

85 Series High Performance VGA/XGA Distribution Amplifier Manual Rev C

Part Number
85-111-702-A (1x2)
85-111-704-A (1x4)

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Two Year Limited Warranty

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Table of Contents

Document History	3
1 Overview	4
2 Basic Functions	4
3 Power Requirements	4
4 High Density HD-15 Connector	6
5 The VGA\XGA Signal.....	6
6 Overall Specifications	7
7 Packages	8

Document History

<u>Rev:</u>	<u>Date:</u>	<u>Action:</u>
A	April 27, 2012	Initial Release
B	June 22, 2012	Improved Power description section
C	October 16, 2012	Added epoxy UL recognition to specifications & HD-15 Description and pinout.

1 Overview

The 85 Series Distribution Amplifiers “DA’s” include in this manual provide a way to distribute one XGA/VGA signal to up to Two or Four other devices. Extended Display Identification Data (EDID) link exists between Input and OUT-1.

85-111-702 (1X2)

85-111-704 (1X4)

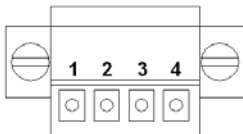
The internal power supply is fully isolated to permit the user to control ground loops. The power connection has an integrated threaded/screw flange for shock and high vibration environments.

2 Basic Functions

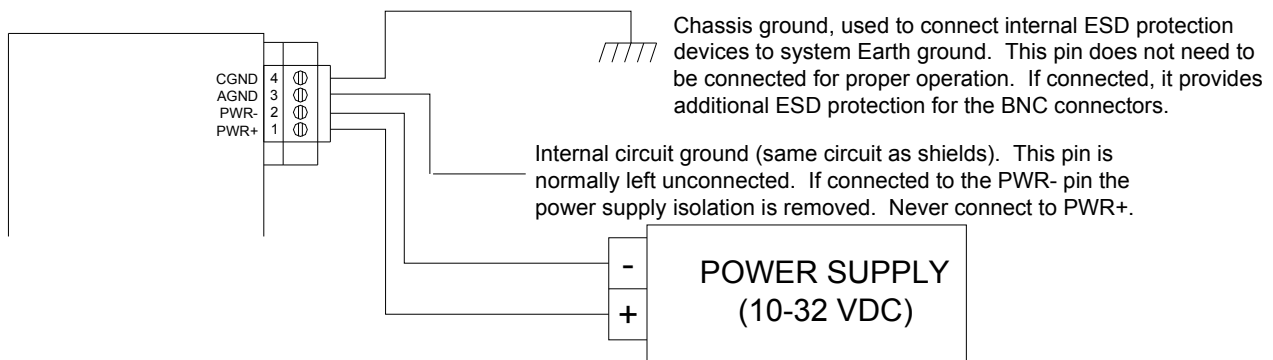
All input and output connections are High Density “HD” 15 pin connectors, typical of VGA/XGA. Output signals are buffered, and are identical with respect to the input. Output 1 is provisioned as a local master for Extended Display Identification Data (EDID). Input HD-15 pin-9 is passed to pin-9 of the local master output. This is a +5V signal, sourced by the graphics card connected to the input, typically providing power for EDID functionality.

3 Power Requirements

These units have an internal switching supply that isolates supply power from the internal power and I/O. Units will operate correctly when powered by 10-24 VAC or 10-32 VDC. Units are equipped with full wave rectification, so power may be applied between Pins 1 & 2 using either polarity.



- Pin 1** PWR+ (10-32V Supply Connection +V)
- Pin 2** PWR- (10-32V Return Connection -V/GND)
- Pin 3** AGND/Circuit Ground (**Same as HD15 Shields**)
- Pin 4** CGND/Chassis Ground (ESD Protection Ground)



Internal Circuit ground (AGND/Pin-3) is the ground reference for the internal circuits. It is NOT the input voltage return path of pins 1 and 2. The user has the option of floating internal circuits, with respect to any system ground, by not connecting to this pin. The user also has the option to

connect circuit ground to the chassis ground or the input power ground (or both). This power connector pin-out permits the user to define the grounding environment the unit is used in.

Chassis ground (CGND/Pin-4) is connected to internal ESD protection devices. The chassis ground does not need to be connected for proper operation. Secondary ESD protection connections exist between the input and output video signals and internal circuit ground.

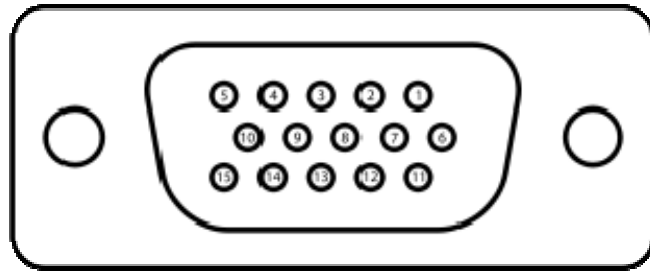
The power connector (J7) is a 4 pin 3.5mm center header (Phoenix Contact #1897267) and mating power plug (Phoenix Contact #1847071) with screw flanges for vibration and shock resistance.

The unit has a LED (green) to show power is connected and unit is operational.

4 High Density HD-15 Connector



Male Interconnect Cable



Female HD-15 Connector Pin Numbering

5	GND (HSync)	4	ID2/RES	3	BLUE Video	2	GREEN Video	1	RED Video
10	GND (VSync/DDC)	9	KEY/PWR	8	BLUE_RTN	7	GRN_RTN	6	RED_RTN
15	ID3/SCL	14	VSync	13	HSync	12	ID1/SDA	11	ID0 _(reserved)

HD-15 Signals

This connector may also be designated as a: RGB connector, D-Sub 15, Mini-Sub D15, ED-15, DB-15HD, HDB-15, or HD15. All are typical of the connector functioning as the output of a graphics adapter.

5 The VGA\XGA Signal

Both analog and digital signals are present within VGA\XGA cables and connectors. Analog signals include Red, Green & Blue (RGB). Digital signals include Horizontal Sync, Vertical Sync (HV), and Extended Display Identification Data (EDID) interface.

Many graphics displays and devices incorporate a Display Data Channel (DDC) or Extended Display Identification Data (EDID)¹ interface. DDC and EDID use the “I²C” (HD-15 pins 12 & 15) serial communications standard. HD-15 KEY/PWR pin voltage is +5VDC and is often used to power the EDID circuitry.

There are several factors that affect image quality. One is the drive capability of the display card. Many are designed to drive short distances and do not perform well above 10 to 20 feet. Another is the cable itself. VGA\XGA especially at higher resolutions demand a properly designed cable to go the distance. At a minimum, 75Ω coaxial cable is needed for each of the red, green and blue signals.

This having been said: Several hundred feet is possible if the right grade of video cable is used. It is rare to find standard cables in excess of 100 feet. Multiple DA's may be distributed between source and destination to boost and/or repeat the VGA\XGA signal.

¹ EDID is defined by standards published by the Video Electronics Standards Association (VESA)

6 Overall Specifications

Inputs:	1 VGA/XGA High Density DB-15 connector
Input Termination:	Red/Green/Blue: DC, 75 Ω H/V-Sync: DC, 2 K Ω
Input Levels:	R/G/B: 0.25 – 2.2 Vpp H/V-Sync: TTL
Input Coupling:	DC
Input Bandwidth:	R/G/B: DC-440 MHz @-3dB (1 Vpp input signal) H/V-Sync: DC-50 MHz @ -3dB (1 Vpp input signal)
Outputs:	2/4 VGA/XGA High Density DB-15 connectors
Output Terminations:	Red/Green/Blue: 75 Ω (series) H/V-Sync: +5V TTL 75 Ω (series) Key/+5V HD-15 pin-9 Pass-Through to Out-1 pin-9 Out-2 and greater pin-9 +5 V 75 Ω (series)
Output Gain:	Unity (1x)
Power LED:	Green (Indicates unit running)
Operating Temperature Range:	-40C to +85C
Power:	10-28V AC, 10-32V DC (either polarity on PWR connector)
Supply Current:	1x2: <1.6W (130mA @ 12VDC) 1x4: <3.6W (300mA @ 12VDC)
Power Connector:	3.5mm 4 pin terminal block (Phoenix Contact #1843813) Mating plug (Phoenix Contact #1847071)
Package Dimensions:	1x2: 4.4" x 2.2" x 0.65" (WxDxH) 1x4 : 4.4" x 2.2" x 1.4"
Mounting:	Two 6-32 threaded inserts
Weight:	7 oz. (actual TBD)
Package:	Epoxy/Encapsulation UL 94 V-O & UL 94 5VA rated.
Options:	Contact VAC for individual and multiple brick mounting solutions.

7 Packages

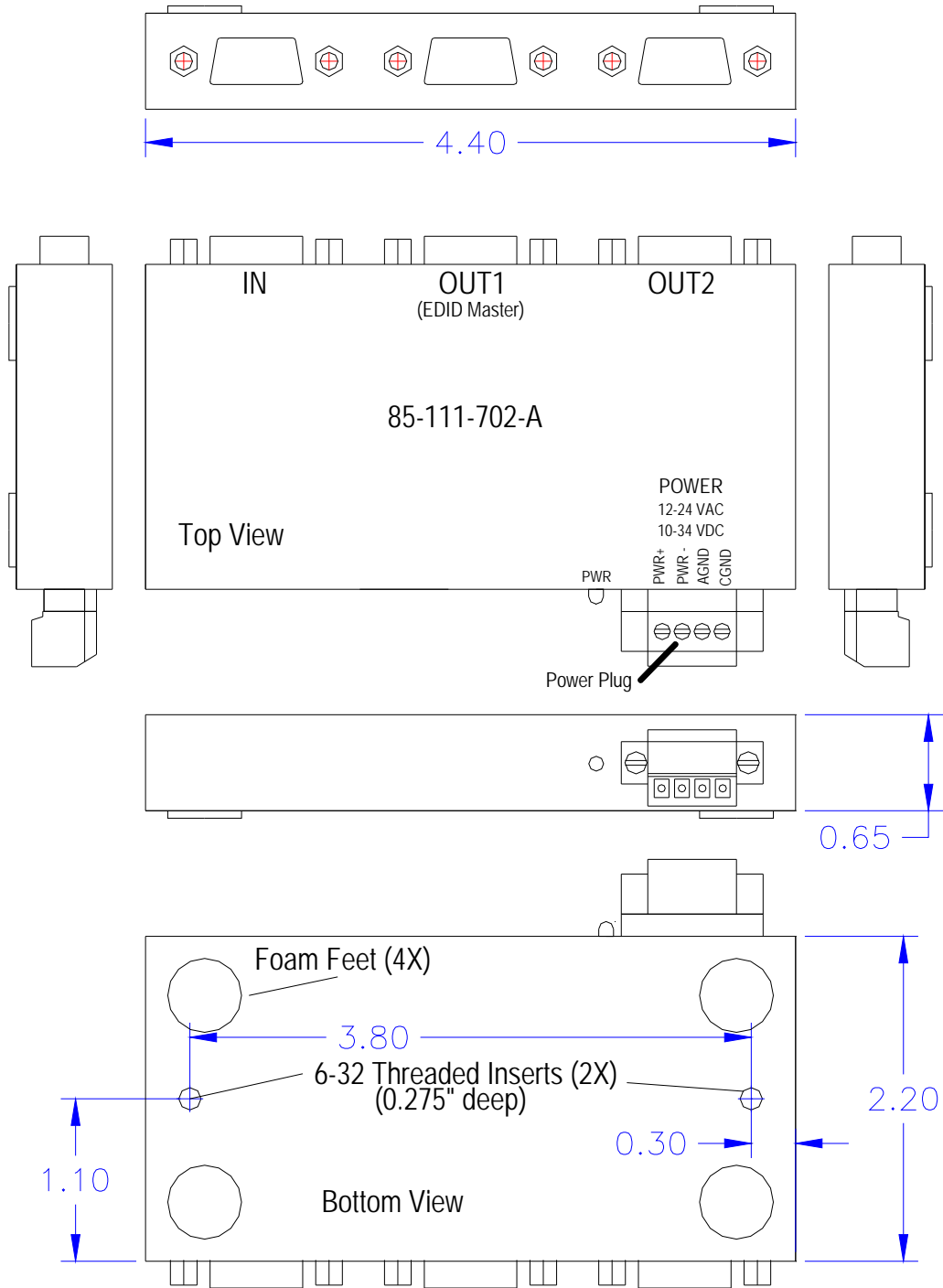


Figure 1: 85-111-702-A Single Layer (1x2) Configuration

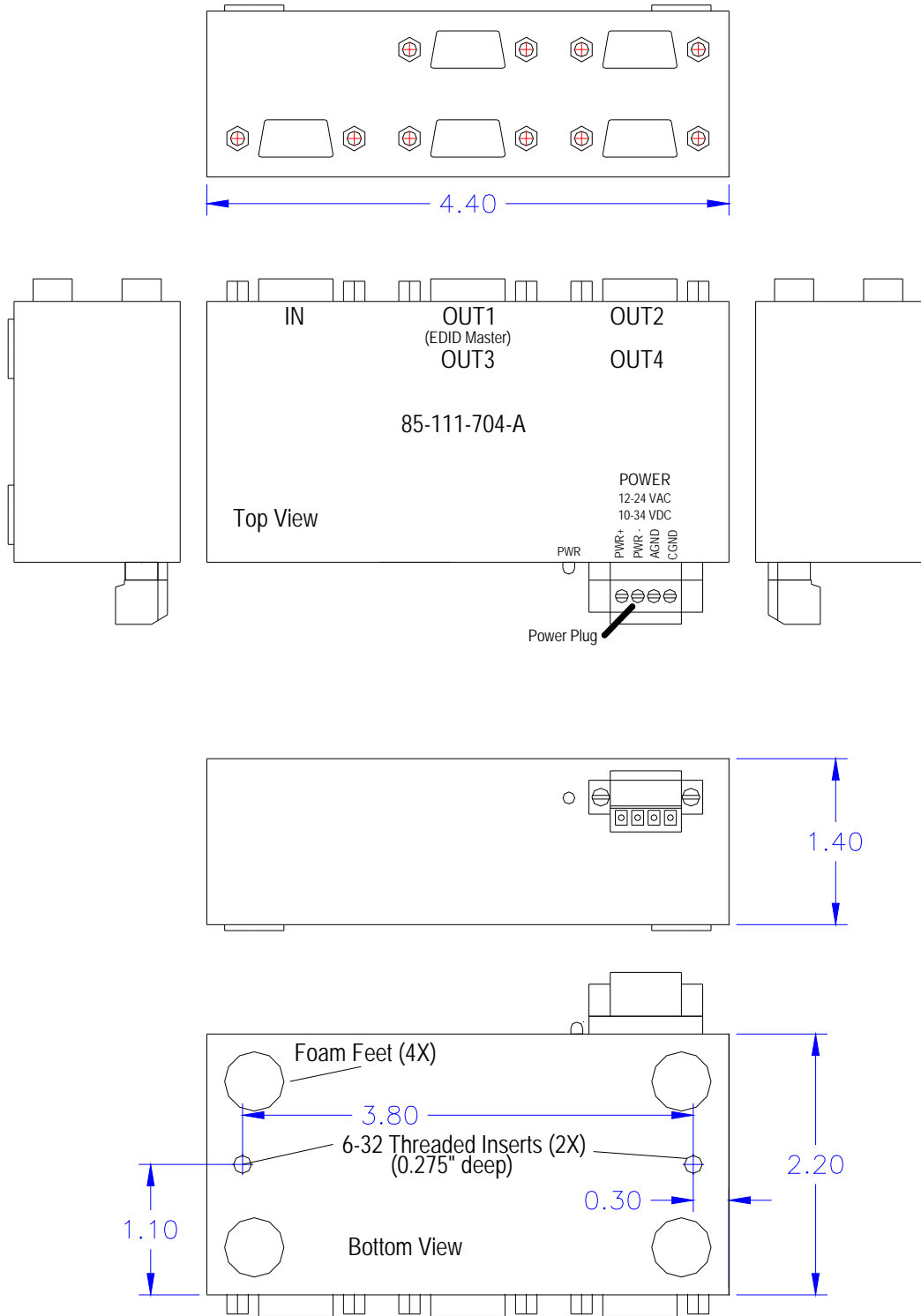


Figure 2: 85-111-704 Two Layer (1x4) Configuration