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# DESIGN GUIDE



**Mult**  
  
**Tasker**<sup>®</sup>

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# *MultiTasker® Design Guide*

The **ALTINEX MultiTasker** is the new, modular system for customizing signal management solutions for a variety of audio, video, and control signals. With MultiTasker, you can accomplish distribution, switching, matrix switching, and signal conversion in one comprehensive rack-based system. And, as a modular system, you can change the configuration and re-program functionality with a minimum of component change.

This Design Guide will provide you with a comprehensive overview of the MultiTasker system — how it works, what options are available, and how to design a MultiTasker-based signal management system to meet your audio-visual requirements. It is organized into four basic sections — an Introduction, Product Information, Sample Configurations, and a Quick Reference guide.

## **Introduction**

The introduction provides a quick tutorial on the conventions used throughout the guide, as well as a procedural guide to designing a MultiTasker System. It explains the symbols used in each product's block diagram, and describes the various function groupings of MultiTasker cards to help you identify the right ones for your signal management system.

## **Product Information**

In the Product Information section, the products have been grouped according to the functionality that they share, with the differences in specific features listed in the initial product comparison at the head of each product group page. A line drawing of the front panel follows, alongside a representative photo, which illustrates the input and output connector placement. On the facing page are the functional block diagrams for each card. These diagrams illustrate the signal flow through the card, and define such options as expandability, switching, and special options such as on/off control or signal detect. The Design Tips part of each product group will mention design requirements and dependencies, suggest alternative usages for extending the functionality of the products in that group, and list important accessories for full utilization of those products.

## **Sample Configurations**

Sample Configurations show how various signal management challenges can be efficiently, effectively, and comprehensively met with a MultiTasker solution. Each one starts by defining input and output requirements using signal block diagrams. The components necessary to achieve the desired objectives are then chosen and shown in the assembled MultiTasker configuration.

## **Quick Reference**

The Quick Reference fold-out chart provides a single-page view of all the MultiTasker products profiled in this guide, and allows side-by-side comparison of their distinguishing specifications.

## **ALTINEX Technology**

ALTINEX is at the forefront of developing new technologies to solve the more persistent challenges in signal distribution. Following are some terms you will encounter frequently in this guide:

- **GLI on-board™** was developed to eliminate ground loops, thereby removing the symptoms of rolling hum bars and other artifacts in video signals, and hum in unbalanced audio.
- **Screen Blanking** prevents the annoying “No Signal Present” message from appearing on displays while allowing the user to turn off, or “blank” the actual computer signal.
- **Sync Delay** promotes graceful switching between computer video signal sources, without the visual “glitch” that commonly occurs during the transition from one source to another.

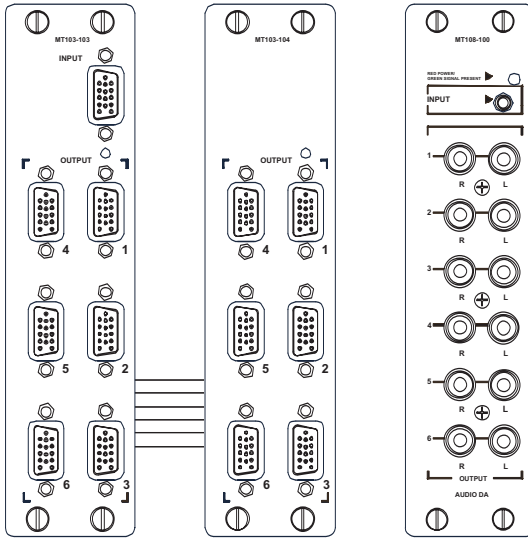
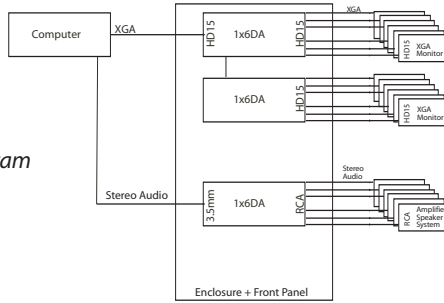
## How to Configure a MultiTasker System

The following design steps provide a basic methodology to create a MultiTasker solution:

1. Identify all of the signal sources — computers, cameras, microphones, etc.— their signal formats and connector types. If there are computer sources, make note of what resolutions and refresh rates they will be used at. In the example on the facing page, note that the computer source has been defined to deliver an XGA resolution video signal, as well as stereo audio (*see Figure 1*).
2. Identify all of the signal destinations — monitors, projectors, or recorders — and make note of their signal compatibility, connectors, resolutions and refresh rates they support.
3. Choose a video format standard. Just as broadcast video can be routed in composite, S-Video or component signal formats (Y, Pr, Pb/Y, R-Y, B-Y), computer video can be routed as RGBsB, RGBS or RGBHV analog formats or DVI digital formats. Choose standards reflecting the minimal number of format changes, and with which the displays are compatible. With computer video, make sure that the sync signal format is compatible with all display and conversion devices.
4. Verify scan rate compatibility — make sure that the output devices can display the input signals, or that the appropriate signal converter is specified into the MultiTasker system.
5. Choose a connector type to minimize the number of conversions necessary, and thereby reduce the potential for signal degradation. In the example on the facing page the 15-pin HD connector type from the source computer output is maintained throughout the signal flow diagram. The audio signal, however, is converted from 3.5mm connector output to RCA jacks, for better connectivity to a variety of output devices.
6. Create a signal flow diagram, noting any special features required from each component of the block diagram. In the example on the facing page, all signals are defined and identified by type and connector.
7. Select a control method and user interface — push-button, controller, computer, or none.
8. Select the appropriate MultiTasker components to accomplish the required signal routing. In the example on the facing page, the signal function, resolution and connector requirements were used to pick the appropriate cards from the VGA DA card group and Audio DA card group (*see Figure 2*). Finally, the eight-slot enclosure was chosen as the best size to fit the system requirements (*Figure 3*).

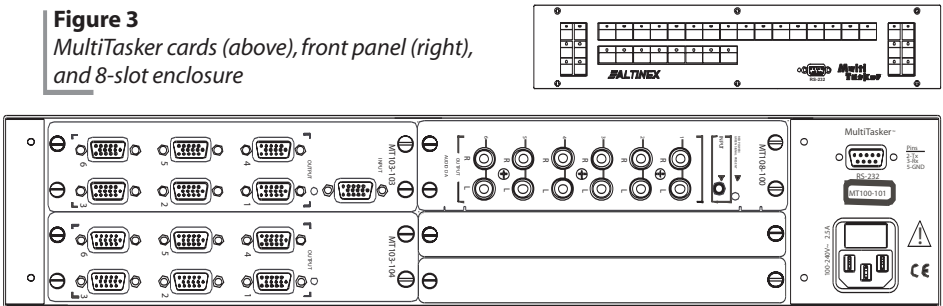
ALTINEX technical support is available to help you with any step in this process.

**Figure 1**  
System flow diagram



**Figure 2**  
MultiTasker cards  
103-103, 103-104,  
and 108-100

**Figure 3**  
MultiTasker cards (above), front panel (right),  
and 8-slot enclosure



# How To Read an ALTINEX Block Diagram

This Design Guide uses block diagrams to describe the functions of MultiTasker cards. These diagrams provide useful insight into the connections available, and flow of the signal through each individual product. In the following section, the various symbols used in these block diagrams will be identified and explained.

By following the signal lines from the inputs to the outputs, block diagrams can be used to determine the number and type of cards and connections needed to complete your configuration. Additional card functionality is also listed here. Opposite is a list of symbols describing components and features inside each diagram.

### Internal Connection Feature

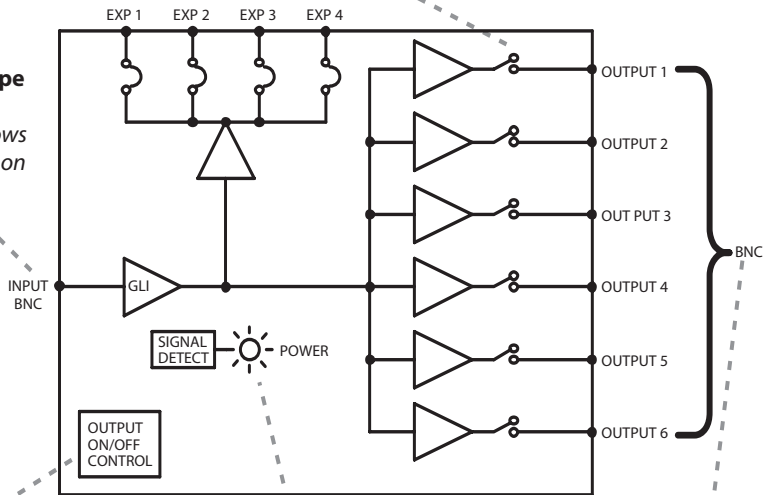
This part of the diagram indicates if a card can be expanded, or connected to other cards internally. This example shows the ability to connect up to four additional cards internally.

### Internal Components

This example shows the outputs as buffered and switched. Each "triangle" is an amplifier, and the broken line terminated by a circle represents a switch.

### Number and Type of Inputs

This example shows a BNC connector on the input.



### Special Functions

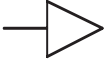
Software-activated features are indicated in "function boxes" like this one. This example shows the capability to turn outputs on or off.

### Number and Type of Outputs

This example shows BNC connectors on the output.

### Indicator Light

If an LED is present on the card, then it is shown here, with the functions indicated on either side. This LED performs two functions — indicating signal detect and power.



**Amplifier**

*buffers either the input, or output, or both*



**Jumpers**

*show where manual signal routing can be performed during installation*



**GLI (Ground Loop Isolation)**

*protects system against humming and rolling bars in video*



**Audio Mixer**

*allows simultaneous output of all inputs, with input level control of each*



**Plug and Play**

*Plug and Play circuitry (on 15-pin HD connectors)*



**On-off Control**

*requires software commands to enable/disable signal*



**Switch**

*switches between multiple signals; chooses one at a time for output*



**Sliding Switch**

*usually a hardware switch located on faceplate of card*



**Contact-NO**

*contact "normally open" switch*



**Contact-NC**

*contact "normally closed" switch*



**Hardware Equalization**

*manual control of output video signal through on-board potentiometer*



**Software Equalization**

*software control of output video signal through RS-232 or front panel control*



**Hardware Gain Control**

*manual control of audio signal gain through on-board potentiometer*



**Software Gain Control**

*software control of audio signal gain through RS-232 or front panel control*



**HPos**

*potentiometer-based horizontal position control*



## How to Choose Components in a MultiTasker System

To find the right Multitasker component for each function in your system, the following determinations need to be accomplished in the following order:

1. Decide which basic function that a particular card needs to perform: Distribution? Switching? Signal conversion?
2. Look within that function group to determine which card handles the correct signal format and has the proper connector.
3. From the resulting sub-group of cards, choose the one that has the appropriate number of inputs and outputs, and meets the performance specifications and special functions required.

MultiTasker components have been organized into the following function groups:

### ***Enclosures***

These are the starting points in any MultiTasker system. They hold the other components of the system and provide power and control signals to them. Multiple enclosures can be “ganged” to accomplish more extensive signal management. Although listed separately, a front panel must always be ordered with an enclosure.

### ***Front Panels***

The front panel is typically chosen to support the level of functionality required by the cards being used in the MultiTasker system. For simple audio and video distribution, just a simple faceplate will suffice. For external control of switching, a front panel with an RS-232 control interface is necessary. There is also a front panel with push-button control available.

### ***Video Distribution Amplifier Cards***

These cards take a video signal input and condition it or amplify it for distribution to one or many outputs. They support different bandwidth signals, and different combinations of distribution, expansion, output on-off control, and ground-loop protection capabilities.

### ***VGA-Type Distribution Amplifier Cards***

Much like the Video DA group, these cards take in one computer video signal and condition it or amplify it for distribution to one or many outputs. They offer support VGA to QXGA-bandwidth distribution of computer video signals, along with varying combinations of distribution, expansion, output on-off control, and ground-loop protection capabilities.

### ***Video Switcher Cards***

A video switcher allows you switch between two or more input signals, choosing one for output. These cards work directly with composite video, S-Video, or can be ganged in groups of three to five in order to switch component video (Y, Pb, Pr/Y, R-Y, B-Y), RGsB, RGBS or RGBHV. Also offered in this group are varying combinations of expansion and output on-off control capabilities.

### ***VGA-Type Switcher Cards***

The VGA-type Switcher family of cards allows you to switch between many input computer video signals to choose one for output. They support switching of VGA through QXGA bandwidth computer video signals, along with varying combinations of expansion and output on-off control capabilities.

### ***Video Matrix Switcher Cards***

Matrix cards allow for simultaneous connections of many inputs to many outputs. Using these cards, multiple computer or video inputs can be routed to multiple monitors or other displays.

### ***Small VGA-Type Matrix Switcher Cards***

This family of cards allows simultaneous connection of many computer video source inputs to many computer video display outputs. They offer VGA-type 15-pin HD connectors on all inputs and outputs and support VGA through QXGA signal resolutions.

### ***CAT-5 Transmitters/Receivers***

These MultiTasker cards are used to transmit analog computer video signals over CAT-5 type UTP cable. They are used in transmitter-receiver pairs, and can also be used in conjunction with stand-alone ALTINEX CAT-5 products such as the DA1920SX transmitter or DA1921SX receiver. Signal distribution of computer video signals through CAT-5 cabling allows you to take advantage of cost and space savings over the use of traditional multi-channel coax cable.

### ***Up/Down Converters***

These cards translate the incoming video signals to alternate formats. The Scan Doubler will take a composite or S-Video signal input and convert it into a VGA-compatible signal output. Conversely, the Scan Reducer will take a VGA or XGA signal of varying refresh rates in, and convert it to either an NTSC or PAL-compatible broadcast signal out. Finally, the Scaler will take in a broadcast, VGA-type or DVI video signal, switch to the desired input and convert it to the VGA-UXGA signal you define, at the refresh rate you define.

### ***Audio Distribution Amplifier Cards***

These cards take an audio signal input, and condition it or amplify it for distribution to one or many outputs. Available with a variety of I/O connectors and balanced or unbalanced configurations, these cards offer different combinations of distribution, expansion, output on-off control, and ground-loop protection features.

### ***Audio Switcher Cards***

An audio switcher allows you to switch between two or more input signals, choosing one for output. They allow stereo or monaural audio switching of balanced or unbalanced signals, and in some instances can be ganged in pairs to expand the number of input signals.

### ***Audio Matrix Switchers***

This card family allows for simultaneous many-audio-input to many-audio-output connections.

### ***Audio Power Amplifier Cards***

Utilizing additional external power, these cards can mix several standard line-level audio signal inputs with a mic-level input, and deliver the final audio output directly to speakers or line out.

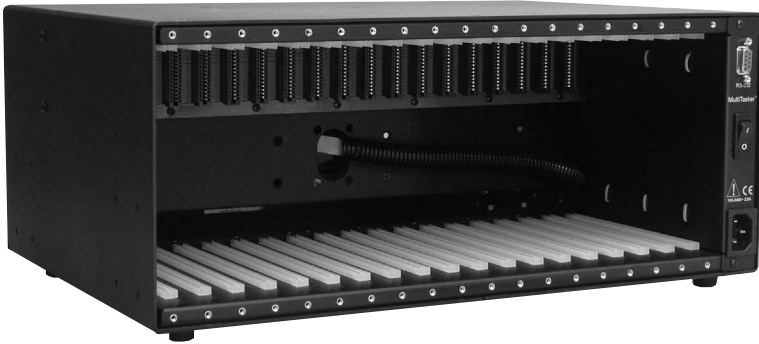
### ***Control Cards***

Exercising control over external devices is easy and convenient with this family of cards.

### ***Patch Cables***

In many instances you will need to connect the output of one card in a MultiTasker enclosure to the input of another. This family of patch cables provides handy solutions for those needs.

# 19-Slot Enclosure



## MT100-100

The MT100-100 enclosure consists of 19 slots, a power supply, and a backplane to route power and control signals to the cards. On the back panel of the 19-slot enclosure is an IEC-320 male power connector, an on-off switch, and a 9-pin D-sub female connector for external RS-232 control. (RS-232 control is activated only when used in conjunction with a front panel that provides control capability to the cards installed in the enclosure).

A front panel must be chosen with this enclosure; three are available, each with different capabilities to complement the functionality of the cards used in the enclosure. Optionally, a second power supply may be installed, either for redundancy in mission-critical applications or if more power is required by a large number of scan conversion or scaling cards.

To keep dust out, unused slots should be covered by separately available slot covers (MT200-105: package of five blank covers).



MT200-105

## Specifications

|                                       |   |
|---------------------------------------|---|
| <b>Slots Available</b>                | 19 (20 for custom applications)   |
| <b>Weight</b> (empty, no slot covers) | 15 lb (6.8 kg)  |
| <b>Ship Weight</b> (approx.)          | 20 lb (9.1 kg)  |
| <b>MTBF</b> (calc.)                   | 60,000 hrs  |
| <b>Rack Space</b> (19")               | 4U high, 1 rack wide, 12" (30.5 cm) deep  |
| <b>Power Input</b>                    | 100-240 V AC (50/60 Hz), 2.0 A maximum  |
| <b>Power to Cards</b>                 | -13V, -6V, +6V, +13V<br>45 W maximum per power supply,<br>90 W with 2 power supplies installed; other options available |
| <b>Power Consumption</b>              | 20 W minimum/250 W maximum,<br>depending on power supply options installed  |
| <b>Approvals</b>                      | FCC and CE  |

# 19-Slot Front Panel Options



MT101-102

## MT101-102

- Blank front panel — no controller included
- Primarily for no-control-required applications such as distribution
- Includes cooling fans



MT101-100

## MT101-100

- Front panel with controller
- Required for applications using external control, such as switching, which use the RS-232 interface
- Includes cooling fans, microprocessor-based control interface, and 9-pin D-sub female connector for external RS-232 control



MT101-101

## MT101-101

- Front panel with controller, 36-button interface
- Allows front-panel control of cards
- Buttons are completely configurable through RS-232 control interface
- Includes cooling fans, microprocessor-based interface, 9-pin D-sub female connector for RS-232 control/programming, and 36 programmable buttons

## RS-232 Control Commands

[RESUi], [CnUi], [VERCnUi], [SETUi]

# 8-Slot Enclosure



## MT100-101

The MT100-101 enclosure consists of 8 slots and a backplane to route power and control signals to the cards. On the back panel of the 8-slot enclosure is an IEC-320 male power connector, an on-off switch, and a 9-pin D-sub female connector for external RS-232 control. (RS-232 control is activated only when used in conjunction with a front panel that provides control capability to the cards installed in the enclosure).

A front panel must be chosen with this enclosure; three are available, each with different capabilities to complement the functionality of the cards used in the enclosure. Each front panel includes the power supply for the unit.

To keep dust out, unused slots should be covered by separately available slot covers (MT200-105: package of five blank covers).

MT200-105



## Specifications

|                                       |  |
|---------------------------------------|--|
| <b>Slots Available</b>                | 8  |
| <b>Weight</b> (empty, no slot covers) | 11 lb (5 kg)   |
| <b>Ship Weight</b> (approx.)          | 15 lb (6.8 kg)   |
| <b>MTBF</b> (calc.)                   | 100,000 hrs  |
| <b>Rack Space</b> (19")               | 2U high, 1 rack wide, 12" (30.5 cm) deep   |
| <b>Power Input</b>                    | 100-240 V AC (50/60 Hz), 2.0 A maximum   |
| <b>Power to Cards</b>                 | -13V, -6V, +6V, +13V<br>45 W maximum per power supply,<br>90 W with 2 power supplies installed |
| <b>Power Consumption</b>              | 10 W minimum/160 W maximum,<br>depending on power supply options installed                     |
| <b>Approvals</b>                      | FCC and CE   |

# 8-Slot Front Panel Options



MT101-103

## MT101-103

- Blank front panel-no controller included
- Primarily for no-control-required applications such as distribution
- Includes power supply



MT101-104

## MT101-104

- Front panel with controller
- Required for applications using external control, such as switching, which use the RS-232 interface
- Includes power supply, microprocessor-based control interface, and 9-pin D-sub female connector for external RS-232 control



MT101-105

## MT101-105

- Front panel with controller, 36 button interface
- Allows front-panel control of cards
- Buttons are completely configurable through RS-232 control interface
- Includes power supply, microprocessor-based interface, 9-pin D-sub female connector for RS-232 control/programming, and 36 programmable buttons

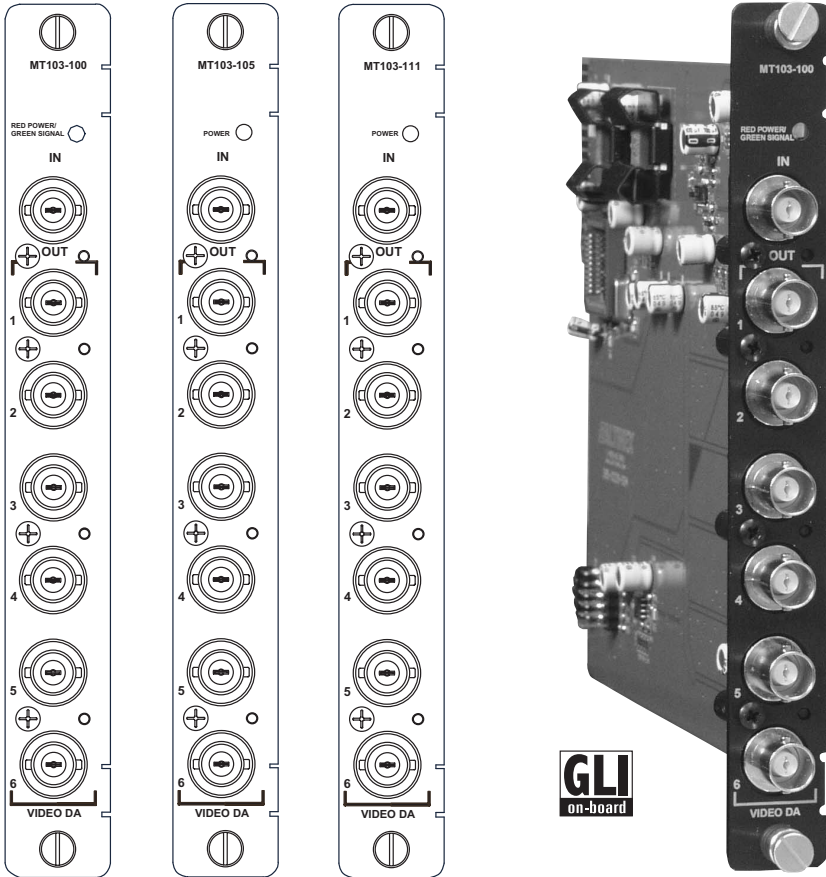
## RS-232 Control Commands

[RESUi], [CnUi], [VERCnUi], [SETUi]

# Video Distribution Amplifiers

## Product Comparison

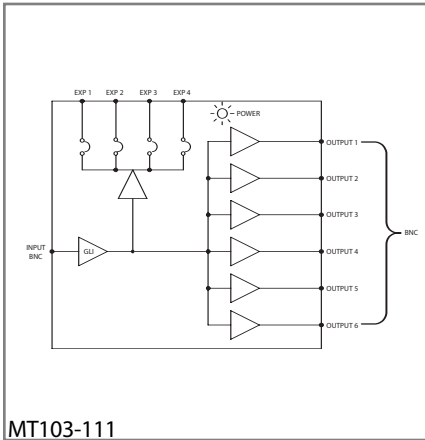
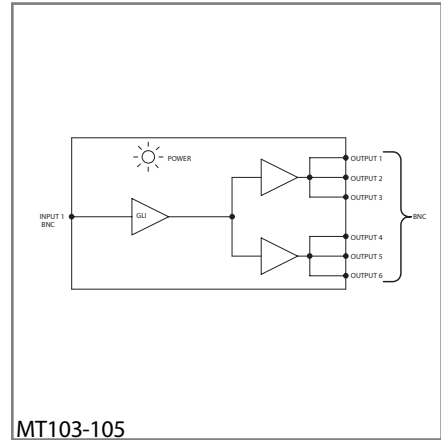
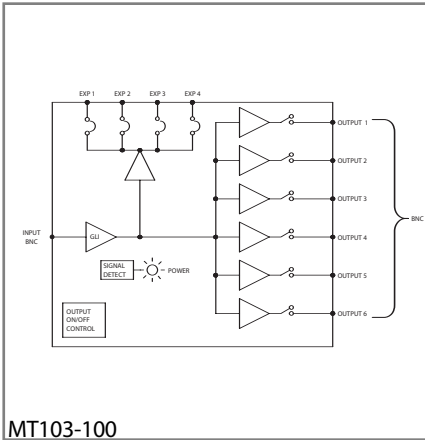
|                              | MT103-100  | MT103-105  | MT103-111  |
|------------------------------|------------|------------|------------|
| <b>Inputs/Outputs</b>        | 1-in 6-out | 1-in 6-out | 1-in 6-out |
| <b>Input Connectors</b>      | BNC female | BNC female | BNC female |
| <b>Output Connectors</b>     | BNC female | BNC female | BNC female |
| <b>Ind. Buffered Outputs</b> | ✓          |            | ✓          |
| <b>Bandwidth</b>             | 350 MHz    | 250 MHz    | 350 MHz    |
| <b>Output On/Off</b>         | ✓          |            |            |
| <b>Signal Detect</b>         | ✓          |            |            |
| <b>GLI</b>                   | ✓          | ✓          | ✓          |
| <b>Expansion</b>             | 4 cards    |            | 4 cards    |
| <b>Slots</b>                 | 1          | 1          | 1          |



## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

## Block Diagrams



## Design Tips

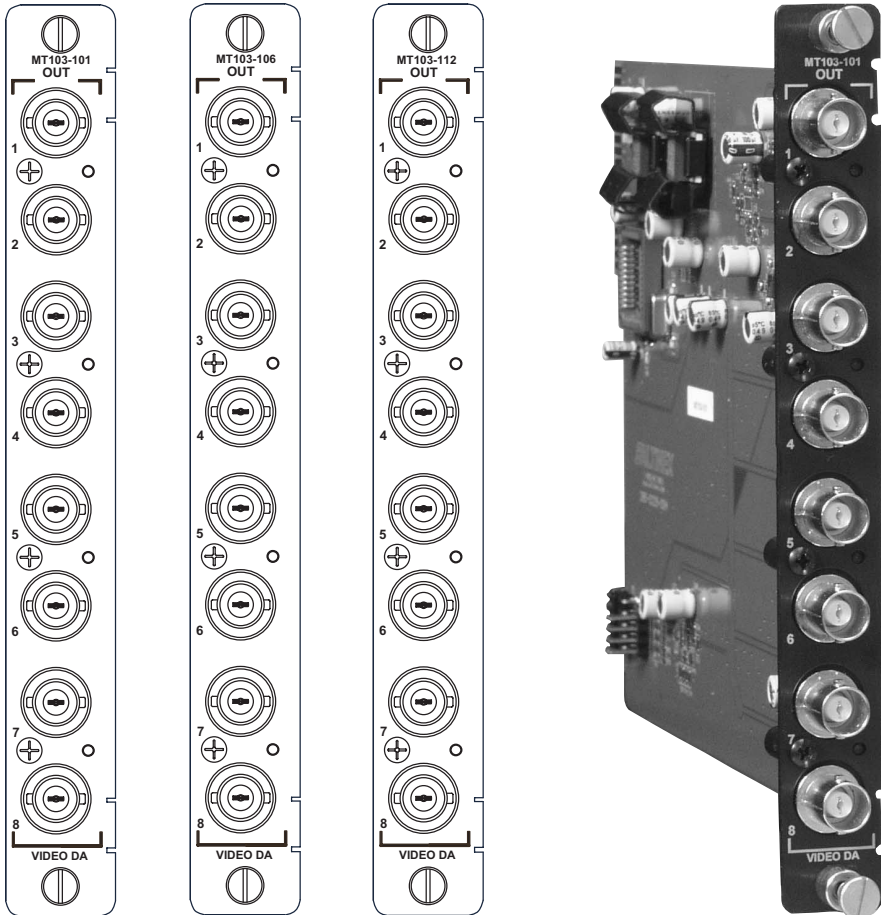
- Economical NTSC, PAL, SECAM, and HDTV (Y, Pb, Pr) signal distribution with MT103-105
- Computer-grade bandwidth (up to QXGA) with MT103-100 and MT103-111
- Use multiple cards side by side to handle S-Video (two cards), component video or RGsB (three cards), RGbS (four cards), and RGbHV (five cards)
- Expand up to 38 outputs on MT103-100 and MT103-111 through internal connection of up to four expansion cards — see **MT103-101**, **MT103-106**, and **MT103-112**



# Video Distribution Amplifier Expansion

## Product Comparison

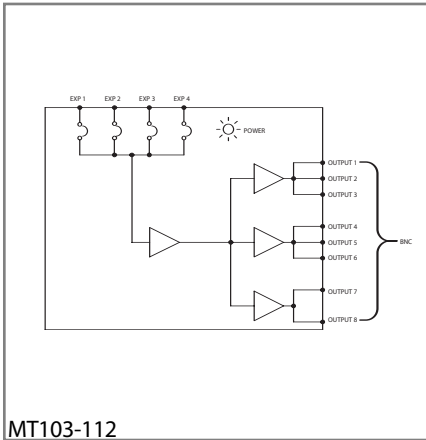
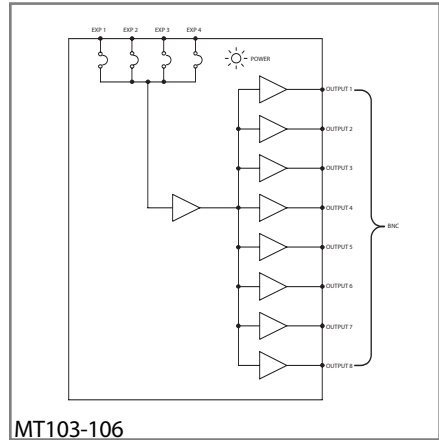
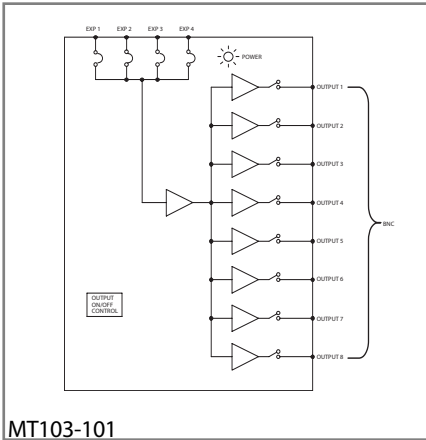
|                       | MT103-101       | MT103-106       | MT103-112       |
|-----------------------|-----------------|-----------------|-----------------|
| Inputs/Outputs        | 8-out expansion | 8-out expansion | 8-out expansion |
| Input Connectors      | internal        | internal        | internal        |
| Output Connectors     | BNC female      | BNC female      | BNC female      |
| Bandwidth             | 350 MHz         | 350 MHz         | 250 MHz         |
| Output On/Off         | ✓               |                 |                 |
| Ind. Buffered Outputs | ✓               | ✓               |                 |
| Slots                 | 1               | 1               | 1               |



## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

## Block Diagrams



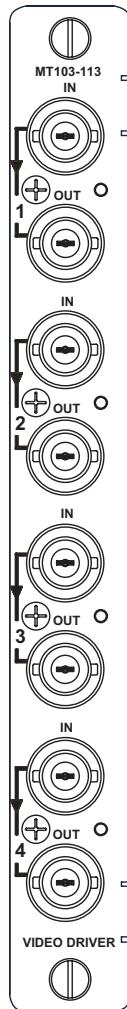
## Design Tips

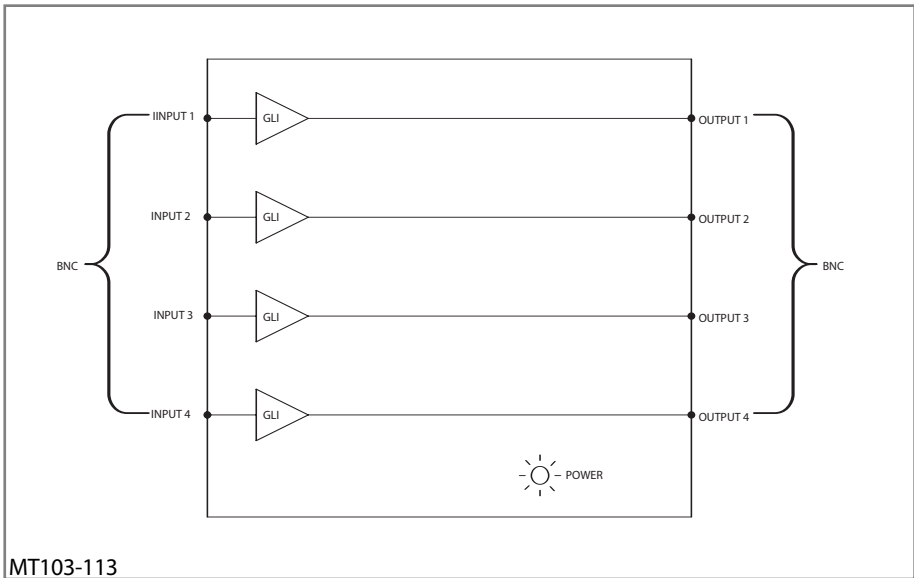
- Economical NTSC, PAL, SECAM and HDTV (Y, Pb, Pr) signal distribution with MT103-112
- Computer-grade bandwidth (up to QXGA), with MT103-101 and MT103-106
- Use multiple cards side by side to handle S-Video (two cards), component video or RGB (three cards), RGBS (four cards), and RGBHV (five cards)
- Normally uses **MT103-100** or **MT103-111** for internal input, but may also be used with video switching expansion cards

# Video Line Driver/GLI

## Product Comparison

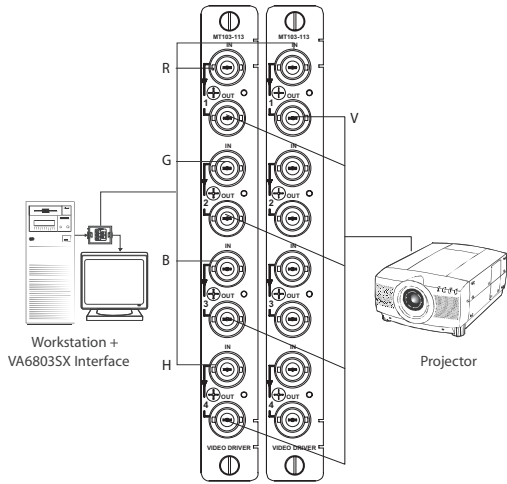
|                          |                                |
|--------------------------|--------------------------------|
| <b>Inputs/Outputs</b>    | <b>MT103-113</b><br>4-in 4-out |
| <b>Input Connectors</b>  | BNC female                     |
| <b>Output Connectors</b> | BNC female                     |
| <b>Bandwidth</b>         | 350 MHz                        |
| <b>GLI</b>               | ✓                              |
| <b>Slots</b>             | 1                              |





**Design Tips**

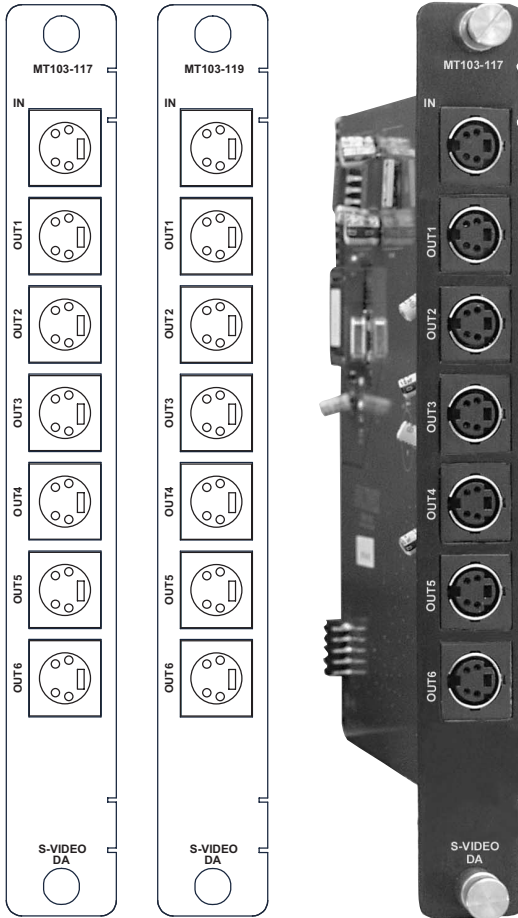
- Use to prevent or remove “hum bars” in video image
- Compatible with NTSC, PAL and SECAM (Composite, S-Video, and HDTV) signals
- To convert 15-pin HD to BNCs use **MS8102CA** (six foot/1.8 meter, 15-pin HD male to five-BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five-BNC female)
- Supports RGBHV, RGBS, and RGsB format signals as well (may require multiple cards)



# S-Video Distribution Amplifiers

## Product Comparison

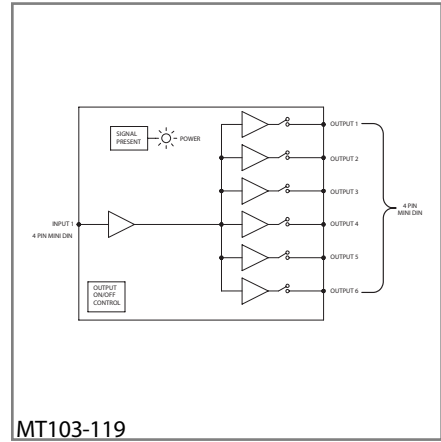
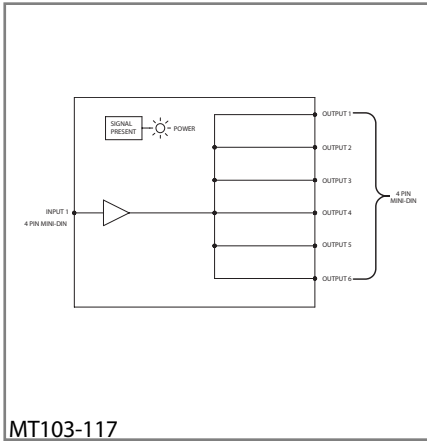
|                              | MT103-117             | MT103-119             |
|------------------------------|-----------------------|-----------------------|
| <b>Inputs/Outputs</b>        | 1-in 6-out            | 1-in 6-out            |
| <b>Input Connectors</b>      | 4-pin mini DIN female | 4-pin mini DIN female |
| <b>Output Connectors</b>     | 4-pin mini DIN female | 4-pin mini DIN female |
| <b>Bandwidth</b>             | 60MHz                 | 60 MHz                |
| <b>Ind. Buffered Outputs</b> |                       | ✓                     |
| <b>Output On/Off</b>         |                       | ✓                     |
| <b>Slots</b>                 | 1                     | 1                     |



## RS-232 Control Commands

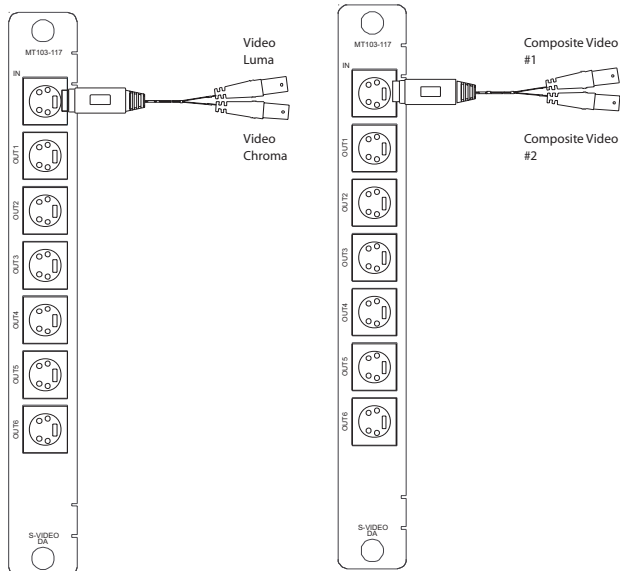
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi]

## Block Diagrams



## Design Tips

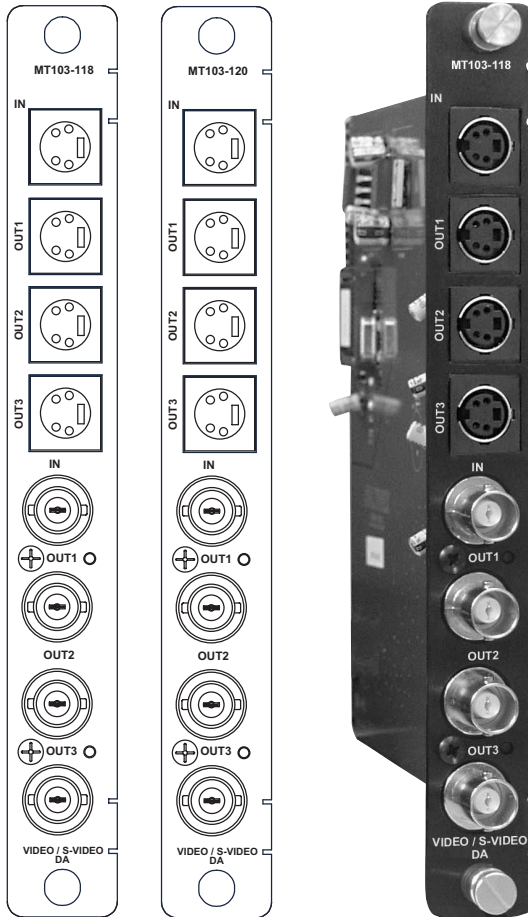
- Use the MT103-117 for high-quality S-Video distribution
- Use the MT103-119 for applications requiring output on-off control
- Can also be used as dual composite distribution amplifier with 4-pin mini-DIN to BNC adapter
- Adapt S-Video connectors to female BNC ends using **ALTINEX MS8135MG** (12 inch/30.5 centimeter, four-pin mini DIN male to two-BNC female)



# Dual Video/S-Video Distribution Amplifiers

## Product Comparison

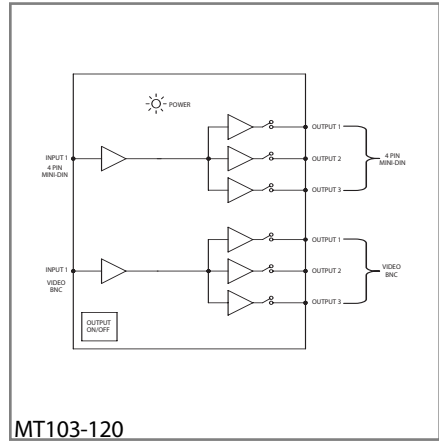
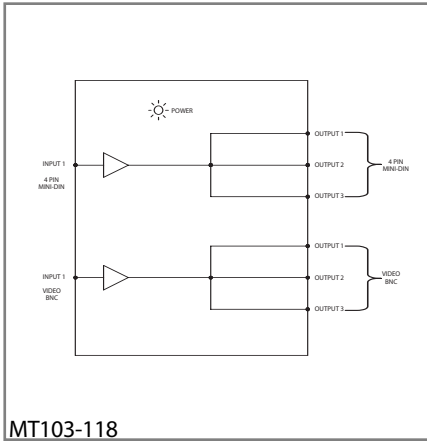
|                              | MT103-118                          | MT103-120                          |
|------------------------------|------------------------------------|------------------------------------|
| <b>Inputs/Outputs</b>        | Dual separate 1-in 3-out           | Dual separate 1-in 3-out           |
| <b>Input Connectors</b>      | BNC female & 4-pin mini DIN female | BNC female & 4-pin mini DIN female |
| <b>Output Connectors</b>     | BNC female & 4-pin mini DIN female | BNC female & 4-pin mini DIN female |
| <b>Bandwidth</b>             | 60 MHz                             | 60 MHz                             |
| <b>Ind. Buffered Outputs</b> |                                    | ✓                                  |
| <b>Output On/Off</b>         |                                    | ✓                                  |
| <b>Slots</b>                 | 1                                  | 1                                  |



## RS-232 Control Commands

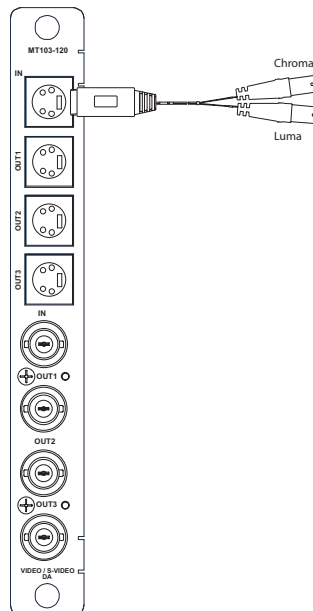
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

## Block Diagrams



## Design Tips

- Use the MT103-118 for high-quality composite and S-Video distribution
- Use the MT103-120 for applications requiring output on-off control
- Adapt S-Video connectors to female BNC ends using **ALTINEX MS8135MG** (12 inch/30.5 centimeter, four-pin mini DIN male to two-BNC female)

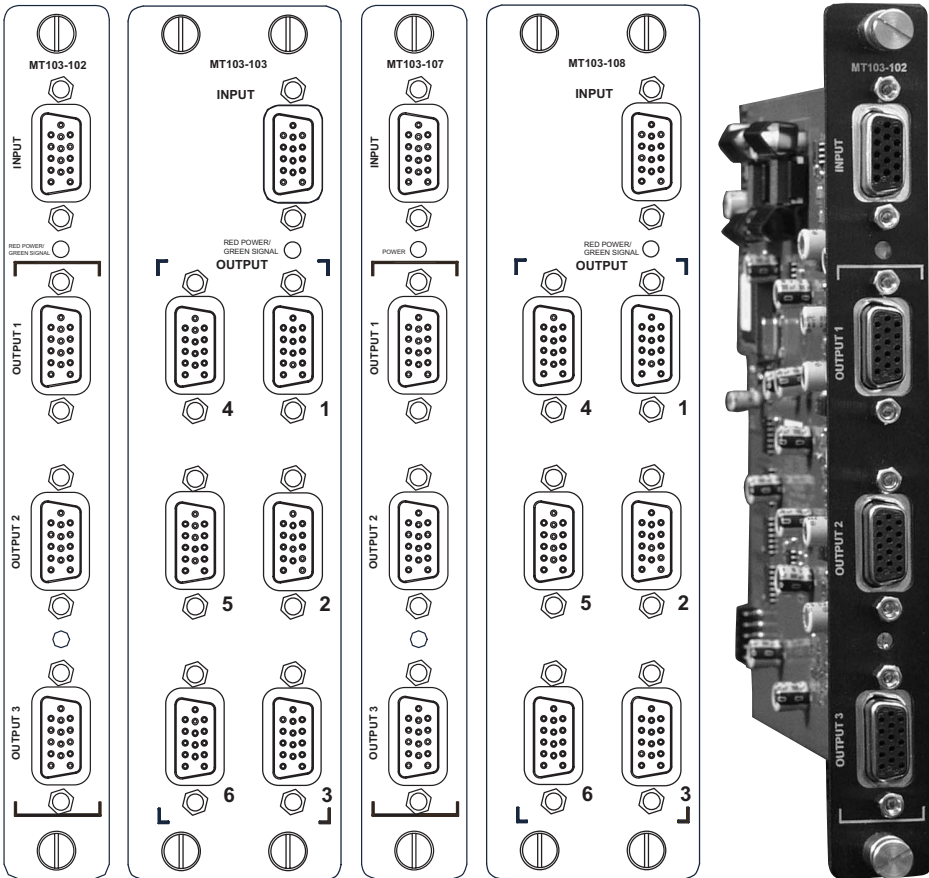




# VGA-Type Distribution Amplifiers

## Product Comparison

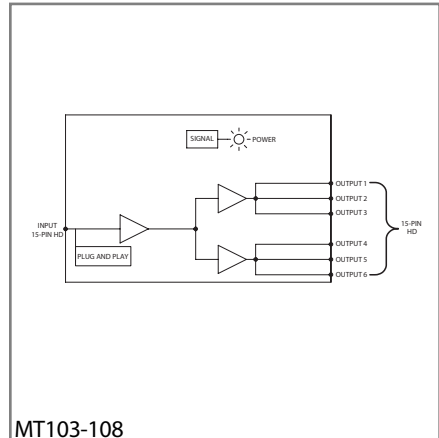
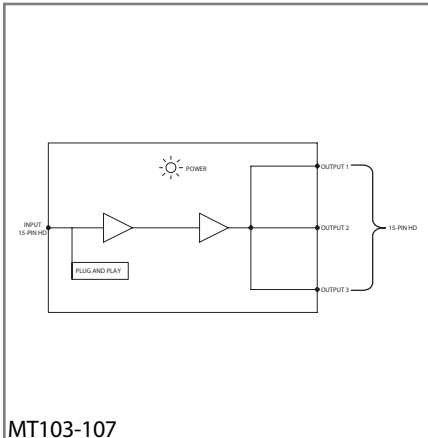
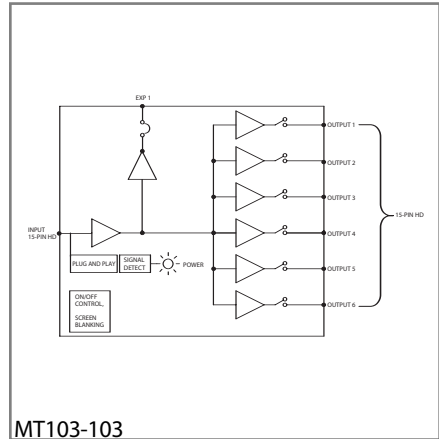
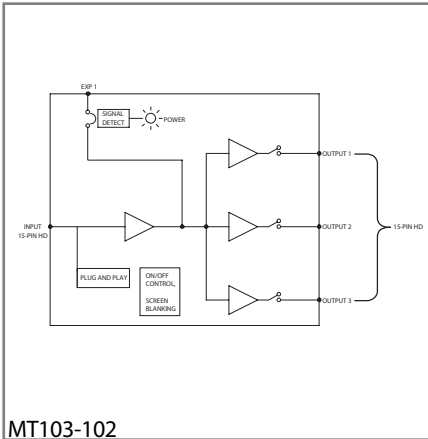
|                              | MT103-102        | MT103-103        | MT103-107        | MT103-108        |
|------------------------------|------------------|------------------|------------------|------------------|
| <b>Inputs/Outputs</b>        | 1-in 3-out       | 1-in 6-out       | 1-in 3-out       | 1-in 6-Out       |
| <b>Input Connectors</b>      | 15-pin HD female | 15-pin HD female | 15-pin HD female | 15-pin HD female |
| <b>Output Connectors</b>     | 15-pin HD female | 15-pin HD female | 15-pin HD female | 15-pin HD female |
| <b>Bandwidth</b>             | 350 MHz          | 350 MHz          | 250 MHz          | 250 MHz          |
| <b>Output On/Off</b>         | ✓                | ✓                |                  |                  |
| <b>Signal Detect</b>         | ✓                | ✓                |                  | ✓                |
| <b>Screen Blanking</b>       | ✓                | ✓                |                  |                  |
| <b>Ind. Buffered Outputs</b> | ✓                | ✓                |                  |                  |
| <b>Expansion</b>             | 1 card           | 1 card           |                  |                  |
| <b>Slots</b>                 | 1                | 2                | 1                | 2                |



## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

## Block Diagrams



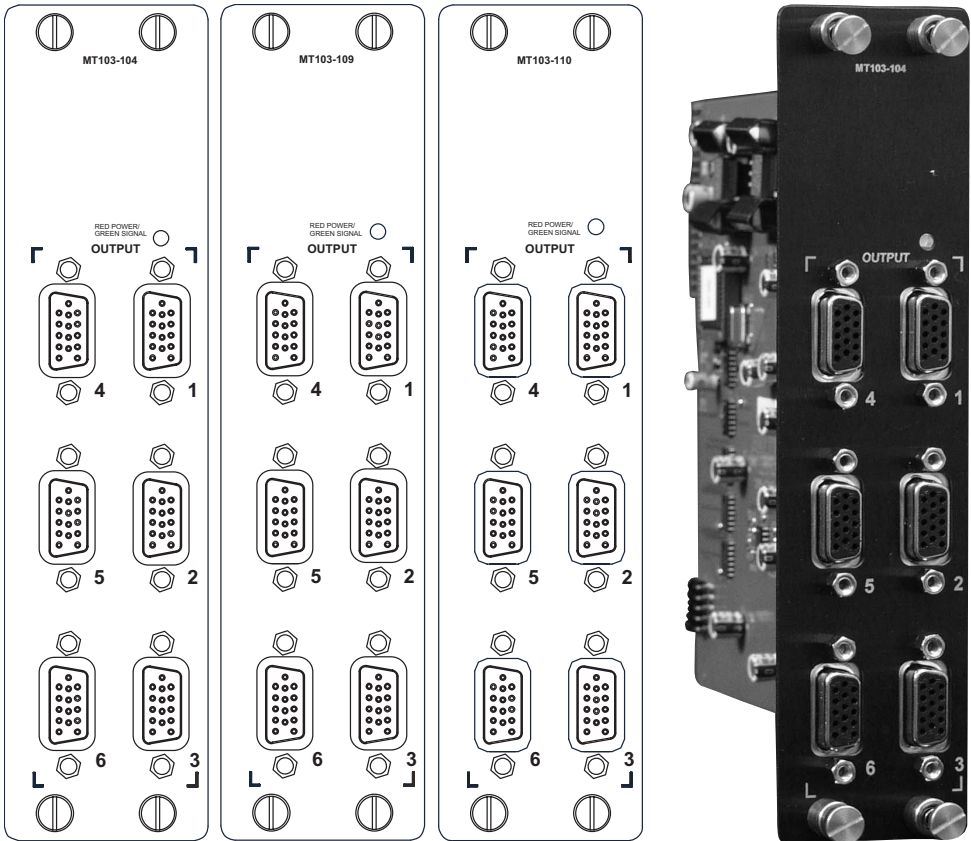
## Design Tips

- Economical, high-quality VGA through UXGA distribution with MT103-107 (three-out) and MT103-108 (six-out)
- High-bandwidth (VGA through QXGA) distribution, expansion, screen blanking, and output on-off control with MT103-102 (three-out) and MT103-103 (six-out)
- Convert 15-pin HD connectors to BNCs using ALTINEX **MS8102CA** (six foot, 15-pin HD male to five-BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five-BNC female) cables
- Expand total available outputs using VGA-Type Distribution Amplifier Expansion Cards (**MT103-104**, **MT103-109**, **MT103-110**; see next page for more info)
- True VESA Plug and Play on inputs for graphics-mode compatibility

# VGA-Type Distribution Amp Expansion

## Product Comparison

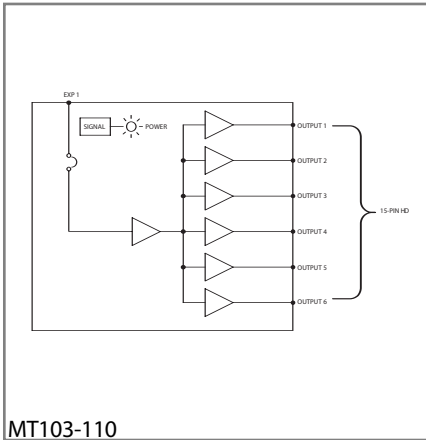
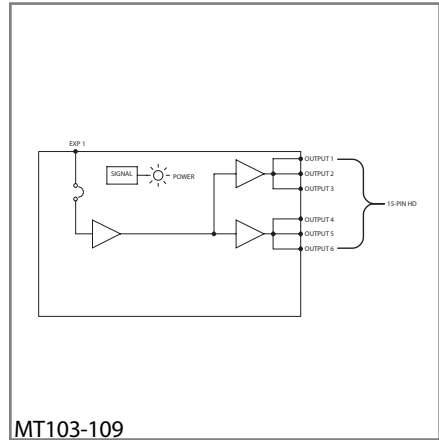
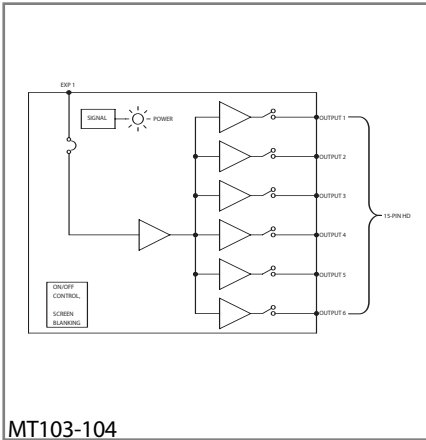
|                       | MT103-104         | MT103-109         | MT103-110         |
|-----------------------|-------------------|-------------------|-------------------|
| Inputs/Outputs        | 6-out (expansion) | 6-out (expansion) | 6-out (expansion) |
| Input Connectors      | internal          | internal          | internal          |
| Output Connectors     | 15-pin HD female  | 15-pin HD female  | 15-pin HD female  |
| Bandwidth             | 350 MHz           | 250 MHz           | 350 MHz           |
| Output On/Off         | ✓                 |                   |                   |
| Signal Detect         | ✓                 | ✓                 | ✓                 |
| Screen Blanking       | ✓                 |                   |                   |
| Ind. Buffered Outputs | ✓                 |                   | ✓                 |
| Slots                 | 2                 | 2                 | 2                 |



## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

## Block Diagrams



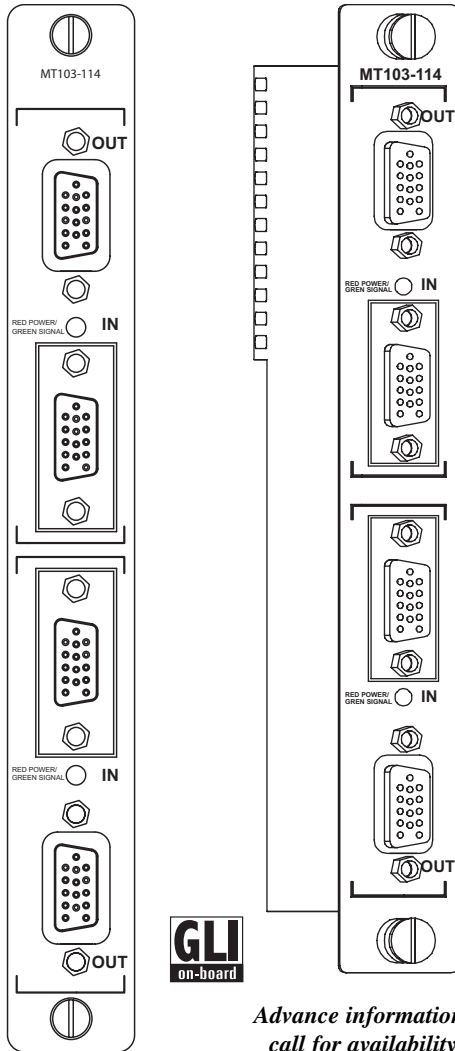
## Design Tips

- Must be used together with main VGA Distribution Amplifier card offering expansion capability (see **MT103-102** and **MT103-103** on previous page)
- Expansion accomplished with internal cable bus (single expansion cable included with expansion card)
- Only one VGA Expansion Card may be used per main card
- Economical, high-quality VGA through UXGA distribution with MT103-109
- High-bandwidth (VGA through QXGA) distribution with MT103-110
- High-bandwidth (QXGA) distribution, screen blanking, and output on-off control with MT103-104

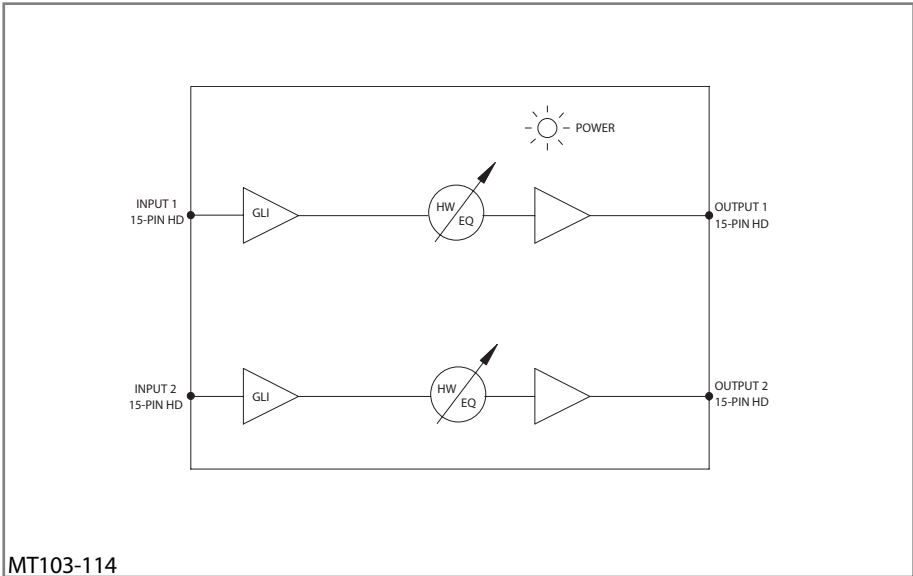
# VGA-Type Line Driver/GLI

## Product Comparison

|                          |                           |
|--------------------------|---------------------------|
| <b>Inputs/Outputs</b>    | MT103-114                 |
| <b>Input Connectors</b>  | 2-in 2-out + equalization |
| <b>Output Connectors</b> | 15-pin HD female          |
| <b>Output Connectors</b> | 15-pin HD female          |
| <b>Bandwidth</b>         | 350 MHz                   |
| <b>Slots</b>             | 1                         |

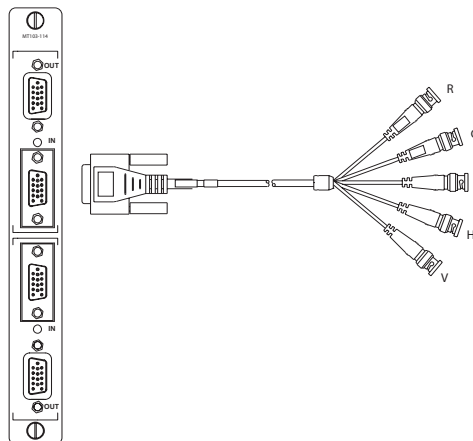


*Advance information;  
call for availability*



**Design Tips**

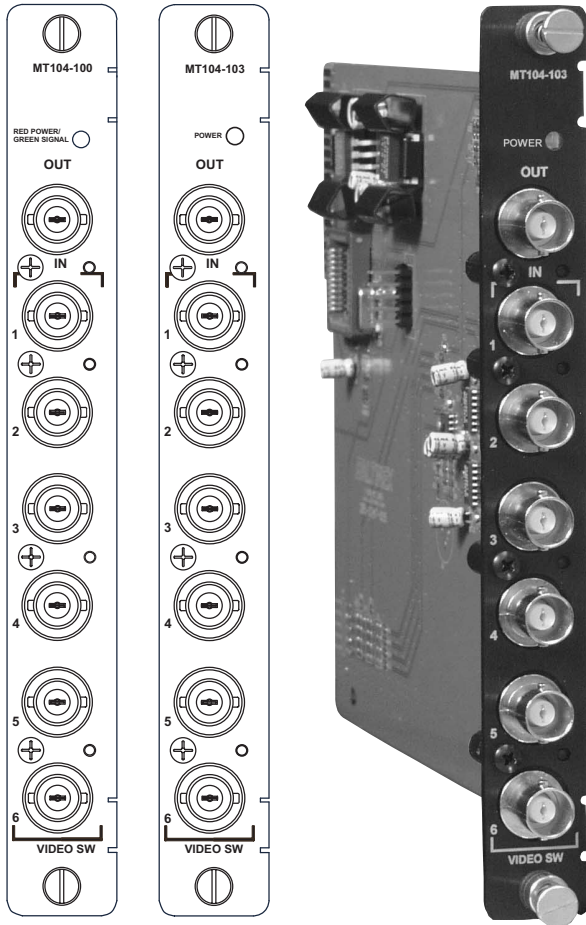
- Use to prevent and remove “hum bars” in computer video image
- Equalization compensates for cable attenuation over 25–300 ft. (7.6–91m) cable runs
- Compatible with VGA through QXGA signals
- Also supports RGBHV, RGBS, and RGB format signals (with proper cable adapter)
- To convert 15-pin HD to BNCs use **MS8102CA** (six foot/1.8 meter, 15-pin HD male to five-BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five-BNC female)



# Video Switchers

## Product Comparison

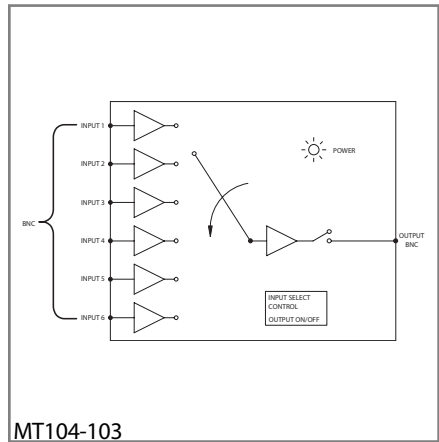
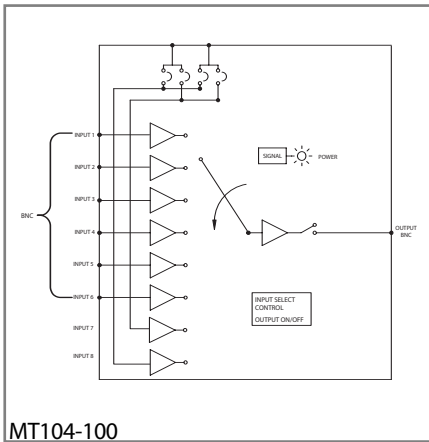
|                   | MT104-100  | MT104-103  |
|-------------------|------------|------------|
| Inputs/Outputs    | 6-in 1-out | 6-in 1-out |
| Input Connectors  | BNC female | BNC female |
| Output Connectors | BNC female | BNC female |
| Bandwidth         | 350 MHz    | 350 MHz    |
| Output On/Off     | ✓          | ✓          |
| Signal Detect     | ✓          |            |
| Expansion         | 2 cards    |            |
| Slots             | 1          | 1          |



## RS-232 Control Commands

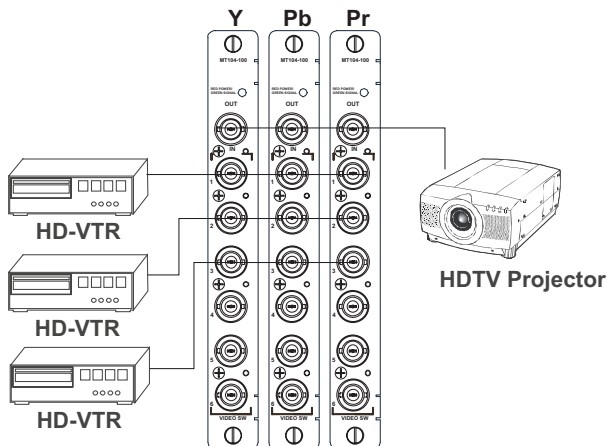
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi]

**Block Diagrams**



**Design Tips**

- Designed for composite video switching and (using multiple cards installed side-by-side) can switch S-Video (two cards), component, HDTV and RGB video (three cards), RGBS (four cards) and RGBHV (five cards)
- Use MT104-100 to expand up to 22 inputs through internal connection of up to two expansion cards — see **MT104-101**
- Output can be disabled, allowing multiple outputs to be looped for even further expansion
- VIS (Vertical Interval Switching — eliminates switching “glitch”) available by special order
- Switching is controlled via RS-232 commands through the MultiTasker enclosure, or through push-button front panel

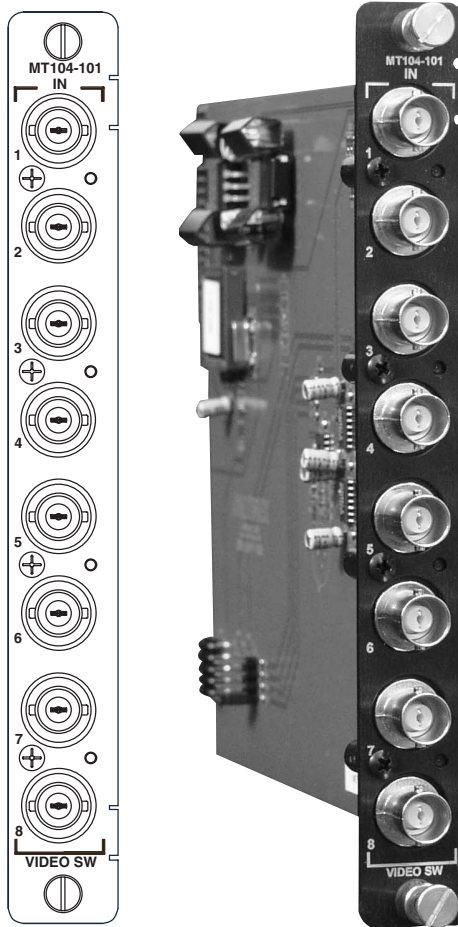




# Video Switcher Expansion

## Product Comparison

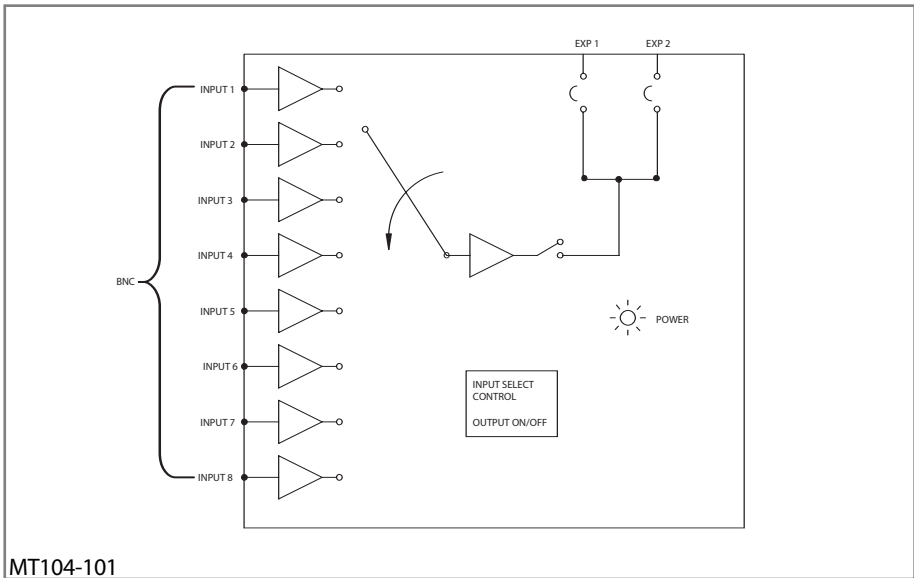
|                          |                  |
|--------------------------|------------------|
|                          | <b>MT104-101</b> |
| <b>Inputs/Outputs</b>    | 8-in expansion   |
| <b>Input Connectors</b>  | BNC female       |
| <b>Output Connectors</b> | internal         |
| <b>Bandwidth</b>         | 350 MHz          |
| <b>Output On/Off</b>     | ✓                |
| <b>Slots</b>             | 1                |



## RS-232 Control Commands

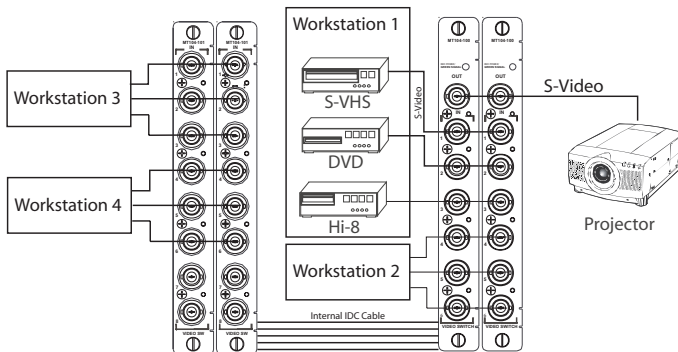
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi]

**Block Diagrams**



**Design Tips**

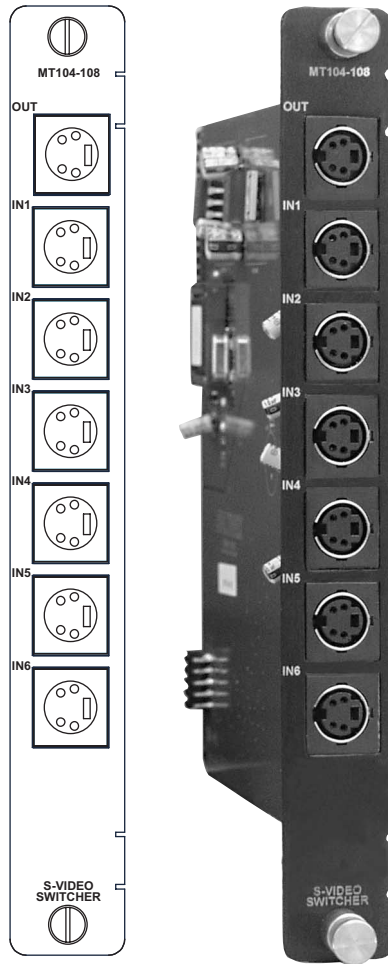
- Must be used together with main Video Switcher Card (**MT104-100**) offering expansion capability
- Expansion accomplished with internal cable bus (single expansion cable included with expansion card)
- Switching controlled via RS-232 commands or front panel control through the MultiTasker enclosure
- Designed for composite video switching, and (using multiple cards installed side-by-side) can switch S-Video (two cards), component, HDTV and RGsB video (three cards), RGbS (four cards) and RGBHV (five cards)



# S-Video Switcher

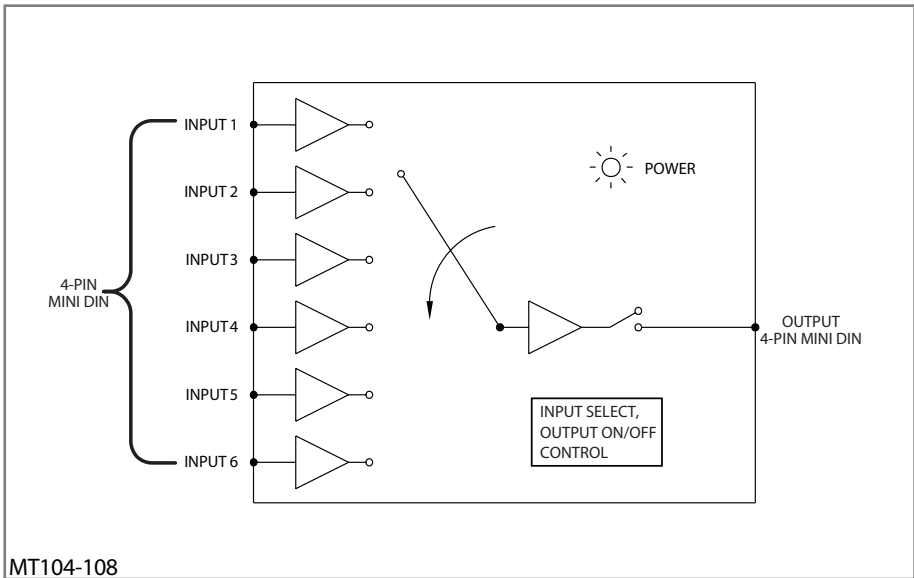
## Product Comparison

|                          |                       |
|--------------------------|-----------------------|
|                          | <b>MT104-108</b>      |
| <b>Inputs/Outputs</b>    | 6-in 1-out            |
| <b>Input Connectors</b>  | 4-pin mini DIN female |
| <b>Output Connectors</b> | 4-pin mini DIN female |
| <b>Bandwidth</b>         | 60 MHz                |
| <b>Output On/Off</b>     | ✓                     |
| <b>Slots</b>             | 1                     |



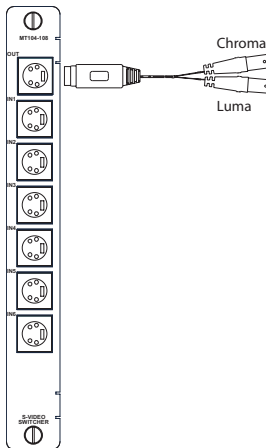
## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]



**Design Tips**

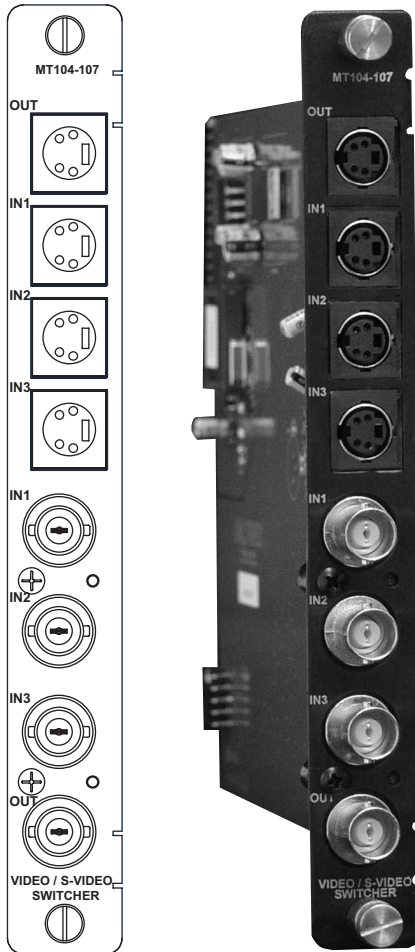
- Compatible with NTSC, PAL and SECAM
- Switching is controlled via RS-232 commands or front panel control through the Multi-Tasker enclosure
- Auto-switching option available by custom order
- Adapt S-Video connectors to BNC ends using **ALTINEX MS8135MG** (12 inch/30.5 centimeter, 4-pin mini-DIN male to two-BNC female)



# Dual Video/S-Video Switcher

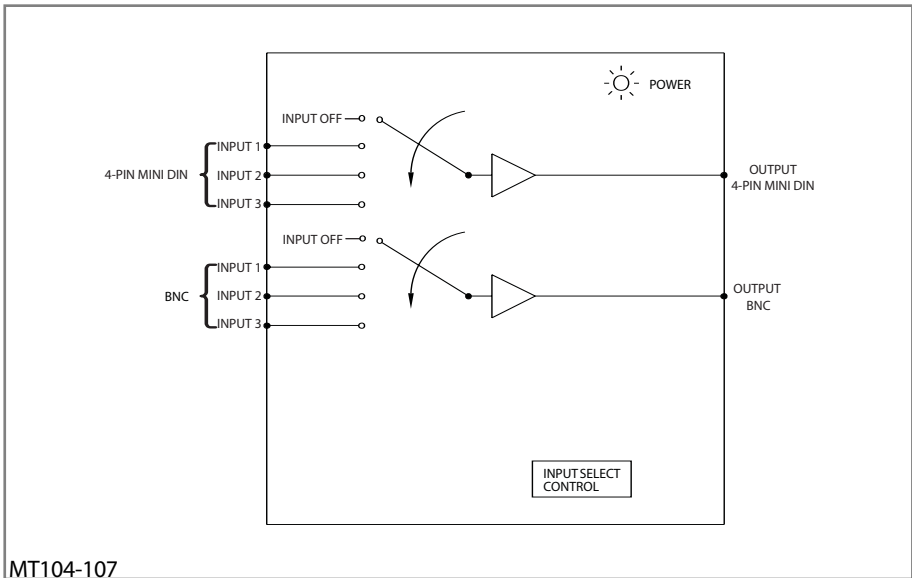
## Product Comparison

|                          |                                  |
|--------------------------|----------------------------------|
|                          | <b>MT104-107</b>                 |
| <b>Inputs/Outputs</b>    | Dual separate 3-in 1-out         |
| <b>Input Connectors</b>  | BNC female/4-pin mini DIN female |
| <b>Output Connectors</b> | BNC female/4-pin mini DIN female |
| <b>Bandwidth</b>         | 60 MHz                           |
| <b>Input Off</b>         | ✓                                |
| <b>Slots</b>             | 1                                |



## RS-232 Control Commands

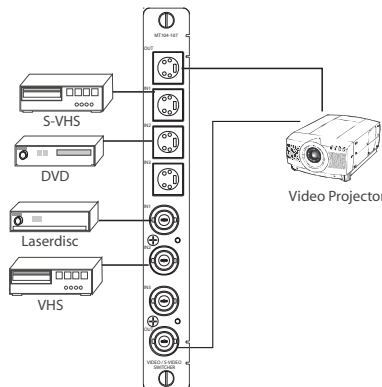
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]



MT104-107

**Design Tips**

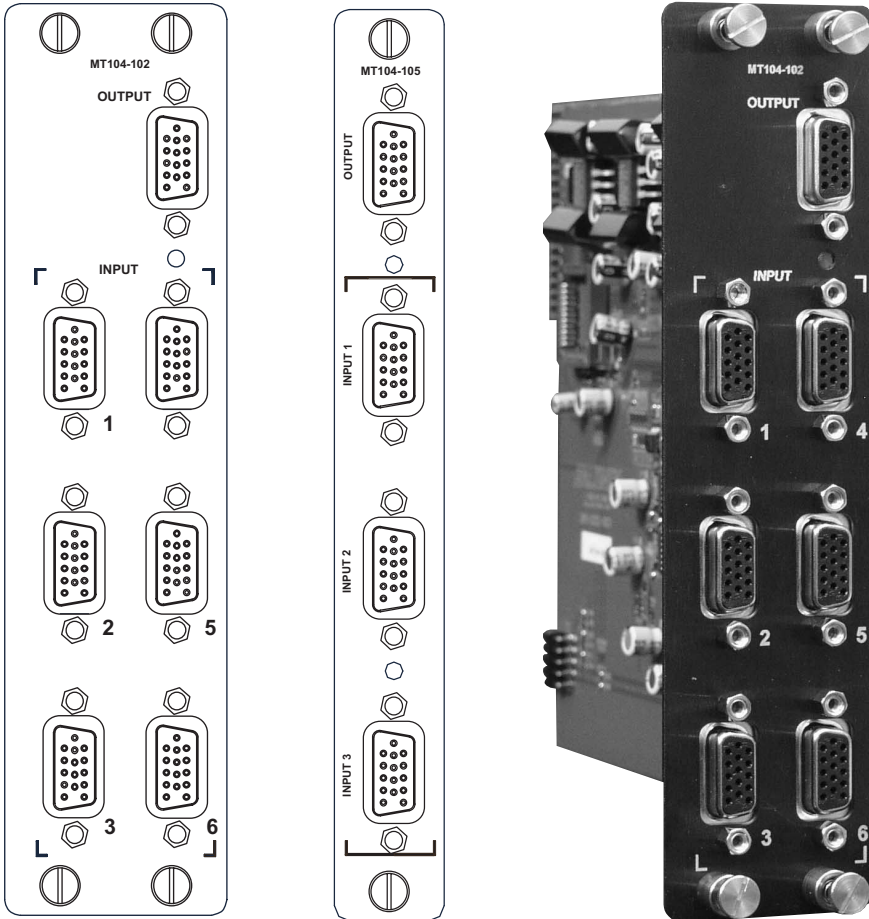
- Compatible with NTSC, PAL and SECAM
- Independent composite video and S-Video channel switching
- Auto-switching option available by custom order
- Switching is controlled via RS-232 commands or front panel control through the Multi-Tasker enclosure
- Adapt S-Video connectors to BNC ends using **ALTINEX MS8135MG** (12 inch/30.5 centimeter, 4-pin mini DIN male to two BNC female)



# VGA-Type Switchers

## Product Comparison

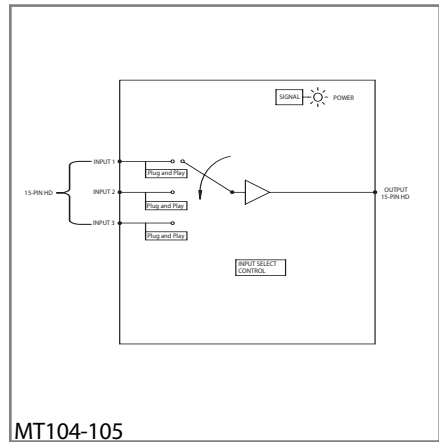
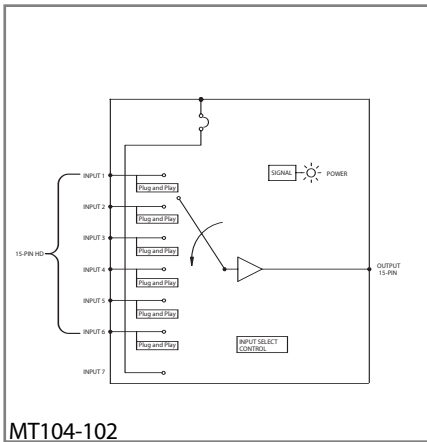
|                   | MT104-102        | MT104-105        |
|-------------------|------------------|------------------|
| Inputs/Outputs    | 6-in 1-out       | 3-in 1-out       |
| Input Connectors  | 15-pin HD female | 15-pin HD female |
| Output Connectors | 15-pin HD female | 15-pin HD female |
| Bandwidth         | 350 MHz          | 350 MHz          |
| Signal Detect     | ✓                | ✓                |
| Sync Delay        | ✓                | ✓                |
| Expansion         | 1 card           |                  |
| Slots             | 2                | 1                |



## RS-232 Control Commands

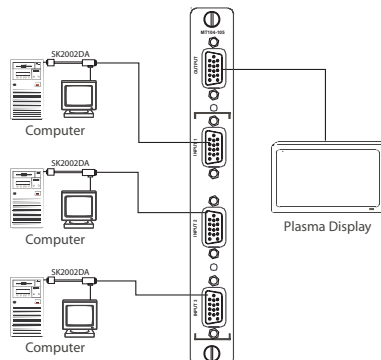
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

**Block Diagrams**



**Design Tips**

- Supports VGA through QXGA throughput
- Use MT104-102 if input expansion is required. The MT104-102 is expandable by one card via an internal cable — see **MT104-104** and **MT104-106** VGA-Type Switcher Expansion Cards
- Also capable of switching RGSB, RGBS and RGBHV formats (requires cable adapters)
- Auto-switching option available by custom order
- Convert 15-pin HD connectors to BNCs using **ALTINEX MS8102CA** (six foot/1.8 meter, 15-pin HD male to five-BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five-BNC female) cables
- Switching is controlled via RS-232 commands or front panel control through the Multi-Tasker enclosure

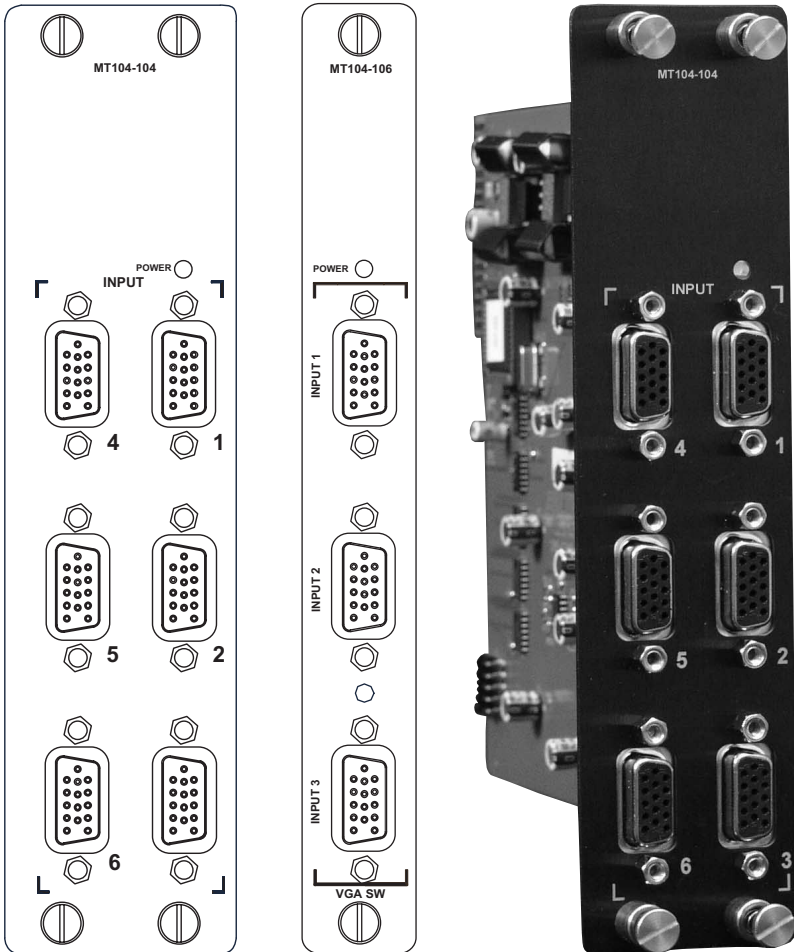




# VGA-Type Switcher Expansion

## Product Comparison

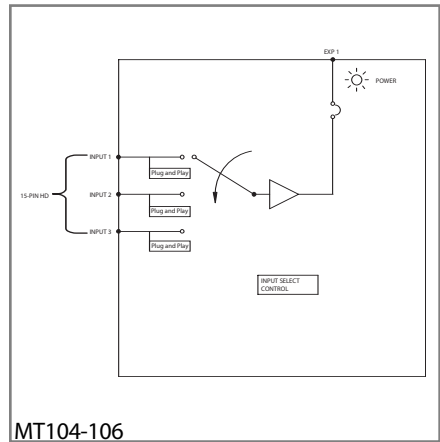
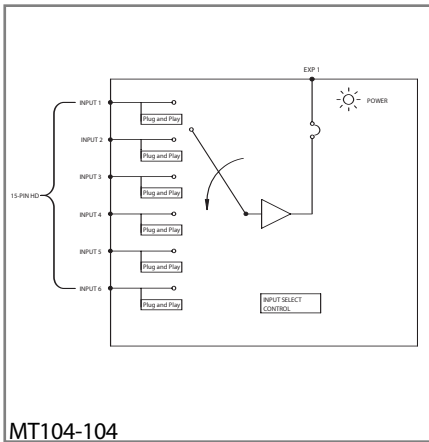
|                          |                  |                  |
|--------------------------|------------------|------------------|
|                          | <b>MT104-104</b> | <b>MT104-106</b> |
| <b>Inputs/Outputs</b>    | 6-in (expansion) | 3-in (expansion) |
| <b>Input Connectors</b>  | 15-pin HD female | 15-pin HD female |
| <b>Output Connectors</b> | internal         | internal         |
| <b>Bandwidth</b>         | 350 MHz          | 350 MHz          |
| <b>Sync Delay</b>        | ✓                | ✓                |
| <b>Expansion</b>         | 1 card           | 1 card           |
| <b>Slots</b>             | 2                | 1                |



## RS-232 Control Commands

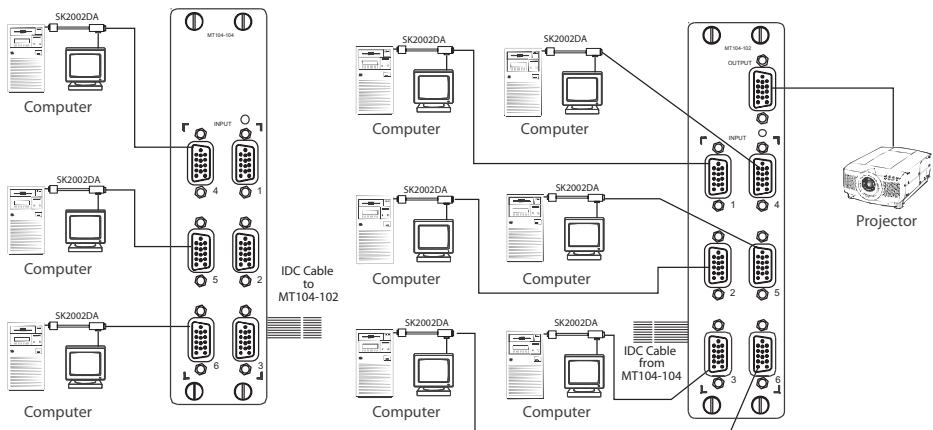
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi]

## Block Diagrams



## Design Tips

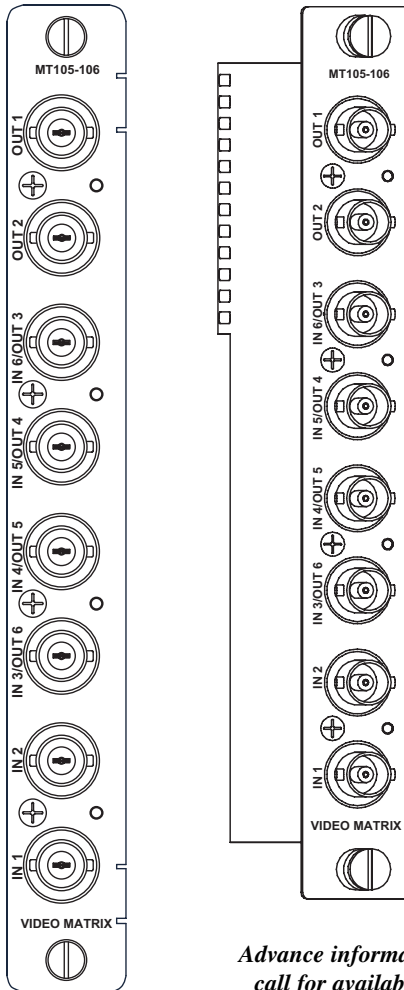
- Supports VGA through QXGA throughput
- Connects to VGA-type switcher cards via internal cable — see **MT104-102**
- Auto-switching option available by custom order
- Convert 15-pin HD connectors to BNCs using **ALTINEX MS8102CA** (six foot/1.8 meter, 15-pin HD male to five-BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five-BNC female) cables
- Switching is controlled via RS-232 commands or front panel control through the Multi-Tasker enclosure



# Small Video Matrix Switchers

## Product Comparison

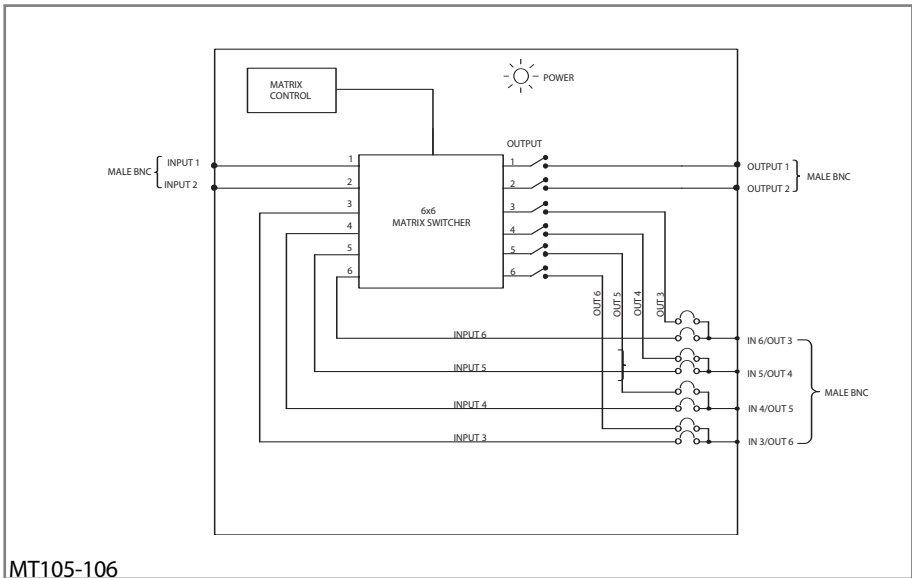
|                   |  |
|-------------------|--|
| Inputs/Outputs    | <b>MT105-106</b><br>2 x 6, 3 x 5, 4 x 4, 5 x 3, or 6 x 2 |
| Input Connectors  | BNC female   |
| Output Connectors | BNC female   |
| Bandwidth         | 200 MHz  |
| Slots             | 1  |



*Advance information;  
call for availability*

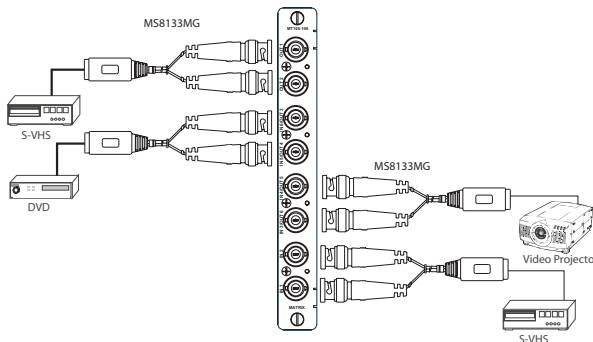
## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi], [IxOyCnUi]



**Design Tips**

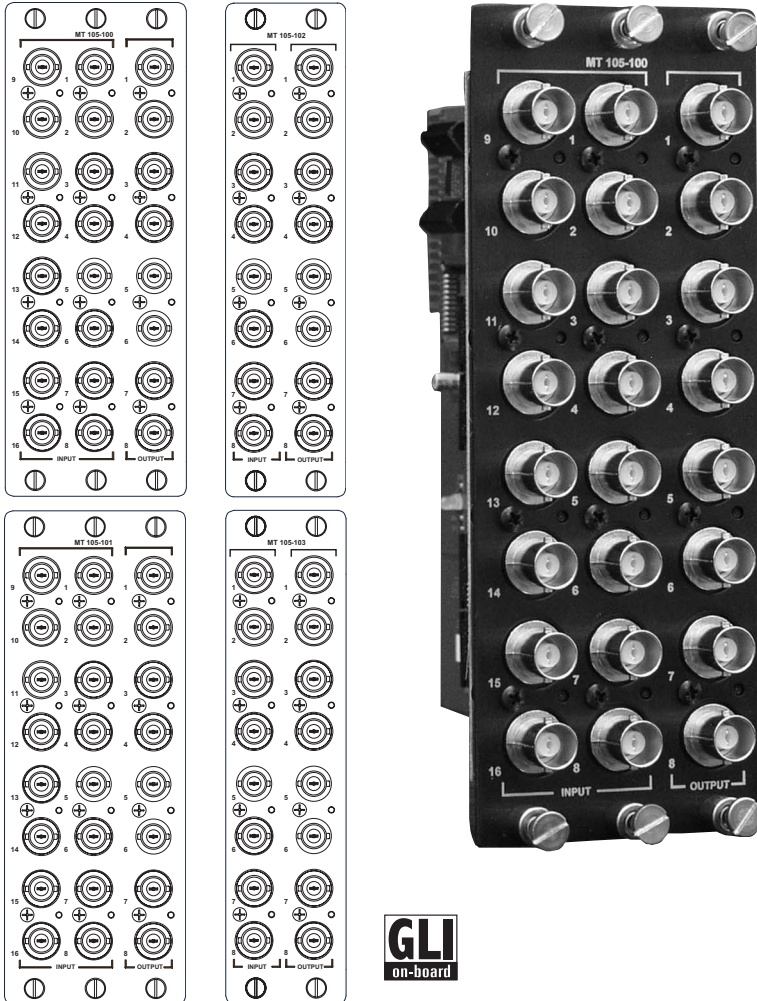
- Use internal jumpers to set up for use as 2 x 6, 3 x 5, 4 x 4, 5 x 3, or 6 x 2 matrix
- Use multiple cards for multi-signal formats, i.e., two cards for S-Video, three for RGB or component, five for RGBHV
- May be used as 1 x 3, 2 x 2 or 3x1 S-Video matrix using 2 BNCs per source (chroma/luma)
- Matrix switching is controlled via RS-232 commands through the MultiTasker enclosure, or front panel control with a push-button front panel
- For S-Video sources, adapt two BNCs to a four-pin mini-DIN using **ALTINEX MS8132MG** (12 inch/30.5 cm, four-pin mini-DIN male to two-BNC male) or **ALTINEX MS8133MG** (12 inch/30.5 cm, four-pin mini-DIN female to two-BNC male)



# Mid-Size Video Matrix Switchers

## Product Comparison

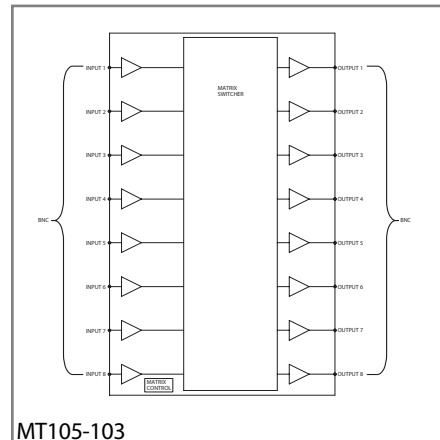
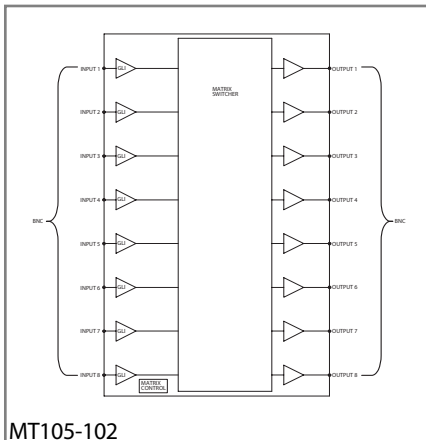
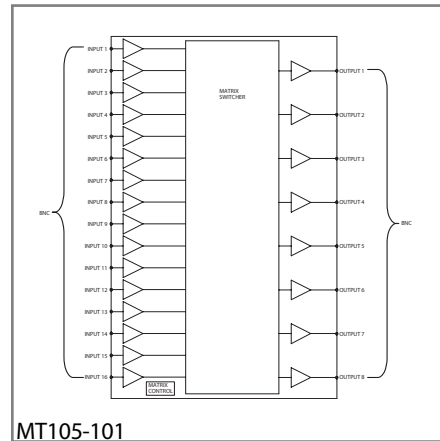
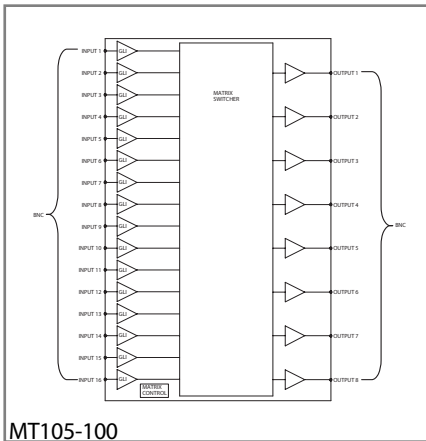
|                          | MT105-100     | MT105-101     | MT105-102    | MT105-103    |
|--------------------------|---------------|---------------|--------------|--------------|
| <b>Inputs/Outputs</b>    | 16 x 8 matrix | 16 x 8 matrix | 8 x 8 matrix | 8 x 8 Matrix |
| <b>Input Connectors</b>  | BNC female    | BNC female    | BNC female   | BNC female   |
| <b>Output Connectors</b> | BNC female    | BNC female    | BNC female   | BNC female   |
| <b>Bandwidth</b>         | 350 MHz       | 200 MHz       | 350 MHz      | 200 MHz      |
| <b>GLI</b>               | ✓             |               | ✓            |              |
| <b>Slots</b>             | 3             | 3             | 2            | 2            |



## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi], [IxOyCnUi]

## Block Diagrams



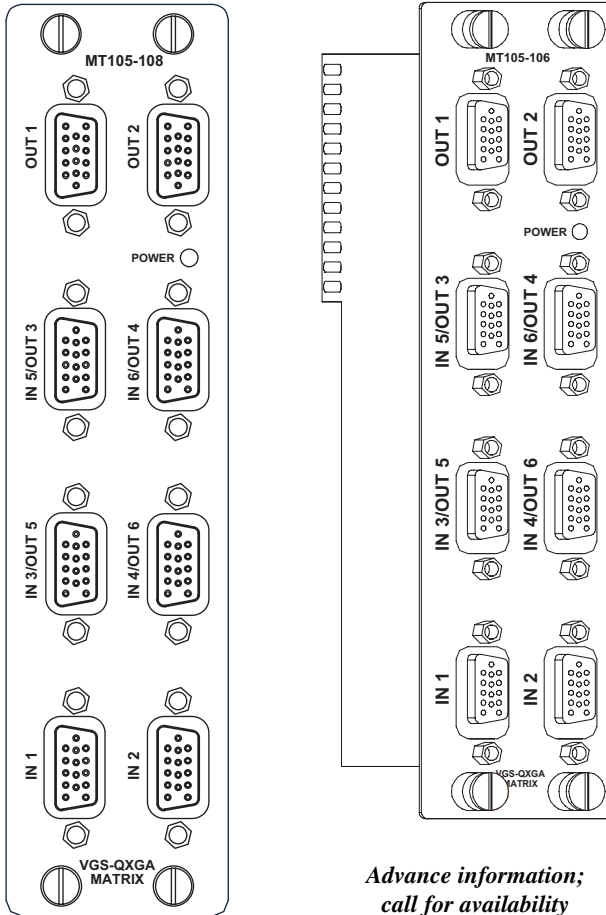
## Design Tips

- Support composite, S-Video, component, HDTV, RGB, RGBS, and RGBHV switching up to UXGA resolutions
- MT105-100 and MT105-102 have GLI (ground loop protection), support up to QXGA resolutions
- Use multiple cards for multi-signal formats, i.e., two cards for S-Video, three for RGB or component, five for RGBHV
- Single card inputs can be “ganged” to support multi-signal formats, i.e., 16 x 8 supports 8 x 4 S-Video matrix, 5 x 2 HDTV-RGB, or 4 x 2 RGBS matrix
- Matrix switching is controlled via RS-232 commands through the MultiTasker enclosure, or front panel control with a push-button front panel

# Small VGA-Type Matrix Switchers

## Product Comparison

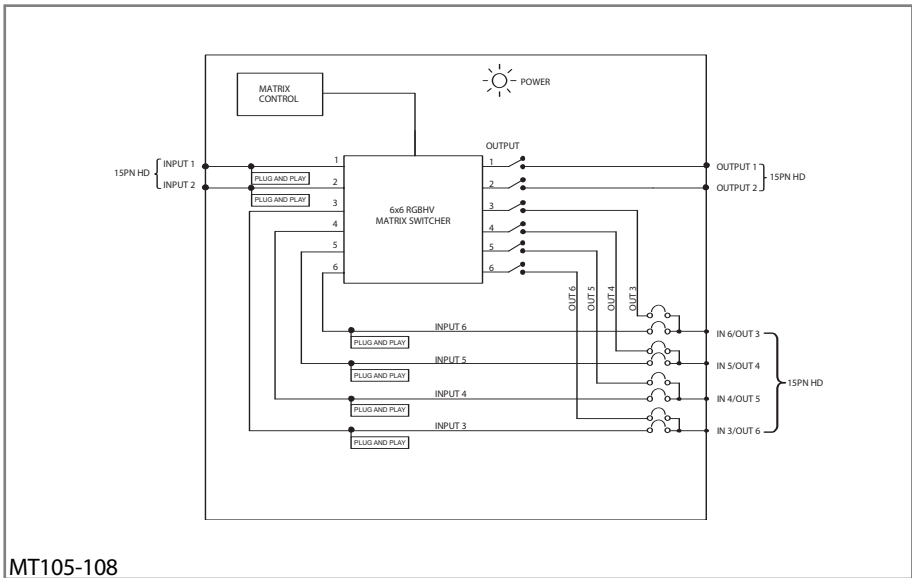
|                          |                                      |
|--------------------------|--------------------------------------|
|                          | <b>MT105-108</b>                     |
| <b>Inputs/Outputs</b>    | 2 x 6, 3 x 5, 4 x 4, 5 x 3, or 6 x 2 |
| <b>Input Connectors</b>  | (4) 15-pin HD                        |
| <b>Output Connectors</b> | (4) 15-pin HD                        |
| <b>Bandwidth</b>         | 250 MHz                              |
| <b>Sync Delay</b>        | ✓                                    |
| <b>Screen Blanking</b>   | ✓                                    |
| <b>Slots</b>             | 2                                    |



*Advance information;  
call for availability*

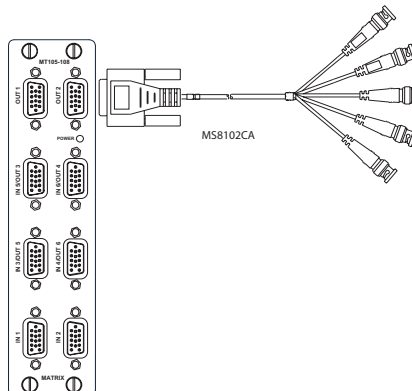
## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi], [IxOyCnUi]



**Design Tips**

- Supports VGA to UXGA throughput
- Use internal jumpers to set up for use as 2 x 6, 3 x 5, 4 x 4, 5 x 3, or 6 x 2 matrix
- Can also switch component video, RGsB, RGBS and RGBHV signals with adapter cables
- Matrix switching is controlled via RS-232 commands through the MultiTasker enclosure, or front panel control with a push-button front panel
- Convert 15-pin HD connectors to BNCs using ALTINEX **MS8102CA** (six foot/1.8 meter, 15-pin HD male to five-BNC male or **MS8106CA** (six foot, 15-pin HD male to five-BNC female) cables

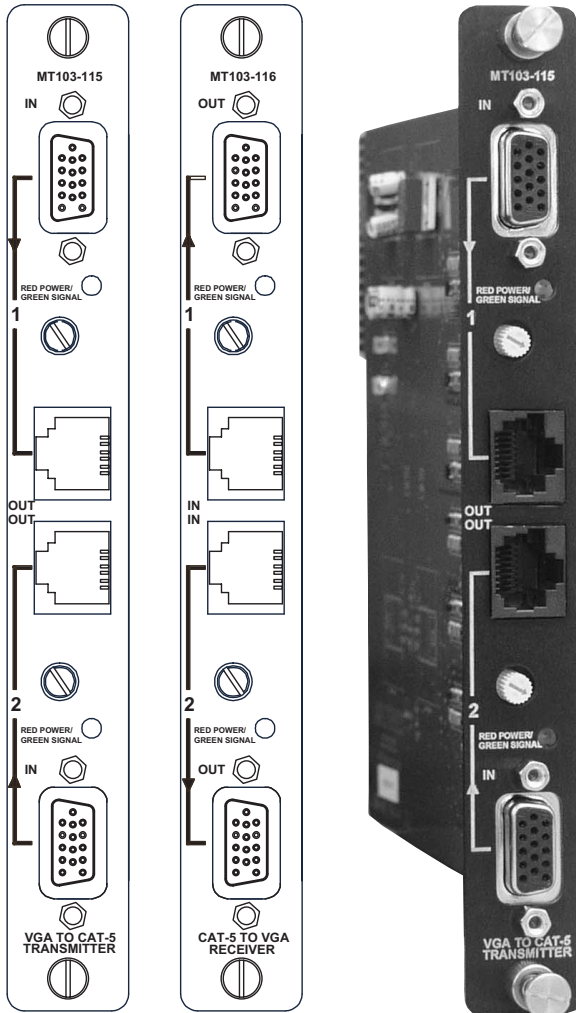




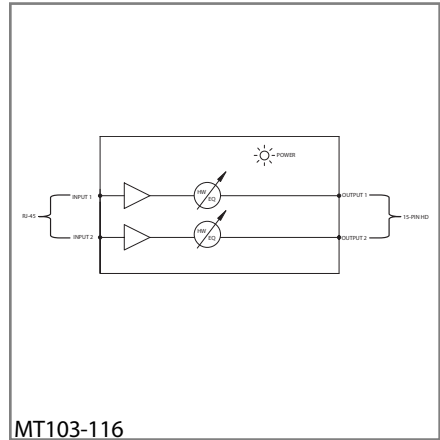
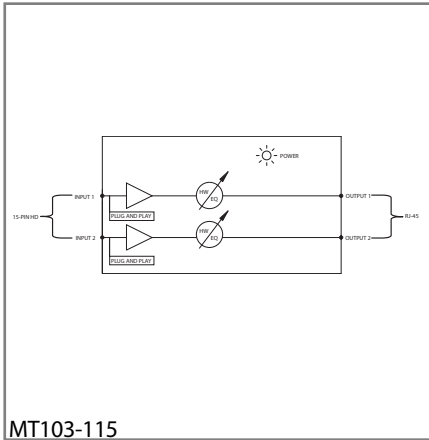
# CAT-5 Transmitter/Receiver

## Product Comparison

|                          |                  |                  |
|--------------------------|------------------|------------------|
|                          | <b>MT103-115</b> | <b>MT103-116</b> |
| <b>Inputs/Outputs</b>    | 2-in 2-out       | 2-in 2-out       |
| <b>Input Connectors</b>  | (2) 15-pin HD    | (2) RJ-45        |
| <b>Output Connectors</b> | (2) RJ-45        | (2) 15-pin HD    |
| <b>Bandwidth</b>         | 350 MHz          | 350 MHz          |
| <b>Plug and Play</b>     | ✓                |                  |
| <b>Equalization</b>      | ✓                | ✓                |
| <b>Slots</b>             | 1                | 1                |

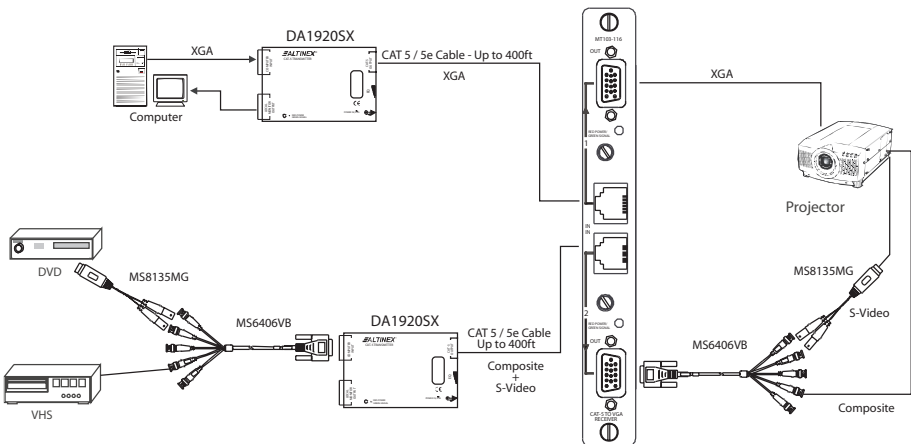


**Block Diagrams**



**Design Tips**

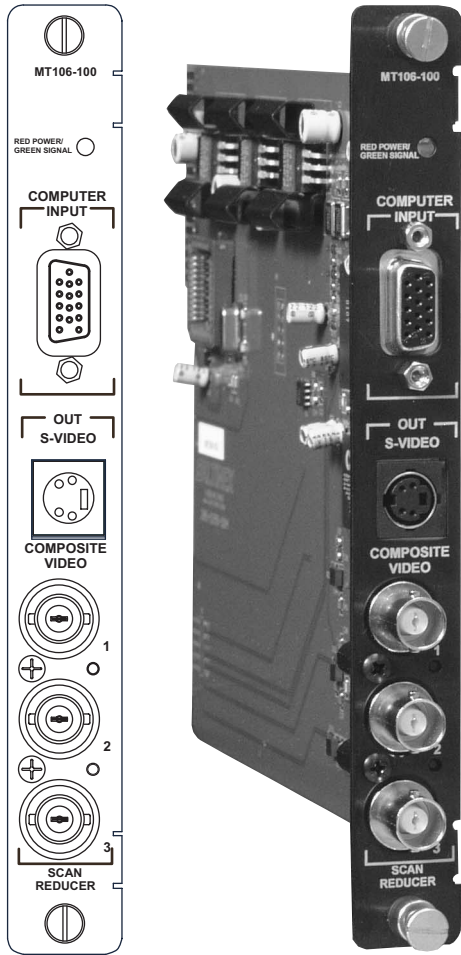
- Designed for use with ALTINEX compact CAT-5 transmitters and receivers (such as model numbers **DA1920SX** and **DA1921SX**)
- Dual inputs/outputs are completely independent; no switching or distribution occurs
- Supports VGA (at 400 foot/121m) through UXGA (at 250 foot/76m) video resolutions
- Can be used with composite, S-Video, RGsB, RGBS, and RGBHV signals as well; to convert 15-pin HD to BNCs, use ALTINEX **MS8102CA** (six foot/1.8 meter, 15-pin HD male to five-BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five-BNC female)



# Scan Reducer

## Product Comparison

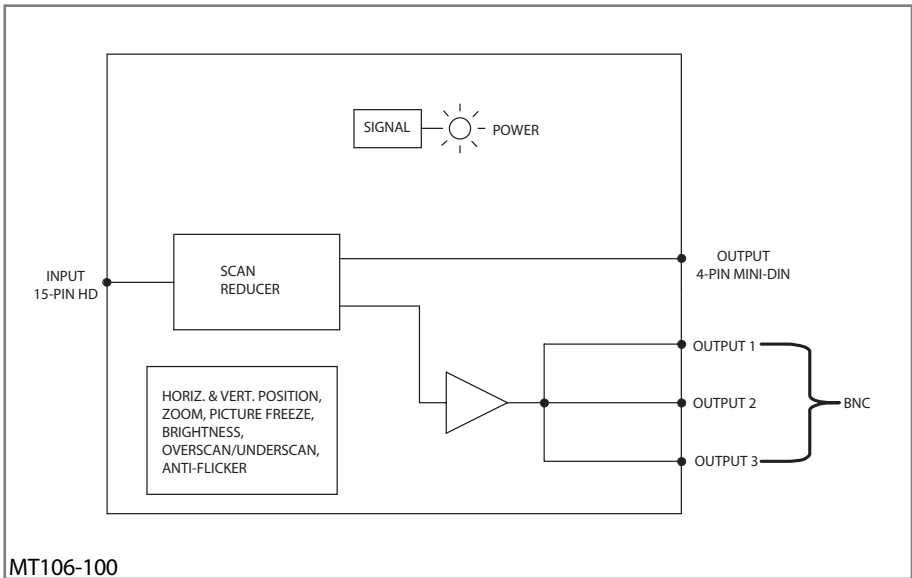
|                          |  |
|--------------------------|--|
| <b>Inputs/Outputs</b>    | <b>MT106-100</b><br>1-in 4-out             |
| <b>Input Connectors</b>  | 15-pin HD female                           |
| <b>Output Connectors</b> | (3) BNC female + (1) 4-pin mini DIN female |
| <b>Input Signals</b>     | VGA through XGA                            |
| <b>Output Signals</b>    | Video + S-Video (NTSC and PAL)             |
| <b>Slots</b>             | 1  |



## RS-232 Control Commands

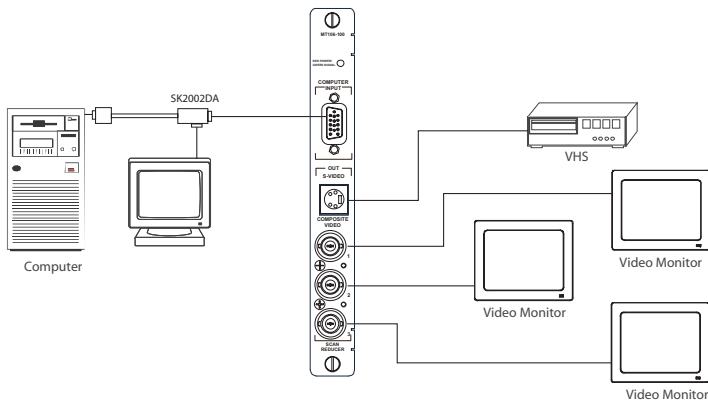
[CnUi], [GkUi], [RDGkUi], [CLRGkUi], [VERCnUi], [WRxyyCnUi], [RDxxCnUi]

**Block Diagrams**



**Design Tips**

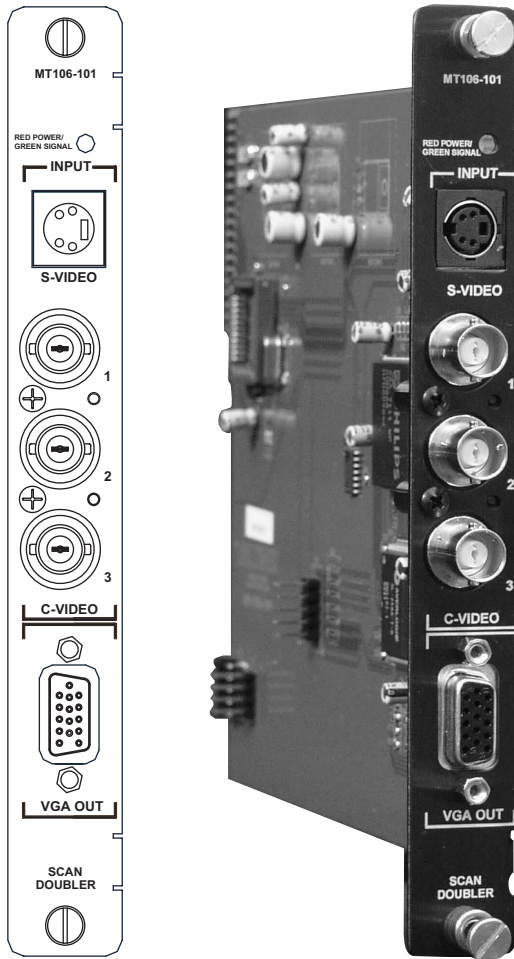
- Supports VGA (640 x 480) input signals with refresh rates up to 100 Hz, SVGA (800 x 600) input signals with refresh rates up to 85 Hz, and XGA (1024 x 768) input signals with refresh rates up to 80 Hz
- Converts non-interlaced computer video signals to interlaced NTSC/PAL video signals
- Four simultaneous outputs: three composite video and one S-Video
- Control of horizontal and vertical positioning, zoom, picture freeze, brightness, overscan/underscan, and anti-flicker controls via RS-232 through the MultiTasker enclosure, or through front panel control with a push-button front panel



# Scan Doubler

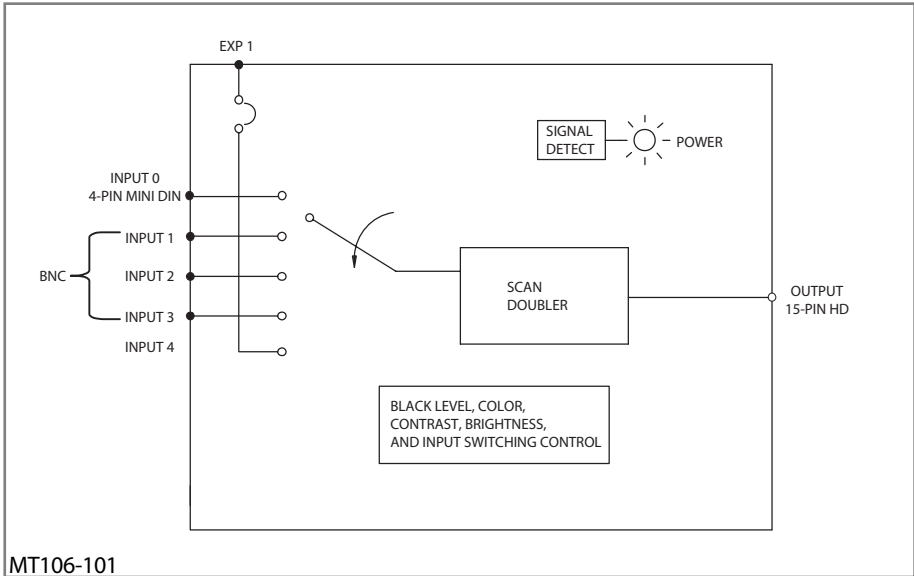
## Product Comparison

|                          |   |
|--------------------------|---|
| <b>Inputs/Outputs</b>    | <b>MT106-101</b><br>4-in 1-out (5th input from expansion) |
| <b>Input Connectors</b>  | (3) BNC female + (1) 4-pin mini DIN female                |
| <b>Output Connectors</b> | 15-pin HD female  |
| <b>Input Signals</b>     | Video/S-Video (PAL or NTSC)                               |
| <b>Output Signals</b>    | VGA (640 x 480)   |
| <b>Expansion</b>         | input: 1 video card                                       |
| <b>Slots</b>             | 1   |



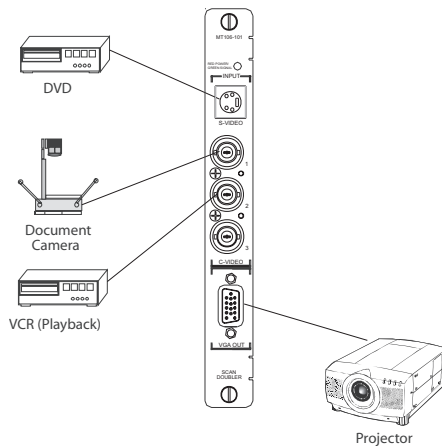
## RS-232 Control Commands

[CnUi], [GkUi], [RDGkUi], [CLRgkUi], [VERCnUi], [ONmCnUi], [WRxyyCnUi], [RDxxCnUi]



**Design Tips**

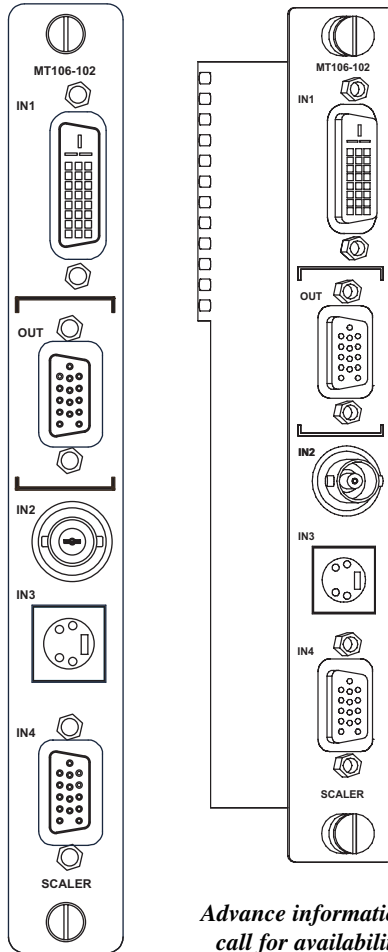
- Switches between composite or S-video inputs, converts to VGA (640 x 480 @ 60 Hz)
- If other output resolutions are required, please see **Scaler Card**
- Expandable internally by one switcher card for eight additional composite inputs
- Provides control of black level, color, contrast, and brightness via RS-232 through the MultiTasker enclosure, or through front panel control with a push-button front panel



# Scaler

## Product Comparison

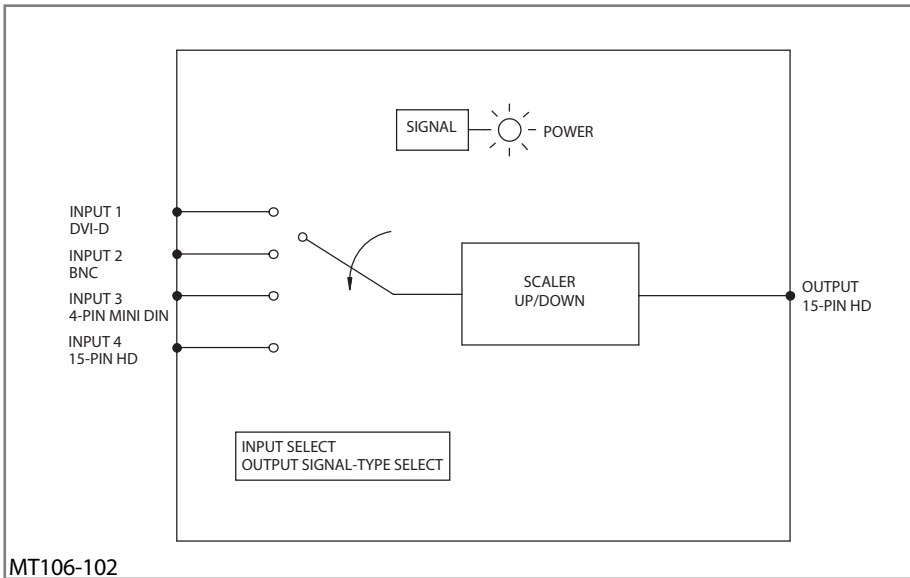
|                          |   |
|--------------------------|---|
|                          | <b>MT106-102</b>  |
| <b>Inputs/Outputs</b>    | 4-in 1-out  |
| <b>Input Connectors</b>  | (1) BNC female+(1) 4-pin mini DIN+(1) 15-pin HD female+(1) DVI-D female |
| <b>Output Connectors</b> | 15-pin HD female  |
| <b>Input Signals</b>     | Video/S-Video/DVI/ VGA-UXGA   |
| <b>Output Signals</b>    | VGA to UXGA   |
| <b>Slots</b>             | 1   |



*Advance information;  
call for availability*

## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [WRxxyyCnUi], [RDGkUi], [CLRGkUi], [SELMCnUi], [+], [-]



**Design Tips**

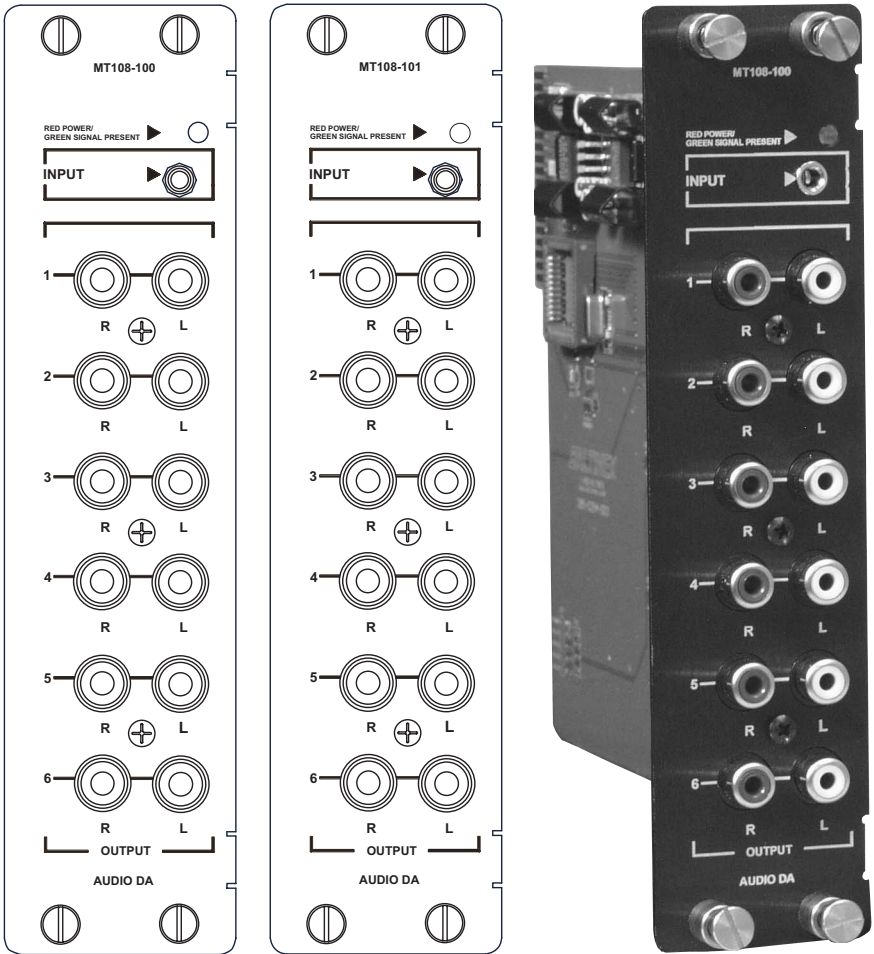
- Different inputs for composite, S-Video, DVI and VGA-UXGA sources
- Outputs user-defined resolution (VGA through UXGA) on 15-pin HD connector
- Useful for matching a variety of input signals to the native resolution of a projector
- Either 15-pin HD input or output may be converted to BNCs for RGBHV via ALTINEX **MS8102CA** (six foot/1.8 meter, 15-pin HD male to five BNC male) or **MS8106CA** (six foot/1.8 meter, 15-pin HD male to five BNC female) cables



# Stereo Audio Dist. Amplifier—Unbalanced

## Product Comparison

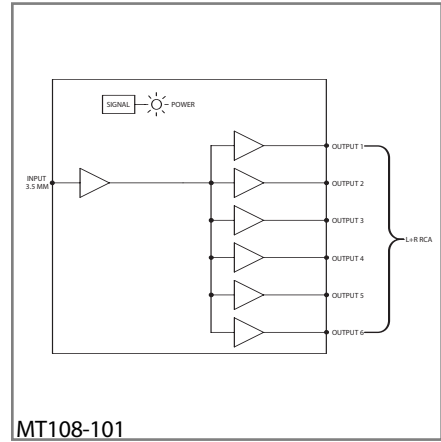
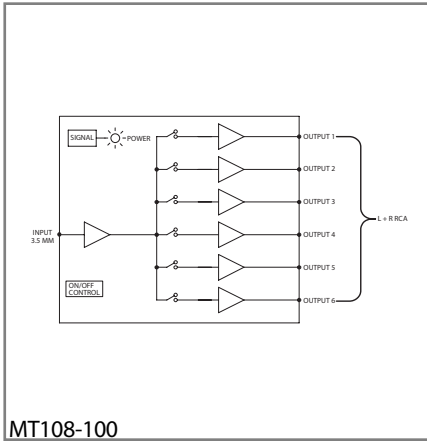
|                   | MT108-100  | MT108-101  |
|-------------------|------------|------------|
| Inputs/Outputs    | 1-in 6-out | 1-in 6-out |
| Input Connectors  | 3.5 mm     | 3.5 mm     |
| Output Connectors | dual RCAs  | dual RCAs  |
| Output On/Off     | ✓          |            |
| Signal Detect     | ✓          | ✓          |
| Slots             | 2          | 2          |



## RS-232 Control Commands

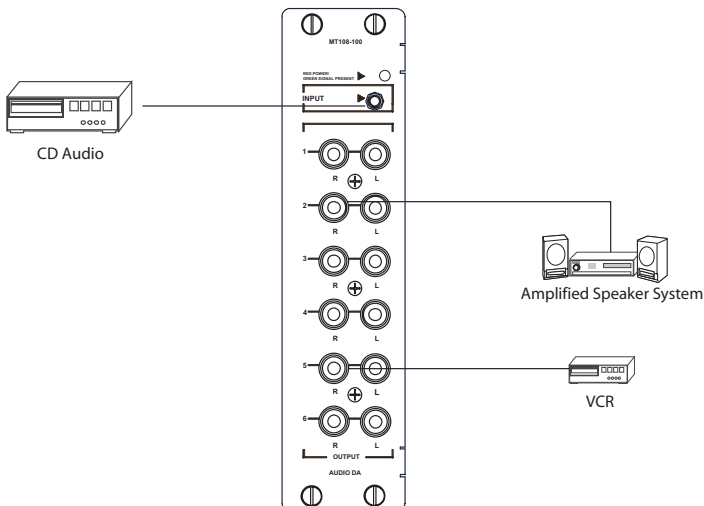
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]

## Block Diagrams



## Design Tips

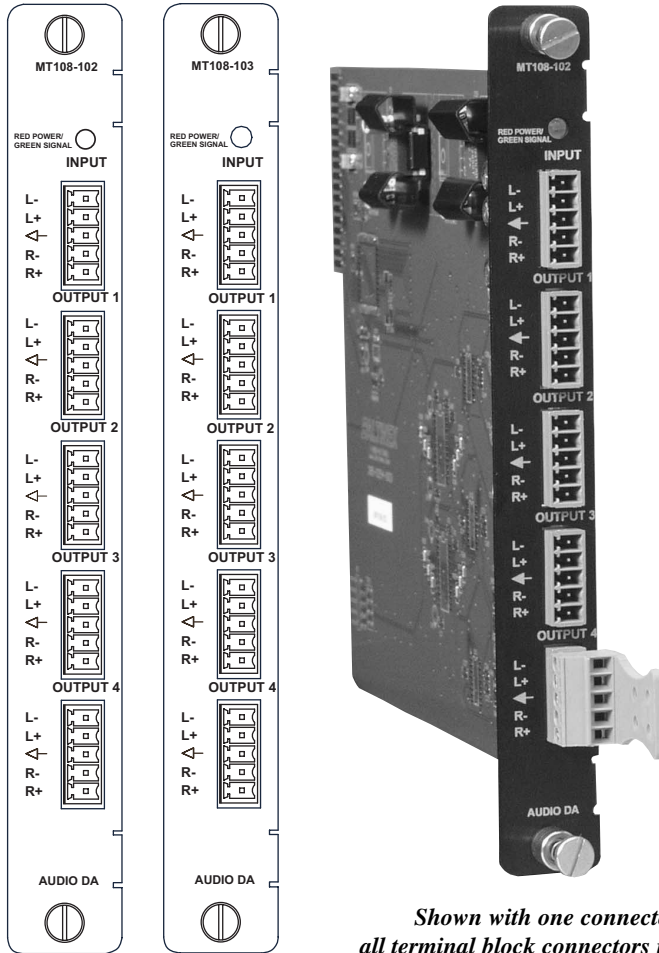
- Ideal for distributing audio to recording devices in dubbing racks
- Unbalanced outputs offer convenient connectivity for short cable runs
- May also be used for mono audio distribution
- MT108-100 also has the ability to independently turn on or off each stereo output under the control of RS-232 commands through the MultiTasker enclosure, or through front panel control with a push-button front panel



# Stereo Audio Dist. Amplifier—Balanced

## Product Comparison

|                          |                  |                  |
|--------------------------|------------------|------------------|
|                          | <b>MT108-102</b> | <b>MT108-103</b> |
| <b>Inputs/Outputs</b>    | 1-in 4-out bal.  | 1-in 4-out bal.  |
| <b>Input Connectors</b>  | terminal block   | terminal block   |
| <b>Output Connectors</b> | terminal block   | terminal block   |
| <b>Output On/Off</b>     |                  | ✓                |
| <b>Signal Detect</b>     | ✓                | ✓                |
| <b>Slots</b>             | 1                | 1                |

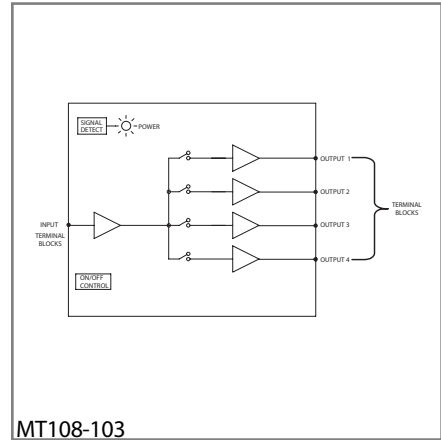
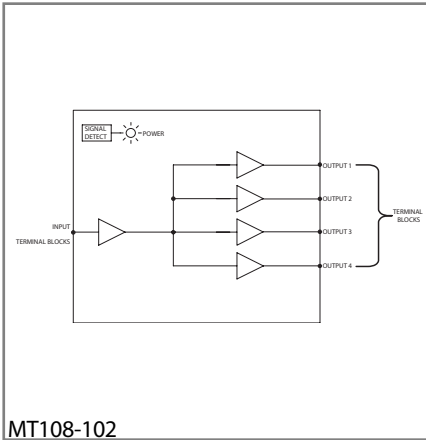


*Shown with one connector;  
all terminal block connectors included*

## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi]

## Block Diagrams



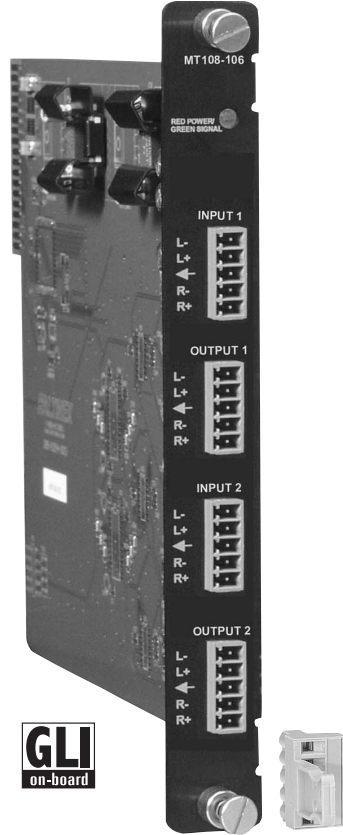
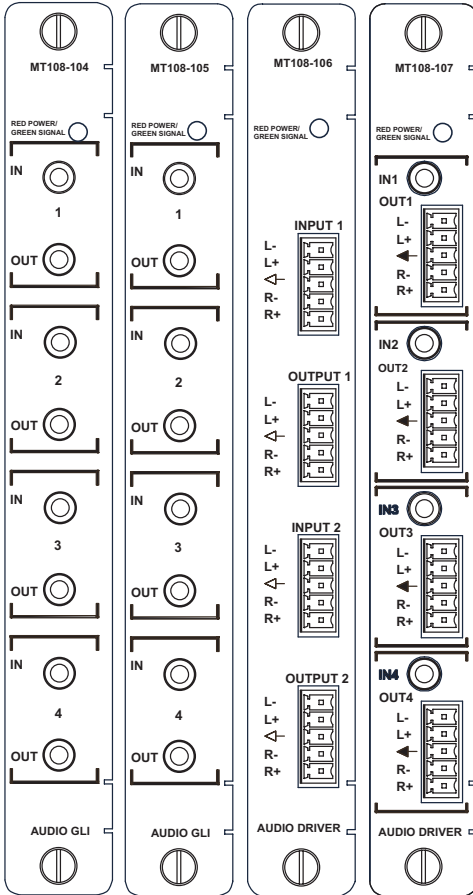
## Design Tips

- Balanced inputs and outputs allow longer cable runs and superior noise resistance
- May also be used for mono audio distribution
- Use multiple cards for surround sound
- MT108-103 also has the ability to independently turn on or off each stereo output under the control of RS-232 commands through the MultiTasker enclosure, or through front panel control with a push-button front panel

# Stereo Audio Line Driver + GLI

## Product Comparison

|                          | MT108-104  | MT108-105  | MT108-106      | MT108-107      |
|--------------------------|------------|------------|----------------|----------------|
| <b>Inputs/Outputs</b>    | 4-in 4-out | 4-in 4-out | 2-in 2-out     | 4-in 4-out     |
| <b>Input Connectors</b>  | 3.5 mm     | 3.5 mm     | terminal block | 3.5 mm         |
| <b>Input Signal</b>      | unbalanced | unbalanced | balanced       | unbalanced     |
| <b>Output Connectors</b> | 3.5 mm     | 3.5 mm     | terminal block | terminal block |
| <b>Output Signal</b>     | unbalanced | unbalanced | balanced       | balanced       |
| <b>GLI</b>               | ✓          | ✓          | ✓              | ✓              |
| <b>Volume Control</b>    |            | ✓          | ✓              | ✓              |
| <b>Slots</b>             | 1          | 1          | 1              | 1              |

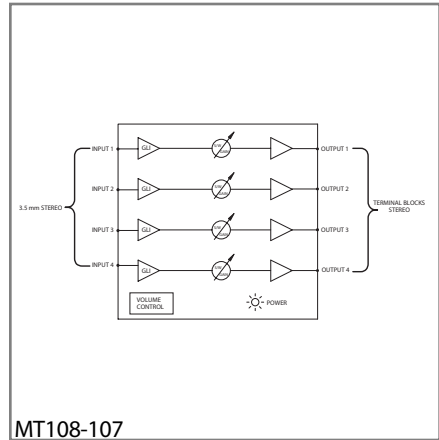
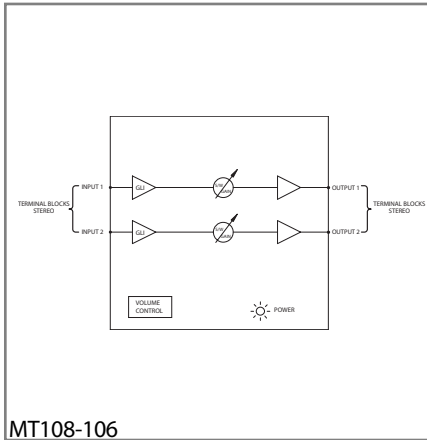
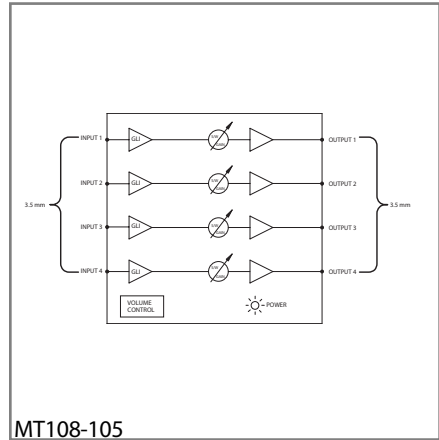
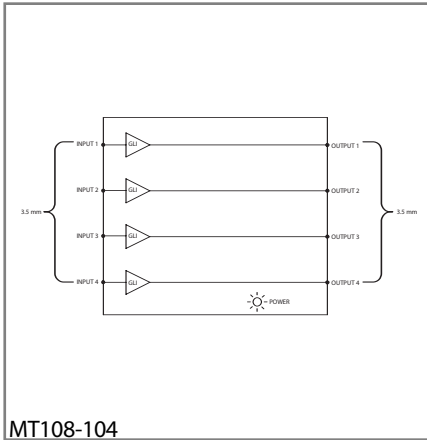


*Shown without connectors;  
terminal block connectors included*

## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRGkUi], [SELMcNui],  
[+], [-]

**Block Diagrams**



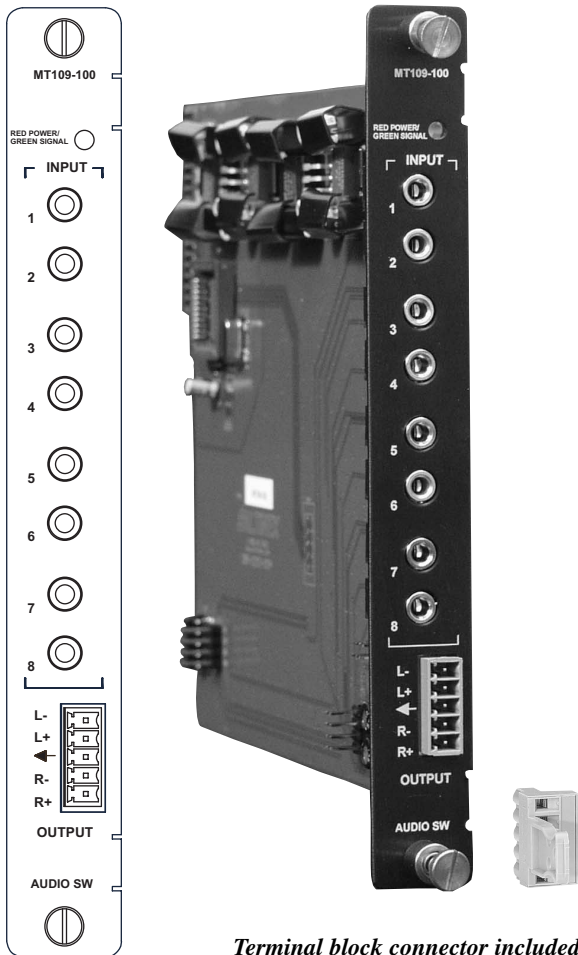
**Design Tips**

- General purpose stereo audio ground loop isolator blocks hum, noise
- Use MT108-107 to convert unbalanced input to balanced output
- MT108-105, MT108-106, and MT108-107 have the ability to independently adjust the gain of each stereo channel set through RS-232 control via the MultiTasker enclosure, using 15-step linear gain control, from +6 dB to -80 dB
- May also be used for mono audio distribution

# Stereo Audio Switcher—Unbal. In/Bal. Out

## Product Comparison

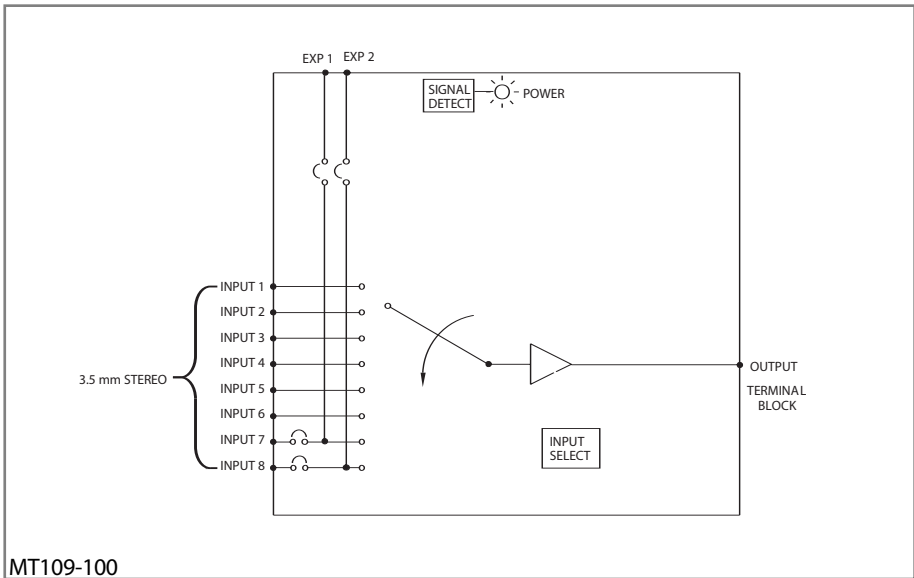
|                          |                                 |
|--------------------------|---------------------------------|
|                          | <b>MT109-100</b>                |
| <b>Inputs/Outputs</b>    | 8-in unbalanced, 1-out balanced |
| <b>Input Connectors</b>  | 3.5 mm                          |
| <b>Output Connectors</b> | terminal block                  |
| <b>Signal Detect</b>     | ✓                               |
| <b>Expansion</b>         | Input: 2 cards                  |
| <b>Slots</b>             | 1                               |



*Terminal block connector included*

## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]



**Design Tips**

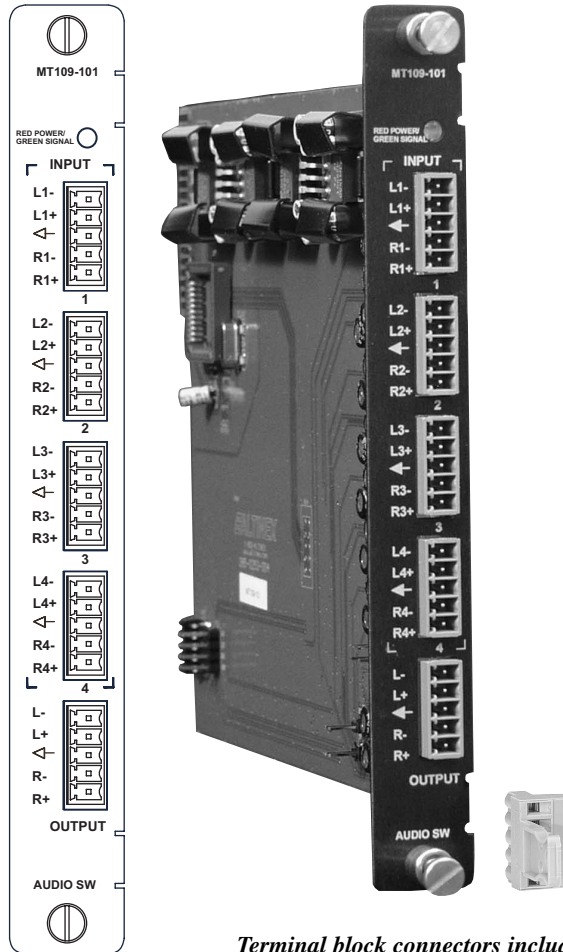
- Switches between eight stereo audio input sources to output balanced stereo signal
- Additional input through internal cable bus allows multiple cards to be “ganged”
- Output can be wired for either balanced or unbalanced audio
- May also be used for mono audio switching
- Switching is controlled via RS-232 commands through the MultiTasker enclosure, or through front panel control with a push-button front panel



# Stereo Audio Switcher Balanced In/Out

## Product Comparison

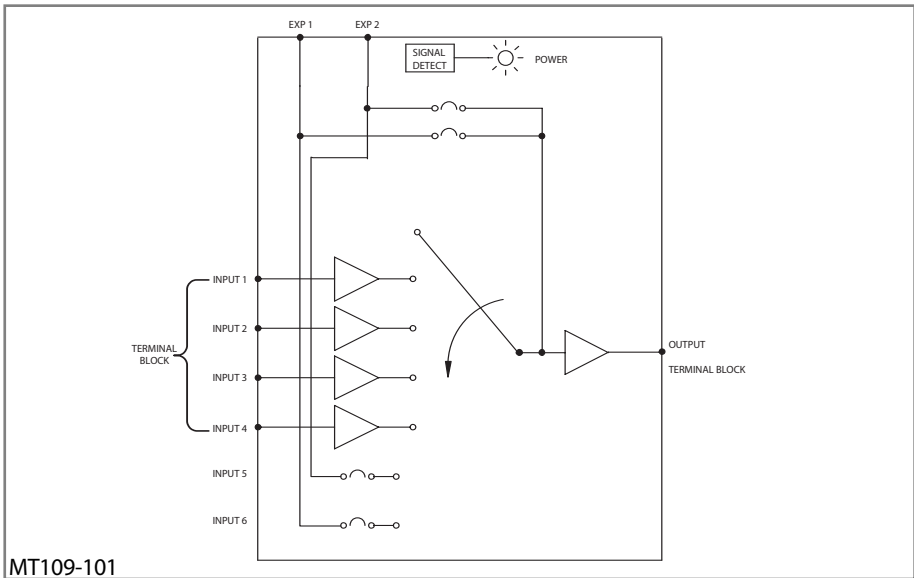
|                   |                     |
|-------------------|---------------------|
| Inputs/Outputs    | MT109-101           |
| Input Connectors  | 4-in 1-out balanced |
| Output Connectors | terminal block      |
| Output Connectors | terminal block      |
| Signal Detect     | ✓                   |
| Expansion         | 2-in or 2-out       |
| Slots             | 1                   |



*Terminal block connectors included*

## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi]



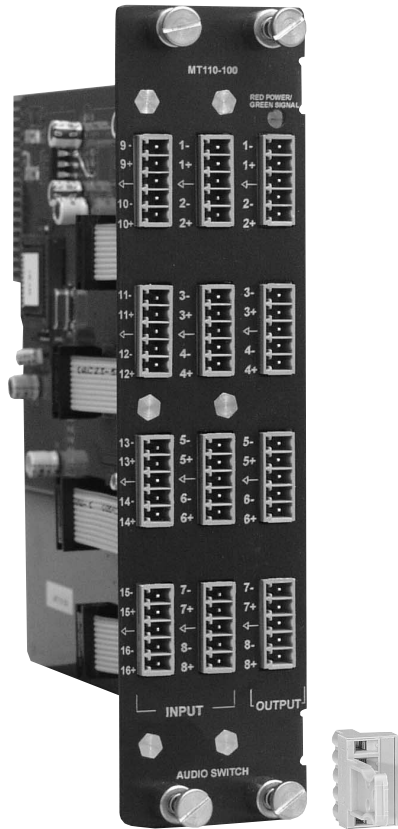
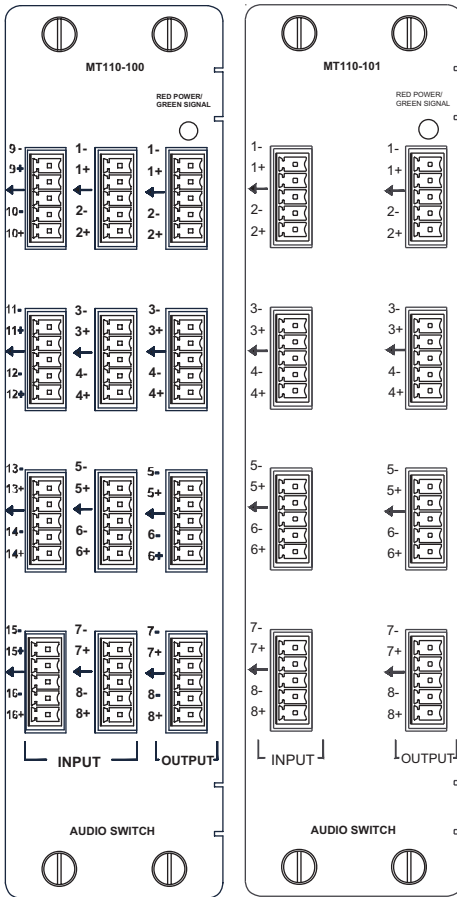
**Design Tips**

- Switches between four balanced stereo audio sources, and connects one to a single receiving device
- Output or additional input through internal cable bus, allows multiple cards to be “ganged”
- May also be used for mono audio switching
- Switching is controlled via RS-232 commands through the MultiTasker enclosure, or through front panel control with a push-button front panel

# Stereo Audio Matrix Switchers

## Product Comparison

|                          |                                     |                                    |
|--------------------------|-------------------------------------|------------------------------------|
| <b>Inputs/Outputs</b>    | <b>MT110-100</b><br>16 x 8 balanced | <b>MT110-101</b><br>8 x 8 balanced |
| <b>Input Connectors</b>  | terminal block                      | terminal block                     |
| <b>Output Connectors</b> | terminal block                      | terminal block                     |
| <b>Signal Detect</b>     | ✓                                   | ✓                                  |
| <b>Slots</b>             | 2                                   | 2                                  |

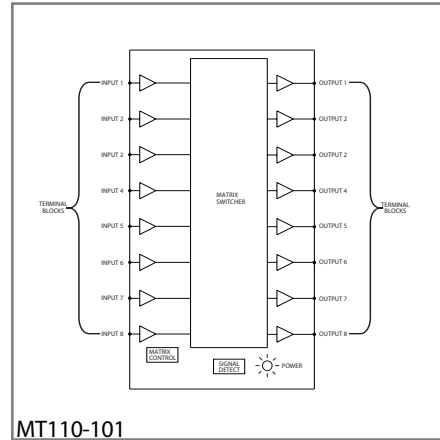
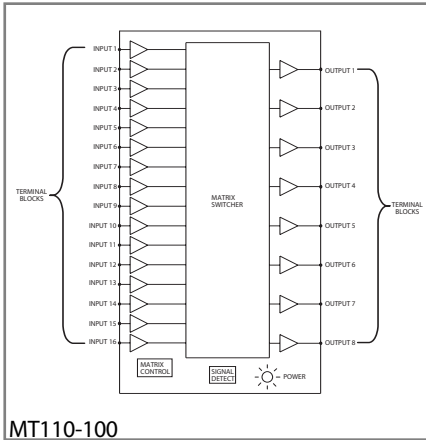


*Terminal block connectors included*

## RS-232 Control Commands

[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [IxOyCnUi], [SW], [WRCn-CoCpCq...GkUi], [RDGkUi], [CLRGkUi]

## Block Diagrams



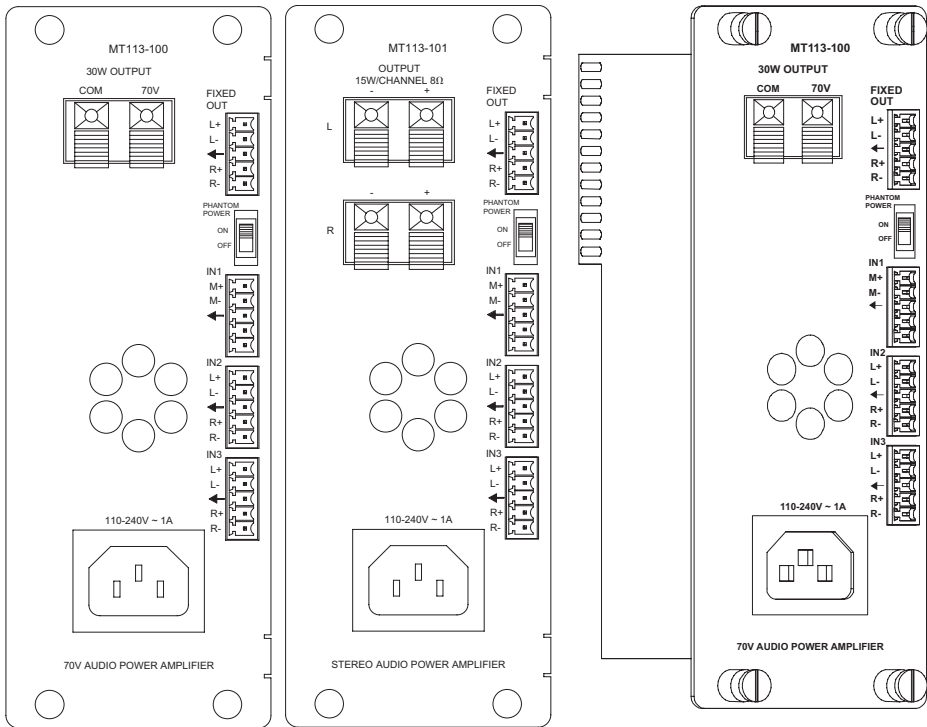
## Design Tips

- Any input independently switches to any of the outputs
- All inputs and outputs can be wired for unbalanced or balanced audio
- Can operate as stereo switcher: a single 16 x 8 card can be used to create an 8 x 4 stereo audio matrix
- Can be grouped for large applications: two 16 x 8 cards handle 16 x 8 stereo audio, six cards can handle 5.1 surround sound
- Switching is controlled via RS-232 commands through the MultiTasker enclosure, or through front panel control with a push-button front panel
- Input gain control (software) available by special order

# Audio Power Amplifiers

## Product Comparison

|                                    |   |   |
|------------------------------------|---|---|
| <b>Input Signals</b>               | <b>MT113-100</b><br>1 mic, 2 balanced   | <b>MT113-101</b><br>1 mic, 2 balanced   |
| <b>Input Connectors</b>            | terminal block                          | terminal block                          |
| <b>Output Signals</b>              | 70V, 30W; line                          | 15 W x 2 channel into 8 ohms; line      |
| <b>Output Connectors</b>           | compression terminal,<br>terminal block | compression terminal,<br>terminal block |
| <b>Input Signal Mixing</b>         | ✓                                       | ✓                                       |
| <b>Input/Output Volume Control</b> | ✓                                       | ✓                                       |
| <b>Phantom Power (Mic)</b>         | ✓                                       | ✓                                       |
| <b>Slots</b>                       | 3                                       | 3                                       |



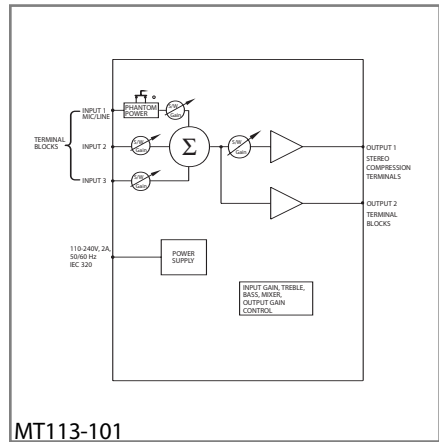
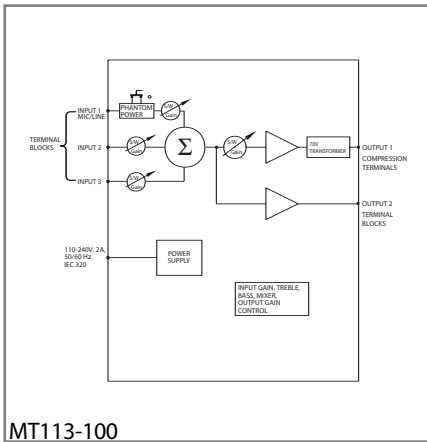
*Advance information;  
call for availability*

*Cards shown without connectors; terminal block connectors included*

## RS-232 Control Commands

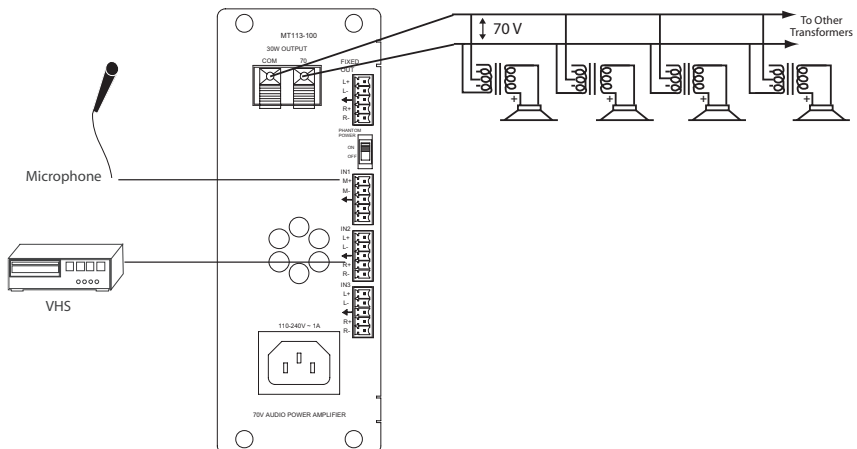
[CnUi], [GkUi], [VERCnUi], [ONmCnUi], [OFFmCnUi], [SW], [WRCnCoCpCq...GkUi], [RDGkUi], [CLRgkUi], [SELMnUi], [+], [-]

**Block Diagrams**



**Design Tips**

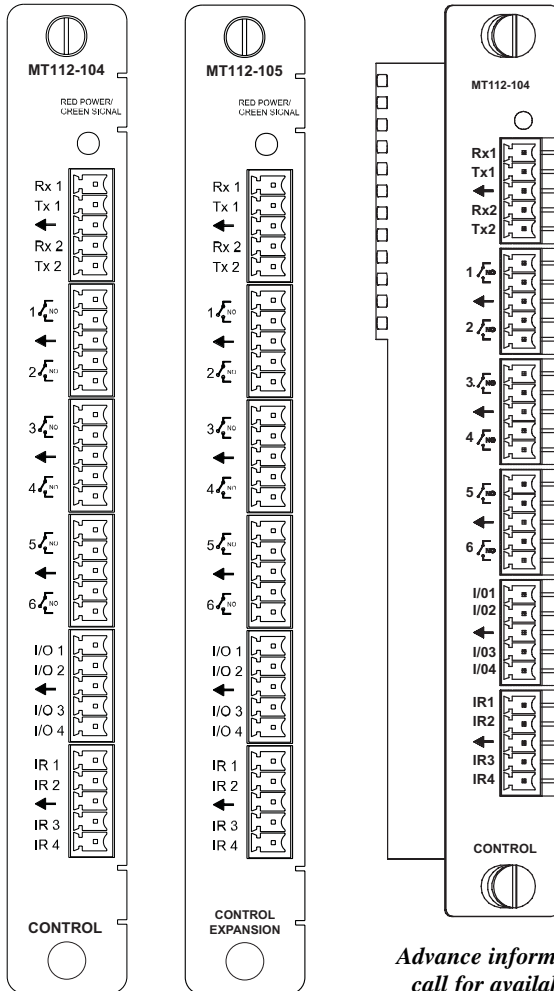
- Mixing and volume control are controlled via RS-232 commands through the MultiTasker enclosure
- These cards require a separate AC power plug to power audio amplifier
- MT113-100 outputs standard 70V, 30W signal for distributed audio systems
- MT113-101: two 15-watt speaker outputs — 30W total output power
- MT113-101 designed for use with four-ohm or eight-ohm speakers
- Both cards offer microphone input with switchable phantom power



# Control Cards

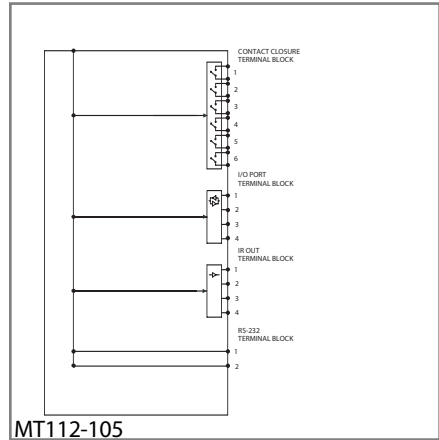
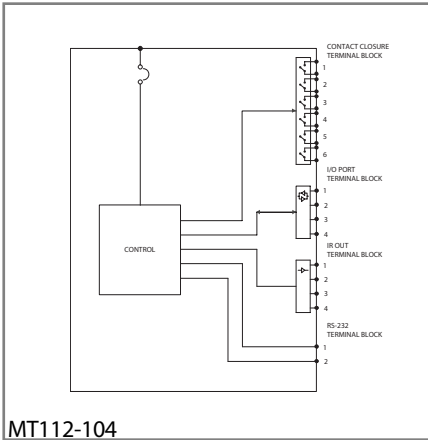
## Product Comparison

|              | MT112-104                            | MT112-105        |
|--------------|--------------------------------------|------------------|
| Connectors   | terminal blocks                      | terminal blocks  |
| Relays       | 6                                    | 6                |
| I/O Ports    | 4                                    | 4                |
| IR Ports     | 4                                    | 4                |
| RS-232 Ports | 2                                    | 2                |
| RS-485 Ports | See Design Tips for more information |                  |
| Expansion    | 1                                    | (expansion card) |
| Slots        | 1                                    | 1                |



*Advance information;  
call for availability*

## Block Diagrams



## Design Tips

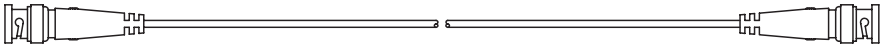
- I/O ports allow programmable voltage output levels, ramped voltage output, programmable input voltage level to cue macros
- 2 RS-232 ports can be combined via internal jumper, used as one RS-422/RS-485 port
- IR ports are programmable
- Relays rated at 48 volts, 100 mA
- Real-time clock allows timed events



# Patch Cables

## Product Comparison

|                           | 3 in / 7.6 cm | 6 in / 15 cm | 12 in / 30 cm | 18 in / 46 cm |
|---------------------------|---------------|--------------|---------------|---------------|
| BNC                       | MS6003BN      | MS6006BN     | MS6012BN      | MS6018BN      |
| 4-pin mini DIN            | MS6103SV      | MS6106SV     | MS6112SV      | MS6118SV      |
| 3.5 mm                    | MS6503SM      | MS6506SM     | MS6512SM      | MS6518SM      |
| 15-pin HD                 | MS6303VM      | MS6306VM     | MS6312VM      | MS6318VM      |
| 4-pin mini DIN to (2) BNC |               |              | MS8132MG      | MS6218SB      |
| 15-pin HD to (5) BNC      | MS6403VB      | MS6406VB     | MS6412VB      | MS6418VB      |



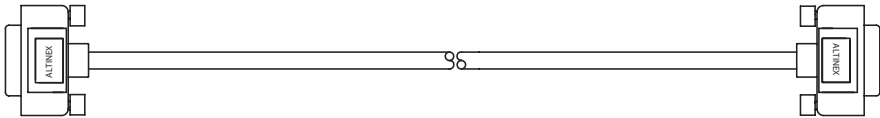
### Male BNC to Male BNC patch cable

Available in 3 in / 7.6 cm, 6 in / 15 cm, 12 in / 30 cm, and 18 in / 46 cm lengths



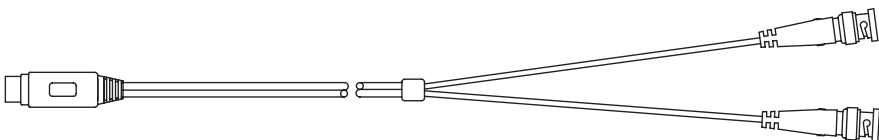
### Male 4-pin mini-DIN to Male 4-pin mini-DIN patch cable

Available in 3 in / 7.6 cm, 6 in / 15 cm, 12 in / 30 cm, and 18 in / 46 cm lengths



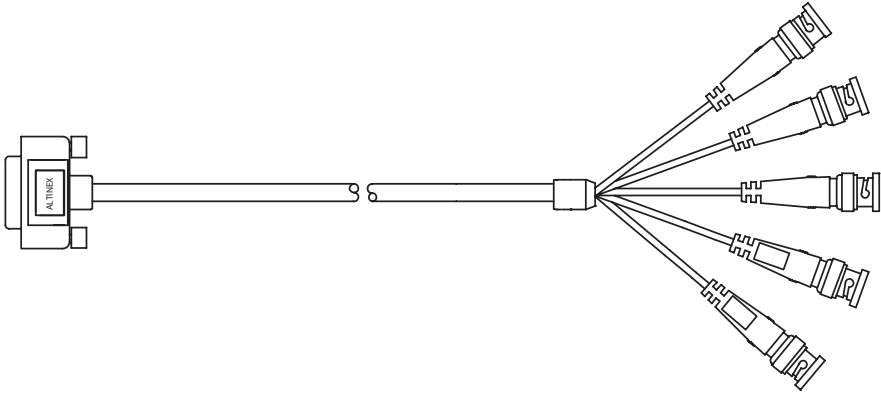
### Male 15-pin HD to Male 15-pin HD patch cable

Available in 3 in / 7.6 cm, 6 in / 15 cm, 12 in / 30 cm, and 18 in / 46 cm lengths

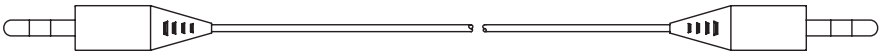


### Male 4-pin mini-DIN to (2) Male BNC patch cable

Available in 12 in / 30 cm, and 18 in / 46 cm lengths

**Male 15-pin HD to (5) Male BNC patch cable**

Available in 3 in / 7.6 cm, 6 in / 15 cm, 12 in / 30 cm, and 18 in / 46 cm lengths

**Male 3.5mm to Male 3.5mm patch cable**

Available in 3 in / 7.6 cm, 6 in / 15 cm, 12 in / 30 cm, and 18 in / 45 cm lengths

**Design Tips**

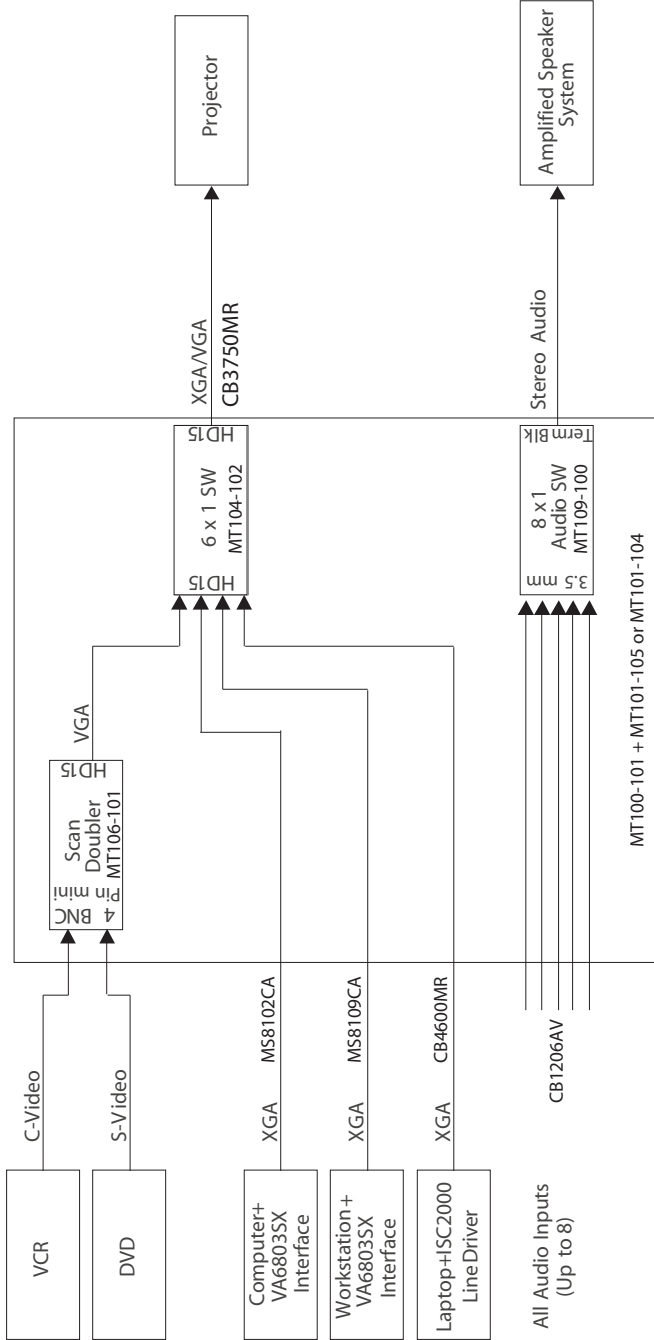
- Designed to connect the output of one MultiTasker card to the input of another
- Cable length does not include length of connectors on each end

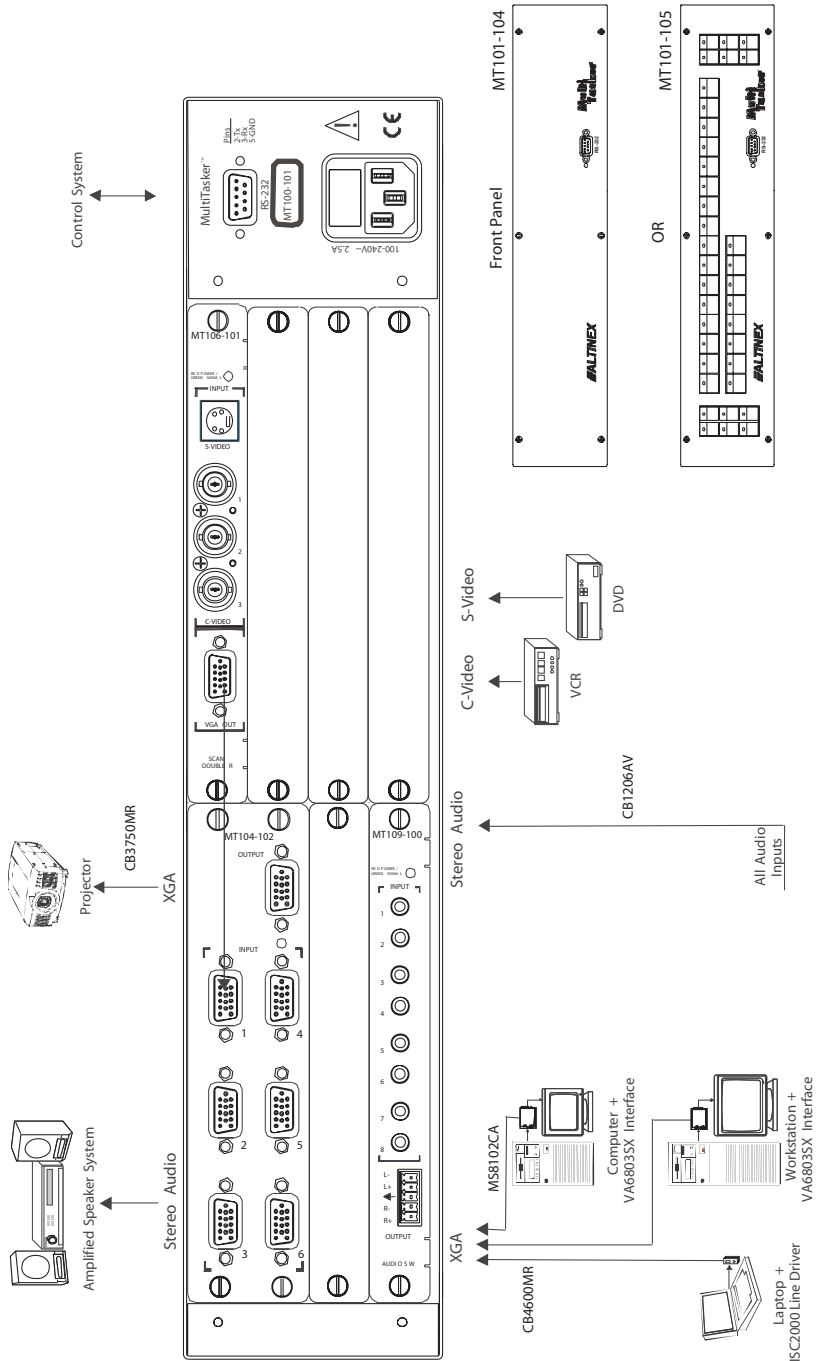
# Sample Configuration #1

## Small Multimedia Presentation System

As a switching center for a variety of sources, this configuration will accept many different kinds of signals, scan double the composite video and S-Video signals, and switch between them and various computer inputs to output to a computer video projector. Plenty of room is still left in the enclosure for options such as

distribution or scan reduction for recording to tape. Choose the **MT101-104** if an external control panel is to be used to make input selections, or the **MT101-105** for front-panel push-button control.



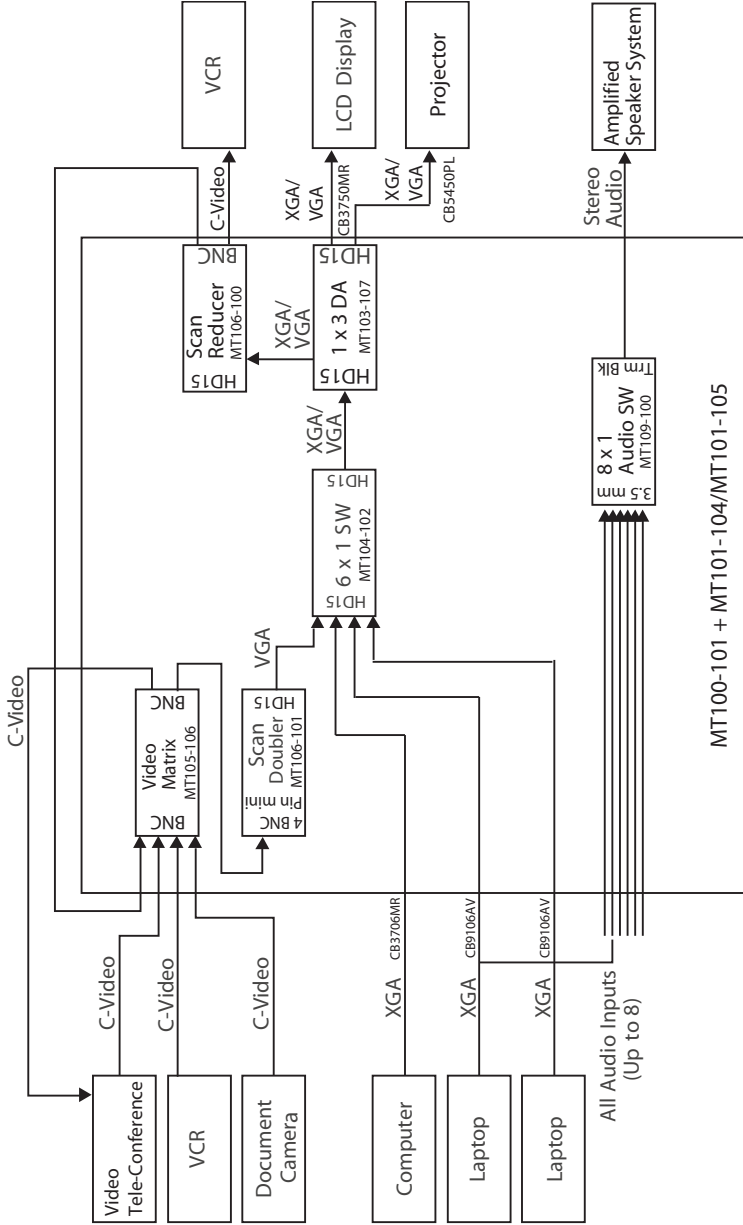


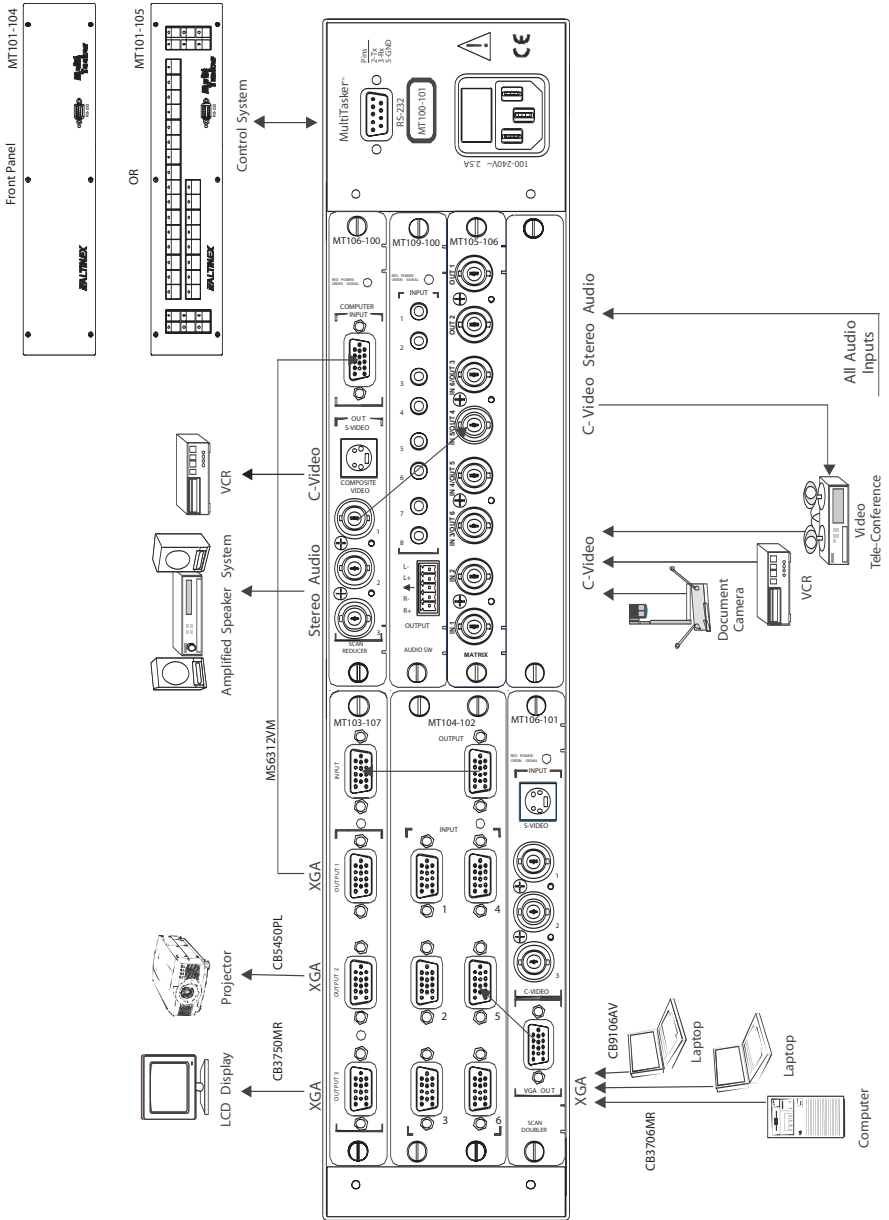
# Sample Configuration #2

## Small Multimedia Presentation System + Videoconferencing

As the variety of shared media in your videoconference system increases, so can MultiTasker. Shown below is a typical system, with plenty of capacity to spare for additional inputs and outputs. Several slots are available for expansion of existing cards or

additional functionality such as audio distribution or scaling. Choose the **MT101-104** if an external control panel is to be used, or the **MT101-105** for front-panel push-button control.



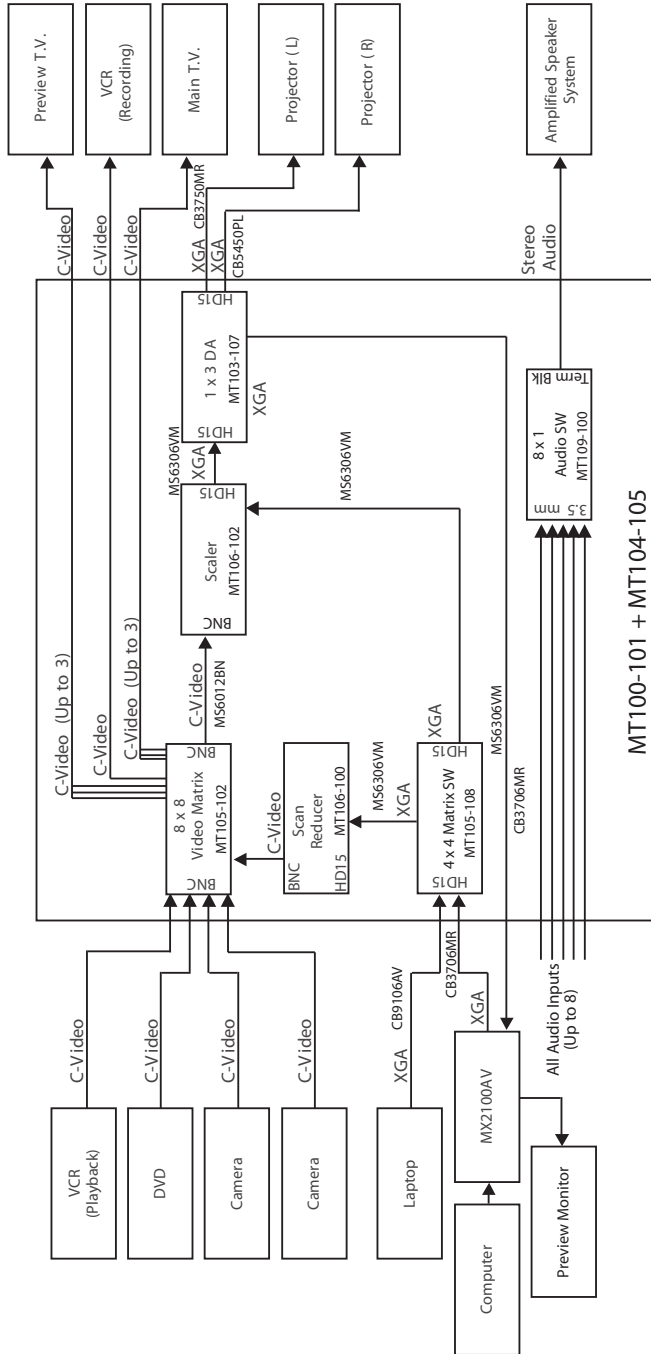


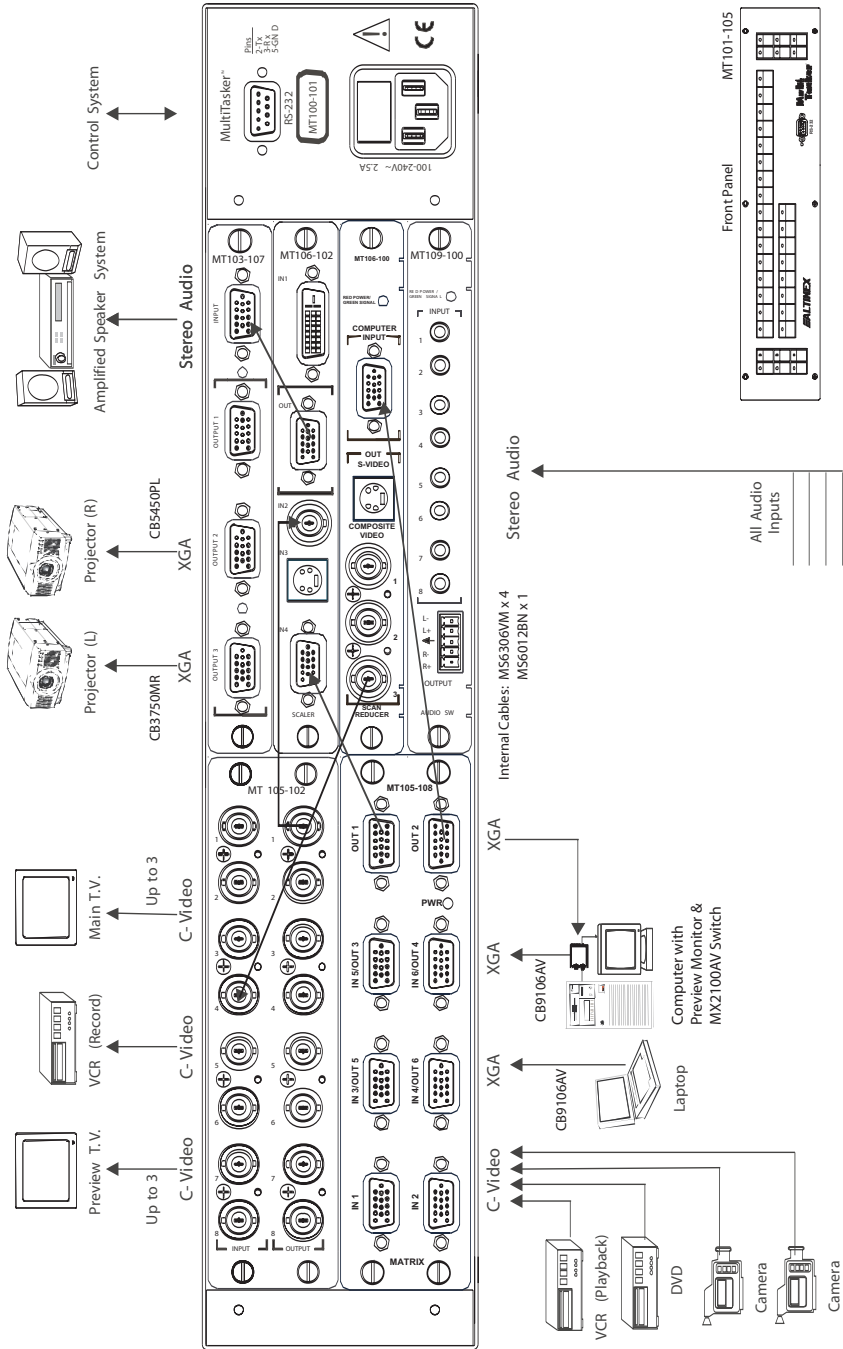
# Sample Configuration #3

## Multimedia Presentation System with Preview

This configuration uses a video matrix switcher and VGA-type switcher and distribution amplifier to connect any input to a monitor, recorder, or a set of projectors. A preview output signal in composite format can display any input, to preview that input before switching it to the projector or recording outputs. Also

included is a scaler, to match the chosen output to the native resolution of a projector. Choose the **MT101-104** if an external control panel is to be used, or the **MT101-105** for front-panel push-button control.





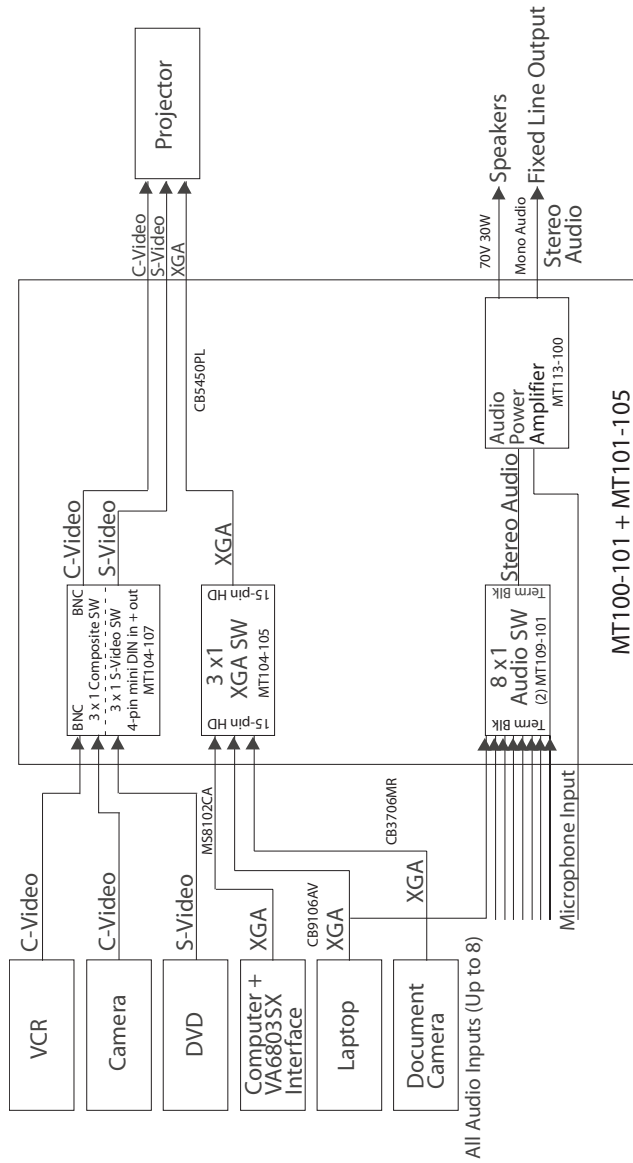


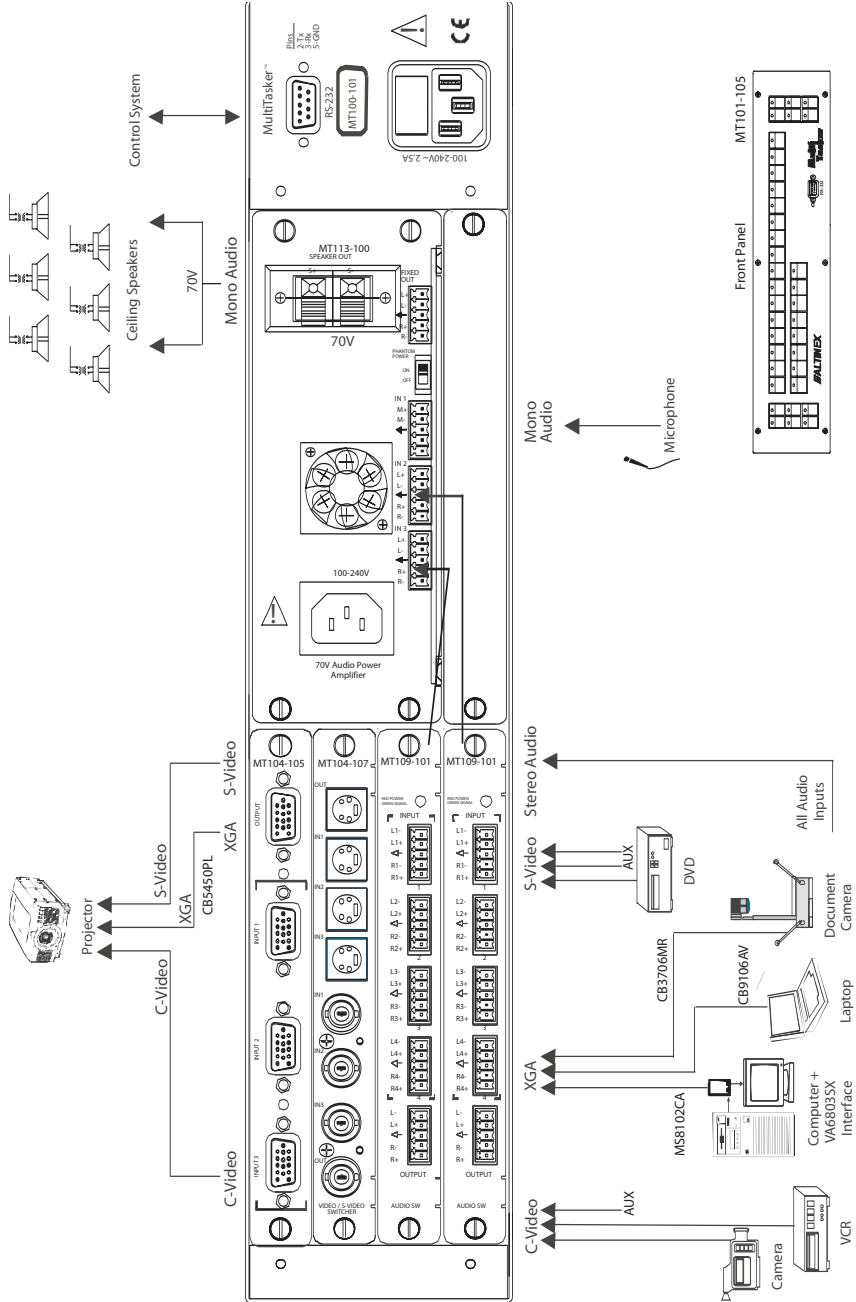
# Sample Configuration #4

## Small Presentation System with Powered Amplifier

Equipped with three composite, three S-Video, three high-resolution computer video inputs, and eight balanced audio inputs plus a microphone input with phantom power, this system switches between all the inputs to output composite, S-Video and VGA-QXGA formats. The two audio input banks are mixed with the

microphone input, and the resulting mixed audio is output in stereo at line level, and at 70V, 30W monaural from the integrated audio amplifier card. There is still room to spare in this configuration for future additions, such as a video scaler.



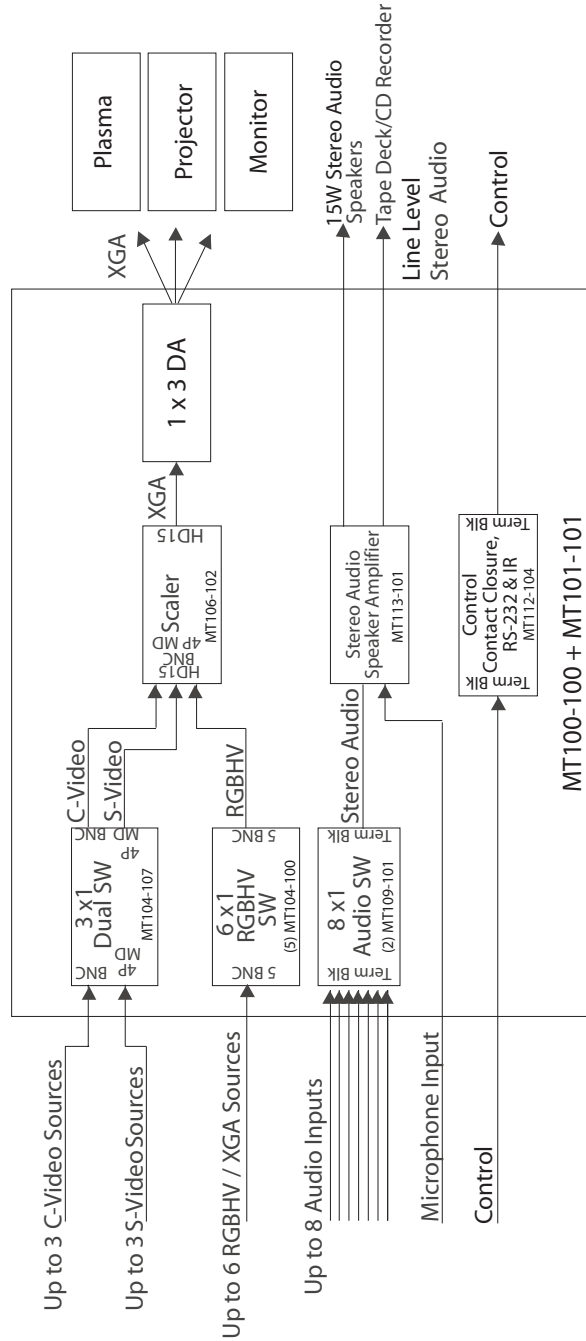


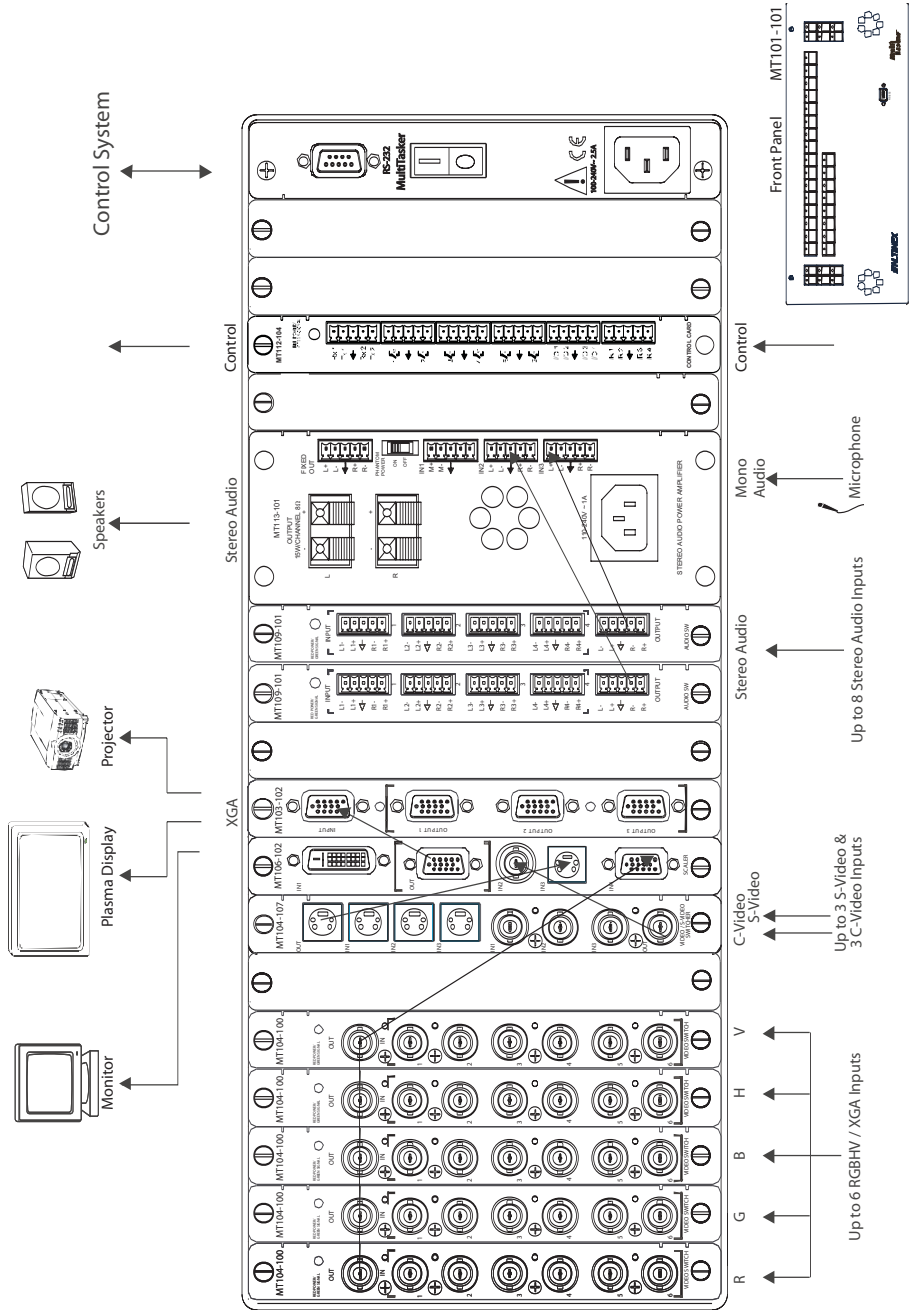
# Sample Configuration #5

## 8-Input, Triple Output System Switcher with Video Scaling

For high-end presentation facilities, the MultiTasker can deliver high-end customized solutions. This configuration includes three composite, three S-Video, and six RGBHV inputs, all of which are switched and scaled to the native projector resolution. The output is then distributed to three displays. Eight audio inputs are taken in to two audio switching banks, which are mixed along

with a microphone input to an amplified 15W per channel stereo output, with an additional line out available for recording. Choose the **MT101-100** if an external control system is to be used, or the **MT101-101** if additional push-button control is required.



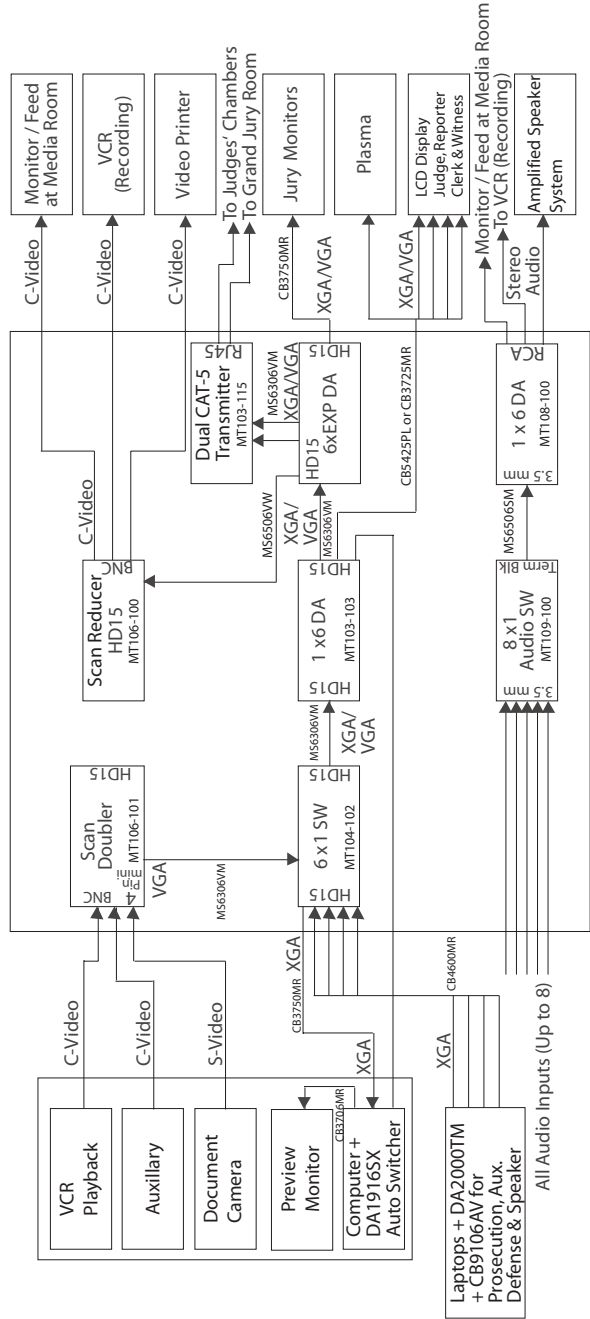


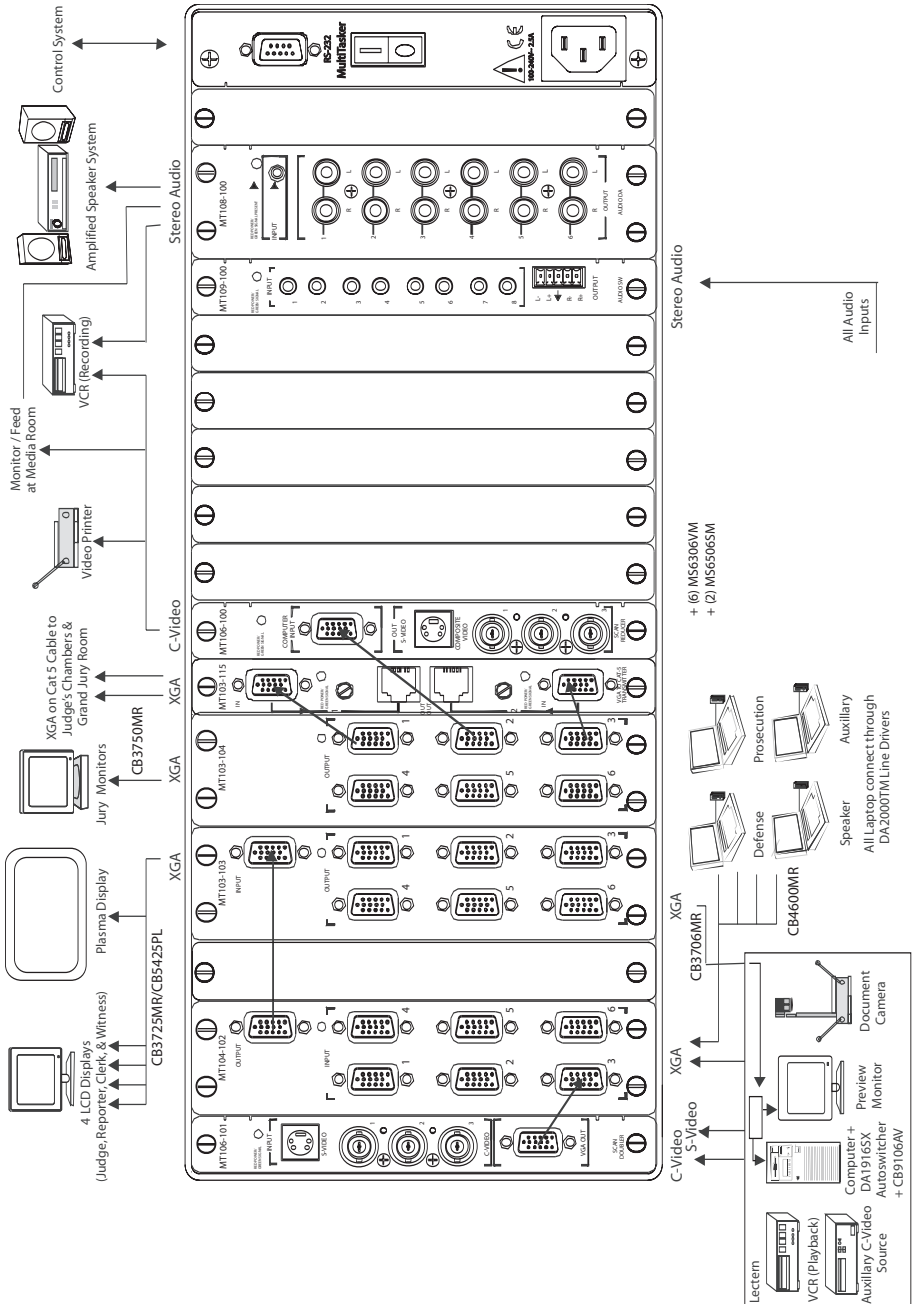
# Sample Configuration #6

## Advanced Courtroom Signal Management System

For the more sophisticated courtroom settings requiring control over multiple video feeds and outputs, the MultiTasker provides a very capable customized solution. The following configuration shows three composite and an S-Video input which are scan-dou- bled and then switched with up to five additional computer inputs for individually controlled output to the various parties in

the courtroom setting. Up to eight audio inputs can be switched with or independent of the video sources. Additional outputs include two CAT-5 video outputs for Judge and Grand Jury cham- bers, and scan reduction for video output to video recording devices and media feeds. Plenty of room is still available for addi- tional inputs or outputs.



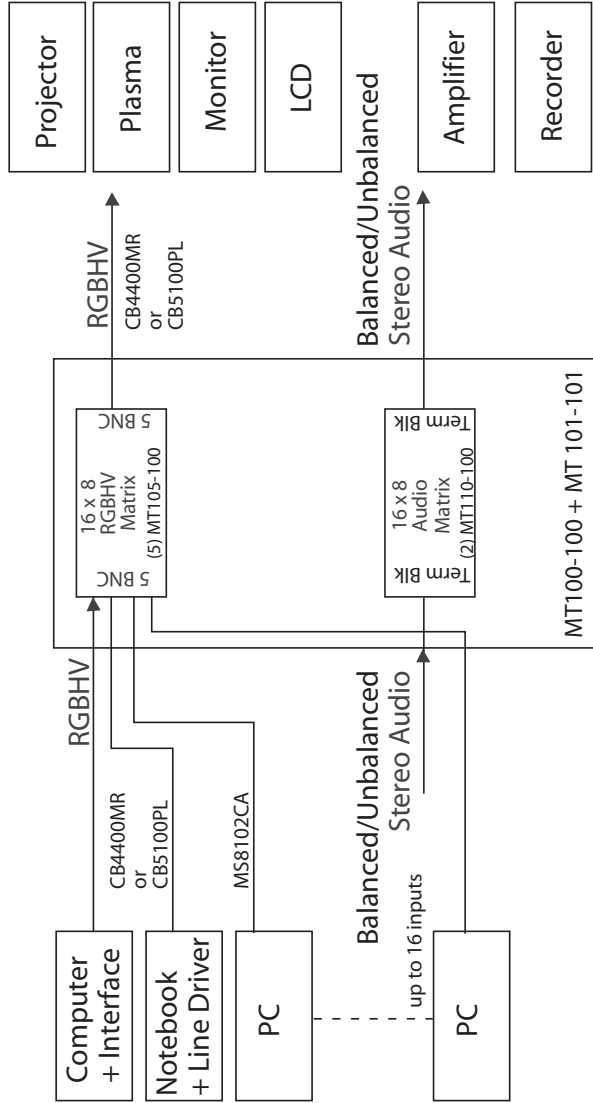


# Sample Configuration #7

## Computer Video and Audio Matrix Switching

Filling all 19 slots of the larger MultiTasker enclosure, this high-performance solution allows 16 x 8 switching of RGBHV-format computer sources ranging from VGA to QXGA resolutions, all with balanced or unbalanced audio. BNC connectors are used for

video and terminal block inputs for audio to maximize signal quality. Choose the **MT101-100** if an external control system is to be used, or the **MT101-101** for additional front-panel push-button control.







# Appendix A: Controlling a MultiTasker System

This section provides a brief overview of how the MultiTasker is controlled by any device capable of delivering ASCII characters through an RS-232 (or compatible) port, including PC computers and touch-panel control devices. This is *not* a comprehensive set of programming commands, nor is it a reference for programming a MultiTasker front panel with push buttons. Also, some of the commands listed here will behave differently from card to card. For a comprehensive list of commands for a particular card, see the ALTINEX website (<http://www.altinex.com>).

MultiTasker Control Software — available free from ALTINEX — is an excellent tool to control MultiTasker units from a Windows® PC. See “Appendix B: MultiTasker Control Software” for more information on how that program is used.

In the following examples, all commands sent to the MultiTasker will appear in **THIS FONT**; feedback information from the MultiTasker will look **LIKE THIS**.

A typical command for the MultiTasker will consist of three parts: function, card ID, and unit ID. For example, **[ON5C3U0]** enables the number 5 input (when used with a switching card) or output (of a distribution amplifier with output on-off control) on the card in slot 3 in MultiTasker unit 0. The slot number that a card is plugged into is an intrinsic part of any command sent to a MultiTasker system; once a control system has been programmed, the cards should not be moved into different slots or MultiTasker enclosures, or else the system may need to be re-programmed. Note the following rules when issuing commands to a MultiTasker unit:

1. Square brackets [ ] are required to start and end most commands; others (not discussed here) use curly brackets { }.
2. Use uppercase letters for all commands.
3. Commands must be executed without any spaces.

The following syntax is used to describe how commands are sent to a MultiTasker unit:

- Specific input (or output) numbers are identified with the lower-case letter **m** after a command
- Specific cards are identified following the upper-case letter **C** with the lower-case letter **n**
- Groups of cards can be addressed simultaneously; specific groups are identified following the upper-case letter **G** with the lower-case **k**
- Specific MultiTasker enclosures (Units) are identified following the upper-case letter **U** with the lower-case letter **i** (when more than one MultiTasker enclosure is used)

*Example:* the **[ON]** command uses the syntax **[ONmCnUi]** or **[ONmGkUi]**

*Note:* when using only one enclosure in a MultiTasker configuration, the unit identifier (**U0**) need not be included in a command.

## Multiple Enclosure Setup

If your MultiTasker system will use more than one enclosure connected to the same control port, you will need to set the “Unit ID” of each enclosure using the following procedure:

1. With the power to all units turned off, connect all MultiTasker units to the control unit by “looping” a control cable (ALTIMEX # RC5215MT recommended) from the RS-232 port of one unit to the next.
2. Turn on the power switch to only one unit, then send the ASCII command [SETU0] — this will set the powered unit ID to 0, even after the unit power is turned off.
3. Turn off unit 0 and turn on the next unit.
4. Send the command [SETU1], thereby setting the second unit ID to 1.
5. Repeat steps 3 and 4 for the number of units you are using, and increment the unit number for each successive unit. Up to 10 units may be looped this way.

*Note:* Since MultiTasker enclosures are pre-set from the factory with Unit ID=0, you may start this process with the second enclosure and use ID=1.

### Common Commands Used to Control the MultiTasker

To turn on an output of a distribution amplifier card with output on-off control, or to turn on one input of a switcher card (which turns off the other inputs), use the [ON] command as follows:

[ONmCnUi] to turn on one input or output, where

m = input or output number

n = card slot number

i = unit number

To turn off an output of a distribution amplifier card with output on-off control, or to turn off the input of a switcher card, use the [OFF] command as follows:

[OFFmCnUi] to turn off one input or output, or [OFFCnUi] to turn off all inputs or outputs

A command can be issued to a single card, or to a group of cards. (This is useful when using several cards to manage a multi-channel signal, for instance when using five cards to manage RGBHV signals.) Cards can be grouped using the [WR] command as follows:

[WRCnCoCpCq...GkUi] where

n, o, p, q = card slot numbers

k = group number

Other commands can now refer to the group as they would a single card, by substituting G for C in the command string. Each enclosure can contain up to a maximum of nine groups.

*Example:* [WRC1C2C3G5U1]

After executing this command, card 1, 2, and 3 of unit 1 will be grouped as group 5. To clear the members of a specified group, issue the command

[CLRG5U1]

## Pre-setting Path Statements

Sometimes it's useful to pre-set a series of commands (without executing them), and then issue a switching command to execute all of the pre-set commands. The MultiTasker system allows for this kind of control by offering the [...P] and [SW] commands.

**Example:** The following illustration uses all of the commands discussed thus far in performing simultaneous audio and video switching. Switching will occur between two RGBHV sources, connected to five MT104-100 6-in 1-out switching cards, with each card used for one of the R, G, B, H, and V channels of the computer inputs. All audio will be switched using one MT109-100 unbalanced input audio switching card. To accomplish this switching we will first group the video cards into one group — the “RGBHV” group, then pre-set a series of commands to be executed all at once, in the order in which they were pre-set. First, we create the RGBHV group and turn off all inputs to the video group and audio card:

```
[WRC1C2C3C4C5G1U0] groups the five MT104-100s in slots 1 through 5 into Group #1  
[OFFG1U0] turns off all inputs to the RGBHV group  
[OFFC6U0] turns off all inputs to the audio card in slot 6
```

Now we are ready to select input #3 on both the audio and video cards simultaneously.

```
[ON3G1U0P] prepares to turn on input3 of the RGBHV group, but does not execute  
the command  
[ON3C6U0P] prepares to turn on input3 of the audio card in slot 6, but does not execute  
the command  
[SW] - Switches to input 3 of both the video group and audio card simultaneously
```

## Getting Feedback from MultiTasker

The MultiTasker system is designed to provide feedback, should such a need arise. For instance, to find out which cards are members of a group, issue the command [RDGkUi].

### **Example:**

To read member data for group 3 of unit 2, send the command [RDG3U2]. The system will return feedback as

```
C6C7C8C9C10 G3U2
```

where the members in the group are identified as card #6 through card #10, and the group and unit number are returned as well.

Most of the aforementioned commands can also have the [...F] command added at the end of the command string for feedback on the execution of a command. The return string will be either OK or ERxx, where xx corresponds to an error code specific to the type of card receiving the command. See that card's user's guide for a detailed explanation of a specific error code.

Another common command used for feedback is the Card status command:

```
[CnUi] returns status from card
```

### **Example:**

To find out the status of the card in slot 2 of unit 3, send the command [C2U3]; the MultiTasker will return:

```
ON456 C2 where
```

ON456 = inputs (or outputs, depending on card type) 4, 5, and 6 are on  
C2 = Card ID # 2 (slot 2)

Following are additional commands commonly used with the MultiTasker:

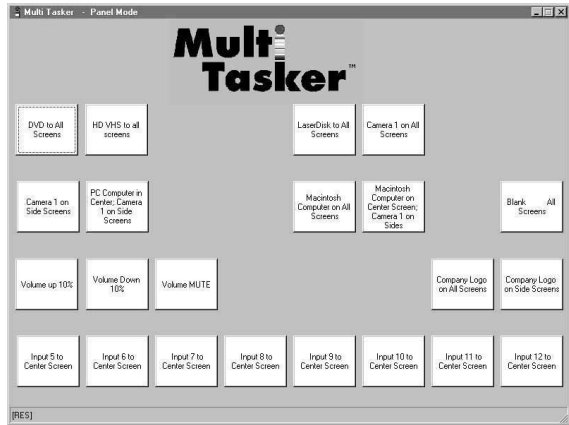
| <b>Command/Format</b>  | <b>Action/Result</b>   |
|------------------------|--|
| [GkUi]                 | Returns feedback from a group. <i>Example:</i> ON12 G5U8                         |
| [RESUi]                | Resets MultiTasker enclosure, and all cards within it.                           |
| [VERCnUi]              | Displays the software version and card type of most (not all) cards              |
| [lxOyCnUi]             | Matrix switch command: connects input “x” to output “y”                          |
| [SELMcNui][+][+][+]... | Adds one step per plus sign to multi-step range (Volume, Brightness, etc.)       |
| [SELMcNui][-][-][-]... | Subtracts 1 step per minus sign from multi-step range (Volume, Brightness, etc.) |
| [WRxyyCnUi]            | Writes data “yy” to register “xx” in card “n” (used in more complex cards)       |

As you can see, the MultiTasker command set is a robust, easy-to-use structure which can be executed from any device capable of sending ASCII characters via RS-232.

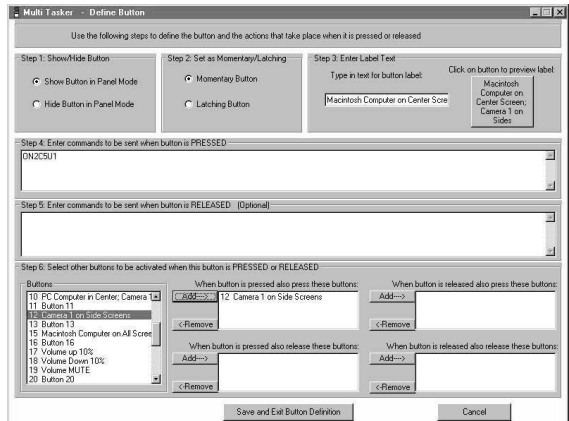
# Appendix B: MultiTasker Control Software

ALTINEX provides a free application, part #WS1004MT, for controlling a MultiTasker system directly from a Windows-based PC computer. This application allows for the custom programming of up to 32 separate functions (or virtual “buttons”), with the ability to have one “button” trigger one or more of the other buttons.

*The user interface can be customized, including the ability to add a customer’s logo to the top*



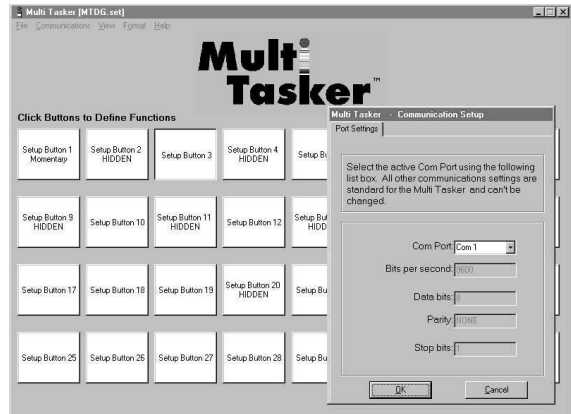
*Programming the user interface is easy, with point-and-click button options and fields for ASCII commands.*



Programming the control of MultiTasker systems is easy with this user-friendly interface. Each button is individually programmed with a combination of ASCII-based instructions, other button functions, dual-action instructions, and titling of the button. Even the interface can be customized with panel, button and text colors, and logo replacement.

Once configured, MultiTasker Control Software communicates with the MultiTasker Units from the COM port of any Windows-based PC. You are given the choice of which COM port to use; all other configuration is automatic.

*Buttons can be programmed to execute MultiTasker instructions, or to hide (for formatting purposes). Communication is executed through the COM port of a PC.*



## Requirements:

|                           |                                |
|---------------------------|--------------------------------|
| <b>Operating System:</b>  | Windows 95, 98, NT, 2000 or XP |
| <b>RAM:</b>               | 8 MB                           |
| <b>Hard Disk Storage:</b> | 4 megabytes                    |
| <b>Processor:</b>         | 486, Pentium or faster         |
| <b>I/O:</b>               | RS-232 (Serial COM Port)       |
| <b>Graphics:</b>          | 800 x 600 pixels; 256 colors   |
| <b>Security:</b>          | Password-protected setup       |

# Index

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| MS6006BN            | 6-in./15 cm BNC Patch Cable .....                       | 70          |
| MS6012BN            | 12-in./31 cm BNC Patch Cable .....                      | 70          |
| MS6018BN            | 18-in./46 cm BNC Patch Cable .....                      | 70          |
| MS6103SV            | 3-in/7.6 cm 4-Pin Mini DIN Patch Cable .....            | 70          |
| MS6106SV            | 6-in/15 cm 4-Pin Mini DIN Patch Cable .....             | 70          |
| MS6112SV            | 12-in/31 cm 4-Pin Mini DIN Patch Cable .....            | 70          |
| MS6118SV            | 18-in/46 cm 4-Pin Mini DIN Patch Cable .....            | 70          |
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| MT104-101 | 8-In Video Switcher Expansion (BNC In) .....                      | 30    |
| MT104-102 | 6-In 1-Out VGA Switcher (15-Pin HD In/Out) .....                  | 36    |
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| MT104-107 | 3-In 1-Out Video, S-Video Switcher (BNC, 4-Pin DIN In/Out) .....  | 34    |
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| WS1004MT  | MultiTasker Control Software .....                                | 90    |



# Quick Reference Chart

## ENCLOSURES

| Number of Slots | Built-In Power Supply | Dimensions            | Model     | Page |
|-----------------|-----------------------|-----------------------|-----------|------|
| 8               | (In Front Panel)      | 1 Rack Wide x 2U High | MT100-101 | 10   |
| 19              | ✓                     | 1 Rack Wide x 4U High | MT100-100 | 8    |

## FRONT PANEL OPTIONS

| Encl. Compatibility | RS-232 Control of Enclosure | 9-pin Control Connector | Programmable Buttons | Power Supply | Model     | Page |
|---------------------|-----------------------------|-------------------------|----------------------|--------------|-----------|------|
| MT100-101 (8-slot)  |                             |                         |                      | ✓            | MT101-103 | 11   |
| MT100-101 (8-slot)  | ✓                           | ✓                       |                      | ✓            | MT101-104 | 11   |
| MT100-101 (8-slot)  | ✓                           | ✓                       | 36                   | ✓            | MT101-105 | 11   |
| MT100-100 (19-slot) |                             |                         |                      |              | MT101-102 | 9    |
| MT100-100 (19-slot) | ✓                           | ✓                       |                      |              | MT101-100 | 9    |
| MT100-100 (19-slot) | ✓                           | ✓                       | 36                   |              | MT101-101 | 9    |

## VIDEO DISTRIBUTION AMPLIFIER CARDS

| Inputs/Outputs    | Input Conn.        | Output Conn.       | Bandwidth | Output On/Off | GLI | Exp.    | Slots | Model     | Page |
|-------------------|--------------------|--------------------|-----------|---------------|-----|---------|-------|-----------|------|
| 1-in 6-out        | BNC                | BNC                | 250 MHz   |               | ✓   |         | 1     | MT103-105 | 12   |
| 1-in 6-out        | BNC                | BNC                | 350 MHz   |               | ✓   | 4 Cards | 1     | MT103-111 | 12   |
| 1-in 6-out        | BNC                | BNC                | 350 MHz   | ✓             | ✓   | 4 Cards | 1     | MT103-100 | 12   |
| 8-out (Expansion) | Internal           | BNC                | 250 MHz   |               |     |         | 1     | MT103-112 | 14   |
| 8-out (Expansion) | Internal           | BNC                | 350 MHz   |               |     |         | 1     | MT103-106 | 14   |
| 8-out (Expansion) | Internal           | BNC                | 350 MHz   | ✓             |     |         | 1     | MT103-101 | 14   |
| 4-in 4-out        | BNC                | BNC                | 350 MHz   |               | ✓   |         | 1     | MT103-113 | 16   |
| 1-in 6-out        | 4-pin mini DIN     | 4-pin mini DIN     | 60 MHz    |               |     |         | 1     | MT103-117 | 18   |
| 1-in 6-out        | 4-pin mini DIN     | 4-pin mini DIN     | 60 MHz    | ✓             |     |         | 1     | MT103-119 | 18   |
| Dual 1-in 3-out   | BNC+4-pin mini DIN | BNC+4-pin mini DIN | 60 MHz    |               |     |         | 1     | MT103-118 | 20   |
| Dual 1-in 3-out   | BNC+4-pin mini DIN | BNC+4-pin mini DIN | 60 MHz    | ✓             |     |         | 1     | MT103-120 | 20   |

## VGA-TYPE DISTRIBUTION AMPLIFIER CARDS

| Inputs/Outputs          | Input Conn. | Output Conn. | Bandwidth | Output On/Off | Signal Detect | Screen Blanking | Exp.   | Slots | Model     | Page |
|-------------------------|-------------|--------------|-----------|---------------|---------------|-----------------|--------|-------|-----------|------|
| 1-in 3-out              | 15-pin HD   | 15-pin HD    | 250 MHz   |               |               |                 |        | 1     | MT103-107 | 22   |
| 1-in 3-out              | 15-pin HD   | 15-pin HD    | 350 MHz   | ✓             | ✓             | ✓               | 1 Card | 1     | MT103-102 | 22   |
| 1-in 6-out              | 15-pin HD   | 15-pin HD    | 250 MHz   |               | ✓             |                 |        | 2     | MT103-108 | 22   |
| 1-in 6-out              | 15-pin HD   | 15-pin HD    | 350 MHz   | ✓             | ✓             | ✓               | 1 Card | 2     | MT103-103 | 22   |
| 6-out (Expansion)       | Internal    | 15-pin HD    | 250 MHz   |               | ✓             |                 |        | 2     | MT103-109 | 24   |
| 6-out (Expansion)       | Internal    | 15-pin HD    | 350 MHz   |               | ✓             |                 |        | 2     | MT103-110 | 24   |
| 6-out (Expansion)       | Internal    | 15-pin HD    | 350 MHz   | ✓             | ✓             | ✓               |        | 2     | MT103-104 | 24   |
| 2-in 2-out+Gain Control | 15-pin HD   | 15-pin HD    | 350 MHz   |               |               |                 |        | 1     | MT103-114 | 26   |

## VIDEO SWITCHER CARDS

| Inputs/Outputs   | Input Connectors   | Output Connectors  | Bandwidth | Output On/Off | Signal Detect | Expansion | Slots | Model     | Page |
|------------------|--------------------|--------------------|-----------|---------------|---------------|-----------|-------|-----------|------|
| 6-in 1-out       | BNC                | BNC                | 350 MHz   | ✓             |               |           | 1     | MT104-103 | 28   |
| 6-in 1-out       | BNC                | BNC                | 350 MHz   | ✓             | ✓             | 2 Cards   | 1     | MT104-100 | 28   |
| 8-in (Expansion) | BNC                | Internal           | 350 MHz   | ✓             |               |           | 1     | MT104-101 | 30   |
| 6-in 1-out       | 4-pin mini DIN     | 4-pin mini DIN     | 60 MHz    | ✓             |               |           | 1     | MT104-108 | 32   |
| Dual 3-in 1-out  | BNC+4-pin mini DIN | BNC+4-pin mini DIN | 60 MHz    | Input On/Off  |               |           | 1     | MT104-107 | 34   |

## VGA-TYPE SWITCHER CARDS

| Inputs/Outputs   | Input Connectors | Output Connectors | Bandwidth | Signal Detect | Sync Delay | Expansion | Slots | Model     | Page |
|------------------|------------------|-------------------|-----------|---------------|------------|-----------|-------|-----------|------|
| 3-in 1-out       | 15-pin HD        | 15-pin HD         | 350 MHz   | ✓             | ✓          |           | 1     | MT104-105 | 36   |
| 6-in 1-out       | 15-pin HD        | 15-pin HD         | 350 MHz   | ✓             | ✓          | 1 Card    | 2     | MT104-102 | 36   |
| 3-in (Expansion) | 15-pin HD        | Internal          | 350 MHz   |               | ✓          | 1 Card    | 1     | MT104-106 | 38   |
| 6-in (Expansion) | 15-pin HD        | Internal          | 350 MHz   |               | ✓          | 1 Card    | 2     | MT104-104 | 38   |

## VIDEO MATRIX SWITCHER CARDS

| Inputs/Outputs                           | Input Connectors | Output Connectors | Bandwidth | Slots | Model     | Page |
|--|------------------|-------------------|-----------|-------|-----------|------|
| 2 x 6, 3 x 5, 4 x 4, 5 x 3, 6 x 2 Matrix | BNC              | BNC               | 200 MHz   | 1     | MT105-106 | 40   |
| 8 x 8 Matrix                             | BNC              | BNC               | 200 MHz   | 2     | MT105-103 | 42   |
| 8 x 8 Matrix                             | BNC              | BNC               | 350 MHz   | 2     | MT105-102 | 42   |
| 16 x 8 Matrix                            | BNC              | BNC               | 200 MHz   | 3     | MT105-101 | 42   |
| 16 x 8 Matrix                            | BNC              | BNC               | 350 MHz   | 3     | MT105-100 | 42   |

## VGA MATRIX SWITCHER CARDS

| Inputs/Outputs                           | Input Connectors | Output Connectors | Bandwidth | Slots | Model     | Page |
|--|------------------|-------------------|-----------|-------|-----------|------|
| 2 x 6, 3 x 5, 4 x 4, 5 x 3, 6 x 2 Matrix | (4) 15-pin HD    | (4) 15-pin HD     | 250 MHz   | 2     | MT105-108 | 44   |

## CAT-5 TRANSMITTER/RECEIVER CARDS

| Input Connectors | Output Connectors | Bandwidth | Plug and Play | EQ | Slots | Model     | Page |
|------------------|-------------------|-----------|---------------|----|-------|-----------|------|
| (2) 15-pin HD    | (2) RJ-45         | 350 MHz   | ✓             | ✓  | 1     | MT103-115 | 46   |
| (2) RJ-45        | (2) 15-pin HD     | 350 MHz   |               | ✓  | 1     | MT103-116 | 46   |

## UP/DOWN CONVERTER CARDS

| Inputs/Outputs | Input Connectors   | Output Connectors            | Input Signals              | Output Signal(s) | Expansion     | Slots | Model     | Page |
|----------------|--|------------------------------|----------------------------|------------------|---------------|-------|-----------|------|
| 1-in 4-out     | 15-pin HD  | (3) BNC + (1) 4-pin mini DIN | VGA thru XGA               | Video + S-Video  |               | 1     | MT106-100 | 48   |
| 4-in 1-out     | (3) BNC + (1) 4-pin DIN                                  | 15-pin HD                    | Video/S-Video              | VGA (640 x 480)  | Input: 1 Card | 1     | MT106-101 | 50   |
| 4-in 1-out     | (1) BNC + (1) 4-pin mini DIN + (1) 15-pin HD + (1) DVI-D | 15-pin HD                    | Video/S-Video/DVI/VGA-UXGA | VGA to UXGA      |               | 1     | MT106-102 | 52   |

## AUDIO DISTRIBUTION AMPLIFIER CARDS

| Inputs/Outputs         | Input Connectors | Output Connectors | Output On/Off | Signal Detect | GLI | Gain Adj. | Slots | Model     | Page |
|------------------------|------------------|-------------------|---------------|---------------|-----|-----------|-------|-----------|------|
| 1-in 4-out Balanced    | Terminal Block   | Terminal Block    |               | ✓             |     |           | 1     | MT108-102 | 56   |
| 1-in 4-out Balanced    | Terminal Block   | Terminal Block    | ✓             | ✓             |     |           | 1     | MT108-103 | 56   |
| 1-in 6-out Unbalanced  | 3.5 mm           | Dual RCA          |               | ✓             |     |           | 2     | MT108-101 | 54   |
| 1-in 6-out Unbalanced  | 3.5 mm           | Dual RCA          | ✓             | ✓             |     |           | 2     | MT108-100 | 54   |
| 2-in 2-out Balanced    | Terminal Block   | Terminal Block    |               |               | ✓   | ✓         | 1     | MT108-106 | 58   |
| 4-in 4-out Unbalanced  | 3.5 mm           | 3.5 mm            |               |               | ✓   |           | 1     | MT108-104 | 58   |
| 4-in 4-out Unbalanced  | 3.5 mm           | 3.5 mm            |               |               | ✓   | ✓         | 1     | MT108-105 | 58   |
| 4-in Unbal. 4-out Bal. | 3.5 mm           | Terminal Block    |               |               | ✓   | ✓         | 1     | MT108-107 | 58   |

## AUDIO SWITCHER CARDS

| Inputs/Outputs                  | Input Connectors | Output Connectors | Signal Detect | Expansion     | Slots | Model     | Page |
|---------------------------------|------------------|-------------------|---------------|---------------|-------|-----------|------|
| 4-in 1-out Balanced             | Terminal Block   | Terminal Block    | ✓             | 2-in or 2-out | 1     | MT109-101 | 62   |
| 8-in Unbalanced, 1-out Balanced | 3.5 mm           | Terminal Block    | ✓             | 2-in          | 1     | MT109-100 | 60   |

## AUDIO MATRIX SWITCHER CARDS

| Inputs/Outputs  | Input Connectors | Output Connectors | Signal Detect | Slots | Model     | Page |
|-----------------|------------------|-------------------|---------------|-------|-----------|------|
| 8 x 8 Balanced  | Terminal Block   | Terminal Block    | ✓             | 2     | MT110-101 | 64   |
| 16 x 8 Balanced | Terminal Block   | Terminal Block    | ✓             | 2     | MT110-100 | 64   |

## AUDIO POWER AMPLIFIER CARDS

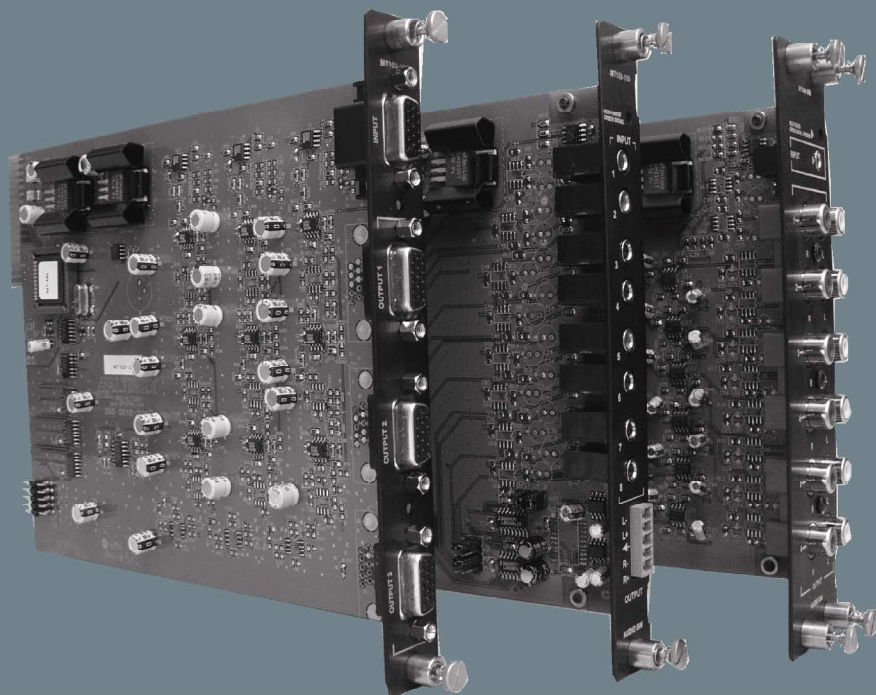
| Input Connectors                | Output Connectors | Output Type | Signal Detect | Slots | Model     | Page |
|---------------------------------|-------------------|-------------|---------------|-------|-----------|------|
| (3) Terminal Block (1) AC Power | Terminal Block    | 70V         | ✓             | 3     | MT113-100 | 66   |
| (3) Terminal Block (1) AC Power | Terminal Block    | 2 x 15W     | ✓             | 3     | MT113-101 | 66   |

## CONTROL CARDS

| Connectors     | Relays | I/O | IR | RS232/485 | Expansion        | Slots | Model     | Page |
|----------------|--------|-----|----|-----------|------------------|-------|-----------|------|
| Terminal Block | 6      | 4   | 4  | 2/1       | 1                | 1     | MT112-104 | 68   |
| Terminal Block | 6      | 4   | 4  | 2/1       | (expansion card) | 1     | MT112-105 | 68   |

## PATCH CABLES

| Type                                | Lengths                              | Page |
|-------------------------------------|--------------------------------------|------|
| BNC, Male to Male                   | 3, 6, 12, 18 in (7.6, 15, 30, 46 cm) | 70   |
| 4-pin Mini-DIN, Male to Male        | 3, 6, 12, 18 in (7.6, 15, 30, 46 cm) | 70   |
| 15-pin HD, Male to Male             | 3, 6, 12, 18 in (7.6, 15, 30, 46 cm) | 70   |
| Male 4-pin mini-DIN to (2) Male BNC | 12, 18 in (7.6, 15, 30, 46 cm)       | 70   |
| Male 15-pin HD to (5) Male BNC      | 3, 6, 12, 18 in (7.6, 15, 30, 46 cm) | 72   |
| 3.5mm Stereo, Male to Male          | 3, 6, 12, 18 in (7.6, 15, 30, 46 cm) | 72   |



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