Crestron MPS-250

Multimedia Presentation System 250

> System switcher, audio processor, and control system

> Out-of-the-box switching and audio control

> 2 video/HDTV and 3 RGB/computer inputs

> 1 QuickMedia input with delay skew compensation

> Built-in input signal sensing | auto-switching capable

> Discrete composite, S-Video, component, and RGB outputs

> NEW! RGB Pass-thru mode for easy integration with DigitalMedia

> QuickMedia and Crestron Home CAT5 AV outputs

> 5 balanced stereo audio inputs

> 2 gated mic inputs with compressor & limiter

> 4-channel mic mixing w/4-band EQ per channel

> Separate program, speech, and record outputs

> Graphic and parametric equalization | 40mS audio delay

> Built-in 40 watt amplifier — stereo, 70V, or 100V models

> 2-Series control engine | e-Control 2 Web server

> 10/100 Ethernet | RoomView and SNMP support

> 2 RS-232, 4 IR, 4 digital in, & 4 relay control ports

> Front panel setup and control | Backlit LCD display

> Keypad, touchpanel, and wireless control options

> Internal power supply | 2-space rack-mountable

The MPS-250 is a complete presentation control and signal routing solution for boardrooms and classrooms. Integrating the control system, multimedia matrix switcher, mic mixer, audio processor, amplifier, and QuickMedia distribution center all into a single 2-space rackmount package, the MPS-250 affords considerable signal routing versatility and high-performance signal processing without the need for separate components.

System Switcher—Right out of the box, the MPS-250 provides high-performance switching of 2 video and 3 RGB computer sources to a single projector or flat-panel display. Composite, S-Video, component and RGBHV signals can be routed to the appropriate inputs on the display device, with control of the display provided via Ethernet, RS-232 or IR. Input signal sensing is provided on every video and RGB input to enable auto-switching functionality and provide device power status information to the control system. Selectable sync impedance on the RGB inputs helps accommodate cable runs of varying lengths.

Versatile matrix switching inside the MPS-250 actually affords some additional hidden signal routing flexibility, providing discrete switchable outputs for RGB, composite, S-Video, and component signals. For instance, Outputs 1 and 2 can function as separate composite and S-Video outputs, or as a single component output; Output 3 can be a single component, S-Video, or composite output; and Output 4 can be used for either RGB or component. Each output is fed by a separate matrix crosspoint, so they all can be active simultaneously and assigned any relevant input source.

NEW! RGB Pass-thru mode provides a quick path to integration with the ground-breaking Crestron DigitalMedia™ system. With just a single 15-pin VGA cable connected to a DM-MD6X1 DigitalMedia switcher, DMC-DVI input card, or any other DM product with an RGB input, the MPS-250 automatically routes whatever video signal is selected – whether RGB, component, S-Video, or composite – allowing seamless conversion to digital for distribution to HDTV displays and projectors throughout your facility.

Touchpanel Output—An additional discrete output is provided on the MPS-250 to feed a preview signal to the system touchpanel or other monitor. This output is controlled separately from the main display outputs, allowing a different source to be viewed on the touchpanel. The touchpanel connection is facilitated through a choice of QuickMedia® (QM) or Crestron Home® (CH) CAT5 Balanced Video outputs, simplifying wiring to a wide range of Crestron touchpanels. The QM output supports high-resolution RGB and HDTV plus audio, while the CH output is limited to standard video and HDTV only (dependent upon the capabilities of the touchpanel).

QuickMedia®—The QM Touchpanel output can also be used to feed signals straight to the primary display device, providing a very streamlined, low-cost, long-distance wiring solution. The Crestron exclusive QuickMedia transport transmits high-resolution RGB, HD video, stereo program and microphone audio signals up to 450 feet over a single inexpensive CAT5e type cable[1]. Just one CresCAT-QM cable and a QM receiver are all that is required for complete signal routing and device control, eliminating all the bulky, expensive cabling that would otherwise be needed.

A single QM input is also provided on the MPS-250, providing additional inputs for AV, computer, and microphone sources through the simple connection of a QM Wall Plate, FlipTop Box, or Distribution Center.

4-Channel Microphone Matrix Mixing—Two gated microphone/line inputs are included on the MPS-250 complete with software-switchable 48V phantom power and independently adjustable compression and limiting. Two additional microphone signals can be brought in through the QM input, with 4-band speech-optimized equalization provided on all 4 mic channels. Sophisticated matrix mixing allows for four completely different mixes of all 4 microphones—three mixes feeding local Program, Speech, and Record outputs, and one additional mix feeding the QM output.
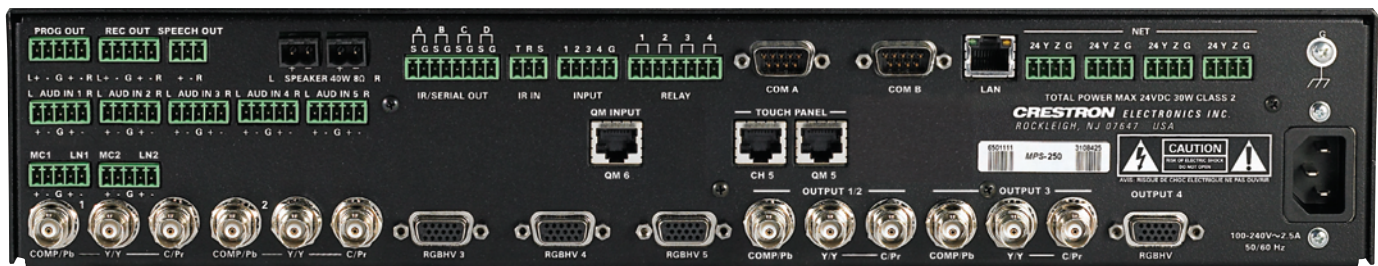
Professional Audio Features—Five stereo audio inputs on the rear panel accept balanced or unbalanced line-level signals from computers and other program audio sources. Additional audio sources can be brought in through the QM input. To accommodate a wide range of signals, adjustable input compensation is employed to help maintain consistent volume levels when switching between sources. Versatile matrix mixing allows the selected program signal and the 4 microphone signals to be separated or mixed in any combination to feed 3 local audio outputs, each with its own unique mix.

Three "local" balanced line level outputs are provided on the MPS-250, each with independent adjustments for volume, bass, treble, and mute. The stereo PROGRAM and mono SPEECH outputs are normally intended for driving external amplification, with relay muting on each output to prevent "thumping" on power up. The RECORD output allows for a separate stereo mix to feed a recording device or assistive listening system. Ten-band graphic equalization plus 2-band parametric equalization on each output eliminates the need for expensive outboard audio processors, and up to 40mS delay adjustment is available on the SPEECH output for proper loudspeaker alignment.

The QM Touchpanel output is controlled separately from the other audio outputs, allowing a different program source and microphone mix to be monitored on the touchpanel, or output to other audio equipment by way of an appropriate QM receiver or other QuickMedia device.

Built-in Amplifier—A 40-watt amplifier is built into the MPS-250, with three models available offering the choice of 8-ohm stereo, 70V mono, or 100V mono outputs. For large rooms requiring more power, the MPS-250 supports plug-and-play compatibility with Crestron QM-Series 3-channel amplifiers, providing a complete solution for driving a professional loudspeaker system with separate program and speech channels.

Front Panel Control—Out of the box, the MPS-250 front panel supports easy pushbutton routing of input sources to each of the outputs, and audio volume adjustment using the volume control knob. Dedicated buttons and indicators are

also provided for separate control of system power and projector power. In addition, five preset buttons are included for custom functions such as lowering a projection screen, closing blinds, or selecting a lighting preset.

The front panel label strips are easily customized using Crestron Engraver software or standard 3/8" tape labels, allowing for the clear designation of each input, output, and preset button. When selected, these functions will also appear on the LCD display as generic names (Input 1, 2…), or as custom names (DVD, Podium PC, Screen Up, etc.).

Easy setup of the MPS-250 is facilitated through the LCD display without necessitating a computer. Together with 4 softkey buttons, 4 menu navigation buttons and the volume knob, the LCD enables configuration of IP network, audio, and other system settings. For security, the front panel controls can be password protected or locked out.

2-Series Control System—Integrated into the MPS-250 is a Crestron 2-Series Ethernet control system complete with e-Control®2 Web server and a host of RS-232, IR, digital input and relay control ports for integration with third-party equipment. Anything from a basic AV presentation room with a single projector, screen, and keypad controller, to a fully custom touchpanel based system with multiple controlled sources and display devices, can be programmed easily using Crestron SystemBuilder™ software. And, the MPS-250 works with Crestron RoomView® Help Desk software, the industry's most comprehensive facility-wide asset management solution.

Room Control Options—Without requiring any programming, the MPS-250 can be controlled simply using a Crestron APAD LCD Controller or a selection of keypads. With custom programming, our complete line of Isys™ touchpanels and MediaManager FlipTops is supported. Equipped with an optional CNXRMIRD IR receiver, the MPS-250 allows any Crestron IR wireless touch-panel or handheld remote to be used for a low-cost wireless control solution. Or, adding an RF wireless gateway or Wi-Fi access point enables use of a wide range of 1-way and 2-way RF wireless handheld remotes and touchpanels.

AVAILABLE MODELS

MPS-250
Multimedia Presentation System w/Stereo Amplifier

MPS-250-70V
Multimedia Presentation System w/70 Volt Amplifier

MPS-250-100V
Multimedia Presentation System w/100 Volt Amplifier

SPECIFICATIONS

Processor

CPU: 32-bit Freescale ColdFire® Microprocessor

Memory

32 MB SDRAM, 256 KB NVRAM, 16 MB Flash

Operating System

Real-time, preemptive, multitasking kernel, multi-threaded; FAT32 file system with long names; supports SIMPL™ Windows® and SIMPL+®

Ethernet

10/100BaseT, static IP or DHCP/DNS, SSL, auto-negotiating, full duplex TCP/IP, UDP/IP, CIP, SMTP, SNMP, built-in Web server and e-mail client; supports Crestron e-Control®2 XPanel and RoomView® applications

Video

Switcher: 6x5 crosspoint matrix including 1x1 QM signal routing, local QM delay skew compensation, RGB pass-thru mode (multi-format via RGB output connection)
Signal Types: RGB and composite, S-Video, or component video (does not transcode)
Video/HDTV Formats: NTSC or PAL, HDTV up to 1080i/1080p
RGB Formats: RGBHV, RGBS, RGsB
Maximum Resolution: 2048 X 1536 @ 60Hz (1920 X 1200 @ 60Hz via QM)
Blanking Time: < 0.1 second
Sync Rise/Fall Time: 3.5 ns maximum
Sync Latency: < 30 ns
Gain: 0dB (75 ohms terminated)
QM Cable Compensation: 10-bit digitally controlled PEAK (bandwidth) and BOOST (frequency); 4-bit digitally controlled SKEW delay, 0 to 22 ns (independent for R, G, and B)

Audio

Switcher/Preamp: 6x2 stereo crosspoint matrix including 1x1 QM signal routing, 2-channel gated mic preamp with compressor & limiter, 4-channels mic EQ, 6X5 mic/program matrix mixer, 4x2 mic matrix mixer on the QM output, stereo volume/tone control and EQ per each of PROGRAM and RECORD outputs, mono volume/tone control and EQ/delay on SPEECH output, integrated power amplifier, QM auto-compensation with self-peaking
A-D/D-A Conversion: 24-bit, 48 kHz
Volume Range: -80 to +20 dB, 0.1dB steps (output); -80 to 0 dB, 0.1dB steps (mixer)
Mute: -100dB (electronic), -120dB (relay)
Input Compensation: ±10dB, 0.1dB steps
Mic Input Gain: 0 to 100 % (40dB range) plus mute
Gate Level (Threshold): 0 to 100 %
Gate Attack: 0 to 100 mS
Gate Decay (Release): 0 to 5000 mS
Gate Depth: -80dB (mute) to 0dB, 0.1dB steps
Compression Threshold: -80dB to +20dB, 0.1dB steps
Limit Threshold: 0dB to 20dB, 0.1dB steps
Comp/Lim Attack: 0.1 to 300 mS
Comp/Lim Release: 1 to 500 mS
Compression Ratio: 1.0:1 to 10.0:1
Comp/Lim Curve: Selectable hard or soft knee
Mic EQ: ±12dB, 0.1 dB steps at 160, 500, 1.2k, 3k Hz
Bass/Treble: ±12dB, 0.5dB steps at 100Hz and 10kHz
Output Equalization: 10-band graphic (GEQ) + 2-band parametric (PEQ)
GEQ: ±12dB, 0.1dB steps at 31, 63, 125, 250, 500, 1k, 2k, 4k, 8k, 16k Hz
PEQ Filter Gain/Center Frequency: ±12dB, 0.1 dB steps at 25Hz to 20kHz, 0.5Hz steps
PEQ Filter Bandwidth: 0.1 to 3.0 octaves, 0.1 octave steps
PEQ Filter Types: Low Pass, High Pass, Peaking Eq, Notch, Treble Shelf, Bass Shelf
Speech Output Delay: 0 to 40 mS, 1mS steps
Frequency Response: 20Hz to 20kHz ±0.5dB (PROG/REC OUT), 50Hz to 20kHz ±0.5dB (SPEECH OUT), 20Hz to 20kHz ±0.5dB (SPEAKER @ 8 ohms), 100Hz to 20kHz ±1.5dB (SPEAKER @ 70V or 100V)
S/N Ratio: 95dB (PROG/REC OUT @ 10dBV, 20Hz to 20kHz A-weighted), 95dB (SPEECH OUT @ 10dBV, 50Hz to 20kHz A-weighted), 90dB (SPEAKER @ 8 ohms, full output, 20Hz to 20kHz A-weighted), 90dB (SPEAKER @ 70V or 100V, full output, 20Hz to 20kHz A-weighted)
THD+N: 0.02% (PROG/REC OUT @ 10dBV, 20Hz to 20kHz), 0.02% (SPEECH OUT @ 10dBV, 50Hz to 20kHz), 0.7% (SPEAKER @ 8 ohms, full output, 20Hz to 20kHz), 0.7% (SPEAKER @ 70V or 100V, full output, 100Hz to 20kHz A-weighted)
Stereo Separation: -80dB (PROG/REC OUT @ 10dBV, 20Hz to 20kHz), -60dB (SPEAKER @ 8 ohms, full output, 20Hz to 20kHz)
Channel Crosstalk: -80dB (AUD IN @ 10dBV, 20Hz to 20kHz)

Connectors – Audio

PROG OUT: (1) 5-pin 3.5mm detachable terminal block, stereo line-level output
Output Impedance: 200 ohms balanced, 100 ohms unbalanced
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

REC OUT: (1) 5-pin 3.5mm detachable terminal block, stereo line-level output
Output Impedance: 200 ohms balanced, 100 ohms unbalanced
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced
Note: Does not include relay mute

SPEECH OUT: (1) 3-pin 3.5mm detachable terminal block, mono line-level output
Output Impedance: 200 ohms balanced, 100 ohms unbalanced
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

SPEAKER: (1 or 2) 2-pin 5mm detachable terminal blocks, speaker-level audio outputs
Wire Size: Connector accepts 12 AWG maximum
Output Power (MPS-250): 20W RMS per channel stereo into 8 ohms, 4 ohms tolerant
Output Power (MPS-250-70V): 40W RMS mono at 70 Volts
Output Power (MPS-250-100V): 40W RMS mono at 100 Volts

AUD IN 1 - 5: (5) 5-pin 3.5mm detachable terminal blocks, stereo line-level inputs
Input Impedance: 24k ohms balanced/unbalanced
Balanced Input Level: -20 to +12 dBV; 4 Vrms maximum
Unbalanced Input Level: -20 to +6 dBV; 2 Vrms maximum

MC/LN 1 - 2: (2) 5-pin 3.5mm detachable terminal blocks, comprises (2) mic/line inputs
Balanced Mic Input Level: -52 to -12 dBV, 240 mVrms maximum
Balanced Line Input Level: -28 to +11 dBV, 3.7 Vrms maximum
Unbalanced Line Input Level: -34 to +5 dBV, 1.85 Vrms maximum
Mic Input Impedance: 3.9k ohms, accepts 60 to 600 ohm source
Line Input Impedance: 19k ohms balanced, 9.5k ohms unbalanced
Phantom Power: 10 mA (total) @ 48 Volts DC, software enabled to both mic inputs

Connectors – Video

COMP/Pb, Y/Y, C/Pr 1 - 2: (2) sets of (3) BNC female video inputs
Each set configurable as:
 (1) Component/HDTV (YPbPr) video input, or
 (1) S-Video (Y/C) input, or
 (1) Composite input
Input Level/Impedance: 1 Vp-p, 75 ohms, nominal
DC Offset: Insensitive to DC offset (AC coupled)
Video signal sensing on COMP/Pb or Y/Y

RGBHV 3 - 5: (3) DB15HD female, RGBHV or Component/HDTV inputs
Format: RGBHV, RGBS, RGsB, or YPbPr
RGB/Video Input Level/Impedance: 1 Vp-p, 75 ohms, nominal
H/V Sync Input Level: 2 to 5 Vp-p
H/V Sync Input Impedance: 75, 500, or 1k ohms individually selectable for H and V
Video signal sensing on H, Gs, and Y; defeatable DDC pull-up resistors

QM INPUT QM 6: (1) 8-wire RJ45 female, QuickMedia input port
Signal Types: Dynamically configurable for RGBHV, component (YPbPr), S-Video (Y/C), or composite video with stereo program and 2-channels microphone audio;
RGB Format: RGBHV, RGBS, RGsB
RGB Input Resolution, Non-interlaced: 1920 x 1200 maximum (60Hz limit at 1600 x 1200 or higher);
Video/HDTV Formats: NTSC or PAL, HDTV up to 1080i/1080p
Delay Skew Compensation: 0 to 22 nS
Connects to QM output of a QuickMedia device via CRESCAT-QM or CRESCAT-IM cable[1]

COMP/Pb OUTPUT 1: (1) BNC female
Composite video output, or Pb of secondary component/HDTV video output;
Output Level/Impedance: 1.0 to 1.1 Vp-p (terminated, with 1 Vp-p in), 75 ohms nominal

Y/Y, C/Pr OUTPUT 2: (2) BNC female
S-Video (Y/C) video output, or Y and Pr of secondary component/HDTV video output
Output Level/Impedance: 1.0 to 1.1 Vp-p (terminated, with 1 Vp-p in), 75 ohms nominal

COMP/Pb, Y/Y, C/Pr OUTPUT 3: (3) BNC female, configurable as:
 (1) Component/HDTV (YPbPr) video output, or
 (1) S-Video (Y/C) output, or
 (1) Composite output
Output Level/Impedance: 1.0 to 1.1 Vp-p (terminated, with 1 Vp-p in), 75 ohms nominal

RGBHV OUTPUT 4: (1) DB15HD female
RGBHV, component, S-Video, and composite video output
Formats: RGBHV, RGBS, RGsB, YPbPr, Y/C, composite

RGB/Video Output Level: 0.7 to 0.75 Vp-p (terminated, with 0.7 Vp-p input, unity gain)
RGB/Video Output Impedance: 75 ohms nominal
H/V Sync Output Level/Impedance: 4 to 5 Vp-p, 55 ohms
H/V Sync Polarity: Follows input

TOUCHPANEL CH 5: (1) 8-wire RJ45 female, CAT5 balanced video output port
Dynamically configurable for component (YPbPr), S-Video (Y/C), or composite video
Video/HDTV Formats: NTSC or PAL, HDTV up to 1080i
Output Impedance: 100 ohms balanced
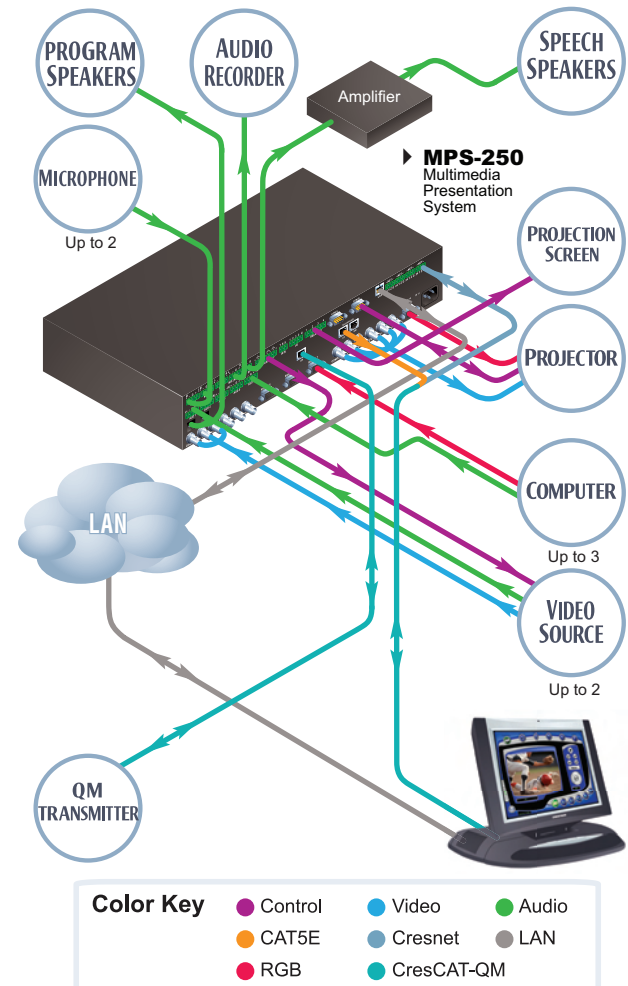Connects to CH CAT5 balanced video input port of a compatible touchpanel or other device via CresCAT cable

TOUCHPANEL QM 5: (1) 8-wire RJ45 female, QuickMedia output port
Signal Types: Dynamically configurable for RGBHV, component (YPbPr), S-Video (Y/C), or composite video with stereo program and 2-channels microphone audio;
RGB Format: RGBHV, RGBS, RGsB
RGB Output Resolution, Non-interlaced: 1920 x 1200 maximum (60Hz limit at 1600 x 1200 or higher);
Video/HDTV Formats: NTSC or PAL, HDTV up to 1080i/1080p
Connects to QM input port of a compatible touchpanel or other QuickMedia device via CresCAT-QM or CresCAT-IM cable[1]

Connectors – Control & Power

IR/SERIAL OUT A - D: (4) 2-pin 3.5mm detachable terminal blocks, IR/Serial output ports
IR output up to 1.2 MHz, 1-way serial TTL/RS-232 (0-5 Volts) up to 9600 baud

IR IN: (1) 3-pin 3.5mm detachable terminal block, for CNXRMIRD IR Receiver (sold separately), allows control from IR wireless remotes using RC-5 command set

INPUT 1 - 4: (1) 5-pin 3.5mm detachable terminal block
Comprises (4) digital/contact closure inputs, rated for 0-24 Volts DC, referenced to GND
Input Impedance: 2.2k ohms pulled up to 5 Volts DC
Logic Threshold: 2.5 Volts DC nominal with 1 Volt hysteresis band

Color Key
● Control ● Video ● Audio
● CAT5E ● Cresnet ● LAN
● RGB ● CresCAT-QM

● **CRESTRON**®

RELAY 1 - 4: (1) 8-pin 3.5mm detachable terminal block
Comprises (4) normally open, isolated relays
Rated 1 Amp, 30 Volts AC/DC, MOV arc suppression across contacts

COM A - B: (2) DB9 male, bidirectional RS-232 ports
Up to 115.2k baud, hardware and software handshaking support

LAN: (1) 8-wire RJ45 with 2 LED indicators, 10/100BaseT Ethernet port
Green LED indicates link status, yellow LED indicates Ethernet activity

NET: (4) 4-pin 3.5mm detachable terminal blocks, Cresnet Master ports, paralleled
Available Cresnet Power: 30 Watts

G: (1) 6-32 screw, chassis ground lug

100-240V~2.5A: (1) IEC Socket, main power input, removable power cord included

COMPUTER (front): (1) USB Type B female, computer console port, cable included

LCD Display

Green LCD alphanumeric, adjustable backlight, 2 lines x 20 characters per line, displays input/output names, volume level, setup menus, time/date, and other system information

Controls and Indicators

NET: (1) yellow LED, indicates Cresnet bus activity
MSG: (1) yellow LED, indicates control system has generated an error message
HW-R: (1) recessed miniature pushbutton for hardware reset, reboots the control system
SW-R: (1) recessed miniature pushbutton for software reset, restarts the SIMPL program
SYS PWR: (1) pushbutton and green LED, controls system power
PROJ PWR: (1) pushbutton and green LED, controls display device power
SOFTKEYS: (4) pushbuttons for activation of LCD driven functions and passcode entry
MENU: (1) pushbutton, steps menu back one level
Λ,V: (2) pushbuttons, scroll up or down through menu and adjust menu parameters
ENTER: (1) pushbutton, executes highlighted menu or value
VOLUME: (1) continuous turn rotary encoder, adjusts menu parameters, defaults to program audio volume
FUNCTION 1 – 5: (5) pushbuttons and red LEDs, programmable
IN 1 – 6: (6) pushbuttons and red LEDs, select input to be routed
OUT 1 – 5: (5) pushbuttons and red LEDs, select output destination

Power Requirements

Main Power: 2.5 Amps @ 100-240 Volts AC, 50/60 Hz
Available Cresnet Power: 30 Watts

Environmental

Temperature: 41° to 104°F (5° to 40°C)
Humidity: 10% to 90% RH (non-condensing)

Enclosure

Chassis: Steel, black matte powder coat finish, convection-cooled, vented top and sides
Faceplate: Extruded aluminum, black matte powder coat finish with polycarbonate label overlay
Mounting: Freestanding or 2U 19" rack-mountable (adhesive feet and rack ears included)

Dimensions

Height: 3.56 in (90 mm), 3.47 in (88 mm) without feet
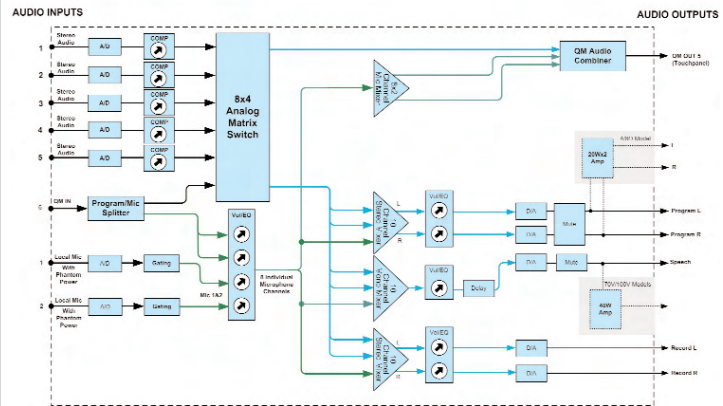**Width:** 17.03 in (433 mm), 19.0 in (483 mm) with ears
Depth: 12.58 in (320 mm)

Weight

MPS-250: 10.1 lb (4.6 kg)
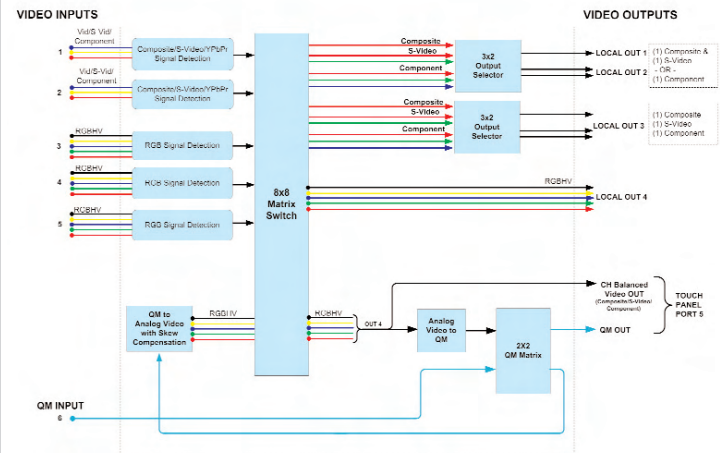**MPS-250-70V/100V:** 11.9 lb (5.4 kg)

1. *For QuickMedia wiring use CresCAT-QM, CresCAT-IM, or quality CAT5e/CAT6 cable with a delay skew of 15nS per 100m; the maximum aggregate cable length and delay skew between any QM transmitter (origination point) and QM receiver (endpoint) is 450 ft (137 m) and 22 nS; a maximum of two QM midpoint devices may be inserted in a given QM signal path; exceptions apply, refer to each respective product manual for full detail.*

Internal Block Diagram – Audio

Internal Block Diagram – Video

AVAILABLE ACCESSORIES

APAD
Wall Mount LCD Controller

C2N-DB12
12-Button Decorator Keypad

CNX-B12
12-Button Designer Keypad

C2N-FTB
FlipTop Control Center

CNXRMIRD
IR Receiver

QM-AMP3X80MM
3-Channel Multimedia Amplifier

QM-AMP3X80SR
3-Channel Sound Reinforcement Amplifier

CNSP-XX
Custom Serial Interface Cable

IRP2
IR Probe

C2N-MNETGW
infiNET Gateway

CLW-DIM1RF and CLW-SW1RF
infiNET Dimmer and Switch

CLS-C6
iLux Integrated Lighting System

RoomView® Express
Remote Help Desk and Resource Management Software

RoomView® Server Edition
Enterprise Management and Scheduling Software