ISM 824

MODULAR INTEGRATION SCALING MULTISWITCHER

Optimum integration flexibility in a single, compact enclosure

- Eight input matrix switcher with optional integrated signal processing
- Two universal pass-through wideband outputs and four customizable output slots - Eight outputs total
- Eight optional output boards
  - Universal RGB & Video scalers:
    - Analog output
    - DVI output
    - HD-SDI output
  - Video scaler
  - Scan converter
  - MTP twisted pair
  - Single output wideband
  - Dual output wideband
- Audio input gain and attenuation
- Audio output volume control
- IP Link® Ethernet control and monitoring

Extron® Electronics
www.extron.com

Introduction

The ISM 824 MultiSwitcher is a unique modular matrix switcher that allows for **simultaneous scaling and wideband switching** in a single, compact enclosure. It features two standard, wideband outputs and four customizable board slots that accept a variety of optional output boards, including video scaling and additional wideband outputs. The ISM 824 is ideal for applications such as boardrooms, large classrooms, and auditoriums that require cost-effective signal routing with flexible, on-board signal processing.

The ISM 824 is similar in performance and features to Extron's popular CrossPoint Series. The ISM 824 offers eight inputs that are fully configurable from RGBHV and HDTV to composite video, and two universal, pass-through wideband outputs.

In addition to the two standard wideband outputs, the ISM 824 features a **plug-in backplane design with four output slots** that support optional expansion boards for signal processing, such as scaling and scan conversion, as well as additional wideband outputs. With this unique, powerful expansion capability, the ISM 824 can be equipped initially with any of the output boards for a specific project, and then upgraded in the future with additional boards as system needs evolve and expand.

Eight output expansion boards are available for the ISM 824, with the same advanced video processing technologies employed in Extron scalers, signal processors, and scan converters. The **Universal RGB & Video Scaler Output Board** features high performance RGB and video scaling, with upconversion and downconversion of high resolution RGB signals, as well as standard definition video signals. The Universal RGB & Video Scaler Board is available in three versions:

- **Analog -** outputs RGBHV or component video in 70 selectable rates at up to WUXGA (1920x1200) resolution, as well as HDTV 1080p.
- **DVI -** outputs 61 selectable rates up to 1920x1200 and HDTV 1080p.
- **HD-SDI -** outputs one of five standard serial digital rates, including 720p 50/60, 1080i 50/60, and 1080p/24.

For applications that require video-only scaling with RGB pass-through, the **Video Scaler Output Board** scales standard definition composite video and S-video signals to a common, high resolution output rate. It offers 30 selectable output rates from 640x480 to 1400x1050, including HDTV 1080p.

For compatibility with low resolution video monitors as well as VCRs, DVD recorders, or videoconferencing, the **Scan Converter Output Board** delivers an optimized, scan-converted video output.

For applications requiring signal distribution without signal processing, the **MTP Twisted Pair Universal Transmitter Board** transmits video, audio, and control signals up to 600 feet (185 meters) on a single CAT 5/5e/6 or Skew-free UTP cable. Also, as a universal transmitter, it supports all input signal types in mixed-signal routing applications. Finally, **Single and Dual Output Wideband Boards** are available for additional, configurable wideband outputs.

The ISM 824 provides **optimum integration flexibility** while reducing system complexity and cost. With both matrix switching and signal processing capabilities in one 3U enclosure, system configuration and set-up can be accomplished from a single location, saving installation cost and time. At the same time, control system design and programming is simplified. Additionally, the ISM 824 is ideal for locations where equipment rack space is at a premium.

All features and functions of the ISM 824, including those of any installed output boards, are fully accessible from the front panel, as well as through the RS-232 and IP Link ports. The ISM 824 thus offers versatile control functionality for managing all source distribution and signal processing within an A/V system.

The ISM 824 provides exceptional performance in the most demanding, very high resolution computer-video and audio routing systems, with features such as ADSP™ - Advanced Digital Sync Processing, DSVP™ - Digital Sync Validation Processing, and audio output volume control.

Overview

Back-lit input/output selection buttons
I/O selection and crosspoint ties are easily identifiable using back-lit buttons with clear overlay labels, enabling simple front panel operation.

Configuration port
The ISM 824 can be conveniently set up and configured after installation, using the front panel serial configuration port.

User-friendly interface
An intuitive menu-driven LCD interface, direct access buttons, and precise rotary controls enable detailed adjustment of image settings.

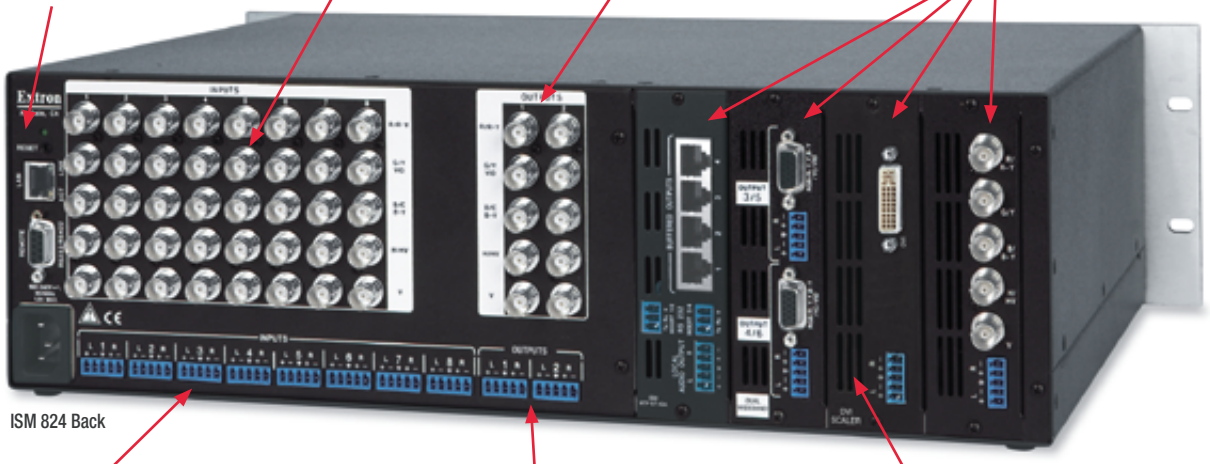
ISM 824 Front

IP Link Ethernet control enables full operation and configuration from any authorized Web client.

Fully configurable inputs
The ISM 824 features eight fully configurable inputs that accommodate a wide range of sources, including RGB, HDTV, component video, S-video, and composite video.

Two Wideband Outputs - Standard
The ISM 824 includes two, universal pass-through wideband outputs.

Four customizable board slots - 2 Dual output, 2 Single output
A simple, plug-in backplane design accepts a variety of optional signal processing and wideband output boards, reducing installation and integration labor costs.



ISM 824 Back

Audio input gain and attenuation
Each audio input includes independent gain and attenuation, which eliminates noticeable volume differences when switching between signal sources.

Audio output volume control
Adjustable output volume, per output, eliminates the need for audio preamps in many system designs.

Optional output boards
Eight available output boards, including universal scalers, video scaler, scan converter, MTP twisted pair, and single and dual output wideband boards, provide a flexible upgrade path for future signal processing and distribution needs.

Features

Windows Control Software

The included Windows control software enables complete set-up and real-time operation of the ISM 824. The software provides complete control functionality and full configuration capability.

Fully Configurable Inputs

The ISM 824 features eight fully configurable inputs on BNC connectors that accommodate RGBHV, RGBS, RGsB, component video, S-video, or composite video signals. High resolution sources can include computer-video signals up to WUXGA (1920x1200), and HDTV up to 1080p.

Four Customizable Output Slots

In addition to the two universal wideband outputs, the ISM 824 is designed for future expansion via a simple, plug-in backplane design with four output slots that support optional output boards for video and RGB scaling, scan conversion, and additional wideband outputs. The first two slots support dual or single output boards.

Audio Inputs and Outputs

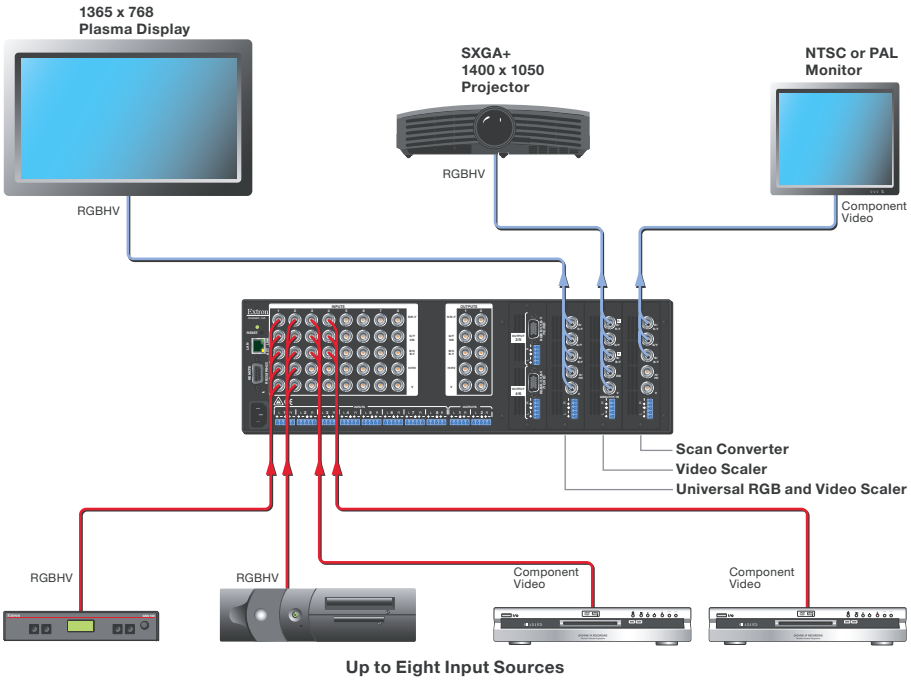
Every input and output of the ISM 824 includes connectivity for balanced or unbalanced mono or stereo audio signals, including outputs on the optional expansion boards. Gain and attenuation can be set for each audio input. With volume control available for each audio output, the ISM 824 eliminates the need for an audio preamplifier in many system designs.

Selectable Output Resolutions

The Universal RGB & Video Scaler Output Board option for the ISM 824 is available in three versions:

- Analog RGB/YUV output, which offers 70 scaled output rates from 640x480 to 1920x1200, including HDTV up to 1080p
- DVI output, which offers 61 scaled output rates, also up to 1920x1200 and HDTV 1080p
- HD-SDI output, which offers five scaled output rates, including 720p 50/60, 1080i 50/60, and 1080p/24

The Video Scaler Output Board offers 30 scaled output rates from 640x480 to 1400x1050, including HDTV up to 1080p.



Up to 4 outputs can be individually scaled or scan converted to suit the requirements of virtually any presentation system.

Integrator-Friendly Features

The ISM 824 offers the same integrator-friendly features familiar to users of the Extron CrossPoint 450 Plus Series of matrix switchers, including QS-FPC™ - QuickSwitch Front Panel Controller with tri-color backlit buttons, and 20 global presets for saving I/O configurations.

When equipped with the optional Universal Scaler, Video Scaler, or Scan Converter Output Boards, additional integrator-friendly features are available to expedite the set-up process and assist in delivering optimal image quality. These include Auto-Image™ set-up, fine tuning for picture controls, and memory presets for saving and recalling picture settings.

IP Link

IP Link is a high performance intelligent network integration solution developed by Extron. Ethernet-enabled A/V products, such as the ISM 824, can be managed and supported by a technician or administrator at any time from any authorized Web client.

IP Link enables remote access to all functions and status parameters, including the internal operating temperature, and the horizontal and vertical sync frequencies of any input. The ISM 824 can be controlled through IP Link by accessing the internal Web pages or using the Windows control software.

RS-232 Control

Through the RS-232 serial control port, the ISM 824 can be controlled and configured via the Extron Windows®-based control program, or integrated into third-party control systems using Extron SIS™ - Simple Instruction Set serial commands.

Output Boards

Eight optional output boards are available for the ISM 824. These cards, which include two scalers, scan converter, twisted pair, and single and dual output wideband boards, can be used in a variety of combinations to support a wide range of signal distribution and signal processing requirements. The boards are installed in a simple, plug-in backplane for system expansion before, during, or after system installation.

ISM RGB

Universal Video & RGB Scaler Board with Analog RGB/YUV Output

The ISM RGB Universal Video & RGB Scaler Board with Analog RGB/YUV Output scales virtually any input signal, including high resolution RGBHV, HDTV, and standard definition composite video, S-video, and component video to a single, common output rate. It outputs RGB or component video and offers 70 selectable rates from 640x480 to 1920x1200, including HDTV 1080p. Other key features include 3:2 NTSC and 2:2 PAL pulldown detection, Auto-Image setup, comprehensive picture controls, and a built-in test pattern generator for ease of installation and set-up.

Part # 70-544-01

ISM DVI

Universal Video & RGB Scaler Board with DVI-D Output

The ISM DVI Universal Video & RGB Scaler Board with DVI-D Output scales virtually any input signal, including high resolution RGBHV, HDTV, and standard definition composite video, S-video, and component video to a single, common output rate. It features a single-link DVI-D output and offers 61 selectable rates from 640x480 to 1920x1200, including HDTV 1080p. Other key features include 3:2 NTSC and 2:2 PAL pulldown detection, Auto-Image™ setup, comprehensive picture controls, and a built-in test pattern generator for ease of installation and set-up.

Part # 70-624-01

ISM HDSDI

Universal Video & RGB Scaler Board with HD-SDI Output

The ISM HDSDI Universal Video & RGB Scaler Board with HD-SDI Output scales virtually any input signal, including high resolution RGBHV, HDTV, and standard definition composite video, S-video, and component video to a single, common output rate. It features a single-link HD-SDI serial digital video output and offers five selectable SMPTE and ITU-compliant video output rates, including 720p 50/60, 1080i 50/60, and 1080p 24. Other key features include 3:2 NTSC and 2:2 PAL pulldown detection, Auto-Image setup, comprehensive picture controls, and a built-in test pattern generator for ease of installation and set-up.

Part # 70-625-01

ISM VS

Video Scaler Output Board with RGB Pass-Through

For video-only scaling needs, the ISM VS Video Scaler Output Board with RGB Pass-Through simplifies system design with mixed signal formats by scaling standard definition composite video and S-video signals to a common, high resolution output rate. It offers 30 selectable output rates from 640x480 to 1400x1050, including HDTV 1080p. High resolution RGB signals are passed through at their native rate. The Video Scaler Output Board also features comprehensive picture controls and a built-in test pattern generator.

Part # 70-545-01

Output Boards (Cont.)

OPTIONAL OUTPUT EXPANSION BOARDS FOR ISM 824

ISM SC

Scan Converter Output Board with Video Transcoder

The ISM SC Scan Converter Output Board with Video Transcoder converts any high resolution RGB or HDTV component video signal to NTSC or PAL composite video, S-video, or component video. It also accepts low resolution video as pass-through signals, and can transcode composite video, S-video, and component video input signals to match the selected scan converted output format. Compatible with RGB signals up to 1600x1200, the Scan Converter Output Board simplifies system design for applications that require a baseband video output for distribution to televisions and other video monitors, or recording for archival purposes.

Part # 70-546-01

ISM MTP UT 4DA

Universal MTP Twisted Pair Transmitter with 4-Output DA

The ISM MTP UT 4DA output card adds MTP Twisted Pair series transmission capability to the ISM 824. It transmits video, audio, and control signals up to 600 feet (185 meters) on a single CAT 5/5e/6 or Skew-free UTP cable. Also, as a universal transmitter, it supports all input signal types in mixed-signal routing applications. The ISM MTP UT 4DA accepts any video input signal type and outputs it as four identical twisted pair signals for connection to MTP Series twisted pair receivers, including MTP U R universal receivers. The ISM MTP UT 4DA features local RS-232 insertion ports, which eliminate the need for additional control system infrastructure to support remote displays, while overcoming the 100-foot (30m) distance limitation for RS-232 signals. The integrated, four-output MTP distribution amplifier simplifies system design and eliminates the cost of an outboard DA in applications where multiple remote displays must receive the same input signal simultaneously.

Part # 70-819-01

ISM 1WB

Single Output Wideband Board with 5 BNC Connectors

The ISM 1WB Single Output Wideband Board adds a single, universal pass-through wideband output on 5-BNC connectors. As with all output boards, the Single Output Wideband Board features stereo audio output on a captive screw connector.

Part # 70-547-01

ISM 2WB

Dual Output Wideband Board with 15-pin HD Connectors

The ISM 2WB Dual Output Wideband Board adds two universal pass-through wideband outputs on 15-pin HD connectors. The dual output design frees board slots for additional signal processing needs. Corresponding stereo audio outputs are provided on captive screw connectors.

Part # 70-547-02

Specifications

VIDEO

Routing ..... 8 x 2 matrix up to 8 x 8 matrix, depending on model and configuration
Gain ..... Unity (outputs 1 and 2)
Bandwidth ..... 450 MHz (-3 dB), fully loaded (main unit, outputs 1 and 2)
350 MHz (-3 dB) for wideband single/dual boards

VIDEO INPUT— MAIN UNIT

Number/signal type ..... 8 RGBHV, RGBS, RGsB, RsGsBs, HDTV component video (interlaced or progressive), S-video, 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

SYNC— MAIN UNIT

Input type ..... RGBHV, RGBS, RGsB, RsGsBs, bi-level or tri-level for component video
Output type ..... RGBHV, RGBS, RGsB, RsGsBs, bi-level or tri-level for component video (follows input) (outputs 1 and 2)
Standards ..... NTSC 3.58, PAL
Input level ..... 0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level ..... AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated

VIDEO OUTPUT— ISM RGB SCALED OUTPUT

Scaled resolution ..... 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], 1280x800[1,2], 1280x1024[1,2,3], 1360x765[1,2,3], 1360x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3], 1400x1050[1,2], 1440x900[2,7], 1600x1200[1,2], 1680x1050[2], 1920x1200[2]
HDTV: 480p[2,8], 576p[1,5], 720p[1,2,8], 1080p[1,2,8], 1080i[1,2,8], 1080p Sharp
[1] = at 50 Hz, [8] = at 59.94 Hz, [2] = at 60 Hz, [3] = at 72 Hz, [7] = at 75 Hz, [4] = at 96 Hz, [5] = at 100 Hz [6] = at 120 Hz

VIDEO OUTPUT— ISM VS SCALED OUTPUT

Scaled resolution ..... 640x480[1,2], 800x600[1,2], 852x480[1,2], 1024x768[1,2], 1280x768[1,2], 1280x1024[1,2], 1360x765[1,2], 1360x768[1,2], 1365x1024[1,2], 1366x768[1,2], 1400x1050[1,2]
HDTV: 480p[2], 576p[1], 720p[1,2], 1080p[1,2], and 1080i[1,2]
[1] = at 50 Hz, [2] = at 60 Hz

VIDEO OUTPUT— WIDEBAND OUTPUTS:

- Main unit outputs 1 and 2 (pass-through)
- ISM 1WB single-output wideband board
- ISM 2WB dual-output wideband board

Nominal level ..... 1 Vp-p for Y or 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 for C of S-video

VIDEO OUTPUT — ISM DVI SCALED OUTPUT

Scaled resolution ..... 640x480[4,5,6], 800x600[4,5,6], 852x480[4,5,6], 1024x768[4,5,6], 1024x852[4,5,6], 1024x1024[4,5,6], 1280x768[4,5,6], 1280x800[4,5], 1280x1024[4,5,6], 1360x765[4,5,6], 1365x768[4,5,6], 1365x1024[4,5,6], 1366x768[4,5,6], 1400x1050[4,5], 1440x900[5,7], 1600x1200[4,5], 1680x1050[5], 1920x1200[5]
HDTV: 480p[5,8], 576p[4], 720p[4,5,8], 1080i[4,5,8], 1080p[1,2,3,4,5,8], 1080p Sharp
[1] = 24 Hz, [8] = at 59.94 Hz, [2] = 25 Hz, [3] = 30 Hz, [4] = 50 Hz, [5] = 60 Hz, [6] = 72 Hz, [7] = 75 Hz

VIDEO OUTPUT — ISM HDSDI SCALED OUTPUTS

Scaled resolution ..... 720p[1,2,3,4,5,6], 1080i[4,5,6], 1080p[1,2,3]
[1] = 24 Hz, [2] = 25 Hz, [3] = 30 Hz, [4] = 50 Hz, [5] = 59.94 Hz, [6] = 60 Hz

VIDEO OUTPUT — ISM MTP UT 4DA

Number/signal type ..... 4 sets of proprietary analog signals
Connectors ..... 4 female RJ-45
Maximum resolution 1920x1200

VIDEO OUTPUT — ISM SC

Number/signal type ..... 1 NTSC/PAL RGsB, component video (with bi-level sync), or S-video
1 NTSC/PAL composite video
Nominal levels ..... 1 Vp-p for Y or 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 for C of S-video
Minimum/maximum levels ..... 0.0 V to 1.0 Vp-p (follows input)
Impedance ..... 75 ohms

AUDIO — MAIN UNIT

Gain ..... Unbalanced output: -6 dB
Balanced output: 0 dB
Frequency response ..... 20 Hz to 20 kHz, ±0.5 dB
THD + Noise ..... 0.03% @ 1 kHz at nominal level, 0 dB gain
S/N ..... >90 dB, at maximum rated output drive
Crosstalk ..... <80 dB @ 1 kHz, fully loaded
Stereo channel separation ..... >90 dB @ 1 kHz
CMRR ..... >75 dB @ 20 Hz to 20 kHz

AUDIO INPUT — MAIN UNIT

Number/signal type ..... 8 stereo, balanced/unbalanced
Connectors ..... (8) 3.5 mm captive screw connectors, 5 pole
Impedance ..... >10k ohms, balanced/unbalanced, DC coupled
Nominal level ..... +4 dBu (1.23 V), -10 dBV (316 mV)
Maximum level ..... +19.5 dBu, (balanced or unbalanced) at 1% THD+N
Input gain adjustment ..... -18 dB to +24 dB
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — MAIN UNIT

Number/signal type ..... 2 (base model, upgradable to 8) stereo, balanced/unbalanced
Connectors ..... (2, upgradable to 8) 3.5 mm captive screw connectors, 5 pole
Impedance ..... 50 ohms unbalanced, 100 ohms balanced
Gain error ..... ±0.5 dB channel to channel
Maximum level (Hi-Z) ..... >+21 dBu balanced or >+15 dBu unbalanced at 1% THD+N
Maximum level (600 ohm) ..... >+15 dBu, balanced or unbalanced, at stated 1% THD+N
Output volume range ..... 0 to 64 (-64 dB to 0 dB) increments from steps 1 through 64

CONTROL/REMOTE — SWITCHER

Serial host control port ..... 1 rear panel RS-232 or RS-422, 9-pin female D connector
1 front panel RS-232 2.5 mm mini stereo jack
Baud rate and protocol ..... 9800 baud, 8 data bits, 1 stop bit, no parity
Ethernet control port ..... 1 RJ-45 female connector
Ethernet data rate ..... 10/100Base-T, half/full duplex with autodetect
Ethernet protocol ..... ARP, ICMP (ping), TCP/IP, Telnet, HTTP
Default settings ..... Link speed and duplex level = autodetected
IP address = 192.168.254.254
Subnet mask = 255.255.0.0
Gateway = 0.0.0.0
DHCP = off
Program control ..... Extron's control/configuration program for Windows®
Extron's Simple Instruction Set (SIS™)
Microsoft® Internet Explorer® ver. 6 or higher, Netscape Navigator, Telnet

Specifications are subject to change without notice.

Specifications (Cont.)

CONTROL/REMOTE — ISM MTP UT 4DA (pass-through)

Serial control ..... 4 RS-232 on (2) 3.5 mm captive screw connectors, 3 pole: 2 bidirectional (via outputs 1 and 3), 2 unidirectional (via outputs 2 and 4)

Baud rates ..... Up to 38400 bps at up to 600' (183 m) (Higher data rates and distances are possible. Performance will vary based on baud rate and cable length.)

NOTE: Protocol is mirrored between the transmitter board and the receiver.

GENERAL

Power ..... 100 VAC to 240 VAC, 50-60 Hz, 75 watts, internal

Temperature/humidity ..... Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Cooling ..... Fan, left to right (as viewed from the front panel)

Mounting

Rack mount ..... Yes

Enclosure type ..... Metal

Enclosure dimensions ..... 5.25" H x 17.5" W x 11.2" D (3U high, full rack wide) (13.3 cm H x 44.4 cm W x 28.4 cm D)
(Depth excludes connectors and knobs. Width excludes rack ears.)

Product weight

Main unit ..... 14 lbs (6.3 kg)

Optional boards ..... 0.5 lbs (0.3 kg)

Shipping weight

Main unit ..... 21 lbs (10 kg)

Optional boards ..... 1 lb (1 kg)

Vibration ..... ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

Safety ..... CE, CUL, UL

EMI/EMC ..... CE, C-tick, FCC Class A, ICES, VCCI

MTBF ..... 30,000 hours

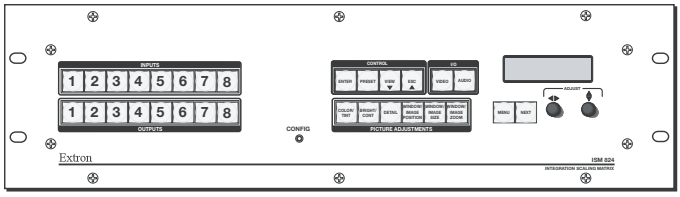
Warranty ..... 3 years parts and labor

NOTE: All nominal levels are at ±10%.

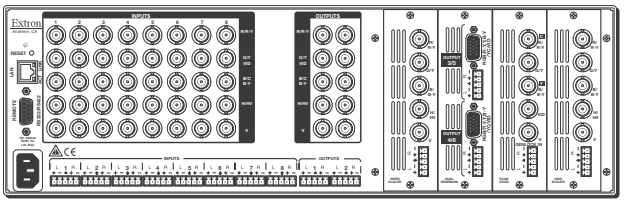
NOTE: Specifications are subject to change without notice.

Model	Version Description	Part number
ISM 824	Modular Scaling MultiSwitcher	60-787-01
ISM RGB	Analog RGB/YUV Output Board for ISM 824	70-544-01
ISM VS	Video Scaler Output Board for ISM 824	70-545-01
ISM SC	Scan Converter Output Board for ISM 824	70-546-01
ISM 1WB	Single Output Wideband Board for ISM 824	70-547-01
ISM 2WB	Dual Output Wideband Board for ISM 824	70-547-02
ISM DVI	DVI-D Output Board for ISM 824	70-624-01
ISM HDSDI	HD-SDI Output Board for ISM 824	70-625-01
ISM MTP UT 4DA	Twisted Pair Output Board for ISM 824	70-819-01

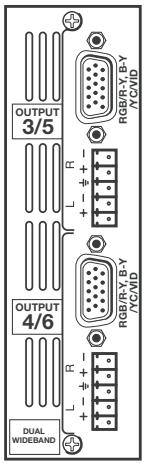
Specifications are subject to change without notice.



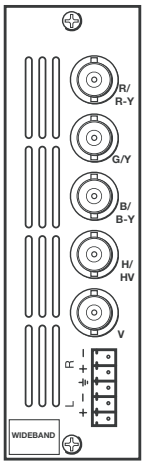
ISM 824 - Front



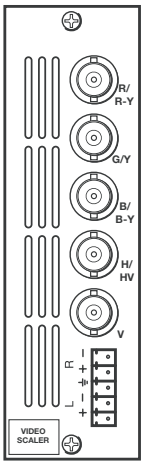
ISM 824 - Back



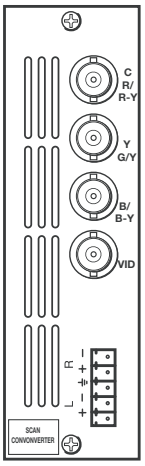
ISM 2WB



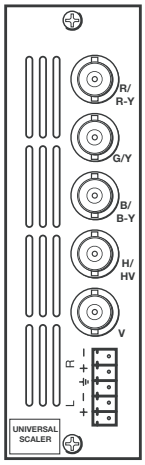
ISM 1WB



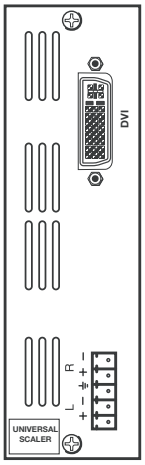
ISM VS



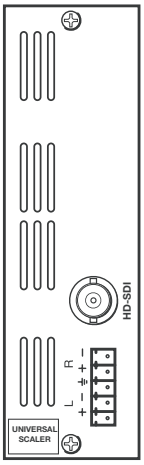
ISM SC



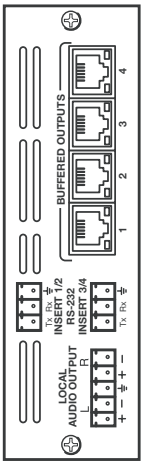
ISM RGB



ISM DVI



ISM HD SDI



ISM MTP UT 4DA

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