DL-HD28A-H2 Owners Manual

11675 Ridgeline Drive
Colorado Springs, CO
80921

Phone: 719-260-0061
Toll-Free: 800-530-8998
Fax: 719-260-0075

Important Safety Instructions

» Please completely read and verify you understand all instructions in this manual before operating this equipment.

» Keep these instructions in a safe, accessible place for future reference.

» Heed all warnings.

» Follow all instructions.

» Do not use this apparatus near water.

» Clean only with a dry cloth.

» Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

» Use only accessories specified or recommended by Intelix.

» Explanation of graphical symbols:

   ◊ Lightning bolt/flash symbol: the lightning bolt/flash and arrowhead within an equilateral triangle symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure which may be of sufficient magnitude to constitute a risk of shock to a person or persons.

   ◊ Exclamation point symbol: the exclamation point within an equilateral triangle symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

» **WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.**

» Use the mains plug to disconnect the apparatus from the mains.

» **THE MAINS PLUG OF THE POWER CORD MUST REMAIN READILY ACCESSIBLE.**

» Do not defeat the safety purpose 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 your obsolete outlet. **Caution! To reduce the risk of electrical shock, grounding of the center pin of this plug must be maintained.**

» Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and the point where they exit from the apparatus.

» Do not block the air ventilation openings. Only mount the equipment per Intelix's instructions.

» Use only with the cart, stand, table, or rack specified by Intelix or sold with the equipment. When/if a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.

» Unplug this apparatus during lightning storms or when unused for long periods of time.

» **Caution!** Shock Hazard. Do not open the unit.

» Refer 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.

DIGITALINX

Table of Contents

Product Overview

The Digitalinx DL-HD28A-H2 is an HDMI 2.0 compatible 2:8 auto scaling and auto switching HDMI distribution amp / splitter that features two HDMI inputs and eight HDMI outputs. The splitters HDMI outputs can switch as a group to either input via auto or manual switching methods and supports down scaling so a 4K video input can automatically be down scaled to an 1080p output when connecting a display that only supports resolutions up to 1080p. The DL-HD28A-H2 supports 4K signals up to 4K@60Hz / 4:4:4 / 8 bit color and features an easy EDID management option using dip switches on the rear panel of the unit. Analog and digital audio can be de-embedded from the selected HDMI input and the DL-HD28A-H2 supports CEC control and is HDCP 2.2 compliant. The DL-HD28A-H2 can be controlled via front panel buttons, RS232 or by TCP/IP control.

Product Overview

- DL-HD28A-H2 2:8 Switching DA
- Quick Install Guide
- (4) Plastic Cushions
- (2) Mounting Clips with (4) Mounting Screws
- 12V DC Power supply with US, EU, UK and AU power adapters.

Product View

Front Panel
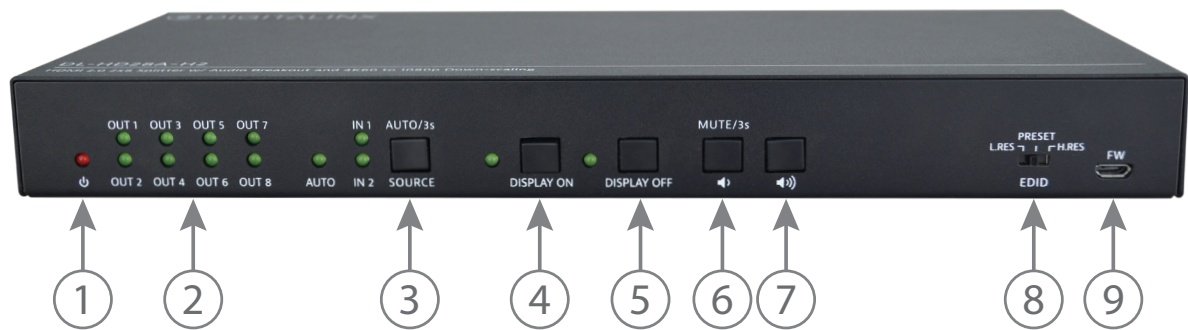
1. **POWER LED INDICATOR -** Illuminates solid RED when device is powered ON

2. **OUTPUT LED INDICATORS** - Illuminates solid GREEN when there is an HDMI output on the corresponding channel

3. **SOURCE BUTTON and LED INDICATORS**

    AUTO - Switching mode indicator; illuminates solid GREEN when device is in auto switching mode, OFF when in manual switching mode. To change switching modes, hold down the SOURCE button for 3 seconds.

    IN1 / IN2 - Input indicator; illuminates solid when corresponding input channel has been selected. To change inputs, use the SOURCE button to toggle between inputs. Front panel input control only works in manual switching mode.

4. **DISPLAY ON** - Press button to turn connected displays ON via CEC or RS232

5. **DISPLAY OFF** - Press button to turn connected displays OFF via CEC or RS232

6. **VOLUME DOWN/MUTE** - Press button to turn connected display volume down via CEC or RS232. To mute audio press and hold button down for 3 seconds

7. **VOLUME UP** - Press button to turn connected display volume UP via CEC or RS232. Use up button to exit audio mute mode

8. **EDID** - EDID value settings selector

9. **FW** - Micro USB connector for firmware updates

DIGITALINX

Rear Panel
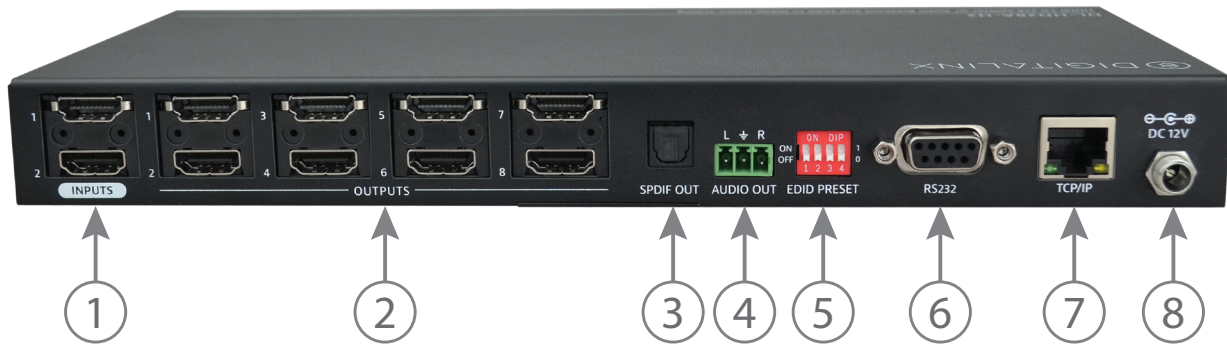
1. **INPUTS** - Two HDMI input ports to connect HDMI sources

2. **OUTPUTS** - Eight HDMI output ports to connect HDMI displays

3. **AUDIO OUT** -3 pin phoenix connector for analog audio output

4. **SPDIF OUT** - Toslink digital audio output port for digital audio output

5. **EDID** - 4 pin dip switches for EDID settings

6. **RS232** - DB-9 female connector for RS232 control

7. **TCP/IP** - RJ45 for Telnet or web GUI control

8. **DC12V** - 2-pin terminal block for external power supply

DIGITALINX

Installation Instructions

Rack Mounting the Switcher

Remove the screws on both sides of the distributor, then attach the supplied rack mounting ears / clips for rack-mounting.

Connecting Video Sources

Connect source devices to the inputs on the DL-HD28A-H2. When using HDMI cables for source inputs, use a High Speed HDMI cable that is less than or equal to 5 meters in length for 4k60 signals and 8 meters for 1080p signals.

Connecting Displays

Connect the display devices to the HDMI output of the DL-HD28A-H2 using a High Speed HDMI cable that is less than or equal to 5 meters in length for 4k60 signals and 8 meters for 1080p signals.

Connecting Audio Output

The DL-HD28A-H2 features two audio outputs, digital Toslink and unbalanced stereo analog. The audio outputs will de-embed the HDMI audio stream of the selected HDMI input.

Note: When using multi channel audio signals only the digital audio output can be used. The analog output will only pass 2 channel stereo audio.

To connect digital audio output, connect a Toslink digital audio cable from the DL-HD28A-H2 to a compatible audio receiver with the same input. To connect the 3 pin unbalanced stereo analog audio output, connect left to left leads, right to right leads and ground to ground leads to an unbalanced audio connector / circuit.

DIGITALINX

Connecting RS232 Control

Connect a control system to the DL-HD28A-H2 switcher via RS232 so the switcher can be controlled by a 3rd party control system using serial communication.

RS232 Wiring

Connect the system controller RX signal to TX on the DL-HD28A-H2 switcher, then connect the controllers TX signal to RX.
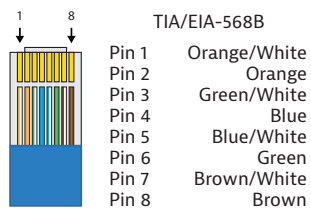
Default RS232 Settings:
- 9600 baud
- 8 Data Bits
- 1 Stop Bit
- Parity = none

PIN 2 - Transmit
PIN 3 - Receive
PIN 5 - Ground

PIN 5   PIN 1
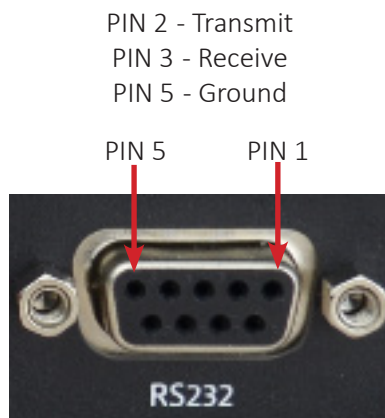
DL-HD28A-H2 DB9 FEMALE

Connecting Ethernet

The DL-HD28A-H2 may be controlled via Ethernet using the internal web GUI or via Telnet server.

TIA/EIA-568B

Pin 1	Orange/White
Pin 2	Orange
Pin 3	Green/White
Pin 4	Blue
Pin 5	Blue/White
Pin 6	Green
Pin 7	Brown/White
Pin 8	Brown

The TCP/IP port requires a standard straight-through Category 5 or greater cable with the TIA/EIA-568B crimp pattern for optimal operation.

The default settings for the TCP/IP port are:
IP address: 192.168.0.178, Telnet port 4001

Web Browser Control / GUI

To connect to the DL-HD28A-H2 web GUI, connect a computer to the same LAN as the DL-HD28A-H2 be sure your computer is in the same network ID range as the switcher, enter in the default IP of the switcher into a web browser. See page 11 for web GUI settings and configuration.
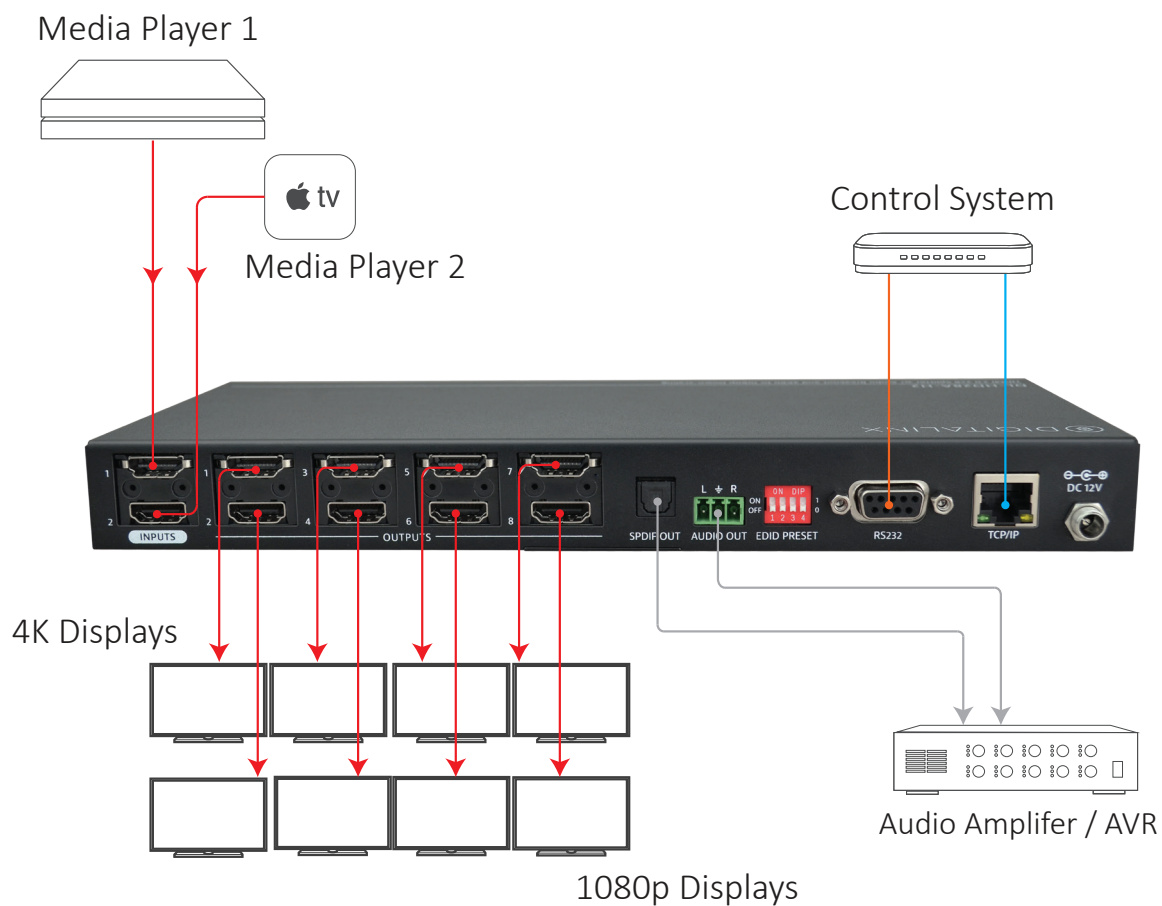
Telnet Control

To connect to the DL-HD28A-H2 and control it as a Telnet client, connect a computer to the same LAN as the DL-HD28A-H2 , be sure your computer is in the same network ID range as the switcher, enter in the default IP of the switcher into a telnet server and use Port 4001 to connect. See page 19 for all the available control commands for this switcher kit.

Applying Power

Connect the included power supply to the DL-HD28A-H2 and lock the power supply to the power connector by twisting the locking collar clockwise.
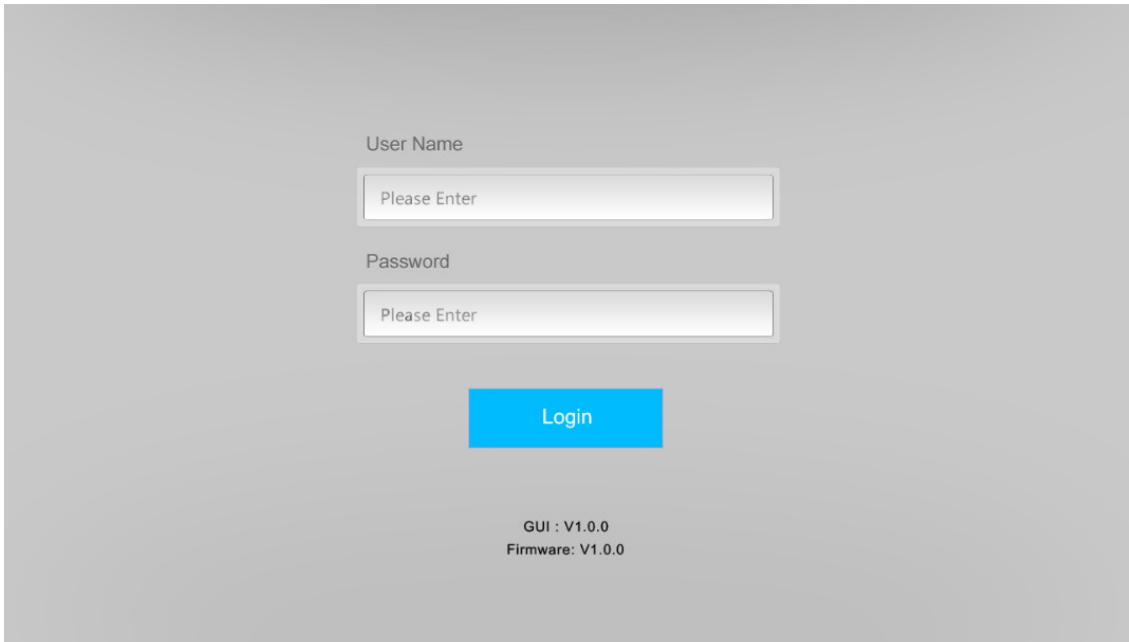
A/V Diagram

Media Player 1

Media Player 2

Control System

4K Displays

1080p Displays

Audio Amplifer / AVR

HDMI
CATx
RS232
AUDIO

Web Browser Control / System Settings

Connecting to Web Control Interface

Open a web browser and type in the IP address of the DL-HD28A-H2. The default IP address is 192.168.0.178. Be sure the computer you are using to connect to the DL-HD28A-H2 web GUI is in the same IP / Network ID range.

The login screen below will appear. The default user name and password is *admin*

Audio / Video Switching

The *CONTROL* menu allows you to set the switching method to either auto or manual switching and switch all outputs as a group to a designated input.

To enable auto switching, check the *AUTO* button. To disable auto switching and use manual switching method, uncheck the *AUTO* button.

To switch the AV route, check either *HDMI 1* or *HDMI 2* in the *SOURCE* buttons section, once selection has been made all displays connected to the outputs of the DL-HD28A-H2 will be switched to this input. **Note:** you must be in *MANUAL* switching mode for this operation.
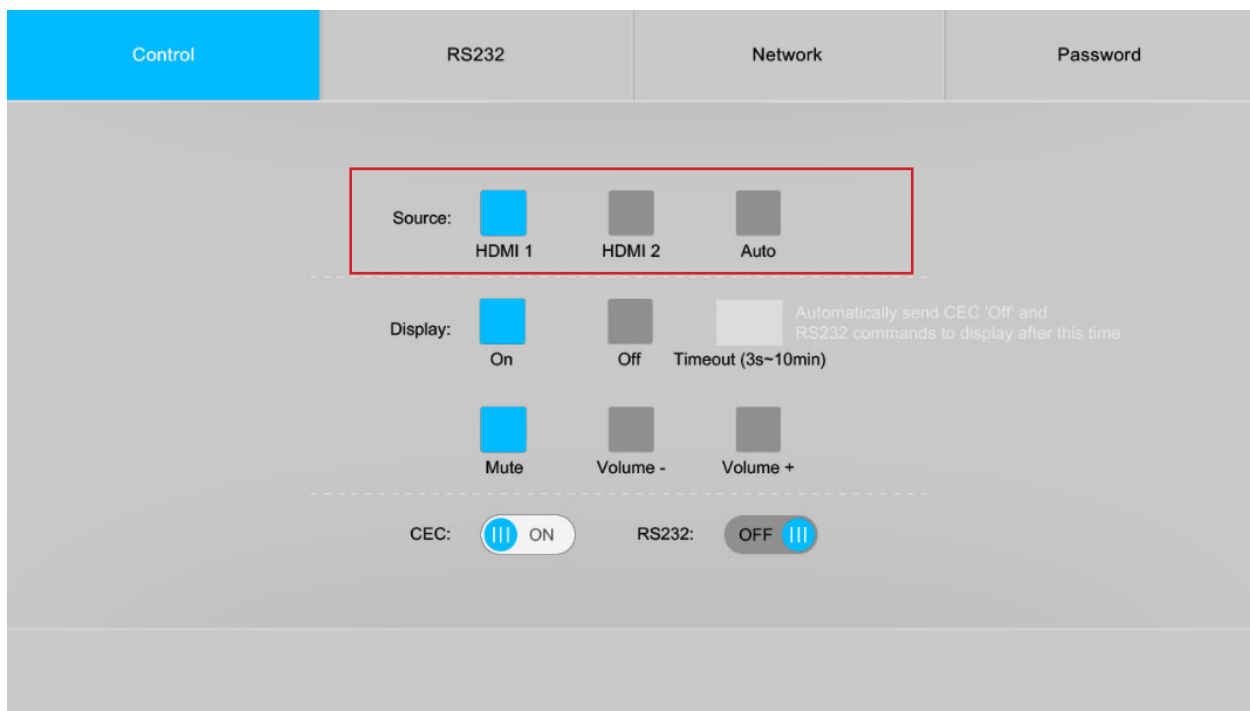
Display On/Off Control

The *CONTROL* menu allows you to control connected displays via CEC or RS232. When using CEC control you can turn the displays ON or OFF and adjust volume properties such as volume level and mute status using the GUI. When RS232 control is used the GUI will only control the displays ON or OFF status when connected to the RS232 port of the DL-HD28A-H2. RS232 commands can be set for ON/OFF status in the RS232 menu in the DL-HD28A-H2 web GUI.

To turn CEC control ON so connected displays can be turned on or off via CEC, check the *CEC* button. To turn CEC control OFF, check the *CEC* button again. The *CEC* button will indicate if CEC control is ON or OFF.

To turn RS232 control ON so a connected display can be turned on or off via RS232, check the *RS232* button. To turn RS232 control OFF check the *RS232* button again. The *RS232* button will indicate if RS232 is ON or OFF.

To turn displays ON check the *ON* button, to turn OFF displays click the *OFF* button. To set up a timeout to turn displays OFF after a designated time when there is no HDMI activity, use the *TIMEOUT* option and indicate the desired timeout then click *SEND.*

To adjust volume properties of connected displays, use the MUTE, VOLUME- and VOLUME+ buttons.
Note: this option only works via CEC.
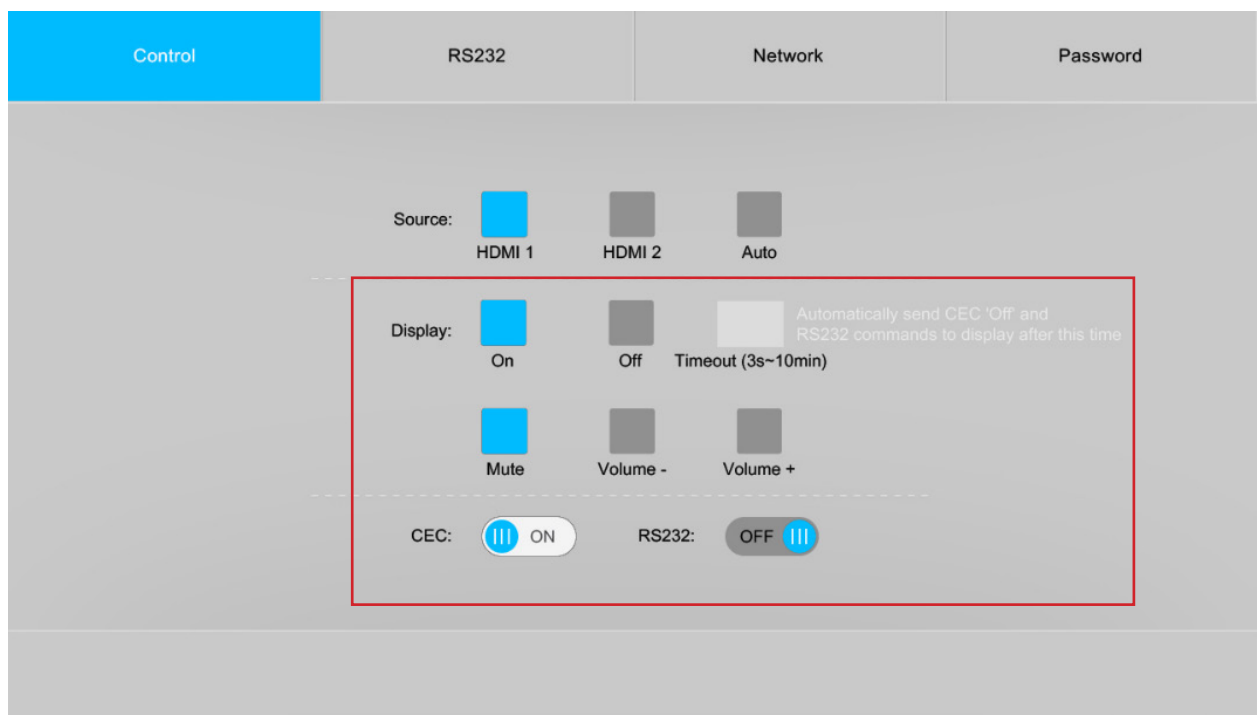
Note: Be sure that the displays used with the distributor supports CEC and the option is turned ON in the TV's settings when using this option for control.

Best Practice: Test the distribution amps compatibility with CEC enabled displays before system is deployed in the field to ensure interoperability.

DIGITALINX

Configuring and Testing RS232 Display Commands

The *RS232* menu allows you to test and configure RS232 command strings through the RS232 serial port output on the DL-HD28A-H2. The RS232 settings for the displays RS232 commands will be located in the displays manufacturers manual or RS232 guide that should be used to configure this section.

To configure string formats, check the *HEX* button to send HEX formatted strings through the RS232 output or uncheck the *HEX* button to send ASCII based strings.

⚠️ To test and use HEX formatted commands use the following syntax format: XX XX XX XX (XX = hex character). Example; the display ON command you are testing is 0xA1 0xA2 0xA3 0xA4 0xA5, enter in A1 A2 A3 A4 A5, prefix (0x) or suffix (h) identifiers are not required.

To select the desired *Baud Rate* setting for the RS232 port, choose a rate under the *BAUD RATE* drop down menu. The DL-HD28A-H2 supports 2400, 4800, 9600, 19200, 38400, 57600 and 115200 baud rates.

To select a command terminator for the command strings, choose the desired *Command Ending* terminator in the drop down menu. **NULL**- no terminator, **CR**- carriage return, **LF**- line feed and **CR+LF** - carriage return + line feed.

To test an RS232 command, enter in the command into the *COMMAND* field and click *SEND.*

To configure the DISPLAY ON command, enter the string into the *DISPLAY ON* field and click *SAVE*.

To configure the DISPLAY OFF command, enter the string into the *DISPLAY OFF* field and click *SAVE*.

RS232 commands can also be duplicated if necessary, click the 2X button to duplicate command twice and enter 2nd command delay time into *DELAY TIME* field, then click *SAVE*

DIGITALINX

Network Settings

The *Network* menu allows you to set the IP address mode to either Static or DHCP, by default the The DL-HD28A-H2 is set to Static mode with a pre-defined IP address of 192.168.0.178 / subnet 255.255.255.0 and gateway set to 192.168.0.1

Check either the *DHCP* or *Static* mode to change IP modes. If using a Static IP address enter in the IP address, subnet and gateway, then click *Confirm*. You will need to reboot the switch for the new network settings to take place.

Access Settings

The *PASSWORD* menu allows you to change the password credentials for the admin login of the The DL-HD28A-H2.

To change the password for the admin login, enter in the desired password then click *Confirm*

EDID Management

Front Panel Settings

EDID (Extended Display Identification Data) is data generated from a connected display in an HDMI system to communicate the resolution capabilities to a connected video source. The front panel EDID switch allows for lowest common denominator or highest common denominator EDID settings for the two HDMI inputs as well as setting EDID using presets via dipswitches.


Below is an explanation of the front panel EDID switch settings....

L. RES - Sets input EDID to the lowest resolution capability of all the connected displays

PRESET - Preset option when setting input EDID via dipswitches, see pg 18

H. RES - Sets input EDID to the highest resolution capability of all the connected displays

Dipswitch Settings

When using a preset EDID table via dipswitch be sure that the *PRESET* selection has been made on the EDID switch on the front panel of the DL-HD28A-H2. See pg 17.

When a dipswitch is in the down position, the switch represents "0" of OFF, when the dipswitch position in the up position it represents "1" or ON.
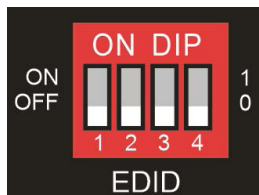
EDID Setting	Position 1	Position 2	Position 3	Position 4
Copies EDID from display connected to HDMI output 1	0	0	0	0
Copies EDID from display connected to HDMI output 2	0	0	0	1
Copies EDID from display connected to HDMI output 3	0	0	1	0
Copies EDID from display connected to HDMI output 4	0	0	1	1
720p@60Hz, Stereo Audio	0	1	0	0
1080p@60Hz, Stereo Audio	0	1	0	1
1080p@60Hz, Multi channel Audio	0	1	1	0
3840x2160@30Hz, Stereo Audio	0	1	1	1
3840x2160@30Hz, Multi channel Audio	1	0	0	0
3840x2160@60Hz, Stereo Audio	1	0	0	1
3840x2160@60Hz, Multi channel Audio	1	0	1	0

Note: Default EDID is to copy EDID from an HDMI display connected to HDMI output 1. When using EDID copy, if EDID fails the EDID will default to 720p.

RS232 and TCP/IP Control

RS232 Settings: 9600 baud, 8 Data bits, 1 Stop bit, Parity = None
TCP/IP Settings: User defined IP address (default IP address:192.168.0.178), Telnet port 4001

There are no spaces between any of the characters in the command string. The commands are case sensitive. Carriage return <CR> and line feed <LF> is required to terminate each string.

A/V Source Switching

Description	Command	Examples
Enables auto switching mode	HDMIA.	*Command:* *HDMIA.<CR><LF>* *Response:* *HDMI OUT SWITCH TO AUTO MODE!*
Enables manual switching mode	HDMIM.	*Command:* *HDMIM.<CR><LF>* *Response:* *HDMI OUT SWITCH TO MANUAL MODE!*
Switches to HDMI input 1 (must be in manual mode)	HDMI1.	*Command:* *HDMI1.<CR><LF>* *Response:* *HDMI OUT SWITCH TO 1!*
Switches to HDMI input 2 (must be in manual mode)	HDMI2.	*Command:* *HDMI2.<CR><LF>* *Response:* *HDMI OUT SWITCH TO 2!*

Auto Switching Method

Description	Command	Examples
Enables TMDS video signal to trigger HDMI switching	INTMDSCHECK.	*Command:* *INTMDSCHECK.<CR><LF>* *Response:* *TMDS CHECK ON!*
Enables 5V/HPD to trigger HDMI switching	INTMDSOFF.	*Command:* *INTMDSOFF.<CR><LF>* *Response:* *HPD CHECK ON!*

DIGITALINX

Audio On/Off Control

Description	Command	Examples
Turns the stereo analog L/R audio output ON	IISON.	*Command:* *IISON.<CR><LF>* *Response:* *IIS OUT ON!*
Turns the stereo analog L/R audio output OFF	IISOFF.	*Command:* *IISOFF.<CR><LF>* *Response:* *IIS OUT OFF!*
Turns the TOSLINK digital audio output ON	SPDIFON.	*Command:* *SPDIFON.<CR><LF>* *Response:* *SPDIF OUT ON!*
Turns the TOSLINK digital audio output OFF	SPDIFOFF.	*Command:* *SPDIFOFF.<CR><LF>* *Response:* *SPDIF OUT OFF!*

Display On/Off CEC Control

Displays connected to the DL-HD28A-H2 via HDMI can be turned ON/OFF via CEC from a 3rd party control system using the commands below. Be sure that the display supports CEC and the option is turned ON.

BEST PRACTICE   Test the distribution amps compatibility with a CEC enabled display before system is deployed in the field to insure interoperability.

Description	Command	Examples
Enables CEC control of CEC compatible displays	`CECON.`	*Command:* *CECON.<CR><LF>* *Response:* *CEC OUT ON!*
Disables CEC control of CEC compatible displays	`CECOFF.`	*Command:* *CECOFF.<CR><LF>* *Response:* *CEC OUT OFF!*
Turns displays ON using CEC	`TVON.`	*Command:* *TVON.<CR><LF>* *Response:* *Successful sending 'DISPLAY 'ON' command to TV!*
Turns displays OFF using CEC	`TVOFF.`	*Command:* *TVOFF.<CR><LF>* *Response:* *Successful sending 'DISPLAY 'OFF' command to TV!*

System Commands

Description	Command	Examples
Restores the device to factory defaults	RST.	Command: RST.<CR><LF> Response: DL_HD28A_H2 VER 1.0.0 CEC_ON RS232_ON TMDS_ON TV1_OFF TV_DELAY 500 ms! SYS_DELAY 30 min! HDMI OUT SWITCH TO AUTO MODE! DIP0000! DIP EDID0000! SPDIF OUT ON! IIS OUT ON! HDMI OUT SWITCH TO 1!
Query system status	STA.	Command: STA.<CR><LF> Response: GUI/RS232 QUERY STATUS! DL_HD28A_H2 VER 1.0.0 RS232_ON CEC_ON TV1_OFF TV_DELAY 500 ms! SYS_DELAY 30 min! TMDS_ON HDMI OUT SWITCH TO AUTO MODE! HDMI OUT SWITCH TO 1! DIP0000! DIP EDID0000! SPDIF OUT ON! IIS OUT ON!

Technical Specifications

Input/Output Connections	
HDMI Inputs	Two (2) HDMI Type A Receptacles
HDMI Outputs	Eight (8) HDMI Type A Receptacles
TCP/IP	One (1) 8P8C Port (Shielded RJ45 Female)
RS232	One (1) Female DB9 Port
Audio	- One (1) Analog L/R audio output, 3-Pin 3.5mm Phoenix connector - One (1) Digital SPDIF output, Toslink connector
Supported Audio, Video, and Embedded Control	
Video Resolutions	Up to 4K@60Hz 4:4:4 8 bit
Video Bandwidth	18Gbps
Maximum Passive HDMI Cable Distance	1.5m for 4k60 signal for input / 7m for 4K60 signal for output
Video Compliance	HDMI 2.0b, HDCP 2.2 and CEC compliant
Embedded Audio	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
De-embedded Audio	Analog L/R Out: PCM Digital Out: PCM, Dolby Digital, DTS, DTS-HD
Device Control Parameters	
Ethernet	100BaseT
RS232 Baud Rate	Up to 115200
Chassis and Environmental	
Enclosure	Painted Aluminum
Dimensions (H x W x D)	28.5mm x 265mm x 110mm (1.1 in x 10.4 in x 4.3 in)
Shipping Weight	830g (1.8 lbs.)
Operating Temperature	-5° to +55° C (+23° to +131° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-20° to +70° C (-4° to +140° F)
Storage Humidity	10% to 90%, Non-condensing
Power, ESD, and Regulatory	
Power Supply	Input:100V-240VAC / 50-60 Hz Output: 12VDC 1A
Power Consumption	12W (Max.)
ESD Protection	8kV air, 4kV contact
Product Regulatory	FCC, CE, RoHS
Other	
Standard Warranty	5 years
Included Accessories	Quick Install Guide,(4) Plastic Cushions, Rack Mounting Ears with Screws, (1) AC power adapter with US, UK, EU and AU power plugs

DIGITALINX

Thank you for your purchase.

For Technical Support please call our toll
free number at 800-530-8998 or email us at
supportlibav@libav.com

www.libav.com

Digitalinx is a brand of: