

MLS 406 & MLS 406MA

Six Input MediaLink™ Switchers with Variable Preamp Output or Mono Audio Amplifier



DESCRIPTION

The Extron **MLS 406** and **MLS 406MA** MediaLink™ Switchers are simple-to-use, six input, multi-format active switchers. As affordable solutions for single-projector classrooms and boardrooms, each switcher provides composite video, S-video, computer-video, and audio switching. For audio, both switchers include a preamp line level output, while the **MLS 406MA** also features a 20-watt integrated mono amplifier for 4 or 8 ohm or 70/100 volt distributed audio systems. Both the preamp and the mono amplifier can be controlled via RS-232.

The **MLS 406** and **MLS 406MA** include three configurable inputs for composite video or S-video on either BNC or 4-pin mini DIN connectors. Stereo audio for these three inputs is on RCA connectors. Inputs four, five, and six are for computer-video with stereo audio on 15-pin HD connectors. Inputs four and five are also configurable for computer-video, as well as composite video or S-video through RS-232 using an Extron 15-pin HD to BNC-5 female cable assembly. Stereo audio for input four is on a captive screw connector, while stereo input for inputs five and six are on 3.5 mm stereo mini connectors.

Each switcher is equipped with dual RGB outputs on five BNC connectors and a 15-pin HD connector that can output RGB video independently or simultaneously. The 15-pin HD output connector can be used to display switched RGB inputs or it can function as a buffered loop-through for a local monitor, eliminating the need for a distribution amplifier.

MediaLink Switchers are designed to be used in conjunction with the MLC 206 MediaLink Controller to facilitate low-cost integration. They can also be used as stand-alone switchers.

FEATURES

- **Bandwidth** – 280 MHz (-3dB) RGB video bandwidth maintains signal integrity.
- **Video and stereo audio inputs** – The **MLS 406** and **MLS 406MA** provide three configurable inputs for composite video or S-video on BNC or 4-pin mini DIN connectors. Stereo audio for these three inputs is on RCA connectors. Inputs four, five, and six are for computer-video with stereo audio on 15-pin HD connectors. Inputs four and five are also configurable for computer-video, as well as composite video or S-video through RS-232 using an Extron 15-pin HD to BNC-5 female cable assembly. Stereo audio for input four is on a captive screw connector, while stereo input for inputs five and six are on 3.5 mm stereo mini connectors.
- **Video outputs** – A dual RGB output is provided on five BNC connectors and a female 15-pin HD connector. The 15-pin HD can also be utilized as a local monitor buffered loop-through.
- **Audio output** – Balanced or unbalanced audio is output on captive screw connectors. The pre-amp output can be set for mono or stereo via RS-232.
- **Integrated audio amplifier** – The **MLS 406MA** provides 20 watt, amplified mono audio output on screw terminals for a 4 or 8 ohm load or 70/100 volt, distributed audio system.
- **Auxiliary/Mix audio input** – An additional input accepts mono line level audio signals for mixing with any of the six switchable inputs.
- **Volume control** – Adjustable when integrated with MediaLink System or as part of a third party RS-232 control system.
- **Loudness control** – A unique audio feature of the **MLS 406** and **MLS 406MA**

that compensates for the normal decreased hearing ability of the human ear at low volume levels by automatically adjusting the gain settings for low and high frequencies.

- **Triple-Action Switching™ (RGB delay)** – Blanks the screen during switching of RGB signals to eliminate visible switching transitions.
- **Front panel security lockout** – Allows security lockout of front panel buttons setup and adjustment options.
- **Control** – Switcher control is available through front panel buttons or RS-232. RS-232 control is provided via Extron's Windows®-based control software, and/or a third party control system using Extron Simple Instruction Set (SIS™). When either switcher is used with a MediaLink Controller, it can remotely control the **MLS 406** and **406MA** input switching and volume control.
- **Rack-mountable** – The **MLS 406** and **406MA** are housed in 1U, full rack width metal enclosures.
- **Internal international power supply**

MODEL

MLS 406
MLS 406MA

PART

60-560-01
60-560-02

OPTIONAL ACCESSORIES

MLC 206 MediaLink Controller	60-385-01	(page 217)
MLC 206 AAP MediaLink Controller	60-460-01	(page 217)
Under Desk Mounting Brackets.....	70-077-01	(page 442)
BNCM-RCAF adapter.....	10-264-01	(page 418)
6' S-video cable	26-522-01	(page 405)
6' VGA w/ audio cable.....	26-490-02	(page 401)
SY VGAM-RGBHVM.....	26-533-xx	(page 409)
SY VGAM-RGBHVF	26-531-xx	(page 408)

SPECIFICATIONS

VIDEO

Gain	Unity
Bandwidth	280 MHz (-3dB)
Differential phase error	1.0° at 3.58 MHz and 4.43 MHz
Differential gain error	1.0% at 3.58 MHz and 4.43 MHz
Crosstalk	-68dB @ 10 MHz, -39dB @ 100MHz
Switching speed.....	5 ms (max.)

VIDEO INPUT AND LOOP-THROUGH

Number/signal type	3 RGBHV, RGBS, RGSB, RSsBs 1 RGBHV, RGBS, RGSB, RSsBs local monitor loop-through 3 S-video 3 composite video
Connectors	3 female 15-pin HD (RGB), 1 female 15-pin HD (RGB loop-through) 3 female 4-pin mini DIN (S-video) 3 female BNC (composite video)
Nominal level.....	1V p-p for Y of S-video, and for composite video 0.7V p-p for RGB
Nominal level.....	0.3V p-p for C of S-video 1V p-p for composite video 0.7V p-p for RGB
Minimum/maximum levels	
RGB	Analog: 0.3V to 1.5V p-p with no offset
S-video, composite video.....	Analog: 0.4V to 2.0V p-p with no offset
Impedance	75 ohms
Horizontal frequency	15 kHz to 145 kHz
Vertical frequency	30 Hz to 170 Hz
Return loss	
RGB	<-40dB @ 5 MHz
Composite video.....	<-40dB, 0 to 10 MHz
Maximum DC offset.....	1.5V

VIDEO OUTPUT

Number/signal type	2 RGBHV, RGBS, RGSB, RSsBs 1 S-video 1 composite video
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MLS 406 & MLS 406MA (continued)...

Connectors	5 female BNC (RGB) 1 female 15-pin HD (buffered local out) 2 female BNC (S-video) 1 female BNC (composite)
Nominal level.....	1V p-p for Y of S-video, and for composite video 0.7V p-p for RGB 0.3V p-p for C of S-video
Minimum/maximum levels	
RGB	Analog: 0.3V to 1.5V p-p
Composite video	Analog: 0.4V to 2.0V p-p
Impedance	75 ohms
Return loss	Less than -40dB @ 5 MHz
DC offset	±5mV maximum with input at 0 offset
Switching type	Triple-Action (RGB delay)

SYNC

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.5V to 5.0V p-p
Output level	TTL: 5.0V p-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max input voltage	5.0V p-p
Max. propagation delay	30 ns
Max. rise/fall time	4.0 ns
Polarity	Positive or negative (follows input)

AUDIO

Gain	Unbalanced output: -6dB; balanced output: 0dB
Frequency response	50 Hz to 15 kHz, +0dB/-1dB @ 20 W into 8 ohms 20 Hz to 20 kHz, +0dB/-2dB @ 20 W into 8 ohms
THD + Noise	<0.8% @ 50 Hz to 20 kHz @ 20 W into 8 ohms <0.05% @ 1 kHz @ 20 W into 8 ohms
S/N	>80dB @ 20 Hz to 20 kHz at maximum power out
Crosstalk	<-80dB @ 1 kHz, fully loaded
Stereo channel separation	>80dB @ 1 kHz
CMRR	>90dB @ 20 Hz to 200 Hz, >60dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type	5 stereo, unbalanced (inputs 1-3) 1 stereo, balanced/unbalanced (input 4) 1 Aux/Mix balanced/unbalanced mono (non-switchable)
Connectors	3 pairs of female RCA connectors (inputs 1-3) 1 female 3.5 mm captive screw connector, 5-pole 2 female 3.5 mm mini stereo jacks (unbalanced only) (inputs 4-5); tip (L), ring(R), sleeve (GND) (1) 3.5 mm captive screw connector, 3-pole (Aux/Mix input)
Impedance	>18 kohms balanced/unbalanced, AC coupled
Nominal level.....	Configurable: +4dBu (1.23V), 0dBu (0.775V), -10dBV (316mV), or -20dBV (100mV)

Maximum level	+4dBu, unbalanced at 1%THD+N
Input gain adjustment	-42dB to +24dB, adjustable per input
Input level sensitivity (MLS 406MA)	-20dBV (100mVrms) for maximum output (20 watts)
NOTE: 0dBu = 0.775V (RMS), 0dBV = 1V, 0dBV 2dBu	

AUDIO OUTPUT — PREAMP

Number/signal type	1 stereo/mono, balanced/unbalanced
Connectors	(1) 3.5mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel
Maximum level (Hi-Z)	>+21dBu, balanced at 1% THD+N
Maximum level (600 ohm)	>+15dBu, balanced at 1% THD+N
NOTE: 0dBu = 0.775 volts (RMS)	

NOTE: Unbalanced wired outputs produce 6dB of attenuation. Balanced outputs have unity gain/attenuation.

AUDIO OUTPUT — POWER AMP (MLS 406MA ONLY)

Number/signal type	(1) mono
Connector	(1) 5-position screw terminal
Drive/full power out.....	At less than 0.5% THD from 20 Hz to 20 kHz:
70V, mono	20 watts (RMS); 4 or 8 ohm, or 70 V output taps with common/ground, transformer coupled
100V, mono	20 watts (RMS) per channel; 4 or 8 ohm, or 100 V output taps with common/ground, transformer coupled
Protection	Input limiting, thermal, short circuit
Indication	Clip LED indicates the maximum input level Peak LED indicates the onset of maximum power output.

NOTE: 0dBu = 0.775 volts (RMS)

CONTROL/REMOTE — SWITCHER

Serial control port	RS-232, 3.5 mm captive screw connector, 5-pole (uses 3 poles)
IR remote control.....	Rear panel 38 kHz, hardwired, modulated
Program control.....	Extron's control program for Windows® Extron's Simple Instruction Set™ - SIS™

GENERAL

Power	100VAC to 240VAC, 50/60 Hz, 60 watts, internal, autoswitchable
Rack mount.....	Yes, with included brackets (#70-077-03)
Enclosure type	Metal
Enclosure dimensions	1.75" H x 17.5" W x 8.5" D (1U high, full rack width) 4.4 cm H x 44.4 cm W x 21.6 cm D (Depth excludes connectors and knob. Width excludes rack ears.)
Product weight	
MLS 406	5.0 lbs (2.3 kg)
MLS 406MA	6.0 lbs (2.7 kg)
Shipping weight	
MLS 406	10 lbs (4.5 kg)
MLS 406MA	11 lbs (5 kg)
Listings/Compliances	UL, CUL, CE, FCC Class B, VCCI, AS/NZS, ICES
Warranty	3 years parts and labor

APPLICATION

