DVS 304

FOUR INPUT VIDEO AND RGB SCALER

- Scales video and RGB input sources:
  - S-video & composite video
  - Component video
  - HDTV
  - RGBHV, RGBS, RGsB
- 3:2 (NTSC) and 2:2 (PAL) pulldown detection
- Automatic Input Format Detection
- RGB or component video output
- 59 scaled output rates, including HDTV and UXGA (1600 x 1200)
- IP Link® technology
- On-screen display
- Picture-in-picture

The DVS 304 is a digital video scaler that provides high performance scaling of a wide variety of input sources, including RGB computer-video, HDTV, and standard definition video. The DVS 304 is ideally suited for today's A/V presentations using the latest projectors or flat panel monitors, as well as centralized system integration with high quality source switching, automatic input format detection, and other capabilities.

DESCRIPTION

The Extron **DVS 304** is a Digital Video Scaler incorporating the latest scaling technology from Extron as well as a host of flexible, convenient, integrator-friendly features. This high performance scaler is designed to satisfy the requirements of today's high quality, high resolution video presentations using the latest displays, and at the same time facilitate the process of system integration. The DVS 304 is ideal for a wide range of A/V environments including boardrooms, conference rooms, educational institutions, houses of worship, home theaters, and event and staging applications.

High Performance RGB and Video Scaling
The DVS 304 features a high performance scaling engine with the capability to scale standard definition video, high definition video, and computer-video signals up and/or down in resolution. With the DVS 304, only a single RGBHV connection to the display is required, resulting in cost savings due to reduced installation time, cabling, and system programming. The DVS 304 also delivers glitch-free switching between video and computer-video sources. Offering the capability to process both conventional video and high resolution multimedia sources, the DVS 304 creates a single, optimally scaled output to match the native resolution of the display.

Variety of Input Formats
The four inputs of the DVS 304 accommodate composite video, S-video, component video, and RGB. SDI (Serial Digital Interface) input is available as an option. The fourth input is flexible and fully configurable to accept any available analog video format from composite video to RGBHV. Additionally, with the exclusive Automatic Input Format Detection mode, the DVS 304 automatically detects and then processes the incoming signal format to this input. This powerful feature is particularly effective in simplifying system integration and operation when using a matrix switcher with the DVS 304.

Multiple Control Options
The DVS 304 can be operated via the front panel, RS-232, optional infrared (IR) remote control, contact closure and IP Link®. With the DVS 304, IP Link also allows for direct communication with the Extron CrossPoint 450 Plus matrix switchers for quick interoperation and powerful system integration.

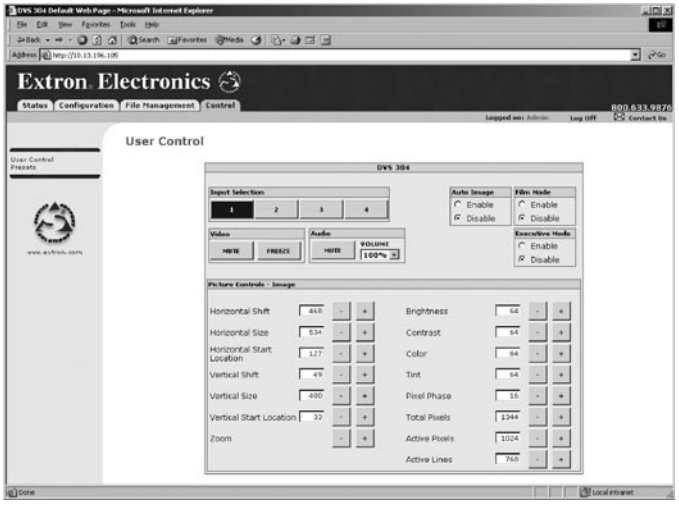
Dual Scaled Outputs
Two identical, scaled outputs are available on 15-pin HD and BNC connectors. A total of 59 output scan rates are available from VGA (640 x 480) to UXGA (1600 x 1200) resolution, as well as HDTV at 720p, 1080i, and 1080p.

Audio Models Available
The DVS 304 A and DVS 304 AD offer four input audio switching for stereo unbalanced or balanced sources. Independent gain and attenuation controls are available for each input, and all audio connections are on captive screw connectors for ease of integration. The output volume control eliminates the need for a separate audio preamplifier in many A/V systems.

Integrator Friendly Features
The DVS 304 is equipped with a comprehensive feature set for integrator friendly access and configuration, as well as user friendly operation. An on-screen display facilitates display of information pertaining to the selected input and adjustment of picture settings, including positioning, size, zoom, brightness, contrast, color, tint, and detail. Configurations can be conveniently saved and recalled from up to three memory presets per input. To enhance presentations, a special picture-in-picture (PIP) mode allows video and RGB sources to be combined within the same image.

IP Link® Ethernet Control
The DVS 304 is equipped with Extron's IP Link, an IP integration technology specifically engineered to meet the needs of professional A/V environments—from large universities and businesses to small residential installations. IP Link provides these advantages:

- **IP Link GlobalViewer™** – This free Web-based asset management application is specifically designed to work with products that include IP Link technology. GlobalViewer enables a variety of asset management functions including proactive maintenance, event scheduling, remote technical support, and theft alerts.
- **Global compatibility** – All IP Link products use industry standard Ethernet communication protocols, including ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, and SMTP.
- **High performance architecture** – Web pages are served many times faster (6 Mbit/sec transfer rate) than similar products.
- **Multi-user support** – Multiple, simultaneous connections enable each IP Link device to support many concurrent users and improve system throughput by sending information in parallel.



A/V System Integration using DVS 304 Scaler

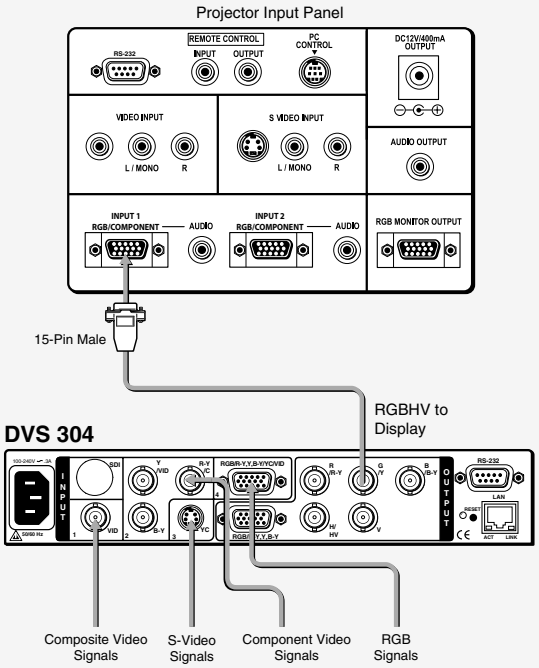
When using a scaler as the centerpiece of an A/V system, just a single RGBHV connection to the display is required. The cost benefits include reduced installation time, less cabling, and minimal system programming. The DVS 304 also offers high performance source switching superior to that of most flat-panel monitors and projectors.

Single cable run to display

- **Lowers material cost** – Cost savings provided by single cable purchase versus individual video/RGB cables
- **Reduces installation time** – Less labor involved with pulling and bundling of cables
- **Less points of failure** – Minimizes likelihood of connector termination issues and damage related to installation and normal use
- **Smaller conduit size can be specified** – One cable requires less space than multiple cables

Simplified operation and control

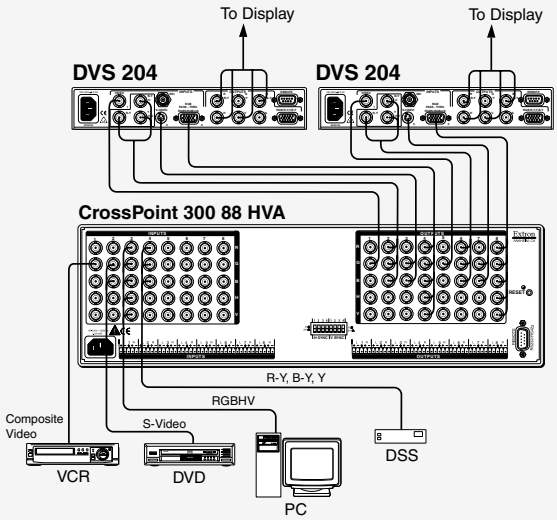
- **Speeds up input switching time** – Display source switching between formats takes time. The DVS 304 delivers just one common rate and resolution to the display, eliminating signal acquisition delay while streamlining presentations.
- **Minimizes system programming** – Consolidated switching allows for easy management of multiple signals in any system



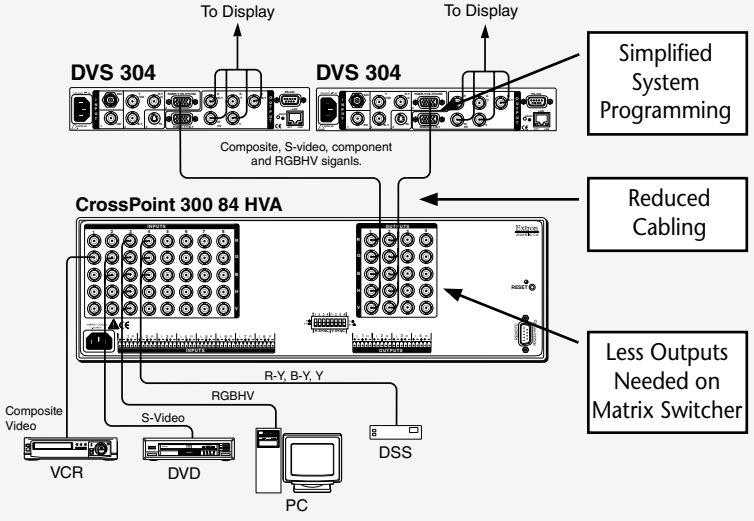
Automatic Input Format Detection

Automatic Input Format Detection allows input four of the DVS 304 to accept and automatically detect any video format present. This provides the ability to deliver multiple signal types to the DVS 304 via a single cable using an external switcher, such as an Extron CrossPoint matrix switcher. The result is a streamlined system that provides significant cost savings, since fewer outputs are required on the matrix switcher.

Traditional Scaler & Matrix Design



DVS 304 Scaler & Matrix Design



FEATURES

Multi-Configurable Inputs
The DVS 304 features four inputs, including a multi-configurable input for composite video, S-video, and component video. The fourth input is fully configurable and can accept any analog video format from composite video, to HDTV component video and RGBHV. Dedicated composite video and S-video inputs provide connectivity for today's most common video devices.

RGB and Video Scaling
RGB computer-video, high definition video, and standard definition video sources can all be scaled to the desired output resolution. A total of 59 output scan rates are available including computer-video rates up to UXGA (1600 x 1200), 480p, 576p, and HDTV rates at 720p, 1080i, and 1080p.

RGB Upscaling and Downscaling
The DVS 304 features an advanced scaling engine with high quality upscaling and downscaling of high resolution computer-video signals.

Automatic Input Format Detection
Input four of the DVS 304 can be set to detect the incoming signal format, automatically reconfiguring itself to provide the appropriate decoding and signal processing. This feature can reduce the number of required outputs for a matrix switcher, lowering system cost while improving manageability.

Auto-Switching
The DVS 304 can automatically switch between input sources. Additional inputs to the scaler can be achieved when the Auto-Switching mode is implemented on the DVS 304, placed on the back end of a larger presentation switcher, such as the MPS 112.

Audio Switching and Output Volume Control
The DVS 304 A and DVS 304 AD feature audio switching for four stereo balanced or unbalanced input sources. In addition to master volume control and muting, gain or attenuation can be adjusted for each input to eliminate noticeable differences when switching between sources.

IP Link® Ethernet Monitoring and Control
IP Link is a high performance intelligent network solution developed by Extron. IP Link also enables the DVS 304 to directly communicate with IP Link enabled matrix switchers for faster, streamlined system operation.

Picture Controls
Images can be adjusted and fine-tuned for brightness, contrast, color, tint, detail, and horizontal and vertical positioning, sizing, and zoom. Three memory presets are available for each input to store all image settings.

Aspect Ratio Conversion
Any video input can be adjusted horizontally and vertically to meet a specific aspect ratio requirement. Alternatively, the input aspect ratio may be specified (as 4:3 or 16:9) and fixed. For example, the user can save and recall specific settings to match various video aspect ratios from DVDs.

Dual Outputs
Scaled outputs are available as RGB or HDTV component video, through 15-pin HD and BNC connectors simultaneously.

Picture-in-Picture
A special picture-in-picture (PIP) mode, activated through the RS-232 or IP Link port, or IR remote control, allows a video source to be displayed within an RGB image, or vice versa. The PIP mode features adjustable window sizing and positioning.

Auto-Image™ Setup
For expedited presentation set-up, the DVS 304 automatically optimizes the image by analyzing and then adjusting to the incoming source, eliminating complex and time-consuming set-up procedures.

On-Screen Display (OSD)
The DVS 304 features an on-screen display which displays status information pertaining to the currently selected input, and facilitates easy adjustment of picture settings.

RS-232 Control
Through RS-232, the DVS 304 can be controlled and configured, or integrated into third-party control systems using Extron Simple Instruction Set (SIS™) commands.

Optional SDI Input
Available as a factory or add-on option is SDI (Serial Digital Interface) input. The SDI input enables CCIR 601 digital video sources to be integrated into A/V systems via the DVS 304.

Rack-Mountable
The DVS 304 is housed in a 1U, half rack width metal enclosure. The DVS 304 A is housed in a 1U, full rack width metal enclosure.

Optional IR Remote Control
The optional Extron IR 902 remote control allows for input source switching, image freeze control, and direct access to picture adjustments.

IR 902 Remote (Optional)

SPECIFICATIONS

VIDEO INPUT

Number/signal type	1 (RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS, component video, S-video, composite video 1 composite video, S-video, component video (Y, R-Y, B-Y) 1 S-video, 1 SDI (optional, DVS 304 D only) 1 composite video
Connectors	(1) 15-pin HD female RGBHV, RGBS, RGBcvS, component video, S-video, composite video 3 BNC female component video, S-video, composite video 1 BNC female: SDI (DVS 304 D, DVS 304 AD only) (1) 4-pin mini DIN female: S-video 1 BNC female: composite video
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	Analog: 0.0 V to 1.0 Vp-p with no offset
Impedance	75 ohms
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency	50 Hz to 120 Hz
Resolution range	640x480 to 1600x1200 including tri-level sync inputs for 480p, 720p, and 1080i
Return loss	<-30 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

VIDEO PROCESSING

Decoder	9 bit digital
Digital sampling	24 bit, 8 bits per color; 13.5 MHz standard
Colors	16.78 million

VIDEO OUTPUT

Number/signal type	2 scaled or pass-through RGBHV, RGBS, RGsB or scaled component video (Y, R-Y, B-Y)
Connectors	5 female BNC 1 female 15-pin HD
Nominal level	1 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	0.0 V to 0.7 Vp-p
Impedance	75 ohms
Scaled resolutions	640x480[1,2,3,4,5,6], 800x600[1,2,3,4,5,6], 852x480[1,2,3,4,5], 1024x768[1,2,3,4], 1024x852[1,2,3,4], 1024x1024[1,2,3], 1280x768[1,2,3,4], 1280x1024[1,2,3], 1360x765[1,2,3], 1365x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3], 1400x1050[1,2], 1600x1200[1,2], HDTV 480p[2], 576p[1,5], 720p[1,2], 1080i[1,2], and 1080p[1,2,] [1] = at 50 Hz, [2] = at 60 Hz, [3] = at 72 Hz, [4] = at 96 Hz, [5] = 100 Hz, [6] = 120 Hz

SYNC

Input type	(RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS
Output type	RGBHV, RGBS, RGsB, and component video tri-level
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0 V to 1.0 Vp-p
Output level	TTL: 5.0 Vp-p, unterminated
Input impedance	75 ohms
Output impedance	75 ohms
Max input voltage	5 Vp-p
Max. propagation delay	20 ns
Polarity	Positive or negative (swtich-selectable)

AUDIO — DVS 304 A, DVS 304 AD

Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.03% @ 1 kHz at nominal level, 0 dB gain
S/N	>90 dB at maximum output (unweighted)
Crosstalk	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>80 dB @ 1 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

AUDIO INPUT — DVS 304 A, DVS 304 AD

Number/signal type	4 stereo, balanced/unbalanced
Connectors	(4) 3.5 mm captive screw connector, 5 pole
Impedance	>50k ohms unbalanced, 25k ohms balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level	+19.5 dBu, (balanced or unbalanced) at 1%THD+N
Input gain adjustment	–15 dB to +9 dB, adjustable per input

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — DVS 304 A, DVS 304 AD

Number/signal type	1 stereo, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced or unbalanced at 1% THD+N
Maximum level (600 ohm)	>+15 dBm, balanced or unbalanced at 1% THD+N
Output volume range	0 to 100 (-52 dB to 0 dB) in 0.5 dB increments from steps 4 to 100, 1 dB increment from step 0 to 3)

CONTROL/REMOTE — Decoder/Scaler

Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	1 = input 1 select, 2 = TX, 3 = RX, 4 = input 2 select, 5 = GND, 6 = input 3 select, 7 = input 4 select, 8 = n/a, 9 = hardwired IR
Ethernet control port	1 RJ-45 female connector
Ethernet data rate	10/100Base-T, half/full duplex with autodetect
Ethernet protocol	ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, SMTP
Contact closure	9-pin female D connector (same as RS-232 connector)
Contact closure pin configurations	See pins 1, 4, 5, 6, and 7 above
IR controller module	Extron IR 902 (optional)
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer, Telnet

GENERAL

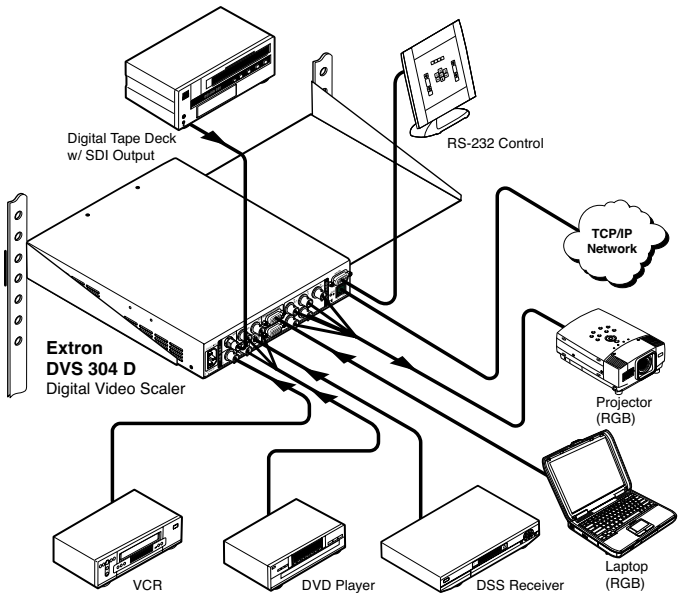
Power	100VAC to 240VAC, 50/60 Hz, 30 watts, internal, autoswitchable
Rack mount	
DVS 304, DVS 304 D	Yes, with optional 1U rack shelf, part #60-190-01 or 60-604-01
DVS 304 A, DVS 304 AD	Yes, with included brackets
Enclosure type	Metal
Enclosure dimensions	
DVS 304, DVS 304 D	1.75" H x 8.75" W x 10.5" D (1U high, half rack wide) 4.4 cm H x 22.2 cm W x 26.7 cm D (Depth excludes connectors and knobs.)
DVS 304 A, DVS 304 AD	1.75" H x 17.5" W x 10.5" D (1U high, full rack wide) 4.4 cm H x 44.4 cm W x 26.7 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	
DVS 304, DVS 304 D	3.3 lbs (1.5 kg)
DVS 304 A	6.5 lbs (2.9 kg)
DVS 304 AD	6.8 lbs (3.1 kg)
Shipping weight	
DVS 304, DVS 304 D	6 lbs (3 kg)
DVS 304 A, DVS 304 AD	11 lbs (5 kg)
DIM weight (DVS 304 A, DVS 304 AD)	12 lbs (6 kg)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

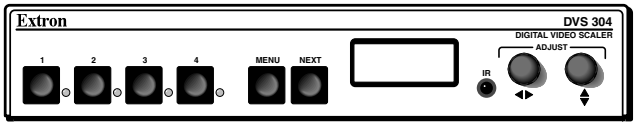
Model	Version	Part Number
DVS 304	Digital Video Scaler	60-736-01
DVS 304 D	Digital Video Scaler with SDI	60-736-03
DVS 304 A	Digital Video Scaler with Audio	60-736-02
DVS 304 AD	Digital Video Scaler with Audio and SDI	60-736-04

Specifications are subject to change without notice.

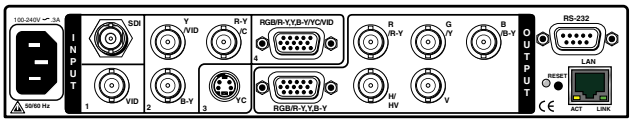
APPLICATION DRAWING



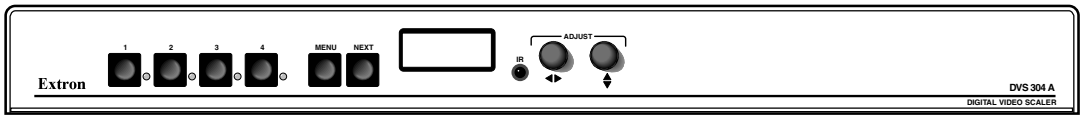
PANEL DRAWINGS



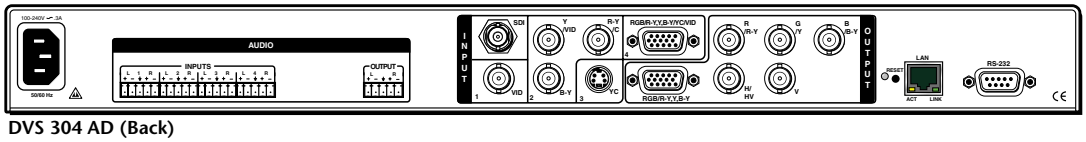
DVS 304 D (Front)



DVS 304 D (Back)



DVS 304 AD (Front)



DVS 304 AD (Back)

Extron Electronics, USA
1230 South Lewis Street
Anaheim, CA 92805
800.633.9876 714.491.1500
FAX 714.491.1517

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort, The Netherlands
+800.3987.6673 +31.33.453.4040
FAX +31.33.453.4050

Extron Electronics, Asia
135 Joo Seng Rd. #04-01
PM Industrial Bldg., Singapore 368363
+800.7339.8766 +65.6383.4400
FAX +65.6383.4664

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan
+81.3.3511.7655 FAX +81.3.3511.7656

05-05
68-1130-01
REV. A