



CM9770 Series Matrix

MICROPROCESSOR-BASED SWITCHER/CONTROLLER, 2,048 INPUTS, 512 OUTPUTS

Product Features

- Microprocessor-Based, Full Cross-Point Video Matrix
- High-Density Architecture Supports up to 256 Cameras and 32 Monitors in Each Bay
- Control up to 2,048 Cameras and 512 Monitors in a Single Node or Expand Camera Capacity with a Multi-Node System (up to 24 Nodes).
- Full System Reports From CM9700-MGR Provide System Wiring and Configuration Details
- Sixteen RS-422 COM Ports (Expandable to 120) and Two RS-232 Full-Duplex Ports Available on the CPU
- System Diagnostic LEDs Displayed on Front Panel
- Flash Technology Eases System Maintenance and Upgrades
- Logical Camera Selection and Priority Level Operation
- Multiplexer, DVR, and VCR Control Via Keyboard
- Built-in Video Loss Detection
- Windows®-Based System Management Software (Windows 2000, XP) Includes Multilanguage Menus and On-Screen Help
- Factory Tested Prepackaged Systems
- ASCII Data Input to Interface Access Control and Other External Computer-Based Systems
- Powerful Macro Programming
- Remote Viewing and Control over TCP/IP Networks Using PelcoNet™

Optional Accessories

- "Hot Switch" and Backup CPU Ensure Uninterrupted Operation
- Redundant Power Supplies for Switching Bays
- Coaxitron® Translator Allows PTZ Communication Over Standard Coaxial Cable
- Responds to 5,000 Alarms
- Network Interface Unit Allows Multiple Systems to Share Video and Control
- Graphical User Interface (VMX300) for Simplified Control from External PC
- DVR Management

All CM9770 Series systems require installation by a Pelco Certified Dealer/Installer. This specification sheet may be used for purpose of information only and does not constitute approval or certification of receiving party. Proof of certification must be provided prior to shipment of CM9770 Systems contained herein.



The **9770 System** is a full-featured video matrix switching control system that allows users to view and control up to 2,048 cameras and 512 monitors on a single node. Expanded monitor capacity in the matrix bay allows implementation of larger systems with a smaller footprint (less hardware) than other matrix systems.

The base configuration for the **9770 System** is made up of a central processing unit (CC1), matrix switching bay(s) (MXBs) with video input/output modules, and keyboard controllers (KBDs). Optional components can be added to enhance system capabilities.

Preconfigured, prepackaged systems make installation fast and simple. The **9770 System** features a user-friendly Windows-based management system, which allows for easy system programming and maintenance.

Macros allow activation of events based on schedule or alarm. Macros may call system-wide sequences (tours); activate preset positions on properly equipped cameras; automate VCR control; and activate external relays to control auxiliary functions such as locking doors (additional equipment may be required).

The **9770 System** also includes built-in video loss detection and system diagnostic features, indicated by LEDs on the front panel of the matrix bay. Flash technology incorporated into the system design allows for easier system maintenance and upgrades.

Optional DVR/VCR management allows DVRs and VCRs to be controlled directly from the system keyboards. Suitable DVRs and VCRs can be monitored for operational conditions ensuring continuous recording.



International Standards
Organization Registered Firm;
ISO 9001 Quality System



SYSTEM COMPONENTS/TECHNICAL SPECIFICATIONS



CENTRAL PROCESSING UNIT (CC1)

The central processing unit communicates with external devices and accepts commands from external computers, keyboards, graphical user interfaces (GUIs), access control systems, casino data systems, programmable logic controllers (PLCs), and lighting and intercom systems. An internal VGA card is included for displaying system diagnostics and for programming. RS-422 COM ports are provided for communication with external devices such as matrix switching bays, pan/tilt or dome receivers, and keyboards.

ELECTRICAL

Input Voltage	120 VAC, 60 Hz or 230 VAC, 50 Hz, autoranging
Power Consumption	57 W

Diagnostic Monitor Output	One VGA
I/O Ports	Sixteen RS-422 ports (expandable to 32); total system capability is 120 ports* Two RS-232 ports One parallel printer port One VGA output port Two PC-AT compatible keyboard ports

GENERAL

Operating Temperature	32° to 120°F (0° to 49°C)
Dimensions	19.50" D x 19.00" W x 7.00" H (49.53 x 48.26 x 17.78 cm)
Mounting	Fits 19-inch EIA-standard rack (4 RUs)
Unit Weight	29.7 lb (13.5 kg)
Shipping Weight	43 lb (19.5 kg)

CERTIFICATIONS

- CE, Class B
- UL Listed
- UL Listed to Canadian safety standards
- FCC, Class B



MATRIX SWITCHING BAY

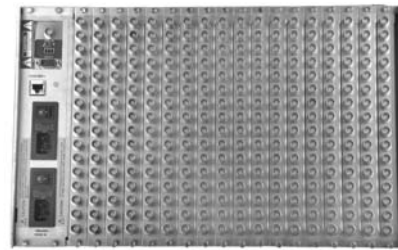
Each bay includes a power supply and mounting baffle and will support modules for up to 256 camera inputs and 32 monitor outputs. Multiple bays can be used to expand a single CPU system to a maximum of 2,048 camera inputs and 512 monitor outputs. An optional backup power supply module (MPS) can be installed in each bay to provide redundancy.

ELECTRICAL

Input Voltage	100-240 VAC, 50/60 Hz, autoranging
Power Consumption	60 W maximum (fully populated)
Communication	Full duplex RS-422 using an RJ-45 connector

VIDEO

Bandwidth	15 MHz
Signal-to-Noise Ratio	-70.5 dB
Adjacent Channel Crosstalk	-60.9 dB at 3.58 MHz
Differential Gain	0.51%
Differential Phase	0.38 degrees
Line Tilt	0.40%
Field Tilt	0.59%
Switching Time	16 mS
Inputs	Card slots support up to 256 inputs per bay
Outputs	Two output card slots for supporting 32 outputs per bay
Video Input Level	0.5 to 2 Vp-p, RS-170 composite video
Impedance	75 ohms terminating (looping versions available)



V-Sync	The Pelco V-Sync signal (sent up the coax cable) provides a synchronization pulse which allows roll-free switching between cameras within the same matrix bay
Vertical Drive	Input connector available on rear panel
Overall Frequency Response	Flat to 8 MHz
Luminance Nonlinearity	20%

GENERAL

Operating Temperature	32° to 122°F (0° to 50°C), non-condensing
Dimensions	
Matrix Bay	21.70" D x 19.00" W x 10.50" H (55.10 x 48.26 x 26.67 cm)
Mounting Baffle**	24.00" D x 19.00" W x 1.75" H (60.96 x 48.26 x 4.45 cm)
Mounting	Fits 19-inch EIA-standard rack (matrix bay: 6 RUs; mounting baffle: 1RU)
Unit Weight	33 lb (14.99 kg) 52 lb (23.59 kg), fully populated
Shipping Weight	44 lb (19.96 kg) 62 lb (28.12 kg), fully populated

CERTIFICATIONS

- CE, Class A
- UL Listed
- UL Listed to Canadian safety standards
- FCC, Class A

*The CM9700-CC1 is equipped with 16 RS-422 COM ports; total capacity can be expanded to 32 ports by adding two CM9700-SER serial communication cards (8 ports each). Total system capability can be expanded to 120 RS-422 COM ports by adding three CM9700-SER-32 port expansion units (32 ports each) to the CC1.

**Included with each MXB unit. Total height of MXB with baffle installed is 12.25 inches (31 cm).

SYSTEM COMPONENTS AND ACCESSORIES

MODELS

CONTROLLER

CM9700-CC1	CPU controller. Operates on 120 VAC, 60 Hz or 230 VAC, 50 Hz. (4 RUs).
CM9700-SER	Serial communication card (RS-422 SERCOM) provides eight communications ports to interface peripheral equipment (four maximum per CPU).
CM9700-SER-32	Port expansion unit; 32 serial communication (SERCOM) ports per unit. Up to three units can be added to a CC1. (Check with Pelco's System Applications Department before adding to an existing CM9700-CC1). Includes interconnecting cables and adapters for DB9 and RJ45 connectors. Data interface can be RS-232 or RS-422. (4 RUs).

MATRIX BAY

CM9770-MXB	Video matrix bay equipped with CM9700-MPS power supply. 100-240 VAC, 50/60 Hz, autoranging (6 RUs).
CM9700-MPS	Matrix bay power supply (spare). 120 VAC, 60 Hz or 230 VAC, 50 Hz.
CM9770-DFC	Downframe card and cable assembly; connects multiple matrix bays for expansion purposes.
CM9770-VCC	Video camera card capable of accepting up to 32 camera inputs. Also requires a rear panel card (CM9770-DFC, CM9770-RPC).
CM9770-RPC	Rear panel video card; provides 32 BNC connectors used to connect camera inputs to matrix bay.
CM9770-VMC	Video monitor card providing 16 monitor outputs; requires CM9770-RPM.
CM9770-RPM	Rear panel monitor card; provides 16 BNCs to connect monitor outputs to matrix bay; also interfaces video output signals from video output card.
CM9700-VPP	Video patch panel; provides 32 BNC inputs for bringing video inputs into the system or 32 BNC connections for looping video out of the system; includes 16-channel coaxial ribbon cable, 3 feet (0.91 m). (3 VPP units = 2 RUs; actual height of each VPP is 1.07 inches [2.7 cm])
CM9700-CBL-06FT	16-channel coaxial ribbon cable, 6 feet (1.82 m)
CM9700-CBL-10FT	16-channel coaxial ribbon cable, 10 feet (3.04 m)



CM9700-VPP FRONT PANEL

CM9700-VPP video patch panels can be mounted horizontally into a standard EIA rack. A cable management bracket is attached to each end of the video patch panel.

OPTIONAL COMPONENTS

The following components are compatible with the 9770 System:

KEYBOARDS

CM9760 Keyboard Controller

The CM9760 keyboard controller allows the user to control the system. The keyboard includes a variable speed, vector-solving joystick with zoom control knob for pan/tilt/zoom (PTZ) and dome control. From the keyboard, the user can control GPI-activated devices, receivers, camera/monitor switching, and multiplexer screen functions, and create single/dual patterns, zones, zone labels, presets and preset recalls. The user can also arm and disarm alarms as well as implement stand-alone, direct mode operation. Twenty-four programmable soft keys can be individually labeled allowing logical camera selection based on the camera's field of view rather than camera numbers.

CM9760-KBD	Full-function desktop variable speed keyboard, white finish; 100-240 VAC, 50/60 Hz.
CM9760-KBD-B	Full-function desktop variable speed keyboard, black finish; 100-240 VAC, 50/60 Hz.
CM9760-KBR	Full-function 19-inch EIA rack mount keyboard (4 RUs); available in black finish only; 100-240 VAC, 50/60 Hz.

A suffix of -US, -UK, -AU, or -EU, designating a region-specific power cord, is added to the above model numbers when ordering. For example, a CM9760-KBD-US is a desktop keyboard (white finish) with a power cord for use in the United States.

KBD200A Keyboard Controller

The KBD200A provides control of camera/monitor switching; reset, pattern, and sequence operation; local and receiver auxiliary operation; and multiplexer screen functions. The KBD200A also provides push-button control of PTZ functions. (A KBDKIT is required for power.)

KBD200A	Desktop keyboard with full switching capabilities, plus push-button control of PTZ functions. 12 VAC or ± 12 VDC. (Requires KBDKIT for power.)
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KBD300A Keyboard Controller

The KBD300A provides control of camera/monitor switching; preset, pattern, and sequence operation; local and receiver auxiliary operation; and multiplexer screen functions. The KBD300A also provides joystick control of PTZ functions. (A KBDKIT is required for power.)

KBD300A	Desktop keyboard with full switching capabilities, plus joystick control of PTZ functions. 12 VAC or ± 12 VDC. (Requires KBDKIT for power.)
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NETWORK INTERFACE UNIT

The CM9700-NW1 network interface unit allows multiple systems to share video and control.

CM9700-NW1	Network interface unit; network CPU and software necessary for joining two or more independent systems together. (4 RUs).
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SYSTEM COMPONENTS AND ACCESSORIES

MISCELLANEOUS

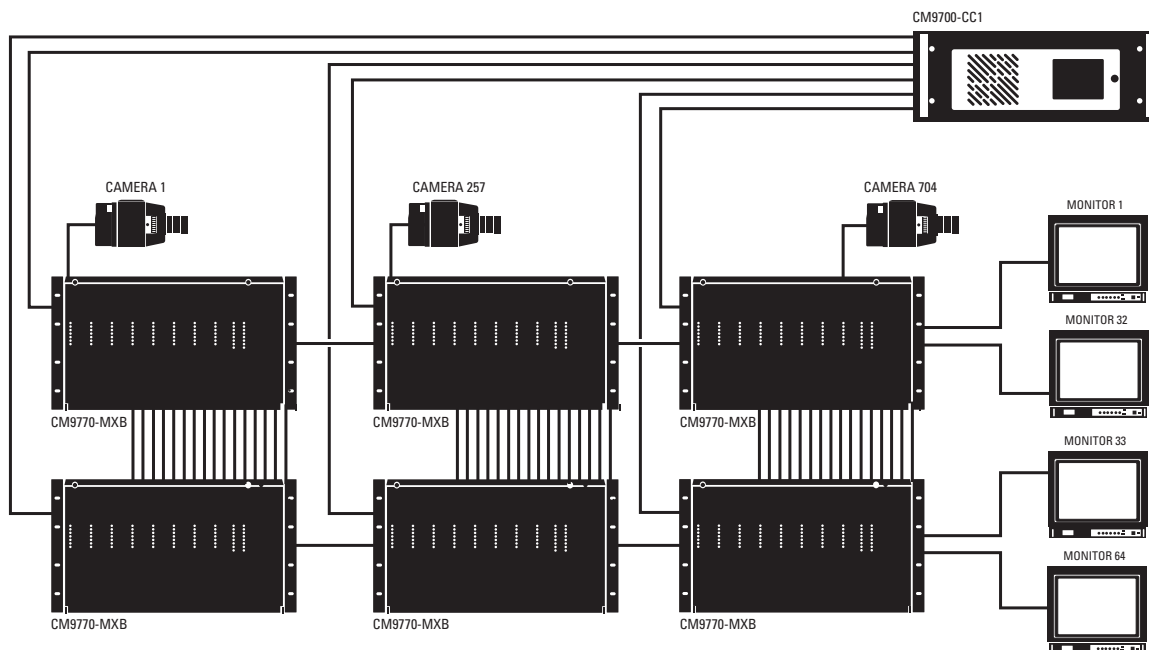
CM9760-ALM	Alarm interface unit; connects directly to each system; each unit can monitor up to 64 alarms and up to four units can be connected in a series from one SERCOM port. (1 RU).
CM9760-CDU-T	Code distribution unit; 16-channel RS-422 transmit only (two data wires and ground) distributor. Primarily used for wiring up to 16 pan/tilt/zoom receivers in a "star" configuration. (1 RU).
CM9760-CXTA	Coaxitron® translator; generates Coaxitron signals for Pelco Coaxitron receivers; each translator supports up to 16 receivers. (1 RU).
CM9760-DMR	Data merger and port expander unit; this unit allows multiple CM9700-CC1 units to control multiple pan/tilt/zoom cameras and allows multiple keyboards to communicate through one CC1 port. (1 RU).
CM9760-DMR-X VMX300 Series	Same as CM9760-DMR except 230 VAC, 50 Hz. Video management system; graphical map/icon-based user interface for mouse-driven operator control from external PC.
CM9760-HS	Hot switch interface unit; changeover unit that monitors the status of a primary CC1 in a 9770 system: three components, 1 RU each.
CM9760-MDA	Master distribution amplifier; inserts master time and date from the CM9700-CC1 and a programmable title of up to 24 characters on one to sixteen video signals. (3 RUs).
CM9760-MDA-X CM9700MDD-EVS	Same as CM9760-MDA except 230 VAC, 50 Hz. Matrix digital decoder (NET5301R optimized for use with matrix) that converts digital video streams from Endura products into analog video to be viewed and controlled on a Pelco CM9700 Series matrix switcher.

CM9760-REL	Relay interface unit; connects directly to each system and provides dry contact switching for direct or automatic control of peripheral equipment; each unit provides up to 64 SPST contact outputs. (1 RU).
CM6800E-48X8	Satellite video matrix switcher. Allows the user to distribute switching capability around a facility, reducing the number of coaxial cable runs to the matrix and allowing monitoring at the satellite switch location. Supports up to 48 inputs, or up to 96 inputs in a 96x16 configuration. (3 RUs).
Genex® Multiplexers	Genex Series MX4009 (9-channel) and MX4016 (16-channel) multiplexers. (1 RU).
CM9760-VCRC	CM9760-VCRC Series VCR Controller; VCR control unit capable of controlling 64 VCRs. (1 RU).

COMPATIBLE RECEIVERS

Spectra® Series	Spectra dome multiple protocol receiver.
ERD97P21-U	Pelco P protocol receiver.
LRD41C21-1/-2/-3	Legacy®, fixed speed receiver with presets.
LRD41C22-1/-2/-3	Same as LRD41C21 Series except variable speed receiver.
Esprit®	Integrated pan/tilt positioning receiver.
Coaxitron	Coaxitron translator allows Coaxitron control of PTZ cameras.
ExSite®	Integrated explosionproof positioning system.

RU = Rack Unit. One RU is equivalent to 1.75 inches (4.45 cm) of vertical space. Identifies number of rack units required to mount component in a 19-inch EIA-standard rack mount.



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