



PRODUCT SPECIFICATION

CM6800 Series Matrix Switcher/Controller

MICROPROCESSOR-BASED, CROSS-POINT VIDEO SWITCHER, 32 X 6 & 48 X 8



U.S. Patent
#411,530

Product Features

- 32 Video Inputs, 6 Video Outputs or 48 Video Inputs, 8 Video Outputs
- Inputs Allow for Viewing and Control of Cameras, Domes, PTZs, Multiplexers, and Other Devices
- Includes Multiple Language Menus and On-screen Text
- Logical Camera Selection
- Video Inputs Individually Selectable for Terminating or Looping with Switches on Rear Panel
- Supports Coaxitron® and RS-422 Camera Control
- Control of Multiple Genex® Multiplexers
- Password Protected Menu Programming
- Windows®-Based Manager Software
- System Partitioning Prevents Unauthorized Viewing and Control
- Integrated Color Bar Generator
- Wide Selection of Peripheral Components, Including Keyboards, Alarm Boxes, Translators and Relay Boxes
- Macro Programming and Event Timers Automate System Operation

The **CM6800 Series Matrix** Switcher/Controllers are very affordable single box solutions for medium-sized matrix switch applications. Each fully integrated package offers a highly versatile, cross-point matrix switcher. Available in 32 x 6 and 48 x 8 models, the **CM6800** provides switching and control from any one of up to 18 keyboards. The system can also be used to control other devices, such as Genex multiplexers.

The **CM6800** provides easy to use, password-protected, on-screen programming menus. six different languages are supported.

The **CM6800 Series Matrix** switcher/controllers are designed to be remotely operated from desktop keyboards or external computer systems. Programming the system is easy using straightforward on-screen menus and a system keyboard. As an alternative, the system includes a Windows®-based System Management Software which speeds system set-up. The Manager software enables system users to program the switcher remotely and it allows the external storage of all the setup items on a computer disk. It can also be used to log system activity, including events and alarms.

The user-enabled character display shows time and date, operation mode, camera number, and a 20-character title for quick, easy identification of the on-screen video.



The **CM6800** supports powerful system macros, and programmable sequences, which allow activation of commonly occurring events, either manually or automatically, based on time of day, day of week, or day of year. Macros provide quick call-up of multiple cameras to multiple monitors. Macros may also activate pre-positions and auxiliaries on suitably equipped (PTZ or dome) receivers, activate external relays to turn on lights, lock doors, or control other auxiliary functions (additional equipment may be required).

Built-in video loss detection alerts operators or technicians in the event of a camera failure. Logical camera numbering simplifies user control by providing the ability to assign any camera number to the physical input. The user can group cameras together in any logical fashion, such as by floor number.

An integral color bar generator allows the user to adjust monitor settings.

The **CM6800** series switchers allow the user to select from a wide variety of alarm handling and display options. Alarmed cameras can be displayed on one or several monitors, as part of one or several alarm groups. There are also choices for the order in which alarms are displayed, priorities, automatic or manual acknowledgement, presets or patterns to be triggered, and activation of auxiliaries.

Multiple ports are provided for PTZ control and keyboards. A single data line, using Pelco's M protocol, can accommodate various types of equipment, such as keyboards and external alarm interface units. RS-232 ports allow for communication with a PC. The **CM6800** system is available with a wide selection of peripheral components, allowing for expansion of alarms, relay contacts, and keyboards.



International Standards Organization Registered Firm ISO 9001 Quality System

SYSTEM COMPONENTS/TECHNICAL SPECIFICATIONS



Matrix Switcher

The CM6800 Matrix Switcher/Controller provides switching and control for up to forty-eight video inputs and eight monitor outputs (depending on the model) from any one of up to eighteen keyboards, PCs and other devices. The CM6800 can be controlled from a local or remote keyboard, or from an external computer. Additionally, it can be used with Genex multiplexers to display multiple camera views on a monitor. The CM6800 features menu-driven, password-protected programming either directly from the switcher or with the CM6800-MGR software package installed

on a personal computer. Programming menus and onscreen text are provided in six languages – English, French, German, Italian, Portuguese, and Spanish. Multiple ports are provided for PTZ control, keyboards, and peripheral components.

MODELS

CM6800-32X6*	Switcher/controller. 32 video inputs, 6 video outputs, NTSC, 120/230V, 50/60 Hz
CM6800-32X6-X*	Switcher/controller. 32 video inputs, 6 video outputs, PAL, 120/230V, 50/60 Hz
CM6800-48X8	Switcher/controller. 48 video inputs, 8 video outputs, NTSC, 120/230V, 50/60 Hz
CM6800-48X8-X	Switcher/controller. 48 video inputs, 8 video outputs, PAL, 120/230V, 50/60 Hz

*Consult factory for availability

GENERAL

Memory Protection	Lithium battery provides 2 weeks of data protection.
Keyboards	Eighteen: Sixteen KBD100/200/300/300V series keyboards and two KBD960 keyboards. (Switcher can provide power for two KBD100/200/300/300V Series keyboards. Additional keyboards will require a remote power supply.)
Receiver/Dome Control Alarm Inputs	Coaxitron® and RS-422 Eight individually programmable for N.O. or N.C. on rear panel (plus an additional 128, via ALM2064, Alarm Interface Units, providing a total of 136 possible)
Control Outputs on Rear Panel	
AUX 1, 2	Two relays (SPDT), rated at 0.5 amp @ 125V, 1 amp @ 30 VDC, 60 milliohms contact resistance
F3	One open collector (TTL); 15 VDC maximum, 25 mA maximum
Additional Outputs	Two REL2064, Relay Interface Units, may be connected to expand relay outputs to a maximum of 128
Communication Ports	
CM6800-32X6	Four data ports, two PTZ control ports, all programmable by the user; 2 ports powered for keyboards
CM6800-48X8	Eight data ports, two PTZ control ports, all programmable by the user; 2 ports powered for keyboards
Ambient Operating Temperature	20° to 120°F (-7° to 49°C)
Humidity	10-90% non-condensing

ELECTRICAL

Power Source	120V or 230V, 50/60Hz
Power Consumption	25 watts

SWITCHER CHARACTERISTICS

Video Inputs, Looping	BNC, terminating or looping (individually selectable per camera) .5 to 2 Vp-p composite video, video loss detection
CM6800-32X6 CM6800-48X8	Thirty-two Forty
Video Inputs, Terminating	Eight, BNC, terminating .5 to 2 Vp-p composite video, video loss detection
CM6800-48X8	Six or eight outputs, BNC
Video Outputs	Cross-point video matrix. NTSC and PAL compatible
Switching Type	Vertical interval switching
Switching Method	Less than 16 milliseconds (typical)
Switching Time	

VIDEO

Bandwidth	15 MHz								
Frequency Response	Flat to 8 MHz, ±1 dB to 13 MHz								
Signal-to-Noise Ratio	-50 dB (peak-to-peak vs. RMS noise)								
Adjacent Channel Crosstalk	-55 dB typical at 3.58 MHz								
Differential Gain	0.03% typical								
Differential Phase	0.24° typical								
Gain	Unity (±1 dB)								
DC Output	Zero volts								
Video Cable Distances	Minimum cable requirements:								
	<ul style="list-style-type: none"> • 75 ohms impedance • All-copper center conductor • All-copper braided shield with 95% braid coverage 								
	<table border="0"> <tr> <td><u>Cable Type</u></td> <td><u>Maximum Distance</u></td> </tr> <tr> <td>RG-59/U</td> <td>750 ft (228 m)</td> </tr> <tr> <td>RG-6/U</td> <td>1,000 ft (304 m)</td> </tr> <tr> <td>RJ-11/U</td> <td>1,500 ft (457 m)</td> </tr> </table>	<u>Cable Type</u>	<u>Maximum Distance</u>	RG-59/U	750 ft (228 m)	RG-6/U	1,000 ft (304 m)	RJ-11/U	1,500 ft (457 m)
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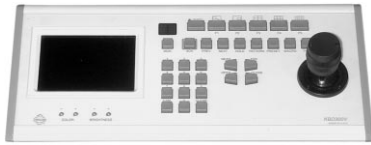
CHARACTER GENERATION

Character Type	White with black outline, adjustable brightness
Camera Identification	Two lines, twenty character title, plus camera number, monitor number, date (4 formats) and time (24-hour or AM/PM formats); each item user-selectable
Programmable Character Set	On-screen, menu driven 128 ASCII characters

MECHANICAL

Dimensions (switcher only)	5.25" H x 17.4" W x 12.25" D (13.34 x 44.20 x 31.12 cm)				
Mounting (switcher only)	Factory configured for EIA rack mount (3 RU); rack ears can be removed for versatile wall mount or freestanding applications				
Weight (switcher only)	<table border="0"> <tr> <td><u>Unit</u></td> <td><u>Shipping</u></td> </tr> <tr> <td>12.7 lb (5.76 kg)</td> <td>19 lb (8.6 kg)</td> </tr> </table>	<u>Unit</u>	<u>Shipping</u>	12.7 lb (5.76 kg)	19 lb (8.6 kg)
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SYSTEM COMPONENTS/TECHNICAL SPECIFICATIONS



KBD300 and KBD300V Keyboards

These full-feature keyboards offer PTZ control, programming capabilities, camera and monitor call-up, operation of sequences and patterns, and local auxiliary activation. Added function keys allow control of receiver auxiliaries. The functions keys have dual selections to allow remote control of multiplexer functions when a Pelco Genex Series multiplexer is used in conjunction with the CM6800 Series Matrix Switcher.

The KBD300 features a three-axis, vector solving joystick that includes a twisting, return-to-center head for precise, single-hand control of PTZ functions. The KBD300V offers a complete, stand-alone control and viewing package, featuring a 5-inch (12.7 cm) diagonal active matrix monitor and vector-solving joystick.

MODELS

KBD300*	Desktop keyboard with full switching and programming capabilities, plus joystick control of PTZ functions
KBD300V	Same as KBD300 except has 5-inch (12.7 cm) LCD monitor, 120V, 60 Hz, NTSC
KBD300V-X	Same as KBD300V except 230V, 50 Hz

* 25-foot cable supplied. If distance between switcher and keyboard exceeds 25 feet, use KBDKIT/KBDKIT-X. Required when wiring more than one keyboard to a single keyboard port.

ELECTRICAL

Input Voltage	12V, 50/60 Hz or +12 VDC
KBD300	+12 VDC @ 1A
KBD300V	
Power Consumption	
KBD300	1 watt
KBD300V	8 watts
Keyboard Connector	RJ-45, 8-pin, modular (female)
Keyboard Communication Interface	RS-485
Baud	9600

Communication Parameters	8 data bits, odd parity, 1 stop bit
Operating Distance	4,000 feet (1,219 m) on 24 AWG wire

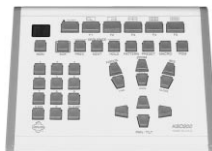
GENERAL

Keyboard Keypad	Mechanical
Joystick	3-axis, vector-solving, with twisting, return-to-center head
	Red LED, 7-segment, 2 cells
Display	
Ambient Operating Temperature	
KBD300	20° to 120°F (-7° to 49°C)
KBD300V	24° to 140°F (-10° to 60°C)
Dimensions	
KBD300	2.25" H x 9.50" W x 7.125" D (5.72 x 24.13 x 18.10 cm)
KBD300V	2.25" H x 14.63" W x 7.125" D (5.72 x 37.16 x 18.10 cm)
Weight	Unit Shipping
KBD300	2.5 lb (1.12 kg) 4 lb (1.81 kg)
KBD300V	4.3 lb (1.95 kg) 7 lb (3.17 kg)



KBD100 Keyboard

Our most economical keyboard, the KBD100 features limited CM6800 Matrix control for operator locations where pan/tilt/zoom (PTZ) functions are not intended or not required. Features include programming capabilities, camera and monitor call-up, operation of sequences and patterns, and three function keys to allow local auxiliary activation.



KBD200 Keyboard

This economical full-feature keyboard offers PTZ control, programming capabilities, camera and monitor call-up, operation of sequences and patterns, local auxiliary activation and "Touchspeed" multi-speed control of variable speed receivers. Added function keys allow control of receiver auxiliaries. The KBD200 additionally features an ASCII Mode, included specifically for phone line video applications. When configured for ASCII Mode control, the KBD200 outputs RS-422 ASCII protocol at 9600 baud. This configuration requires the KBDKIT and, in some cases, the PV130 RS-232 to RS-422 converter.

MODELS

KBD100*	Desktop keyboard, no PTZ
KBD200*	Desktop keyboard, multi-speed PTZ

* 25-foot cable supplied. If distance between switcher and keyboard exceeds 25 feet, use KBDKIT/KBDKIT-X.

ELECTRICAL

Input Voltage	+12 VDC or 12V 50/60 Hz
Power Consumption	1 watt
Keyboard Connectors	RJ-45, 8-pin modular (female)
Keyboard Communication Interface	RS-485
Baud	9600
Communication Parameters	8 data bits, odd parity, 1 stop bit
Operating Distance	4,000 feet (1,219 m) on 24 AWG wire

GENERAL

Keyboard Keypad	Mechanical
Display	
KBD100	7-segment digital display: Red LED, 1 cell
KBD200	7-segment digital display: Red LED, 2 cells
	Multiplexer mode indicator: Green LED
Ambient Operating Temperature	20° to 120°F (-7° to 49°C)
Humidity	10-90% non-condensing
Dimensions	
KBD100	2.25" H x 6" W x 7.125" D (5.72 x 15.24 x 18.1 cm)
KBD200	2.25" H x 8.125" W x 7.125" D (5.72 x 20.64 x 18.1 cm)
Weight	Unit Shipping
KBD100	1.9 lb (0.86 kg) 3 lb (1.35 kg)
KBD200	2.1 lb (0.97 kg) 3 lb (1.35 kg)

SYSTEM COMPONENTS/TECHNICAL SPECIFICATIONS



KBD960 and KBR960 Keyboards

These keyboards provide system users with the maximum degree of flexibility in controlling camera call-up and pan and tilt/dome operation. Twenty-four programmable soft keys may be individually labeled with installation specific titles. This allows logical camera selection based on the camera's field of view rather than camera numbers.

The KBD960/KBR960 includes a variable speed, vector-solving joystick with zoom control knob for pan/tilt/zoom and dome control. All additional lens control functions are positioned next to the joystick for one-handed operation. Two internal relays are provided to activate local devices such as video printers and VCRs. LCD display keys give system operators fingertip control of powerful programming and operational features. These keys access multiple menus of logically displayed icons for simplistic operation. All programmable soft keys illuminate when relays and auxiliaries are activated. The keyboard utilizes an adjustable backlit LCD screen to provide the greatest amount of flexibility in a variety of lighting conditions. Also, an adjustable audible beeper is provided to alert operators of all alarm conditions. From the keyboard, the user can control auxiliary relay activated devices, receivers, camera/monitor switching, and multiplexer screen functions, and create single/dual patterns, zones, zone labels, presets and preset recalls. The KBR960 is a rack mount version.

MODELS

KBD960	Full-function desktop variable-speed keyboard. 120V, 60 Hz wall transformer
KBD960-X	Same as KBD960 except 230V, 50 Hz
KBR960	Full-function 19-inch EIA rack mount keyboard (4 RUs). 120V, 60 Hz
KBR960-X	Same as KBR960 except 230V, 50 Hz

FUNCTIONAL

Joystick	Vector-solving, variable-speed with zoom
Display	LCD, backlit icon and alphanumeric
Display Keys	Eight multi-function keys to access programming icons and menus
Definable Keys	Twenty-four programmable "soft" keys
Numeric Keys	Numeric keys (0-9) plus (Cam) and (Mon)
Specialty Keys (T) "Turbo"	Activates high speed mode of Intercept® and Spectra® domes
(Bkwd/Fwd)	Initiates backward or forward camera sequencing of next/last camera
(Run/Mac)	Initiates sequencing/calls pre-programmed macros
(Rcl/Alt)	Recalls previously selected cameras/calls next camera in group
(Prst/Lock)	Calls pre-position scene/locks currently displayed camera to monitor

ELECTRICAL

Input Voltage	12 VDC from 120V, 60 Hz or 230V, 50 Hz wall transformer (supplied)
Power Consumption	10 watts
Communication	RS-485
Operating Distance	4,000 feet (1,219 m) on 24 AWG wire
Internal Relay Rating	1A
Keyboard Connectors	Two 8-pin RJ-45 connectors (female) (RS-485 serial ports) One 4-pin RJ-45 connector (female) (RS-232 serial port) Two 6-pin RJ-45 connectors (female)
Keyboard Communication Interface	RS-485
Baud	19200
Communication Parameters	8 data bits, no parity, 1 stop bit

GENERAL

Ambient Operating Temperature	32° to 120°F (0° to 49°C)
Dimensions	
KBD960	3.30" H x 15.53" W x 7.80" D (8.38 x 39.45 x 19.81cm)
KBR960	7.00" H x 19.00" W x 1.75" D (17.78 x 48.26 x 4.45 cm)
	Fits 19-inch EIA Standard rack (4 RUs)
Unit Weight	
KBD960	4.59 lb (2.08 kg)
KBR960	6.40 lb (2.90 kg)
Shipping Weight	
KBD960	9 lb (4.1 kg)
KBR960	11 lb (4.9 kg)

SYSTEM COMPONENTS/TECHNICAL SPECIFICATIONS



Alarm Interface Unit

The Alarm Interface Unit connects directly to the System 6800 controller. Each unit can monitor up to 64 alarms. Up to two units can be connected, using the CM6800's M port, allowing up to 128 external alarms. The Alarm Interface Unit supports inputs from N.O. or N.C. contacts.

MODEL

ALM2064

Alarm interface unit, provides alarm monitoring capabilities for up to 64 alarm inputs. 100-240V, 50/60 Hz, auto-ranging. (1 RU)

ELECTRICAL

Input Voltage 100-240V, 50/60 Hz, auto-ranging
Power Consumption 30 vA (reactive consumption);
3 watts (active)

Data Ports

Input RS-485, RJ-45 connector
Output RS-485, RJ-45 connector

Indicators Two power LEDs, green
One alarm LED, red

Fusing

Relay Out 500 mA, 250V
Load rating for relay contacts:
0.50A at 125V, 50/60 Hz or 1A at
24 VDC

Operating Distance

4,000 feet (1,219 m) on 24 AWG wire

MECHANICAL

Connectors

Alarm Inputs

Power

RS-485

Relay Out

Four dual-header, 32-input connectors with mating plugs

3-wire, 18 AWG

Two RJ-45 connectors

One 3-pin header with mating plug

GENERAL

Ambient Operating

Temperature

32° to 120°F (0° to 49°C)

Dimensions

1.75" H x 19.00" W x 8.15" D

(4.45 x 48.26 x 20.70 cm)

Mounting

Unit Weight

Fits 19-inch EIA Standard rack (1 RU)

Shipping Weight

7 lb (3.17 kg)

11 lb (4.9 kg)



Relay Interface Unit

The Relay Interface Unit connects directly to the System 6800 controller and provides dry contacts for direct or automatic control of peripheral equipment. Each REL2064 provides up to 64 SPST contact outputs. Up to two units can be connected, using the CM6800's M port. Relays may be configured to N.O. or N.C.

MODEL

REL2064

Relay interface unit provides 64 relays for operating peripheral equipment. 100-240V, 50/60 Hz, auto-ranging. (1 RU)

ELECTRICAL

Input Voltage 100-240V, 50/60 Hz, auto-ranging

Power Consumption

30 vA (reactive consumption);
5 watts (active)

Data Ports

Input RS-485, RJ-45 connector
Baud rate selected with DIP switch

Output RS-485, RJ-45 connector
Baud rate selected with DIP switch

Indicators Two power LEDs, green
One data LED, red

Fusing

Relay Output 500 mA, 250V

Contact Parameters

Max. Switching

Capacity 60 watts

Max. Operating

Voltage 250V, 50/60 Hz

Max. Current

Contact Resistance 75 milliohms

Rated Load Parameters

.5A @ 125V, 50/60 Hz

2A @ 30 VDC

Operating Distance

4,000 feet (1,219 m) on 24 AWG wire

MECHANICAL

Connectors

Relay Inputs

Power

RS-485

Relay Out

Four dual-header, 32 input connectors with mating plugs

3-wire, 18 AWG

Two RJ-45 connectors

One 3-pin header with mating plug

GENERAL

Ambient Operating

Temperature

32° to 122°F (0° to 50°C)

Dimensions

1.73" H x 17.40" W x 8.54" D

(4.39 x 44.20 x 21.69 cm)

Mounting

Unit Weight

Fits 19-inch EIA Standard rack (1 RU)

Shipping Weight

8 lb (3.63 kg)

12 lb (5.4 kg)



TECHNICAL SPECIFICATIONS

Matrix Switcher

CM6800-32X6	Switcher/controller. 32 video inputs, 6 video outputs, NTSC, 120/230V, 50/60 Hz
CM6800-32X6-X	Switcher/controller. 32 video inputs, 6 video outputs, PAL, 120/230V, 50/60 Hz
CM6800-48X8	Switcher/controller. 48 video inputs, 8 video outputs, NTSC, 120/230V, 50/60 Hz
CM6800-48X8-X	Switcher/controller. 48 video inputs, 8 video outputs, PAL, 120/230V, 50/60 Hz

Keyboards

KBD100*	Desktop keyboard, no PTZ
KBD200*	Desktop keyboard, multi-speed PTZ. <i>(Also see C526 spec)</i>
KBD300*	Desktop keyboard with full switching and programming capabilities, plus joystick control of PTZ functions. <i>(Also see C527 spec)</i>
KBD300V	Same as KBD300 except has 5-inch (12.7 cm) LCD monitor, 120V, 60 Hz, NTSC. <i>(Also see C527 spec)</i>
KBD300V-X	Same as KBD300V except 230V, 50 Hz. <i>(Also see C527 spec)</i>
KBD960	Full-function desktop variable-speed keyboard. 120V, 60 Hz wall transformer
KBD960-X	Same as KBD960 except 230V, 50 Hz
KBR960	Full-function 19-inch EIA rack mount keyboard (4 RUs). 120V, 60 Hz
KBR960-X	Same as KBR960 except 230V, 50 Hz

* 25-foot cable supplied. If distance between switcher and keyboard exceeds 25 feet or if more than two keyboards are used with the CM6800, use KBDKIT/KBDKIT-X (CM6800 can provide power for two KBD100/200/300/300V Series keyboards). KBDKIT/KBDKIT-X required when wiring more than one keyboard to a single keyboard port.

Interface Units

ALM2064	Alarm interface unit, provides alarm monitoring capabilities for up to 64 alarm inputs. 100-240V, 50/60 Hz, auto-ranging. (1 RU)
REL2064	Relay interface unit provides 64 relays for operating peripheral equipment. 100-240V, 50/60 Hz, auto-ranging. (1 RU)

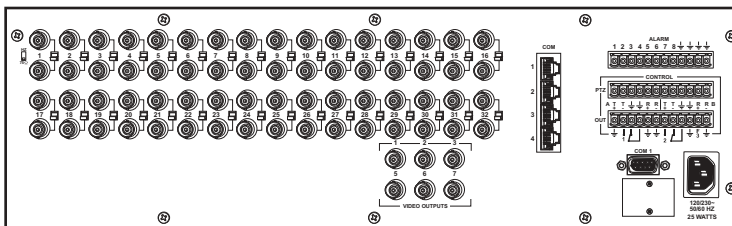
OPTIONAL ACCESSORIES

CM9760-CDU-T	Code distribution unit; 16-channel RS-422 transmit only (2-wire and ground) distributor. Primarily used for "star" configuring up to 16 pan/tilt/zoom receiver data runs
KBDKIT	Remote keyboard wiring kit; includes RJ-45 wall block and 120V to 12V transformer. Use when distance between switcher and keyboard exceeds 25 feet or if more than 2 keyboards are used (CM6800 can provide power for 2 KBD100/200/300/300V Series keyboards). Required when wiring more than one keyboard to a single keyboard port.
KBDKIT-X	Same as KBDKIT except includes 230V to 12V transformer
PV130	Converter kit, RS-232/RS-422, with 12 VDC power supply.

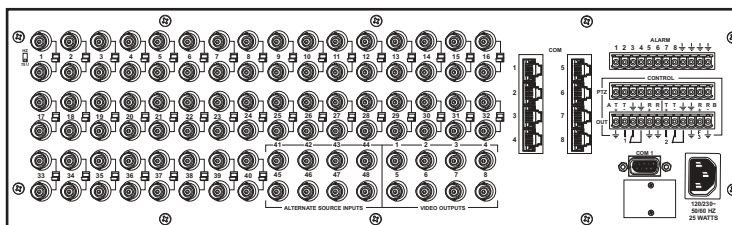
CERTIFICATIONS/RATINGS/PATENTS

- ◆ CE pending
- ◆ UL listed to Standard 6500 (CM6800-48X8)
- ◆ cUL listed to Standard CAN/CSA E60065-00 (CM6800-48X8)
- ◆ U.S. Patent 411,530 - Model KBD300V

32X6 Rear Panel



48X8 Rear Panel



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