AD AMERICAN DYNAMICS

MegaPower™ 1024
MATRIX SWITCHER/CONTROLLER SYSTEM

The MegaPower 1024 is the ultimate high-density video matrix switcher/controller system. This full-featured, pre-packaged, modular system is designed for the largest and most sophisticated users of CCTV, such as airports, corporate or government complexes, casinos, and large medical centers.

The microprocessor based switcher/controller allows you to automate your entire electronic security infrastructure. This permits a single operator (or multiple operators) to easily manage a highly complex CCTV system.

The MegaPower 1024 system's powerful macro programming feature allows for unsurpassed ease of use, even with the most complex and demanding installations. Each operator can customize his or her own keyboard to perform a multitude of system tasks via simple, easy to remember keystrokes intuitive to that operator.

The system supports a variety of recorder control devices, allowing for control of VCRs and digital recorders directly from any suitably equipped system keyboard.

A single CPU controls an entire system of up to 1024 video inputs and 128 video outputs. Pre-packaged systems are available in any combination of modular increments of 16 video inputs and four video outputs.

Satellite programming of multiple systems allows for full cross-point switching and control of up to 8192 video inputs, satisfying the demands of today's largest systems.

The Windows-based system setup software, provided with the system, greatly simplifies the process of customizing and archiving operational parameters.

In addition to camera, site and alarm monitor text, operators can also see which user or keyboard with equal or higher priority has control of or has locked a PTZ/dome.

Optional Hot-Switch capability provides backup protection to insure uninterrupted system operation.

FEATURES

- **NEW** Monitor displays which user or keyboard is in control of the current-displayed video input
- Modular microprocessor-based, high-density matrix architecture
- Single CPU systems of up to 1024 video inputs by 128 video outputs
- Full cross-point satellite-based systems of up to 8192 video inputs by 128 video outputs
- Looping video inputs available via optional loop panels
- External CPU with optional dual CPU/hot switch capability
- Optional internal video loss detection
- User defined macros
- Recorder control (VCRs and digital recorders)
- Provides fixed and variable-speed pan/tilt and dome control
- Integral menu-driven setup
- Ten flexible RS-232 inputs, expandable to 40
- Windows® 98 and NT® 4.0-based system setup software
- Individual monitor tours
- 64 universal tours, 35 event timers, 64 salvos
- Automatic alarm call-up of up to 1024 alarm inputs
- 25 alarm display/clearance modes
- Four alarm contact tables
- System partitioning of inputs, outputs, and keyboards
- System priority levels and user passwords

FEATURES

Macro Control

The system's powerful macros allow each operator to customize his or her own MP1000cc or AD2088 workstation to perform a multitude of tasks via simple, easy to remember keystrokes that are intuitive to that operator. Once macros have been programmed for a keyboard, that set of macros is stored locally.
Each keyboard can be programmed differently to accommodate individual user preferences, needs and requirements. Alternatively, a set of macros can also be "copied" from one keyboard to another. Macros allow for unsurpassed ease of use, even with the most complex and demanding installations.

Recorder Control

Users can control all of the standard recorder functions directly from any suitably equipped keyboard — play, stop, pause, record, rewind, fast forward and eject — for both VCRs and digital recorders.

Flexible Configurations

Modular, high density, pre-packaged systems in any combination of 16 video input and 4 video output increments up to a maximum of 1024 video inputs by 128 video outputs. Expanded satellite systems accommodated up to 8192 inputs.

Site Control

Users can control fixed or variable-speed domes, pan/tilts, motorized lenses, auxiliary outputs, and 72 presets per video input at suitably-equipped camera sites.

System Programming

On-screen menus enable you to use a full system keyboard to program system features. The video output for programming from the CPU can connect directly to a monitor or to an input of the switcher/controller system for callup on system monitors. The AD1024S3 system setup software enables you to custom-configure all system parameters. For use with computers running Windows 98 or NT 4.0, this software package provides simplified system setup, archiving and retrieval of setup data, and uploading and downloading of system setups to the AD1024CPU, all via RS-232.

RS-232 Communications

Ten ports allow standard communication with keyboards, alarm interface units, satellite system CPUs, recorder control devices, third party interfaces, computers, etc. Each port is individually programmable for data rates of 1200, 2400, 4800, or 9600 baud. Each port can expand to four ports with the optional port expander. This expands the maximum available RS-232 ports to 40.

Selectable On-Screen Display

Each monitor can display the date/time, video input number and title, site number and title, and monitor status. Three date formats are provided: MM/DD/YY, DD/MM/YY, or YY/MM/DD. The on-screen display uses white characters with black outline to optimize viewing on diverse contrast scenes. The user can turn the following displays on and off: video input number and monitor status, video input title, and date/time displays. Text controls include incremental horizontal/vertical positioning and display brightness. When attempting to control a PTZ/dome, each monitor can also display which user or keyboard of equal or higher priority has control or has locked the camera.

Pseudo Camera Numbers

For each video input, users can assign a 4-digit number to replace the default video input number. This can aid operators in identification, such as in the case of multiple level buildings or satellite configurations.

Monitor Tours

An operator can define a tour for any video output at any time. These tours provide 64 positions for insertion of video inputs—each with an individual dwell time. The same video input may be inserted in multiple positions. Tours can be run forward or in reverse. Video inputs partitioned from a monitor are automatically skipped.

Universal Tours

Sixty four tours of video inputs or salvos may be established for callup to monitors at any time. Each tour provides 64 positions for insertion of video inputs—each with an individual dwell time, a preset, and an auxiliary action. Tours can be run forward or in reverse. They can include the same video input multiple times and/or multiple presets from a single camera. Tours can be connected together to form sequences of more than 64 video inputs. Video inputs partitioned from a monitor are automatically skipped.

Event Timers

There are 35 user-programmable times available. These times may be independently designated for multiple days of the week to automatically call up Universal Tours to video output(s). Event timers also enable you to activate and deactivate alarm contacts.

Salvo Switching

Salvo switching allows multiple video inputs to be called simultaneously to multiple contiguous video outputs. Sixty four individual groups (Salvos), consisting of up to 16 video inputs (each with a preset and an auxiliary action) can be called either manually or as part of a Universal Tour.

Automatic Alarm Callup—1024 Alarm Inputs

Alarm inputs can be programmed to call a video input or groups of video inputs to any one or more video outputs. A preset, auxiliary action, and individual dwell time may be defined for each alarm input. Any of 25 alarm display/clearance methods may be selected independently for each video output.

Alarm Contact Table

The alarm contact table associates alarm input numbers with video inputs for alarm callup. Four contact tables are available for inclusion in event timers.

Alarm Display Modes

The alarm display mode is user-selectable for each video group.
• **Hold:** Displays initial alarm until cleared. Queues subsequent alarms.
• **Sequence:** Sequences multiple alarms with individual dwell times until cleared.
• **Sequence and Display:** Displays initial alarm on one video output until alarm is cleared. Subsequent alarms are sequenced on a second output (while they are active).
• **Block Hold:** Alarms are displayed on blocks (groups) of video outputs. Any number of blocks may be programmed with up to 16 video outputs in each individual block.
• **Block Sequence:** Alarms are sequenced on blocks (groups) of video outputs. Any number of blocks may be programmed with up to 16 video outputs in each individual block.

Alarm Clearance

The alarm clearance method is user-selectable for each video output.
• **Acknowledge:** Removes an alarm only after the alarm has been manually acknowledged.
• **AutoClear:** Automatically removes an alarm approximately 20 seconds after the input deactivates (if the alarm has not already been manually acknowledged). Manual acknowledgment may be disabled as a security measure.
• **Instant AutoClear:** Automatically removes an alarm when an input deactivates (if the alarm has not already been manually acknowledged). Manual acknowledgment may be disabled as a security measure.

Status Output

An RS-232 port may be programmed to output both occurrence of and removal of all alarm and video loss events. An alarm event message includes date/time of event, contact number, video input number, and alarm status. Video loss message includes date/time, video input number, video loss status, sync loss status, and detection mode.

System Partitioning

System flexibility is further enhanced by defining authorized access to keyboards, video inputs, and video outputs. Partitioning can also be used to limit access to remote systems. System Partitioning includes the following:
• **Keyboard-to-Monitor Access:** Prevents selected keyboards from accessing selected video outputs.
• **Monitor-to-Camera Access:** Prevents selected video outputs from displaying video from selected video inputs.
• **Keyboard-to-Camera Access:** Prevents selected keyboards from calling or controlling selected video inputs.
• **Keyboard-to-Camera Control Access:** Prevents selected keyboards from controlling remote functions at selected camera sites.

Password and Priority Operation

Keyboards or users can be assigned one of 8 levels of priority control of remote camera sites. Up to 64 user codes, each with a unique password, can be assigned to operators. Access to certain system features may be restricted depending on a user's priority level.

Optional Internal Video Loss Detection

This feature alerts an operator to the complete or partial loss of each video input. Advanced detection circuitry detects loss of video sync or 25%, 50%, 75% loss of video signal for each input. Requires AD2010DBVL module(s).

SYSTEM COMPONENT DESCRIPTIONS

AD1024 CPU External Central Processing Unit (CPU) $C\epsilon$

Included in every preconfigured AD1024 System Controls the entire switcher/controller system. It includes 10 RS-232 data ports (expandable to 40), front panel system diagnostic display, two High Speed Data Line outputs to switching bays and accessories (each output supports 64 monitors). The CPU is compatible with the AD1024HS Hot Switch.

AD1024CPU . . . . .AD1024 Matrix CPU, 120 VAC
AD1024CPU-1 . . . . .AD1024 Matrix CPU, 230 VAC

AD2010R Switching Bays $C\epsilon$

High density video input modules (VIMs) and/or video output modules (VOMs) are accommodated in a single bay. This bay provides for up to 256 video inputs and 16 video outputs without on-screen display, up to 192 video inputs and 16 video outputs with on-screen display, or up to 64 video outputs only.

AD2010R . . . . .Standard Matrix Bay, 120 VAC
AD2010R-1 . . . . .Standard Matrix Bay, 230 VAC

AD2020R Switching Bays $C\epsilon$

Up to 16 high density video input modules (VIMs) and/or video output modules (VOMs) are accommodated in a single bay. This "bi-level" bay is used for condensed system packaging. It provides up to 64 video inputs and 32 video outputs with on-screen display, or up to 64 video outputs only.

AD2020R . . . . .Bi-Level Matrix Bay, 120 VAC
AD2020R-1 . . . . .Bi-Level Matrix Bay, 230 VAC

AD2010PS Power Supply Module $C\epsilon$

Included in the AD2010 and AD2020 series switching bays. Front panel an on/off switch and includes LED indicators to show status of the system's vertical interval sync signal (sync on/off and sync loss). The rear panel provides BNCs for High Speed Data Line input/output, and external sync signal input/output.

AD2010PS . . . . .Power Supply Module for AD2010R, AD2020R Bays
AD2010PS-1 . . . . .Power Supply Module for AD2010R-1, AD2020R-1 Bays

Note: 180° phase adjustable synchronization allows the installer to reference either the AC line or external vertical sync pulse to facilitate roll-free vertical interval switching. An on-screen setup mode enables the installer to match the power supply phase to the camera phase.

AD2010DB Data Buffer Module $C\epsilon$

Included in the AD2010 and AD2020 series switching bays. Each module rear panel supplies 16 video signals for connection to the AD2024VOM video output modules in different bays.

AD2010DB . . . . .Data Receiver/Buffer Module

AD2010DBVL Video Loss Detection Module

In addition to providing the function of the standard AD2010DB Data Buffer Module, this optional module also serves to detect video sync or signal loss. Each module can detect video signals on a maximum of 256 video inputs. Transmission of video loss activity is sent to the AD1024CPU series CPU via RS-232.

AD2010DBVL . . . . .Video Loss Detection Module

AD2016AVIM Video Input Modules $C\epsilon$

The VIM card provides switching for a maximum of 16 video inputs to a maximum of 16 video outputs.

AD2016AVIM-1 . . . . .Input Module, Single Level
AD2016AVIM-2 . . . . .Input Module, Level 1 of Multi Level System
AD2016AVIM-3 . . . . .Input Module, Level 2 of Multi Level System
AD2016AVIM-4 . . . . .Input Model for Looping/Additional Multi Level Systems
AD2016PC . . . . .Input Card
AD2016BP-1 . . . . .VIM-1 Input Card Rear Panel
AD2016BP-2 . . . . .VIM-2 Input Card Rear Panel *
AD2016BP-3 . . . . .VIM-3 Input Card Rear Panel
AD2016BP-4 . . . . .VIM-4 Input Card Rear Panel*

* Includes AD2016CB 30" (76 cm) cables.

AD2024AVOM Video Output Modules $C\epsilon$

The VOM card provides four video outputs per module. Each output provides on-screen text generation and control text positioning.

AD2024AVOM-1 . . . . .Output Module, w/Single Width Rear Panel
AD2024AVOM-2 . . . . .Output Module, w/Double Width Rear Panel
AD2024PC . . . . .Output Card
AD2024BP-1 . . . . .VOM-1 Output Card Rear Panel
AD2024BP-2 . . . . .VOM-2 Output Card Rear Panel

ADULP Universal Loop Panels

The optional panels facilitate looping video signals to other video equipment.

ADULP . . . . .Looping Panel
ADULP-30 . . . . .Looping Panel, w/Two AD2016CB 30" (76 cm) Cables
ADULP-96 . . . . .Looping Panel, w/Two AD2016CB8 96" (244 cm) Cables

AD2024MDT Master Date Time Module

This optional module is intended for dedicated video inputs to dedicated video outputs. Synchronized system time and date information can be inserted on each of the four video outputs.

AD2024MDT . . . . .Date/Time Module

S3 System Setup Software

For use with computers running Windows 98 and NT 4.0, the software provides access to programming advanced system features, simplified system setup, archiving and retrieval of setup data. Uploading/downloading of system setups to the AD1024CPU system, all via RS-232, is included.

OPTIONAL ACCESSORIES

MP1000cc, AD2088, AD2088R, AD2088-1, AD2088R-1, ADTTE $C\epsilon$

Full system keyboards allow for video switching, pan/tilt control, dome control, auxiliary control, macro and recorder control (MP1000cc and AD2088 only), and system programming. The keyboards support bi-directional communication with the AD1024CPU via RS-232 ASCII commands.

AD1981, AD1981X Port Expander

Expands one RS-232 port on a system into four ports. This provides connections to multiple system keyboards.

AD2091, AD2091-1 Manchester Code Generator/Distributor $C\epsilon$

Interfaces with the matrix switcher/controller system via High Speed Data Line and provides 64 AD Manchester code outputs for use by receiver/drivers and suitably-equipped pan/tilts and domes. Multiple units can be cascaded together.

AD2083-02B, AD2083-02B-1 SEC RS-422 Code Generator/Distributor $C\epsilon$

Interfaces with the matrix switcher/controller system via High Speed Data Line and provides 16 SEC RS-422 outputs for use by suitably-equipped domes. Multiple units can be cascaded together.

AD2096A, AD2096-1 Alarm Interface $C\epsilon$

Supervises up to 64 alarm inputs and provides RS-232 ASCII alarm commands to the system. Alarm inputs can be programmed to call any video input, display any preset, or to initiate any auxiliary action. Up to 16 units can be cascaded on a single RS-232 line.

AD1024HS, AD1024HSX CPU Hot Switch

Provides backup protection to insure uninterrupted system operation. Continuously monitors the data lines of two separate CPUs for normal operation. When the AD1024HS detects a CPU malfunction, it automatically selects the alternate CPU to provide uninterrupted system operation.

AD2031, AD2031-1 Switcher Follower $C\epsilon$

Activates relays when designated video inputs are called to designated video outputs. It interfaces with the matrix switcher/controller system and provides up to 32 Form A relays, via High Speed Data Line, that can be grouped in series and addressed to a single video output, or in two groups of 16 relays for two specific video outputs. Multiple units can be cascaded together.

AD2032, AD2032-1 Alarm Responder $C\epsilon$

Activates relays when associated video outputs are in their alarming condition. Interfaces with matrix switcher/controllers and provides up to 32 Form A relays via High Speed Data Line. Multiple units can be cascaded together.

AD2033, AD2033-1 Auxiliary Follower $C\epsilon$

Activates relays when a specific auxiliary is triggered (either manually or automatically) for an associated video input. Interfaces with matrix switcher/controllers and provides up to 32 Form A relays via High Speed Data Line. Multiple units can be cascaded together.

AD1983, AD1983X Code Converter

Converts Manchester code to two bytes of RS-232 control code for transmission on standard RS-232 links. RS-232 receiver/drivers may be connected directly to the link (a separate RS-232 distributor may be required), or a receiving AD1983 Code Converter may be used to convert the signal back to Manchester code for use by standard receiver/drivers.

AD1024CG Four-Channel Character Generator

Displays same title, time/date information as AD2024VOM or can operate as a standalone unit. Interfaces with AD1024 System via High Speed Data Line. Multiple units can be cascaded together.

Recorder Control Devices $C\epsilon$

The series of recorder control devices allow for remote control of VCRs and digital recorders via the AD2088 Full System Keyboard. This enables users to have integrated control of the most popular types of recorders.

- The **AD100XA/AD100XA-1A Recorder Controller** is the CPU of the recorder interface network. Just one recorder controller can accommodate the entire network, and it enables the programming of the various recorder control devices.
- The **AD100IR16/AD100IR16-1A IR Interface Module** controls any recorder that has IR capability and is supplied with an IR remote (used to learn the IR commands).
- The **AD100RL8/AD100RL8-1 Resistive Ladder Module** controls recorders that can be controlled via resistive ladder.
- The **AD100RS8/AD100RS8-1 RS-232 Module** controls RS-232 VCRs and digital recorders.

SPECIFICATIONS

Model Numbers

Fully-configured, pre-packaged systems
AD1024R inputs - outputs . . . . .120 VAC, 50/60 Hz
ADS1024RX inputs - outputs . . . . . .230 VAC, 50/60 Hz
Inputs in increments of 16 (up to 1024)
Outputs in increments of 4 (up to 128)

Operational

Bandwidth . . . . .17 MHz
Frequency Response . . . .± 0.5 dB to 12 MHz
S/N Ratio . . . .-65 dB (Vp-p vs. Vrms noise)
Crosstalk
 Adjacent Channels . . . .-55 dB (at 3.58 MHz)
 Input to Input . . . .-70 dB (at 3.58 MHz)
Differential Delay . . . .± 1.0˚
Differential Phase . . . . .1.5˚ or better
Differential Gain . . . . .1.0% or better
Tilt . . . . .0.5% or better
Gain . . . . .Unity (± 1dB)
Return Loss (Input/output) . . . .≥ 40 dB
DC Level (Video Signal) . . . . .0 volts
Switching . . . . .Complete switching of cross-point matrix. EIA RS-170 and NTSC, CCIR and PAL (X-versions)
Switching Speed . . . . .Less than 20 ms (typical)
Keyboard/Receiver
 Control Time .20 ms (typical)
Phase Adjustment . . . . .180˚ vertical interval adjustment for switching bay
Non-Volatile Memory . . . . .Setup information saved for a minimum of five years
On-Screen Text . . . . .Date/time, video input number, video input title, site number, site title monitor status, user/keyboard number
Character Set .English

Electrical

Supply Voltage
 AD1024R Series . . . . .120 VAC, 50/60 Hz
 ADS1024RX Series . . . . .230 VAC, 50/60 Hz
Power Requirements
 AD2010, AD2020 Series . . . . .40 watts nominal, 60 watts maximum (with 16 modules)

Connections

Video Inputs . . . . .0.5 to 2.0 Vp-p, BNC composite
Video Outputs . . . . .1 Vp-p, composite BNC
RS-232 Ports . . . . .Ten 8-Pin Modular RJ-45 jacks (expandable). Optional Port Expander extends each RS-232 port to four (40 ports max.)
AD High Speed Data
 Line In/Out .Two BNC connectors
External Sync In/Out . . . . .Two BNC connectors
Programming Monitor . . . . .One BNC connector

Mechanical

Mounting . . . . .19-inch EIA rack mount
Dimensions (H x W x D)
 AD2010, AD2020 Series . . . . .267 x 483 x 470 mm (10.5 x 19 x 18.5 in)
 AD1024CPU, AD1024CPU-1 . . . .44.5 x 483 x 260 mm (1.75 x 19 x 10.25 in)
Unit Weight
 AD2010, AD2020 Series . . . . .28 kg (60 lbs), fully loaded bay (with 16 modules)
 AD1024CPU, AD1024CPU-1 . . . .4.5 kg (10 lbs)
Color . . . . .Black

Environmental

Operating Temperature . . . . .0˚ to 60˚ C (32˚ to 140˚ F)
Storage Temperature . . . .-40˚ to 70˚ C (-40˚ to 155˚ F)
Humidity . . . . .5 to 90% RH (non-condensing)

Regulatory

Emissions
 All Models . . . . .FCC Part 15, Subpart B, Class A
 ADS1024X Series . . . . .CE: EN55022, Class B
Immunity
 ADS1024X Series . . . . .CE: EN50082-1
Safety
 AD1024 Series UL1409
 ADS1024X Series . . . . .CE: EN60950

BASIC SYSTEM DIAGRAM