory. Filters are available in this mode and will be described in detail in the Crossover Filters section on page 9.

1. Connect Left/Right signal source to Channel 1 and Channel 2 using either the XLR, ¼ Inch, or RCA connectors.
2. Connect a speaker to each channel output using Speakon, Banana Plugs, or bare wire.



Bridge Mode

BRIDGE mode delivers the power of both amp channels into a single load of 4Ω or greater.

Before you get started ensure that you:

1. Connect signal source to Channel 1 only using either the XLR, ¼ Inch, or RCA connectors.
2. Connect the speaker as shown.
 - a. If using the binding post outputs, connect the positive terminal of the speaker to the positive terminal of Channel 1 and the negative terminal of the speaker to the positive terminal of Channel 2.
 - b. If using the Speakon output, connect the positive terminal of the speaker to Speakon pin 1+ and the negative terminal of the speaker to Speakon pin 2+, then plug the Speakon connector into Channel 1 output of the amplifier.



Follow these quick steps to configure the amplifier for BRIDGE mode:

1. Hold the MENU/SEL button for 1 second until the LCD screen displays the MAIN MENU.
2. Highlight AMP MODE and press the MENU/SEL button to enter the AMP MODE menu.
3. Press the NEXT button until BRIDGE is highlighted.
4. Press the MENU/SEL button to select BRIDGE mode.
5. Now the LCD screen displays the MAIN MENU. You may continue to the CROSSOVER menu status screen which will now show that the amplifier is in BRIDGE mode.

Get Started

Input-Y Mode

The INPUT-Y mode directs the input signal from Channel 1 to both amplifier output channels. This mode is often configured to use a Low Pass filter on Channel 1 and a High Pass filter on Channel 2 as a crossover to drive bi-amplified systems.

Before you get started ensure that you:

1. Connect signal source to Channel 1 only using either the XLR, ¼ Inch, or RCA connectors. Any source connected to Channel 2 will be ignored.
2. Connect a speaker to each channel output using Speakon®, Banana Plugs, or bare wire.

Follow these quick steps to configure the amplifier for INPUT-Y mode:

1. Hold the MENU/SEL button for 1 second until the LCD screen displays the MAIN MENU.
2. Highlight AMP MODE and press the MENU/SEL button to enter the AMP MODE menu.
3. Press the NEXT button until INPUT-Y is highlighted and press the MENU/SEL button to select INPUT-Y mode.
4. Now the LCD screen displays the MAIN MENU. You may continue to the CROSSOVER menu to set up filter options or scroll down to EXIT to return the status screen which will now show the amplifier is in INPUT-Y mode.



Integrated Processing Features

PureBand™ Crossover Filter System:

The PureBand Crossover System provides a variable state Linkwitz-Riley 24dB/octave filter allowing you to choose a point between 30Hz and 3kHz on standard 1/12th octave centers. Three filter types are available: Low Pass, High Pass and Band Pass.

For instructions on setting up the different crossover filter settings, please see the System Configuration Examples in the following section of this manual.

Peak_x™ Limiters

The Peak_x Limiters provide your amplifier and system with higher performance and better protection. They are specifically tuned to work with this amplifier design and power-supply to achieve higher SPL with less audible artifacts while protecting your loudspeaker investment.

System Configuration Examples

Monaural Bi-Amp System

1. Configure the system as described in Input-Y section on page 8. The woofer connected to Channel 1 and the mid/high drivers to Channel 2.
2. Set up Channel 1 as a Low Pass filter and use your crossover frequency as the filter's cutoff frequency.
3. Set up Channel 2 as a High Pass filter using the same filter cutoff frequency as in Step 2 above.



Stereo Bi-Amp System

A theater 2.1 sound amplification system can be easily set up using one amplifier in STEREO mode for the L and R channels and a second amplifier in BRIDGE mode with a Low Pass filter set to the appropriate cutoff frequency.



Menu Navigation

Main Menu

Enter the MAIN MENU by holding the MENU/SEL button beneath the display for about a second. From the MAIN MENU one may navigate, using the PREVIOUS and NEXT buttons, to one of four other menus or select EXIT to return to the status screen where only three lines of text are displayed. Use the up arrow or down arrow to highlight the menu you wish to go to and press the MENU/SEL button to make your selection.

MAIN MENU		AMP MODE
		CROSSOVER
		INPUT SENSITIVITY
		SYSTEM
		EXIT

Amp Mode

The AMP MODE menu is used to select one of three amplifier modes available in your XLS amplifier. The factory default is set to STEREO mode. In STEREO mode, Channel 1 and Channel 2 both function as independent amplifiers. BRIDGE sets the outputs into a bridge configuration as described in the BRIDGE mode section. The INPUT-Y mode allows the user to drive the two channels from the same input signal source. This is convenient for setting up crossover filters for bi-amplified systems.

AMP MODE		STEREO
		BRIDGE
		INPUT-Y
		BACK

Crossover

The CROSSOVER menu will allow the selection of filter type and filter frequency for each amplifier output channel. If the amplifier is in STEREO or INPUT-Y mode, you will first be prompted to select which amplifier channel to set up (BRIDGE mode skips this step). When you enter the CROSSOVER menu, the amplifier mode will be displayed.

CROSSOVER		CHANNEL 1
STEREO		CHANNEL 2
		BACK

Bridge Mode

Once you have selected the channel or if you are in BRIDGE mode, the available filter types will be displayed. Scroll to select between LOW PASS, BAND PASS or HIGH PASS filters, or select NO CROSSOVER. If a filter has been selected, the next screen will display the filter type and cut-off frequency. In the case of the BAND PASS filter, both the low and high cut-off frequencies will be displayed. Once you have selected the cut-off frequency or frequencies, you will be taken back to the MAIN MENU.

CROSSOVER		NO CROSSOVER
CHANNEL 1		LOW PASS
		BAND PASS
		HIGH PASS
		BACK

Input Sensitivity

The INPUT SENSITIVITY feature enables the playback from sources with inherently low output levels to drive the amplifier to full power by selecting ".775 - HIGH." It is recommended that this remain set at the default NORMAL setting for all other audio sources to provide optimal system performance. The HIGH setting is often used with source devices that use RCA connections.

INPUT		1.4V - NORMAL
SENSITIVITY		.775V - HIGH

Additional Features

System Menu

The following features may be accessed through the SYSTEM MENU. The SYSTEM MENU is the fourth selection on the MAIN MENU. Since only three selections are displayed, you must scroll down using the NEXT button until SYSTEM is displayed and highlighted.

SYSTEM MENU	DISPLAY SLEEP
	LIGHTING
	SECURITY
	INFORMATION
	FACTORY RESET
	BACK

Display Sleep

The user may configure the amplifier to allow the display to go into a sleep mode after a pre-determined idle time. This feature can be useful in applications where it is desirable to minimize the light from the amplifier.

This feature may be accessed via SYSTEM > DISPLAY SLEEP. Within the DISPLAY SLEEP menu, the user has the option to set the sleep mode to off or to choose a delay time of 30 seconds, 1 minute, 2 minutes or 5 minutes. If no menu buttons are pushed and the time period elapses, the display will turn off. It can be awakened by touching any menu button.

LED Lighting Options

LED lighting Options can be accessed via SYSTEM > LIGHTING. Inside the LIGHTING menu, the user can toggle the on and off of blue panel lights as well as the green signal level indicators.

Note: The thermal and clip indicators cannot be disabled.

Security

A security feature allows the user to lock the menu buttons so that the settings are not disturbed once they have been set up. To enable the security feature, go to SYSTEM > SECURITY and press NEXT to toggle the display to ENABLE. Press MENU/SEL to return to the SYSTEM MENU. Once enabled, the user can lock-out the menu buttons by simultaneously pressing the PREVIOUS and NEXT buttons. The menu will remain locked, even through a power cycle, until the PREVIOUS and NEXT buttons are pressed again.

System Information

For the audio geeks that just can't get enough data, we have provided a window to access your amplifier's system information. SYSTEM > INFORMATION will reveal a list of information including the model number, internal temperatures and voltages, firmware release number, etc.

Reset Factory Defaults

There may come a time when you just want to reset the entire system and start your setup from ground zero. If you are sure that you want to do this, you may select FACTORY RESET from the SYSTEM MENU. If you select YES for factory reset, you will then be prompted to confirm your choice.

WARNING: If you reset your amplifier, all settings will revert to the factory preset values and you will lose all configurations you may have entered for amplifier modes, filter frequencies, input sensitivity and system settings.

Specifications

Performance Specifications

	1002	1502	2002	2502
Sensitivity	.775Vrms or 1.4Vrms	.775Vrms or 1.4Vrms	.775Vrms or 1.4Vrms	.775Vrms or 1.4Vrms
Frequency Response (1W, 20Hz - 20kHz)	+0dB, -1dB	+0dB, -1dB	+0dB, -1dB	+0dB, -1dB
Signal to Noise Ratio (rated dBr to full rated 8Ω power output; A-Weighted)	>97dB*	>103dB*	>103dB*	>103dB*
Total Harmonic Distortion (THD)	<0.5%	<0.5%	<0.5%	<0.5%
Intermodulation Distortion (60Hz and 7 kHz at 4:1) from full rated output to -30dB	<0.3%	<0.3%	<0.3%	<0.3%
Damping Factor (8Ω, 10Hz ~ 400Hz)	>200	>200	>200	>200
Crosstalk (below rated 8Ω power)	At 1kHz: > 85dB At 20kHz: > 55dB			

*when operated at 1.4Vrms sensitivity

Physical Specifications

	1002	1502	2002	2502
Width	19 in. (48.3 cm)	19 in. (48.3 cm)	19 in. (48.3 cm)	19 in. (48.3 cm)
Height	3.5 in. (8.9 cm)	3.5 in. (8.9 cm)	3.5 in. (8.9 cm)	3.5 in. (8.9 cm)
Depth	7.7 in. (19.6 cm)	7.7 in. (19.6 cm)	10.7 in. (27.2 cm)	10.7 in. (27.2 cm)
Net Weight	8.6 lbs (3.9 kg)	8.6 lbs (3.9 kg)	10.8 lbs (4.9 kg)	10.8 lbs (4.9 kg)
Shipping Weight	13.6 lbs (6.2 kg)	13.6 lbs (6.2 kg)	15.8 lbs (7.2 kg)	15.8 lbs (7.2 kg)

Power Matrix

	1002	1502	2002	2502
Channels	2	2	2	2
2Ω Dual	550W	775W	1050W	1200W
4Ω Dual	350W	525W	650W	775W
8Ω Dual	215W	300W	375W	440W
4Ω Bridged	1100W	1550W	2100W	2400W
8Ω Bridged	700W	1050W	1300W	1550W