AD1650B MicroPower EP
Video Matrix
Switching System

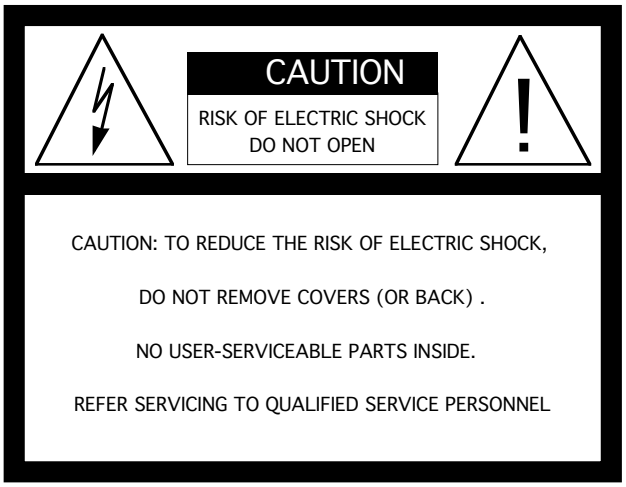
Installation Instructions

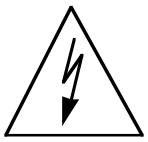
This manual describes the installation procedures for the American Dynamics model AD1650B MicroPower EP Video Matrix Switching Systems. The AD1650B is a CCTV surveillance control system having multiple video inputs, multiple video outputs, and multiple control stations. The AD1650B is capable of controlling a maximum of 128 video input sources such as cameras and a maximum of 16 video outputs such as monitors and video tape recorders. AD1650B Systems are supplied in completely configured switching Bays. Only the necessary bay interconnections, the video input and output connections, and any optional accessory connections need be made prior to operation.

Setup programming and operating instructions for the AD1650B are provided in the System Programming manual, OP1650BSP.

AMERICAN DYNAMICS

The installation of this product should be made by qualified service personnel and should conform to all local codes.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING

To reduce the risk of fire or shock hazard, do not expose this product to rain or moisture.

Warning: This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this product in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

UNPACKING AND INSPECTION

Unpack carefully. This is an electronic product and should be handled as such. Compare the items received with the packing list with your order.

Be sure to save:

1. The shipping cartons and insert pieces. They are the safest material in which to make future shipments of the product.
2. The IMPORTANT SAFEGUARDS sheet.
3. These Installation and Operating Instructions.

MAINTENANCE

User maintenance of this unit is limited to external cleaning and inspection. For specific recommendations refer to the IMPORTANT SAFEGUARDS sheet packaged with this product.

INSTALLATION AND SERVICE

If you require information during installation of this product or if service seems necessary, contact the American Dynamics Repair and Service Department at (800) 442-2225. You must obtain a Return Authorization Number and shipping instructions before returning any product for service.

Do not attempt to service this product yourself. Opening or removing covers may expose you to dangerous voltages or other hazards. Refer all servicing to qualified personnel.

QA301C

CONTENTS

SYSTEM DESCRIPTION

The AD1650B MicroPower EP Matrix Switching System is a CCTV control system with multiple video inputs, multiple video outputs, and multiple control stations. The AD1650B is capable of controlling a maximum of 128 video input sources such as cameras, a maximum of 16 video outputs such as monitors, and a maximum of 24 keyboards.

AD1650B Systems are supplied in completely configured switching bays. Only the necessary bay interconnections, the video input and output connections, and any optional accessory connections need be made prior to operation. The AD1650B System, as delivered, is a complete system with all inputs terminated in 75 ohms. Each bay is packed in a separate shipping carton, labeled with the AD1650B bay assembly number on the outside and on the serial number tag. It is important to note the bay part number for installation.

Sections of this manual are organized specific to the size of the system to be installed. Systems fit in the following categories: one bay, two bay, three bay, four bay, and six bay. The bay number on each serial number tag is important, since this number defines the location of the bay for hook-up.

System Modules

An AD1650B System consists of one or more switching bays with one Central Processing Module, one or more Power Supply Modules, the desired Video Input Modules (VIM) and Video Output Modules (VOM), and appropriate rear panels.

The following pages describe the different modules available for AD1650B switching bays. These include:

Power Supply Module, AD1603N

Power Panel

Central Processing Module, AD1661B

Central Processing Module, AD1663B, with Data Panel

Terminating Video Input Module, AD1611

Looping Video Input Module, AD1609CM

Video Output Module, AD1626

Video Output Module, no Text, AD1626NA

Video Interconnect Panel

All AD1650B switching bays are shipped with the required modules installed in the bays. Only the necessary video and data interconnections to the bays and modules must be made (see Connections, Section 2).

System Keyboards

Eight 2-wire keyboard ports are provided on the rear panel of the Central Processing Module. Two types of keyboards are available for connection to these keyboard ports:

AD1678C - A full-function system operation and programming keyboard with pushbutton lens control and vector solving joystick for pan/tilt movement.

AD1672A - An operator two-monitor keyboard with pushbutton lens control and joystick for pan/tilt movement.

Four RS-232 ports are provided on the rear panel of the Power Supply Module for connection of the following keyboards:

AD2078 - A full-function system operation and programming keyboard with pushbutton lens control and vector solving joystick for pan/tilt movement.

AD1677 - An operator desktop or rack mounted model with pushbutton lens and pan/tilt control.

AD1676B - An operator five-monitor keyboard with pushbutton lens control and joystick for pan/tilt movement.

These ports may be expanded using an AD1981 Port Expander to provide a total of 16 RS-232 ports.

The AD5400 or AD5500 Excalibur Graphical System Manager can be used as a control interface, from a personal computer (PC) connected to any RS-232 port. The Excalibur system provides the same capabilities as an AD2078 keyboard, via a user-friendly graphical interface.

Switching System Accessories

The following American Dynamics products may be connected to the AD1650B System for additional video control capabilities. For specific information on each unit, refer to the respective data sheets for these accessories, or call American Dynamics Applications Department for assistance.

- AD1640 and AD1680 Series Receivers
- AD1680MG Manchester Generator
- AD1683 Control Code/PSK Modem
- AD1691 Code Distributor
- AD1981 Port Expander
- AD1983 Code Converter
- AD2031/AD2032/AD2033 Followers/Responders
- AD2083 Code Translators
- AD1696/AD2096 Alarm Interface Units

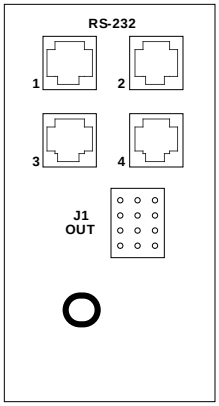
SYSTEM MODULE DESCRIPTIONS

Power Supply Module - AD1603N

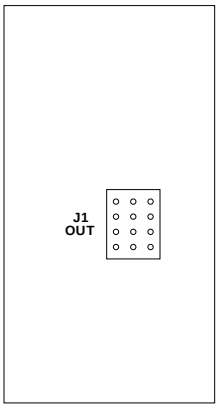
The AD1603N Power Supply Module (PSM) converts the input AC power to the necessary DC voltages which are supplied to all the modules in the AD1650B bay. In multiple bay systems, the AD1603N PSM also provides power to bays that do not have a Power Supply Module.

Power Panels

In bays which have an AD1603N PSM, the rear Power Panel, shown below, provides four 8-pin modular RS-232 ports, labeled 1 through 4, for connection of RS-232 devices such as Keyboards, Alarm Interface Units, Port Expanders, computers, etc. The rear panel also provides a 12-pin interface connector, labeled J1 OUT, for connection of Control Code to code-controlled accessories, such as Code Distributors, Receivers, etc. The J1 OUT connector also distributes power to bays which do not have an AD1603N PSM.

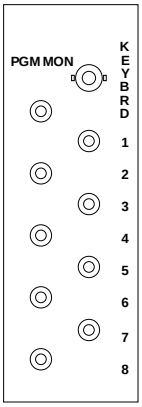


In multiple bay systems, certain bays do not have an AD1603N PSM. For these bays, a rear Power Panel is provided for receipt of power and data signals from the AD1603N PSM in the bays with the PSM. This Power Panel, shown below, provides a 12-pin connector, labeled J1 OUT, for connection of Control Code and power signals from the PSM.



Central Processing Module - AD1661B

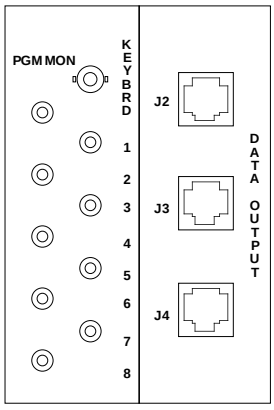
The AD1661B Central Processing Module (CPM) controls the switching bays for the AD1650B system and provides the on-screen programming menus for setup of the system (see System Programming Manual, OP1650BSPB). The AD1661 CPM rear panel provides eight 2-wire keyboard input ports and a programming monitor video output BNC connector, labeled PROG MON, as shown below.



CPM with Data Interconnect Panel - AD1663B

For multiple bay systems, the AD1663B Central Processing Module (CPM) controls the switching bays for the AD1650B system and provides the programming menus for setup of the system. A Data Interconnect Panel is provided with the AD1663B CPM to distribute data and control signals to other bays in the system. Three 8-pin modular RS-232 output ports, labeled J2, J3, and J4, are provided on the Data Interconnect Panel for output of these signals.

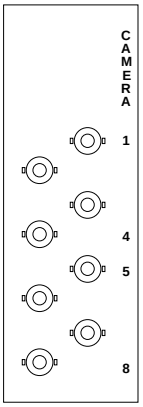
The AD1663B CPM is the same as the AD1661B CPM, above, with the addition of this panel. This module provides all keyboard input ports, the PROG MON BNC, and the RS-232 ports, as illustrated below.



Terminating Video Input Module - AD1611

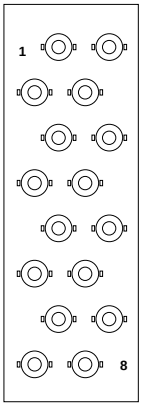
The AD1611 Video Input Module (VIM) performs the actual video switching in the AD1650B switching bays. Each module can switch any one of eight video inputs to any video output, or multiple combinations of video outputs, up to eight. The eight video inputs to the module are connected at the rear panel BNC connectors, as shown below. The connectors are labeled with the appropriate video input number assigned by the switching system: 1 through 8, 9 through 16, and so on up to 121 through 128.

The switched video outputs are routed to the Video Output Modules and the VIP panel within the bay.



Looping Video Input Module - AD1609CM

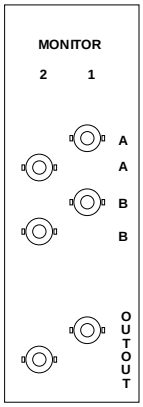
The AD1609CM Video Input Module performs video switching in the AD1650B switching bay, similar to the AD1611 VIM. Each module can switch any one of eight video inputs to any video output, or multiple combinations of video outputs, up to eight. The AD1609CM provides additional looping output BNC connectors for each video input, for routing the unswitched camera video inputs to additional bays.



Video Output Module - AD1626

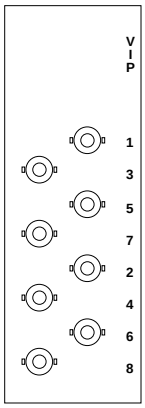
The AD1626 Video Output Module (VOM) creates titles that are added to the monitor video output. Each module controls the output for two system monitors, as labeled at the top of the AD1626 VOM rear panel. The modules are labeled with the appropriate video output number assigned by the switching system: 1 and 2, 3 and 4, and so on up to 15 and 16. The module has two video output BNC connectors on the bottom of the rear panel, labeled OUT, for connection to the two monitors. Four video input BNC connectors are provided for switched inputs from other bays, two inputs for each monitor, labeled A and B.

Model AD1626NA Video Output Module is available with no text on the outputs. The rear panel of both models is the same, as shown below.



Video Interconnect Panel

In multiple bay systems, the Video Interconnect Panel (VIP) is used to distribute the switched video signals from the Video Input Modules in one bay to the Video Output Modules in other bays. Eight video output BNC connectors are provided on the rear panel, as shown below. The connectors are labeled with the appropriate video output number assigned by the switching system: 1 through 8 or 9 through 16.



SETUP

This section of the manual describes the module setup procedures for the AD1650B System. All AD1650B systems are factory configured for proper operation. However, it may be necessary to change or adjust the factory setups to certain modules for unique or changing user requirements. Certain of these module setup procedures should be made prior to installation and connection of the AD1650B (Section 2). The Video Output Module Display Control and Power Supply Module Vertical Phase Adjustment procedures can be done only after the system is connected and powered up.

SETUP

CAUTION - Due to the presence of non-insulated components with hazardous voltages, the following internal adjustments should be performed by qualified service personnel only.

Central Processing Module - Video Type Selection

A DIP switch, labeled S2, on the AD1661B and AD1663B Central Processing Module PCB is factory set for the type of video signal. Switch position 7 of S2 is set to OFF for NTSC video and ON for PAL video.

Video Input Module

The AD1611 and AD1609CM Video Input Modules are configured at the factory and have no user switch settings.

Video Output Module - Display Control

The AD1626 Video Output Module (VOM) has three controls for each monitor display output: brightness, vertical position and horizontal position (see Figure 1-1, below). These are at the front of the AD1626 PCB and are adjusted with the module plugged into the bay, the front panel of the bay removed, and power applied to the bay. The top three controls are for the even-numbered monitor (2, 4, etc.), and the bottom three controls are for the odd-numbered monitor (1, 3, etc.). The function of each control is marked on the board.

To adjust the vertical or horizontal position of a monitor display, set the test switch, labeled S2, to the TEST position (forward). This switch is located under U37 on the board. Using a screwdriver, turn the potentiometers to the desired placement of the display. To lock these positions, return the test switch back to the NORM position. The brightness control can be set at any time.

Video Output Module - Monitor Selection

The AD1626 VOMs are properly configured at the factory. In the event a module setup must be changed, the module must be configured before installation and connection of video outputs. This is done with the AD1626 VOM removed from the bay.

Eight 2-pin jumpers and one 8-position DIP switch are provided, on the module PCB, to configure the AD1626 VOM monitor selection (see Figure 1-1).

Set (insert) two jumpers plugs, only, to select two monitors to be used for this VOM: 1 and 2, 3 and 4, 5 and 6, or 7 and 8. The jumpers are near the back of the AD1626 module PCB (end with gold edge connectors). The PCB labeling indicates the jumper positions for each monitor, ordered as: 1, 3, 5, 7, 2, 4, 6, and 8.

Set the module PCB DIP switch to the same monitor pair as selected in the jumpers. The DIP switch is located near the front edge of the PCB, behind the display controls. The DIP switch positions for each monitor are shown in the table below. Only two switches positions are set to "ON" to identify the monitors selected for this VOM.

Monitor	Jumper Position	DIP Switch Position
1 and/or 9	1	1
2 and/or 10	2	5
3 and/or 11	3	2
4 and/or 12	4	6
5 and/or 13	5	3
6 and/or 14	6	7
7 and/or 15	7	4
8 and/or 16	8	8

Note: The DIP switch position labels *do not* indicate the selected monitor. For example, for monitors 1 and 2, the jumpers are set to 1 and 2, and the DIP switch position 1 and position 5 are set to "ON".

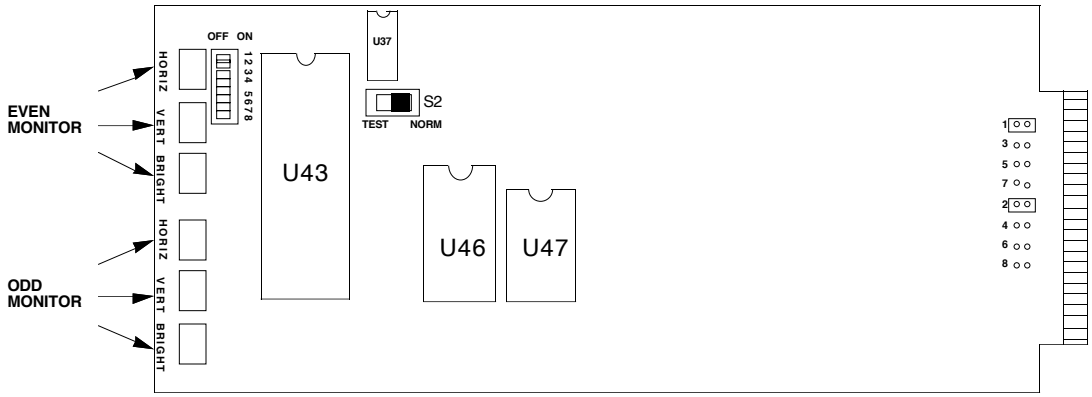


Figure 1-1 - AD1626 Video Output Module PCB Layout

Power Supply Module

The AD1603N Power Supply Module converts the input AC power to the necessary DC voltages which are supplied to all the modules in the AD1650B bay. The AD1603N PSM also includes the Control Code circuitry which supplies code to the remote Receivers and other Control Code accessories.

The system on/off switch and power pilot light are located on the front of the Power Supply Module (see Figure 1-2, below).

Power Supply Module - Vertical Phase Adjustment

A vertical phase control is provided on the AD1603N Power Supply Module for adjustment of the phase of the vertical interval pulse with respect to the AC line. Proper adjustment of this control provides roll-free video switching, provided that all cameras are properly phased together. This control is set at the factory for proper operation.

If field adjustment is required, this control is adjusted with the AD1603N PSM plugged into the bay, the front panel of the bay removed, and power applied to the bay. Insert a screwdriver into the hole located on the top front of the PSM (see Figure 1-2) and turn the control until roll-free switching is obtained. (Video inputs must be line-locked and on the same phase of the AC power source for roll-free vertical switching.)

Power Supply Module - Fuse replacement

The Power Supply Module contains four fuses for the input AC power to the AD1603N and the output DC power from the AD1603N to the AD1650B modules. The fuses may be checked with the power switch turned OFF. These may be replaced in the field by qualified personnel only.

The AC power line fuse, F1, is located in a screw-top fuse holder near the line cord on the rear of the power supply case (see Figure 1-2). If this fuse needs replacement, use the following type fuse, according to the supply voltage:

AD1650B	(120VAC)	3/8A Slo Blo
ADE1650B, ADK1650B	(230VAC)	3/16A T

In addition, three DC output power fuses are mounted on the surface of the AD1603N PCB (see Figure 1-2). These may be replaced with the following size fuses:

F2 (+18VDC) - 1A, 250V
F3 (+9VDC) - 2A, 250V
F4 (-18VDC) - 3/10A, 250V

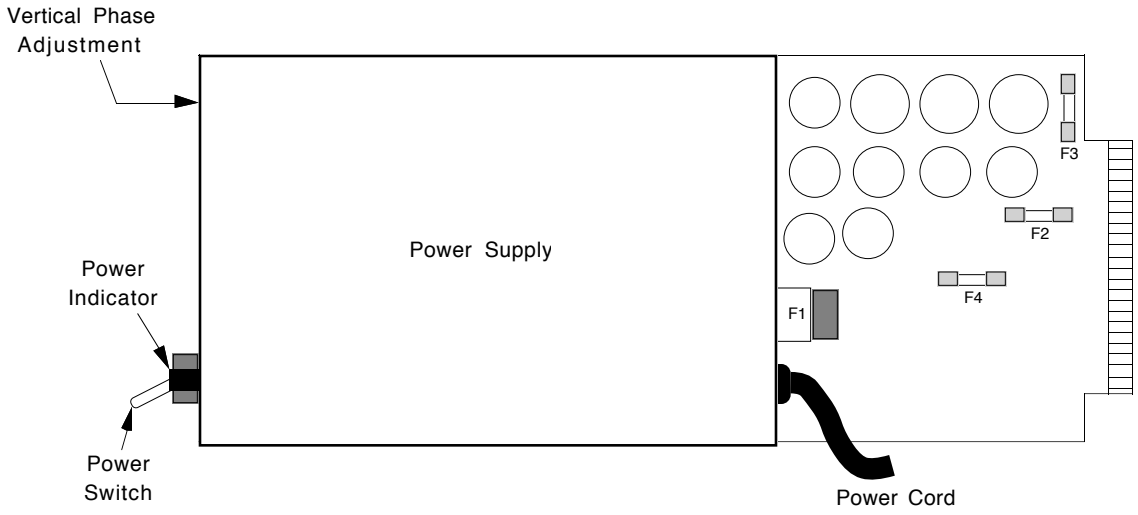


Figure 1-2 - AD1603N Power Supply Module PCB Layout

SYSTEM INSTALLATION

This section of the manual describes the system installation and connection procedures for the AD1650B System. AD1650B Systems are supplied in completely configured switching bays. Only the necessary bay interconnections, the video input and output connections, and any optional accessory connections need be made prior to operation.

INSTALLATION

This installation should be made by qualified service personnel and should conform to all local codes. Safeguards must be taken to avoid unintentional operation by employees and maintenance personnel working about the premises, by falling objects, by customers, by building vibration, and by similar causes.

Mounting

AD1650B systems are normally supplied for standard 19-inch rack mounting and have a rack height of 5 1/4 inches. These models have an "R" suffix to the model number (e.g., AD1650BR32-8). Single bay systems which are available for desktop use have a "D" suffix to the model number (e.g., AD1650BD32-8). The system layout is designed for ease of installation and minimum interconnecting cable length.

In multiple bay configurations, carefully identify the various bays before mounting. The video inputs should be located near the top of the racks while the video outputs should be located near the bottom, as illustrated in the Typical System Configurations section at the end of this manual.

When the system configuration requires more than one rack, the AD1650B bays should be mounted in side-by-side racks as illustrated in the Typical System Configurations.

For proper ventilation and ease of service, allow at least 3 feet (1 meter) from the rear of the racks to any wall.

Power Sources

Models with an "AD" prefix to the model number (AD1650BD8-2, AD1650BR96-8, etc.,) are configured for use with a 120VAC, 50/60Hz primary power source. Models with an "ADE" or "ADK" prefix (ADE1650BD8-2, AD1650BR96-8, etc.,) are configured for a 230VAC, 50Hz primary power source. All models are supplied with pendant 3-wire cords and plugs for mating to the primary source outlet.

DO NOT PHYSICALLY CONNECT EQUIPMENT TO THE POWER SOURCE UNTIL READY TO "POWER UP"

Read the section on **POWERING UP** (Section 4) before applying power to any units.

CONNECTIONS

Note: Internal jumper switch settings on the modules should be made before system connections are started (see SETUP, Section 2).

All AD1650B system connections are made on the rear panels of the bays or modules. Be certain that all connections are completed properly before applying power.

Each installation should be made in a planned and orderly manner. Confirm the operation of each piece of equipment as early as possible during the installation procedure. It is much easier to remove a few temporary terminations or connections after a confirmation check than it is to disconnect and re-wire a large number of "permanent" connections.

To facilitate maintenance and service problems, mark all input and output cables.

Power and Data Interconnections

Inter-bay power and data cables are supplied as required for each configuration. Depending on the functions of the bay, the power panels supplied with each bay have different configurations and connector jack designations. See the descriptions of Power and Data Interconnections in each of the System Configuration descriptions, Section 3.

Note
When using interbay power and data cables, connect ground (black lead wire with lug) to each bay with a screw.

Video Connections

All video connections should be made using a high-grade, 75-ohm, RG-59U video cable (Belden 8241 or equivalent) with BNC connectors. All video outputs must be terminated in 75 ohms at the last unit on the run. Intermediate units must be set to Hi-Z. Outputs which are improperly terminated will not display the system-generated alphanumerics and the resulting pictures will be of poor quality.

Inter-bay power, data, and video connections for several different AD1650B System Configurations are described in Section 3 of this manual. Illustrations of these configurations and system bay interconnections are shown in the Typical System Connections, pages C-8 through C-13.

Control Code Connections

The Control Code for Receivers, Code Followers/Responders, Code Distributors, Code Translators, and other code-controlled accessories is provided by Control Code Outputs in either the AD1651B, AD1653B, or AD1655 bay. Accessories associated with video inputs 1 through 64 are controlled by the Control Code Output from AD1651B or AD1653B bays. Accessories associated with video inputs 65 through 128 are controlled by the Control Code Output from the AD1655 bay.

Control Code emanates from J1, a 12-pin connector, on the back panels of the AD1603N Power Supply Modules of the appropriate bays. A mating plug, with leads, is supplied. Pinouts for the color-coded leads on this connector and the corresponding equipment terminal identifications are:

J1 JACK PIN NO.	LEAD COLOR	EQUIPMENT TERMINAL
1	White	W
4	Black	B
7	Shield	S

Connections are made by connecting the appropriate signal wires from the J1 plug to the unit's B/W/S terminals.

- Connect the **Black Code** wire to the terminal marked **B**.
- Connect the **White Code** wire to the terminal marked **W**.
- Connect the cable **Shield** to the terminal marked **S**.

Control Code Lines must be 18-AWG, shielded, two-wire, twisted pair, Belden 8760 or equivalent (for plenum use Belden 88760 or equivalent). Control Code Lines are NEC Class 2, low voltage circuits. Where local codes permit, installation in conduit is not required. Avoid installation near high voltage circuits or other potential interference sources.

A maximum of three code-controlled units may be "Daisy Chained" on one Control Code Line as shown in Figure 2-1. The maximum code line length is 5000 feet (1500m). A 120-ohm termination must be provided at the last piece of equipment on each Code line.

If additional equipment are required with a Control Code Output or if longer distances are involved, Code Distribution Units must be used as shown in Figure 2-2. Each AD1691 Code Distribution Unit provides 64 Control Code outputs from a single Control Code input. A 120-ohm termination must be provided at the last equipment on each code output line.

For connection of code-controlled accessories (receivers, followers/responders, translators, code distribution units) refer to the installation manual included with each device.

Refer to the Typical System Connections, page C-5, at the end of this manual, for illustration of Control Code connections.

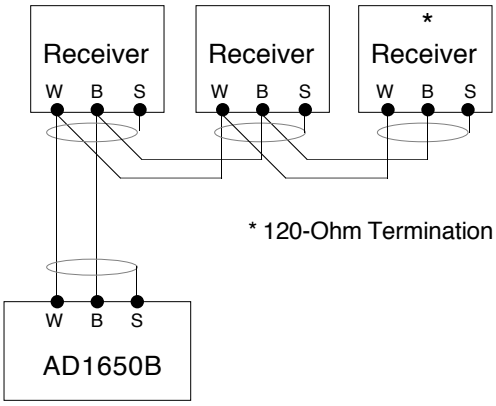


Figure 2-1 - Control Code "Daisy Chain" Connections

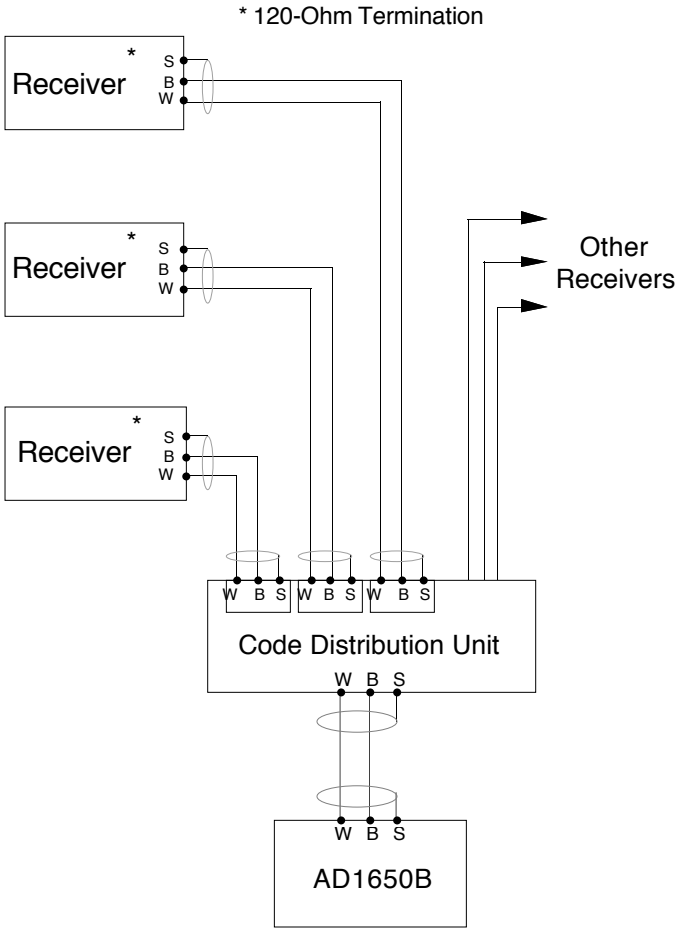


Figure 2-2 - Use of Code Distribution Unit

System Control Connections

TWO-WIRE KEYBOARDS

Eight 2-wire keyboard ports are provided on the rear panel of the AD1661B or AD1663B CPM (see rear panel illustrations on page 2). The port number labels on the rear panel, 1 - 8, correspond to the monitor number controlled via that port. Two AD keyboards are available for connection to these ports:

The AD1672A is a 2-monitor keyboard. This keyboard has two connection cables and may be connected to any two of the ports to control the corresponding numbered monitors.

The AD1678C is a full system keyboard. It may be connected to *any* 2-wire port to control *all* eight monitors.

See the Typical System Connections, page C-2, for illustration of 2-wire keyboard connection.

RS-232 KEYBOARDS AND CONTROL UNITS

Four modular RS-232 ports are provided on the rear panel of the AD1603N Power Supply Module in the AD1651B or AD1653B bay (see rear panel illustrations on page 2). These ports are used for control connections to the CPM of that bay. The four ports may be expanded, using the AD1981 Port Expanders, to provide a maximum of 16 keyboard ports for control connections to the AD1650B system.

AD1676B, AD1677, and AD2078 Keyboards, AD2096 Alarm Interface Units, AD1981 Port Expanders, and other RS-232 compatible devices such as computers, modems, etc. are connected to any of the four RS-232 Ports. Connection, to any of the RS-232 ports, is by an 8-pin modular plug. The AD1650B is supplied with four modular wall-mount junction boxes (HP0047, Figure 2-3)and four modular cables (JJ0007) for connections to these ports.

RS-232 devices can be connected directly to the AD1650B RS-232 ports using the supplied JJ0007 cables if the connection distance between the AD1650B and the RS-232 device is seven feet or less.

If the connection distance exceeds seven feet, an 8-pin Junction Box (HP0047, Figure 2-3) is provided for RS-232 connections. The Junction Box is connected to an AD1650B RS-232 port with the supplied JJ0007 cable, and is wired to the RS-232 device using 18-AWG shielded 3-wire cable (Belden 8770 or equivalent). The maximum cable length between an RS-232 device and the Junction Box is 1000 feet. The pin definitions for the Junction Box are provided in Table 2-1.

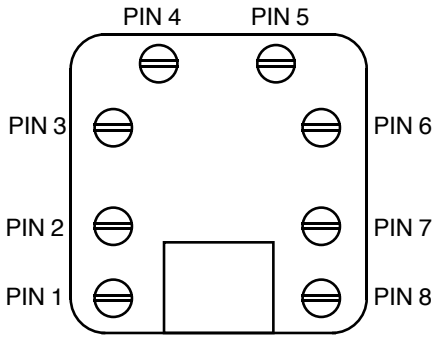


Figure 2-3 - HP0047 Junction Box

Table 2-1 - Junction Box Terminal Definition

Interface Signal	Box Pin	Box Color	RS-232 Code
No Connection	1	Blue	-
Shield	2	Orange	Shield
No Connection	3	Black	-
Receive Data	4	Red	RCD
Transmit Data	5	Green	XMIT
No Connection	6	Yellow	-
Ground	7	Brown	GND
No Connection	8	Gray	-

For proper RS-232 connections, ascertain the DTE (Data Terminal Equipment) or DCE (Data Control Equipment) pin configuration of each connected RS-232 device. All American Dynamics equipment, including the AD1650B, are configured as DTE devices. Consult the installation manual of the RS-232 device for its pin and signal definitions.

The connections for DTE-to-DTE communications between an RS-232 device and the AD1650B Junction Box are:

- Connect the **XMIT** pin of the RS-232 device to **RCD** (pin 4) of the AD1650B Junction Box,
- Connect the **RCD** pin of the RS-232 device to **XMIT** (pin 5) of the AD1650B Junction Box,
- Connect the **Ground** of the RS-232 device to **GND** (pin 7) of the AD1650B Junction Box.

Make RS-232 cable shield connections only at the connectors (Junction Box) attached to the AD1650B bay.

For distances of over 1000 feet, a link using asynchronous line drivers, short-haul modems, or dial-up modems is required. RS-232 cables with mating connectors are required between the AD1650B and the modem at one end of the link and between the modem and the RS-232 device at the other end.

See the Typical System Connections at the end of this manual, pages C-3, C-4, C-6, and C-7, for illustrations of RS-232 device connections.

SYSTEM CONFIGURATIONS

The following section of this manual provides interconnection information for typical configurations of the AD1650B system. These are organized according to the size and capabilities of systems.

SYSTEM CONFIGURATIONS

The following section of this manual provides interconnection information for typical configurations of the AD1650B system. These are organized according to the size and capabilities of systems, as follows:

Illustrations of these configurations and bay interconnections are shown in the Typical System Connections at the end of this manual, pages C-8 through C-13.

The instructions in the following pages and the Typical System Connection illustrations show the modules and connections for the maximum number of Cameras and Monitors of each configuration. Smaller switching system matrices, such as those ordered with future expansion in mind, may have fewer modules installed than illustrated.

These system configurations include varied combinations of AD1650B bays, with different mixtures of modules for power, processor control, Video Input, and Video Output. The different types of bays used in these configurations are:

AD1651B - CPU bay for Single Bay systems

AD1653B - CPU bay for Multiple Bay systems

AD1654 - Bay for Input Modules, Terminated

AD1655 - Bay for Input Modules, Terminated, with power

AD1656 - Bay for Input Modules, Looping

AD1657 - Bay for Output Modules, with power

AD1658 - Bay for Input Modules, Looping, with power

The descriptions in the following pages include the following subsections of connection instructions, as applicable to each configuration.

Power/Data Interconnections

Bays that do not contain a power supply are provided power via the Power/Data Interconnections described in each section. All bays in the multi-bay configurations receive control information from the AD1653B bay via either the Power/Data Interconnections (for bays with no power supply) or separate Data Interconnections (for bays with power supply modules).

Note
When using interbay power and data cables, connect ground (black lead wire with lug) to each bay with a screw.

Control Code Connections

In each configuration, Control Code for camera receivers and other code-controlled units is provided either directly from the J1 connector on the Power Panel of the appropriate bay, or from flying leads on the Power/Data Interconnections. These are identified, as appropriate to each configuration, in the following pages. See page 2-3 for Control Code connections to code-controlled accessories.

Video Interconnections

In most multiple-bay configurations, camera inputs switched by the Video Input Modules are routed to the appropriate Video Output Modules in other bays from the Video Interconnect Panel (VIP) in the input bay. The required Video Interconnections are identified in each configuration in the following pages.

Video Input and Output Connections

All (Camera) video input and (Monitor) video output connections for each type of video module are identified in each of the following configurations.

Note: In the following configuration descriptions, references to "left" or "right" apply to the Bays as viewed from the REAR.

SINGLE BAY SYSTEMS

Single bay systems can consist of 56 cameras and 2 monitors, 48 cameras and 4 monitors, 40 cameras and 6 monitors, or 32 cameras and 8 monitors. A complete system is supplied in one AD1651B bay.

Installed modules include:

One AD1603N Power Supply Module (PSM),

One AD1661B Central Processing Module (CPM),

One to seven AD1611 Video Input Modules (VIMs),

One to four AD1626 Video Output Modules (VOMs).

For illustration of a typical single bay system, see Page C-8 of the Typical System Connections.

IDENTIFY THESE MODULES CAREFULLY BEFORE PROCEEDING.

Power/Data Interconnections

Single bay systems require no power interconnections. All power to the bay and to all modules in the bay is supplied from the AD1603N PSM within the bay.

Control Code Connections

Control Code for all camera receivers in a system is provided from the J1 OUT connector on the AD1603N PSM Power Panel.

Video Input Connections

Each AD1611 VIM includes eight terminated BNC's on the back panel for video input connections. The system assigns the video input connected to the top BNC on the right-most AD1611 VIM as input video number 1, and the video input connected to the top BNC on the next AD1611 VIM to the left as input video number 9, etc., up to video input number 56 on the bottom BNC of the last (seventh) AD1611 VIM on the left.

Video Output Connections

Each AD1626 VOM has two BNC's on the bottom of the back panel (labeled OUT) for video output connections. The system assigns the upper right OUT BNC, on the right-most AD1626 VOM, as video output number 1, and the lower left OUT BNC on this VOM as video output number 2. The upper right OUT BNC on the next AD1626 VOM to the left is assigned as video output number 3, etc., up to video output number 8 for four VOMs.

The four top-most BNC's on each VOM, labeled A and B, are not used in single bay configurations.

TWO BAY SYSTEMS, 64 CAMERAS x 8 MONITORS

Systems for a maximum of 64 cameras and 8 monitors are supplied in two bays. The AD1653B bay contains a power supply, processor, and monitor modules for monitors 1 through 8. The AD1654 bay contains the the camera modules for cameras 1 through 64.

These systems are supplied in two bays configured as shown below:

Modules/Panels	AD1653B Bay	AD1654 Bay
AD1603N PSM, Power Panel	1	-
Power Panel	-	1
AD1663B CPM, Data Panel	1	-
AD1611 VIM	-	1-8
AD1626 VOM	1-4	-
VIP Panel	-	1

For illustration of a typical two bay system with 64 cameras and 8 monitors, see Page C-9 of the Typical System Connections.

CAREFULLY IDENTIFY ALL BAYS, MODULES, AND PANELS BEFORE PROCEEDING.

Power/Data Interconnections

A Power/Data Interconnection cable is supplied to provide both operating power and control signals to the AD1654 bay from the AD1653B bay. Connect the cable between connector J1 on the AD1603N PSM Power Panel in the AD1653B bay and connector J1 on the Power Panel in the AD1654 bay.

Control Code Connections

Control Code for all 64 cameras is provided from flying leads on the supplied Power/Data Interconnection cable, above.

Video Interconnections

The camera video outputs from the AD1654 bay are provided through eight BNC connectors, labeled 1, 3, 5, 7, and 2, 4, 6, 8, on the VIP Panel.

Each AD1626 VOM in the AD1653B bay has two pairs of input BNC connectors located on the upper portion of its back panel for video interconnections from the VIP Panel. From the rear, the input BNC for system monitor 1 is located at the right-most VOM position, labeled MONITOR 1 A, and system monitor 2 is the next position to the left, labeled MONITOR 2 A. System monitor 3 is on the next VOM panel to the left, labeled MONITOR 3 A and system monitor 4 is labeled MONITOR 4 A, and so on to system monitor 8 on the fourth VOM panel. The "B" MONITOR BNC connectors are not used in systems with 64 cameras or less.

AD1654 to AD1653B - Connect the top BNC on the AD1654 bay VIP Panel, labeled 1, to the top input BNC of the AD1653B bay VOM panel for system monitor 1, labeled MONITOR 1 A. Connect the BNC labeled 2 on the AD1654 bay VIP panel, to the top input BNC of the AD1653B bay VOM panel for system monitor 2, labeled 2 A. Continue in this manner until all eight connections of the AD1654 bay VIP panel are connected to all eight "A" monitor input BNC's of the AD1653B bay VOM panels. If there are less than eight monitors in the system, leave the remaining BNC's on the VIP panel unterminated.

DO NOT TERMINATE THE VIP PANELS.

Video Input Connections

Each AD1611 VIM in the AD1654 bay has eight terminated BNC's on the back panel for video input connections. The system assigns the video input connected to the top BNC on the right-most AD1611 VIM as input number 1. The video input connected to the top BNC on the next AD1611 VIM to the left is assigned as input number 9, etc., up to video input number 64 on the bottom BNC of the last AD1611 VIM.

Video Output Connections

Each AD1626 VOM in the AD1653B bay has two BNC's on the bottom of its back panel (labeled OUT) for video output connections. The system assigns the upper right OUT BNC on the right-most AD1626 VOM as video output number 1, and the lower left OUT BNC on this VOM as video output number 2. The upper-right OUT BNC on the next AD1626 VOM to the left is assigned as video output number 3, etc., up to video output number 8 on the fourth VOM.

THREE BAY SYSTEMS, 128 CAMERAS x 8 MONITORS

Systems for a maximum of 128 cameras and 8 monitors are supplied in three bays. The AD1653B bay contains a power supply, a processor, and monitor modules for monitors 1 through 8. The AD1654 bay contains the camera modules for cameras 1 through 64. The AD1655 bay contains a power supply and camera modules for cameras 65 through 128.

These systems are supplied in three bays configured as shown below:

Modules/Panels	AD1653B Bay	AD1654 Bay	AD1655 Bay
AD1603N PSM, Power Panel	1	-	1
Power Panel	-	1	-
AD1663B CPM, Data Panel	1	-	-
AD1611 VIM	-	8	1-8
AD1626 VOM	1-4	-	-
VIP Panel	-	1	1

For illustration of a typical Three Bay system with 128 cameras and 8 monitors, see Page C-10 of the Typical System Connections.

CAREFULLY IDENTIFY ALL BAYS, MODULES, AND PANELS BEFORE PROCEEDING.

Power/Data Interconnections

A Power/Data Interconnection cable is supplied to provide both operating power and control signals to the AD1654 bay from the AD1653B bay. Connect the cable between connector J1 on the AD1603N PSM Power Panel in the AD1653B bay and connector J1 on the Power Panel in the AD1654 bay.

A separate Data Interconnect cable is supplied to provide control data to the AD1655 bay. Connect this Data cable between connector J2 on the Data Panel in the AD1653B bay and connector J2 on the Power Panel in the AD1655 bay.

Control Code Connections

Control Code for cameras 1-64 is provided from flying leads on the Power/Data cable from connector J1 on the AD1653B bay. Control Code for cameras 65-128 is provided from connector J1 on the Power Panel in the AD1655 bay.

Video Interconnections

The camera video outputs from the VIP Panels on the AD1654 (cameras 1 to 64) and AD1655 (cameras 65 to 128) bays are provided through eight BNC's, labeled 1, 3, 5, 7, and 2, 4, 6, 8.

Each AD1626 VOM in the AD1653B bay has two pairs of input BNC's located on the upper portion of its back panel for video interconnections from the VIP panels. Outputs from the AD1654 bay connect to the AD1653B bay "A" MONITOR BNC's. Outputs from the AD1655 bay connect to the AD1653B bay "B" BNC's.

From the rear of the AD1653B bay, the input BNC for system monitor 1 is located at the right-most VOM position in the bay, labeled MONITOR 1 A and 1 B, and system monitor 2 is labeled MONITOR 2 A and 2 B. System monitor 3 is on the next VOM panel to the left, labeled MONITOR 3 A and 3 B, and system monitor 4 is labeled MONITOR 4 A and 4 B, and so on to system monitor 8 on the fourth VOM panel.

AD1654 to AD1653B - Connect the top BNC on the AD1654 bay VIP Panel, labeled 1, to the top input BNC of the AD1653B bay VOM panel for system monitor 1, labeled MONITOR 1 A. Connect the BNC labeled 2 on the AD1654 bay VIP panel, to the top input BNC of the AD1653B bay VOM panel for system monitor 2, labeled 2 A. Continue in this manner until all eight connections of the AD1654 bay VIP panel are connected to all eight "A" monitor inputs of the AD1653B bay VOM panels. If there are less than eight monitors in the system, leave the remaining BNC's on the VIP panel unterminated.

DO NOT TERMINATE THE VIP PANELS.

AD1655 to AD1653B - Connect the top BNC on the AD1655 bay VIP Panel, labeled 1, to the second input BNC of the AD1653B bay VOM panel for system monitor 1, labeled MONITOR 1 B. Connect the BNC labeled 2 on the AD1655 bay VIP panel, to the second input BNC of the AD1653B bay VOM panel for system monitor 2, labeled 2 B. Continue in this manner until all eight connections of the AD1655 bay VIP panel are connected to all eight "B" monitor inputs of the AD1653B bay VOM panels. If there are less than eight monitors in the system, leave the remaining BNC's on the VIP panel unterminated.

DO NOT TERMINATE VIP PANELS.

(Continue on the next page for Video Input and Output Connections for this configuration.)

THREE BAY SYSTEMS, 128 CAMERAS x 8 MONITORS
(Continued from prior page)

Video Input Connections

Each AD1611 VIM in the AD1654 and AD1655 bays includes eight terminated BNC's for video input connections. The system assigns the video input connected to the top BNC on the right-most AD1626 VIM in the AD1654 bay as input number 1. The video input connected to the top BNC on the next VIM to the left is assigned as input number 9 etc., up to video input number 64. In the AD1655 bay, the system assigns the video input connected to the top BNC on the right-most VIM as input number 65. The video input connected to the top BNC on the next VIM to the left is assigned as input number 73 etc., up to number 128.

Video Output Connections

Each AD1626 VOM in the AD1653B bay has two BNC's on the bottom of its back panel (labeled OUT) for video output connections. The system assigns the upper right OUT BNC on the right-most VOM as output number 1, and the lower left OUT BNC of this VOM as output number 2. The upper right OUT BNC on the next VOM to the left is assigned as output number 3, etc., up to output number 8.

TWO BAY SYSTEMS, 24 CAMERAS x 16 MONITORS

Systems for a maximum of 24 cameras and 16 monitors are supplied in two bays. The AD1653B bay contains a power supply, a processor, camera modules for cameras 1 through 24, and monitor modules for monitors 1 through 8. The AD1657 bay contains a power supply, camera modules for cameras 1 through 24, and monitor modules for monitors 9 through 16.

These systems are supplied in two bays configured as shown below:

Modules/Panels	AD1653B Bay	AD1657 Bay
AD1603N PSM, Power Panel	1	1
AD1663B CPM, Data Panel	1	-
AD1611 VIM	1-3	-
AD1609CM VIM	-	1-3
AD1626 VOM	4	1-4

For illustration of a typical Two Bay system with 24 cameras and 16 monitors, see Page C-11 of the Typical System Connections.

IDENTIFY ALL BAYS, MODULES, AND PANELS CAREFULLY BEFORE PROCEEDING.

Power/Data Interconnections

Each bay contains an AD1603N Power Supply Module, thus no power interconnection is required.

A Data Interconnect cable is supplied to provide control data to the AD1657 bay. Connect this cable between connector J3 on the Data Panel in the AD1653B bay and connector J3 on the Power Panel in the AD1657 bay.

Control Code Connections

Control Code for all cameras in this configuration is provided from connector J1 on the Power Panel in the AD1653B bay.

Video Input Connections

Each AD1609CM in the AD1657 bay has eight pairs of looping BNC's on the back panel for video input connections. Video inputs are connected to one BNC of each pair and looped to the corresponding terminated video input in the AD1611 VIM in the AD1653B bay.

The system assigns the video input connected to the top BNC pair on the right-most AD1609CM as input number 1, the video input connected to the top BNC pair on the next AD1609CM to the left as input number 9, and the video input connected to the top BNC pair on the third AD1609CM as input number 17, up to video input 24 on the bottom BNC pair of the third AD1609CM.

Video Output Connections

Each AD1626 VOM in the AD1653B and AD1657 bays has two BNC's on the bottom of the back panel (labeled OUT) for video output connections.

In the AD1653B bay, the system assigns the video output connected to the upper right OUT BNC on the right-most AD1626 VOM as video output number 1, and the video output from the lower left OUT BNC of this VOM as video output number 2. The video output connected to the upper right OUT BNC on the next AD1626 VOM to the left is assigned as output number 3, etc., up to video output number 8 on the fourth VOM in this bay.

In the AD1657 bay, the system assigns the video output connected to the upper right OUT BNC on the right-most AD1626 VOM as output number 9, and the video output from the lower left OUT BNC of this VOM as output number 10. The video output connected to the upper right OUT BNC on the next AD1626 VOM to the left is assigned as output number 11, etc., up to video output number 16 on the fourth VOM in this bay.

The four top-most BNC's on each VOM, labeled A and B, are not used in this configuration.

FOUR BAY SYSTEMS, 64 CAMERAS x 16 MONITORS

Systems for a maximum of 64 cameras and 16 monitors are supplied in four bays. The AD1653B bay contains a power supply, processor, and monitor modules for monitors 1 - 8. The AD1657 bay contains a power supply and monitor modules for monitors 9 - 16. The AD1654 bay contains camera modules for cameras 1 - 64 for monitors 1 - 8. The AD1656 bay contains camera modules for cameras 1 - 64 for monitors 9 - 16.

These systems are supplied in four bays configured as shown below:

Modules/Panels	AD1653B Bay	AD1657 Bay	AD1654 Bay	AD1656 Bay
AD1603N PSM, Pwr Pnl	1	1	-	-
Power Panel	-	-	1	1
AD1663B CPM, Data Pnl	1	-	-	-
AD1609CM VIM	-	-	-	1-8
AD1611 VIM	-	-	1-8	-
AD1626 VOM	4	1-4	-	-
VIP Panel	-	-	1	1

For illustration of a typical Four Bay system with 64 cameras and 16 monitors, see Page C-12 of the Typical System Connections.

IDENTIFY ALL BAYS, MODULES, AND PANELS CAREFULLY BEFORE PROCEEDING.

Power/Data Interconnections

Two Power/Data Interconnection cables are supplied. Connect one cable between connector J1 on the AD1653B Power Panel and connector J1 on the AD1654 Power Panel. Connect the second cable between connector J1 on the AD1657 Power Panel and connector J1 on the AD1656 Power Panel.

One Data Interconnect cable is supplied. Connect the Data cable between connector J3 on the Data Panel in the AD1653B bay and connector J3 on the Power Panel in the AD1657 bay.

Control Code Connections

Control Code for all 64 cameras is provided from flying leads on either of the two Power/Data Interconnection cables, above.

Video Interconnections

The camera video outputs from the VIP Panels on the AD1654 and AD1656 bays are provided through eight BNC's, labeled 1, 3, 5, 7, and 2, 4, 6, 8.

Each AD1626 VOM in the AD1653B and AD1657 bays has two pairs of input BNC's located on the upper portion of its back panel, for video interconnections from the VIP panels. Outputs from the VIP Panels in the AD1654 and AD1656 bays connect to the AD1653B and AD1657 bays "A" MONITOR BNC's. The "B" MONITOR BNC connectors are not used in systems with 64 cameras or less.

From the rear of the AD1653B bay, the input BNC for system monitor 1 is located at the right-most VOM position, labeled MONITOR 1 A, and system monitor 2 is labeled MONITOR 2 A. System monitor 3 is on the next panel to the left, labeled MONITOR 3A, and system monitor 4 is labeled MONITOR 4 A, and so on to system monitor 8.

In the AD1657 bay, the input BNC for system monitor 9 is located at the right-most VOM position, labeled MONITOR 9 A, system monitor 10 is labeled MONITOR 10 A. System monitor 11 is on the next panel to the left, labeled MONITOR 11 A, system monitor 12 is labeled MONITOR 12 A, and so on to system monitor 16.

AD1654 to AD1653B - Connect the top BNC on the AD1654 bay VIP Panel, labeled 1, to the top input BNC of the AD1653B bay VOM panel for system monitor 1, labeled MONITOR 1 A. Connect the BNC labeled 2 on the AD1654 bay VIP panel, to the top input BNC of the AD1653B bay VOM panel for system monitor 2, labeled 2 A. Continue in this manner until all eight connections of the AD1654 bay VIP panel are connected to all eight "A" monitor inputs of the AD1653B bay VOM panels.

DO NOT TERMINATE THE VIP PANELS.

AD1656 to AD1657 - Connect the top BNC on the AD1656 bay VIP Panel, labeled 1, to the top input BNC of the AD1657 bay VOM panel for system monitor 9, labeled MONITOR 9 A. Connect the BNC labeled 2 on the AD1656 bay VIP panel, to the top input BNC of the AD1657 bay VOM panel for system monitor 10, labeled 10 A. Continue in this manner until all eight connections of the AD1657 bay VIP panel are connected to all eight "A" monitor inputs of the AD1657 bay VOM panels. If there are less than 16 monitors in the system, leave the remaining VIP panel BNC's unterminated.

DO NOT TERMINATE THE VIP PANELS.

Video Input Connections

Each AD1609CM in the AD1656 bay has eight pairs of looping BNC's on the back panel for video input connections. Video inputs are connected to one BNC of each pair and looped to the corresponding terminated video input in an AD1611 VIM in the AD1654 bay. The system assigns the video input connected to the top BNC pair on the right-most AD1609CM as input number 1, the video input connected to the top BNC pair on the next AD1609CM to the left as input number 9, etc., up to video input number 64 on the bottom BNC pair of the last AD1609CM.

Video Output Connections

Each AD1626 VOM in the AD1653B and AD1657 bays has two BNC's on the bottom of the back panel for video output connections. In the AD1653B bay, the system assigns the upper right OUT BNC on the right-most AD1626 VOM as output number 1, and the OUT BNC to the left as output number 2. The upper right OUT BNC on the next AD1626 VOM to the left is assigned the number 3, etc., up to video output number 8 on the fourth VOM in this bay.

In the AD1657 bay, the system assigns the upper right OUT BNC on the right-most VOM as number 9, and the BNC to the left as 10. The upper right BNC on the next VOM to the left is assigned as number 11, etc., up to video output number 16.

SIX BAY SYSTEMS, 128 CAMERAS x 16 MONITORS

Systems for a maximum of 128 cameras and 16 monitors are supplied in six bays. The AD1653B bay contains a power supply, processor, and monitor modules for monitors 1 through 8; the AD1657 bay contains a power supply and monitor modules for monitors 9 through 16. The AD1654 bay contains camera modules for cameras 1 through 64, for monitors 1 through 8; the AD1656 bay contains camera modules for cameras 1 through 64, for monitors 9 through 16. The AD1655 bay contains camera modules for cameras 65 through 128, for monitors 1 through 8; the AD1658 bay contains camera modules for cameras 65 through 128, for monitors 9 through 16.

These systems are supplied in six bays configured as below:

Modules/Panels	AD1653B Bay	AD1654 Bay	AD1655 Bay
AD1603N PSM, Power Panel	1	-	1
Power Panel	-	1	-
AD1663B CPM, Data Panel	1	-	-
AD1611 VIM	-	8	1-8
AD1626 VOM	1-4	-	-
VIP Panel	-	1	1

Modules/Panels	AD1657 Bay	AD1656 Bay	AD1658 Bay
AD1603N PSM, Power Panel	1	-	1
Power Panel	-	1	-
AD1609 VIM	-	8	1-8
AD1626 VOM	1-4	-	-
VIP Panel	-	1	1

For illustration of a typical Six Bay system with 128 cameras and 16 monitors, see Typical System Connections, page C-13.

IDENTIFY ALL BAYS, MODULES, AND PANELS CAREFULLY BEFORE PROCEEDING.

Power/Data Interconnections

Two Power/Data Interconnect cables are supplied. Connect one cable between connector J1 on the AD1603N PSM Power Panel in the AD1653B bay and connector J1 on the Power Panel in the AD1654 bay. The second Power/Data cable is connected between connector J1 on the AD1603N PSM Panel in the AD1657 bay and J1 on the AD1656 bay Power Panel.

Three Data Interconnect cables are supplied. Connect one Data cable between connector J2 on the Data Panel in the AD1653B bay and J2 on the Power Panel in the AD1655 bay. Connect the next Data cable between connector J3 on the Data Panel in the AD1653B bay and J3 on the Power Panel in the AD1657 bay. Connect the remaining Data cable between connector J4 on the Data Panel in the AD1653B bay and J4 on the Power Panel in the AD1658 bay.

Control Code Connections

Control Code for cameras 1-64 is provided from flying leads on the Power/Data cables, from either the AD1653B bay or the AD1657 bay (the same code is available from both bays).

Control Code for cameras 65-128 is provided from connector J1 on the Power Panel in either the AD1655 bay or the AD1658 bay (the same code is available from both bays).

Video Interconnections

The eight video output BNC's from the VIP Panels on the AD1654 and AD1656 bays are for cameras 1 to 64 and the eight output BNC's on the VIP Panels on the AD1655 and AD1658 bays are for cameras 65 to 128.

Each AD1626 VOM in the AD1653B and AD1657 bays has two pairs of input BNC's located on the upper portion of its back panel, for video interconnections from the VIP panels. Outputs from the VIP Panels in the AD1654 and AD1656 bays connect to the AD1653B and AD1657 bays "A" MONITOR BNC's. Outputs from the VIP Panels in the AD1655 and AD1658 bays connect to the AD1653B and AD1657 bays "B" MONITOR BNC's.

From the rear of the AD1653B bay, the input BNC for system monitor 1 is located at the right-most VOM position in the bay, labeled MONITOR 1 A and 1 B, and system monitor 2 is labeled MONITOR 2 A and 2 B. System monitor 3 is on the next panel to the left, labeled MONITOR 3A and 3 B, and system monitor 4 is labeled MONITOR 4 A, and so on to system monitor 8.

In the AD1657 bay, the input BNC for system monitor 9 is located at the right-most VOM position in the bay, labeled MONITOR 9 A and MONITOR 9 B, system monitor 10 is labeled MONITOR 10 A and 10 B. System monitor 11 is on the next panel to the left, labeled MONITOR 11 A and 11 B, system monitor 12 is labeled MONITOR 12 A and 12 B, and so on to system monitor 16.

(Continue the Video Interconnections on the next page.)

Video Interconnections (continued)

AD1654 to AD1653B - Connect the top BNC on the AD1654 bay VIP Panel, labeled 1, to the top input BNC of the AD1653B bay VOM panel for system monitor 1, labeled MONITOR 1 A. Connect the BNC labeled 2 on the AD1654 bay VIP panel, to the top input BNC of the AD1653B bay VOM panel for system monitor 2, labeled 2 A. Continue in this manner until all eight connections of the AD1654 bay VIP panel are connected to all eight "A" monitor inputs of the AD1653B bay VOM panels.

DO NOT TERMINATE THE VIP PANELS.

AD1656 to AD1657 - Connect the top BNC on the AD1656 bay VIP Panel, labeled 1, to the top input BNC of the AD1657 bay VOM panel for system monitor 9, labeled MONITOR 9 A. Connect the BNC labeled 2 on the AD1656 bay VIP panel, to the top input BNC of the AD1657 bay VOM panel for system monitor 10, labeled 10 A. Continue in this manner until all eight connections of the AD1657 bay VIP panel are connected to all eight "A" monitor inputs of the AD1657 bay VOM panels. If there are less than 16 monitors in the system, leave the remaining BNC's on the VIP panel unterminated.

DO NOT TERMINATE THE VIP PANELS.

AD1655 to AD1653B - Connect the top BNC on the AD1655 bay VIP Panel, labeled 1, to the second input BNC of the AD1653B bay VOM panel for system monitor 1, labeled MONITOR 1 B. Connect the BNC labeled 2 on the AD1655 bay VIP panel, to the second input BNC of the AD1653B bay VOM panel for system monitor 2, labeled 2 B. Continue in this manner until all eight connections of the AD1655 bay VIP panel are connected to all eight "B" monitor inputs of the AD1653B bay VOM panels.

DO NOT TERMINATE THE VIP PANELS.

AD1658 to AD1657 - Connect the top BNC of the AD1658 bay VIP Panel, labeled 1, to the second input BNC of the AD1657 bay VOM panel for system monitor 9, labeled MONITOR 9 B. Connect the BNC labeled 2 of the AD1658 bay VIP panel, to the second input BNC of the AD1657 bay VOM panel for system monitor 10, labeled 10 B. Continue in this manner until all eight connections of the AD1658 bay VIP panel are connected to all eight "B" monitor inputs of the AD1657 bay VOM panels. If there are less than 16 monitors in the system, leave the remaining BNC's on the VIP panel unterminated.

DO NOT TERMINATE THE VIP PANELS.

Video Input Connections

Each AD1609CM in the AD1656 and AD1658 bays has eight pairs of looping BNC's on the back panel for video input connections. Video inputs are connected to one BNC of each pair and looped to the corresponding terminated video input in an AD1611 VIM in the AD1654 and AD1655 bays.

In the AD1656 bay, the system assigns the video input connected to the top BNC pair on the right-most AD1609CM as input number 1, the video input connected to the top BNC pair on the next AD1609CM to the left as input number 9, etc., up to video input number 64 on the bottom BNC pair of the last AD1609CM in the bay. The looping inputs from each AD1609CM in the AD1656 bay are connected to the corresponding AD1611 VIM input BNC's in the AD1654 bay.

In the AD1658 bay, the system assigns the video input connected to the top BNC pair on the right-most AD1609CM as input number 65, the video input connected to the top BNC pair on the next AD1609CM to the left as input number 73, etc., up to video input number 128 on the bottom BNC pair of the last AD1609CM in this bay. The looping inputs from each AD1609CM in the AD1658 bay are connected to the corresponding AD1611 VIM input BNC's in the AD1655 bay.

Video Output Connections

Each AD1626 VOM in the AD1653B and AD1657 bays has two BNC's on the bottom of the back panel for video output connections.

In the AD1653B bay, the system assigns the video output connected to the upper right OUT BNC on the right-most AD1626 VOM as output number 1, and the OUT BNC to the left on this VOM as output number 2. The video output connected to the upper right OUT BNC on the next AD1626 VOM to the left is assigned as output number 3, etc., up to video output number 8 on the fourth VOM in this bay.

In the AD1657 bay, the system assigns the video output connected to the upper right OUT BNC on the right-most AD1626 VOM as output number 9, and the OUT BNC to the left as number 10. The video output connected to the upper right OUT BNC on the next AD1626 VOM to the left is assigned as output number 11, etc., up to video output number 16 on the fourth VOM in this bay.

OPERATION

The following section of this manual describes the powering up and basic operation of the AD1650B system. The complete system setup programming and operating instructions for the AD1650B are provided in the System Programming manual, OP1650BSP.

POWERING UP

A complete AD1650B system may be brought on-line after:

- All modules and bays have been installed and connected.
- One or more cameras have been connected for video input.
- One or more monitors have been connected for viewing video output.
- All video cables have been properly terminated.
- A Keyboard has been connected for system control.

Power is connected and applied to the AD1650B system one bay at a time, in the following order:

1. AD1658 bay, if present
2. AD1657 bay, if present
3. AD1655 bay, if present
4. AD1651B or AD1653B bay, whichever is present.

(AD1654 and AD1656 bays are powered by other bays in the system.)

Powering the AD1650B bays

Power is supplied to each AD1650B bay which contains an AD1603N Power Supply Module, via a power cord and plug. Connect the power cord to the required voltage source:

AD1650B - 120VAC, 50/60 Hz
ADE1650B, ADK1650B - 230 VAC, 50 Hz

Each AD1650B bay which contains an AD1603N PSM is powered on by the toggle switch located on the bottom right of the front panel (see Figure 4-1, below). When power is turned on, a red indicator, next to the power switch, is illuminated.

Any bay which does not contain an AD1603N PSM, such as an AD1654 or AD1656 bay, is powered by the bay that it is connected to (by the Power/Data Interconnection).

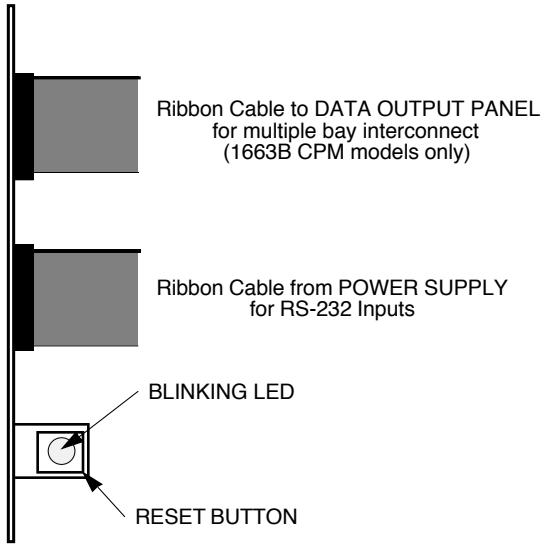


Figure 4-2 - Central Processing Module Front Panel

Operating Indication

Following power on to the bay containing the AD1661B or AD1663B Central Processing Module (CPM), proper operation can be visually verified when the front panel is removed from the bay. An LED/RESET indicator located on the front of the CPM module, shown in Figure 4-2, is the operating indicator. When power is applied, this LED blinks at the rate of once per second to indicate proper CPM operation. If the LED does not blink properly, try a Reset (below).

CPM Reset

If proper operation is not indicated, the CPM may be reset while the front panel of the AD1650B bay is open. To reset the CPM, press the LED/RESET button on the front of the module (see Figure 4-2).

If the CPM still does not indicate proper operation, contact American Dynamics Technical Support Center for assistance.

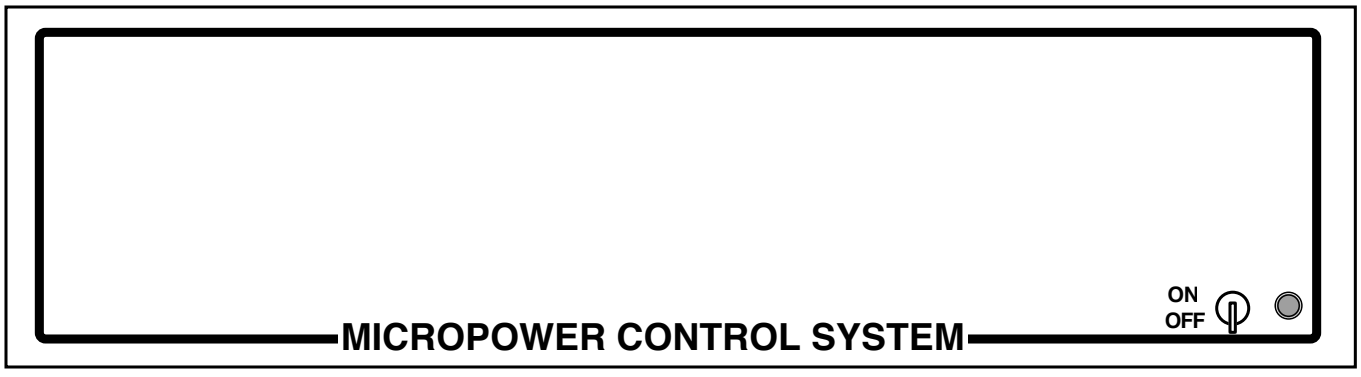


Figure 4-1 - AD1650B Bay Front Panel (bays with an AD1603N PSM)

KEYBOARD CONTROL

The following instructions are for verifying basic operation of the system. For complete setup and programming of the AD1650B, refer to the AD1650B System Programming Manual, OP1650BSPB.

All system setup and control functions are accessible through keyboards connected to the system. As a security feature, AD2078 keyboards have a keyswitch for restricting the setup programming functions. Refer to the keyboard installation and operation manual for these restrictions.

The following operations are available for system test or operation prior to system setup or programming:

- Calling a monitor to a keyboard
- Calling a camera to a monitor
- Controlling the pan/tilt, lens, and auxiliaries at a camera site equipped with a Receiver

Video Selection

Video control functions are accessed from a keyboard by first placing one of the monitors of the system under the control of the keyboard ("Calling" a monitor to a keyboard) and then "Calling" cameras in the system to that monitor.

To "CALL" a MONITOR to a keyboard:

1. Press the CLEAR button to clear the ENTER display.
2. Enter the number of the desired monitor.
3. Press the MON (Monitor) button on the keyboard. The number of the MONITOR NOW UNDER CONTROL is displayed in the MONITOR display.

To "CALL" a CAMERA to the monitor under control:

1. Press the CLEAR button to clear the ENTER display.
2. Enter the number of the desired camera. (A video source must be connected to this input.)
3. Press the CAM (Camera) button on the keyboard. The number of the CAMERA ON THE MONITOR UNDER CONTROL is displayed in the CAMERA display.

The on-screen display position and its brightness for the called monitor are adjusted by the horizontal position, vertical position, and brightness controls on the AD1626 Video Output Module. See Setup of the AD1626 Video Output Module, Section 2.

Camera Control

Cameras at sites equipped with AD1640 or AD1680 Series Receivers can be controlled by keyboard commands. The following camera control actions are performed on the "Called" camera.

CAMERA PAN AND TILT

Hold the keyboard joystick in the direction you wish to move the camera. The camera continues to move until the joystick is centered.

LENS IRIS, FOCUS, ZOOM

Press and Hold the lens function button designating the desired action. The function continues to change as long as the button is depressed. Release the button when the desired effect has been obtained.

AUXILIARIES

Momentary or Latching action of auxiliaries depends on the options installed in the Receiver at the site being controlled. To activate an auxiliary function:

1. Enter the auxiliary number on the keyboard.
2. Press the AUX ON button to activate the auxiliary.
3. Release the AUX ON button:

   If auxiliary action stops the auxiliary is momentary.

   If auxiliary action continues the auxiliary is latching.

4. Press the AUX OFF button to deactivate a latching auxiliary.

Note: The current state of latching functions such as locks or gates is not discernible from the keyboard. If critical, operator feedback should be provided via the monitor or some other device.

SYSTEM PROGRAMMING

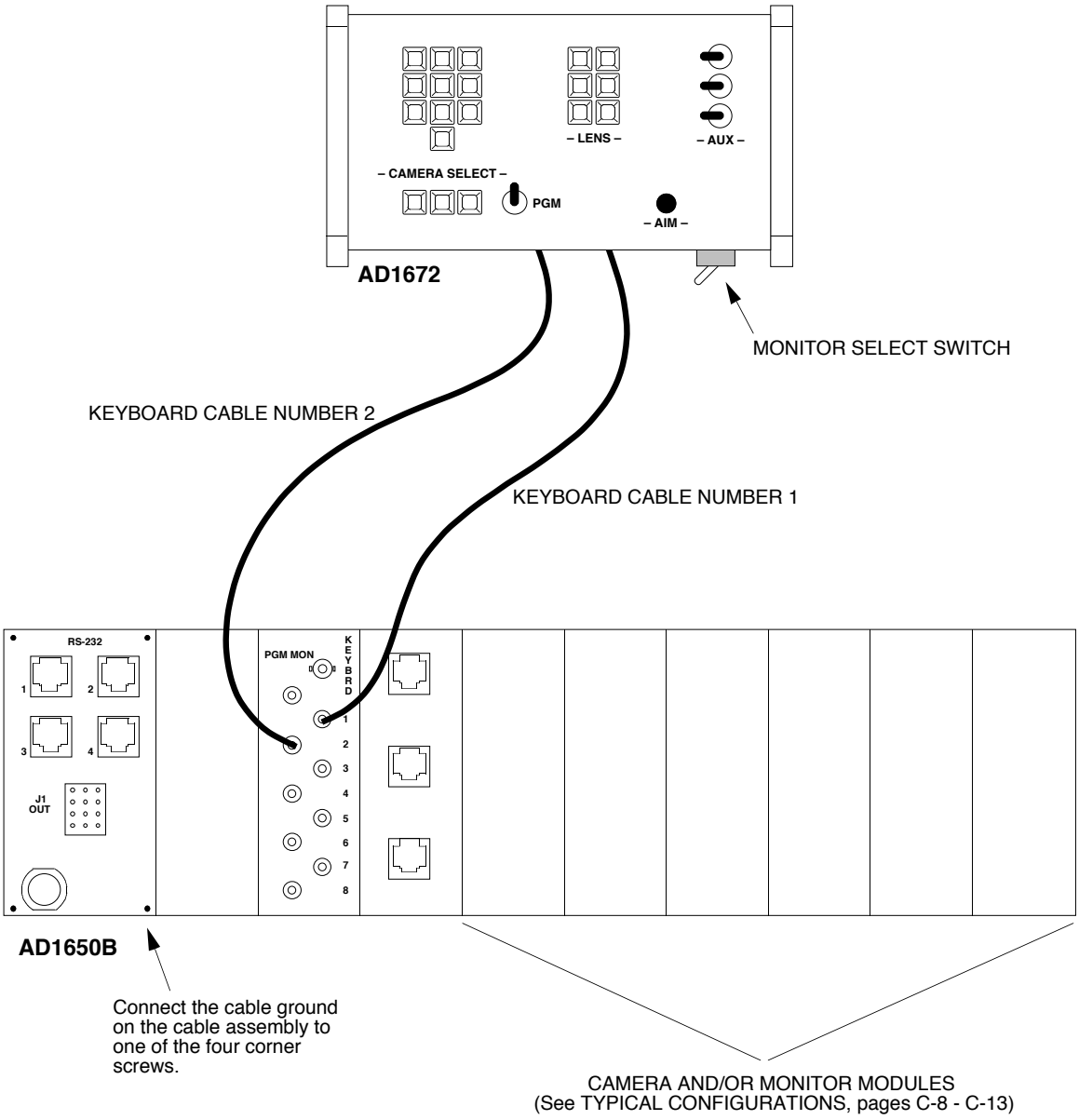
For full system programming procedures refer to the AD1650B System Programming Manual, OP1650BSPB.

IF YOU ENCOUNTER ANY PROBLEMS OPERATING THIS UNIT, OR NEED ASSISTANCE, CALL OUR TECHNICAL SUPPORT CENTER:

within the United States: **1-800-442-2225**
outside the United States: **(914) 624-7640**

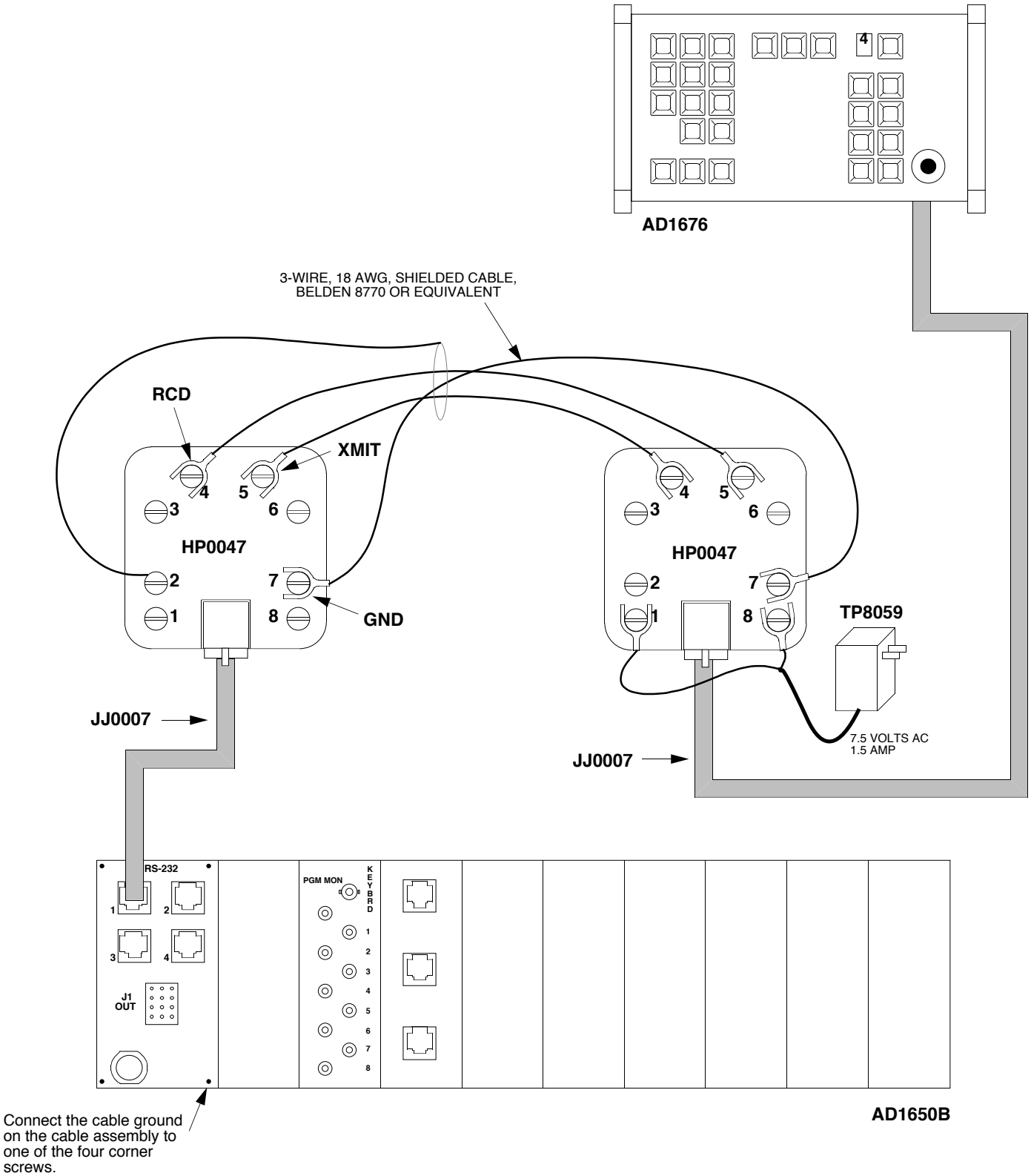
TYPICAL SYSTEM CONNECTIONS

TYPICAL SYSTEM CONNECTIONS
AD1672 KEYBOARD TO AD1650B



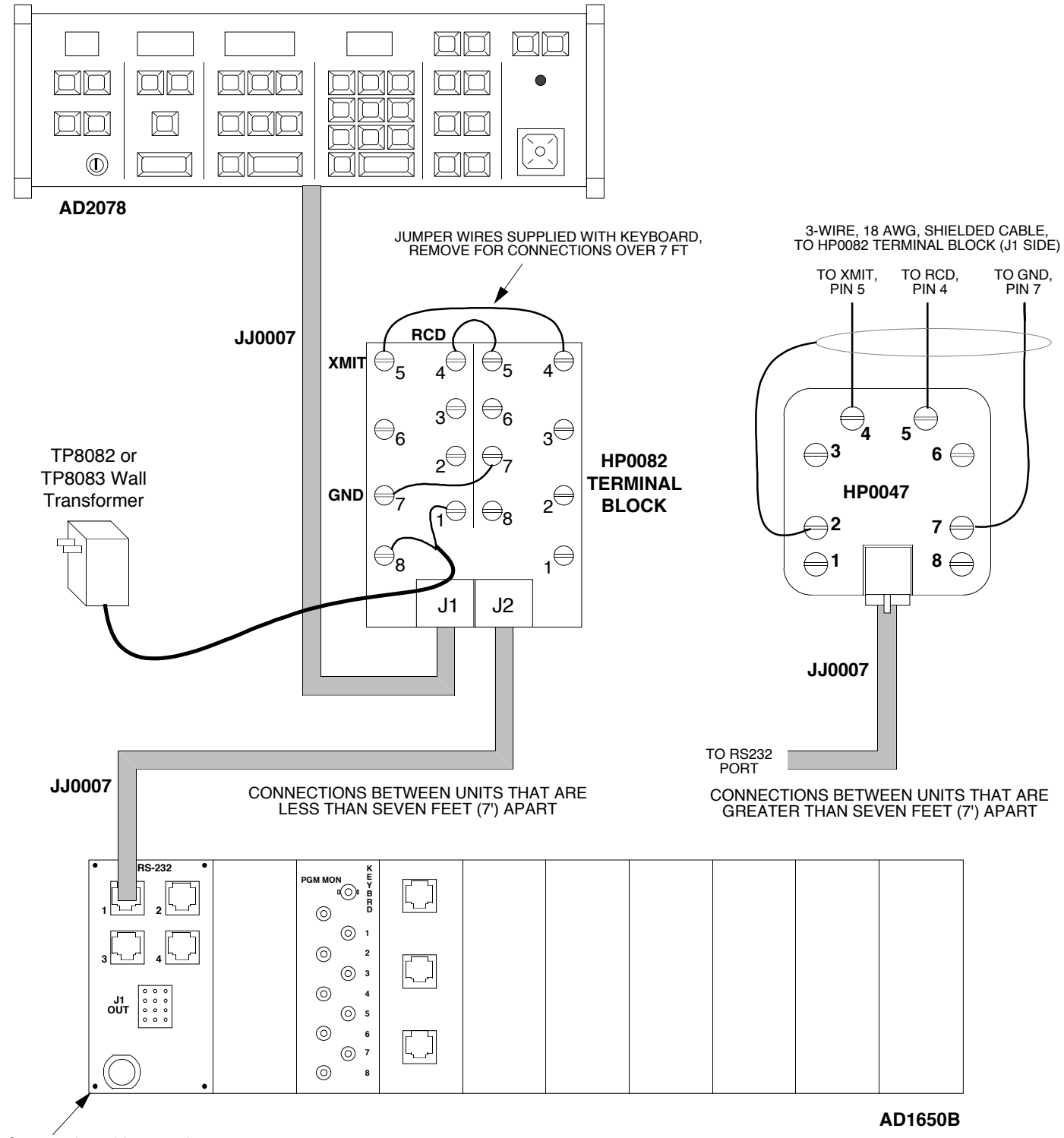
NOTE: THESE CONNECTIONS, ILLUSTRATING CONTROL OF MONITORS 1 AND 2, ARE TYPICAL OF ONE KEYBOARD.
ANY TWO MONITORS CAN BE CONTROLLED BY ONE AD1672 KEYBOARD.
MULTIPLE AD1672 KEYBOARDS CAN BE CONNECTED TO AD1650B PORTS TO CONTROL ADDITIONAL MONITORS.

TYPICAL SYSTEM CONNECTIONS
AD1676 KEYBOARD TO AD1650B



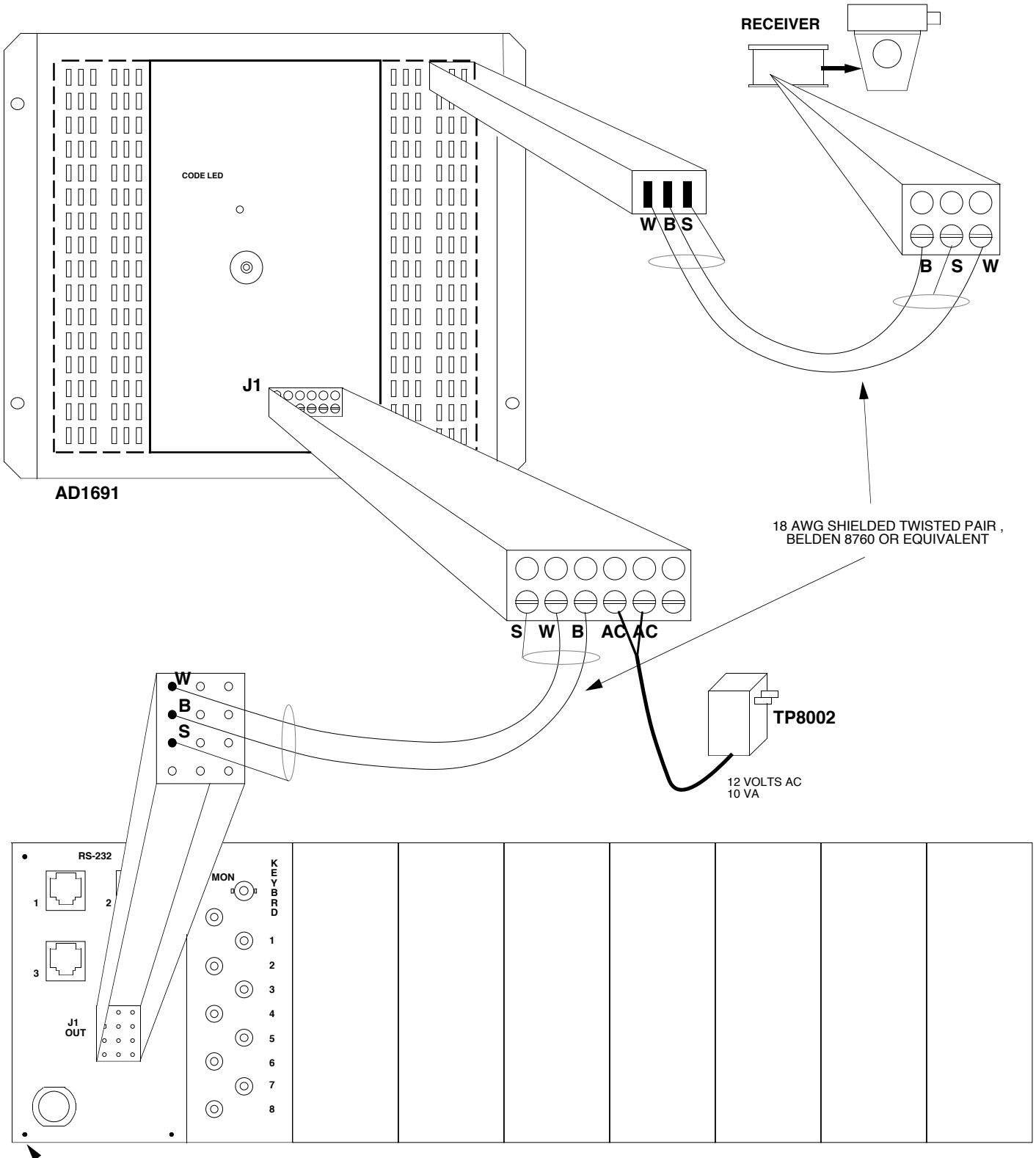
NOTE : THESE CONNECTIONS ARE TYPICAL OF ONE KEYBOARD.
- EACH RS232 PORT IS PROGRAMMABLE.

TYPICAL SYSTEM CONNECTIONS
AD2078 KEYBOARD TO AD1650B

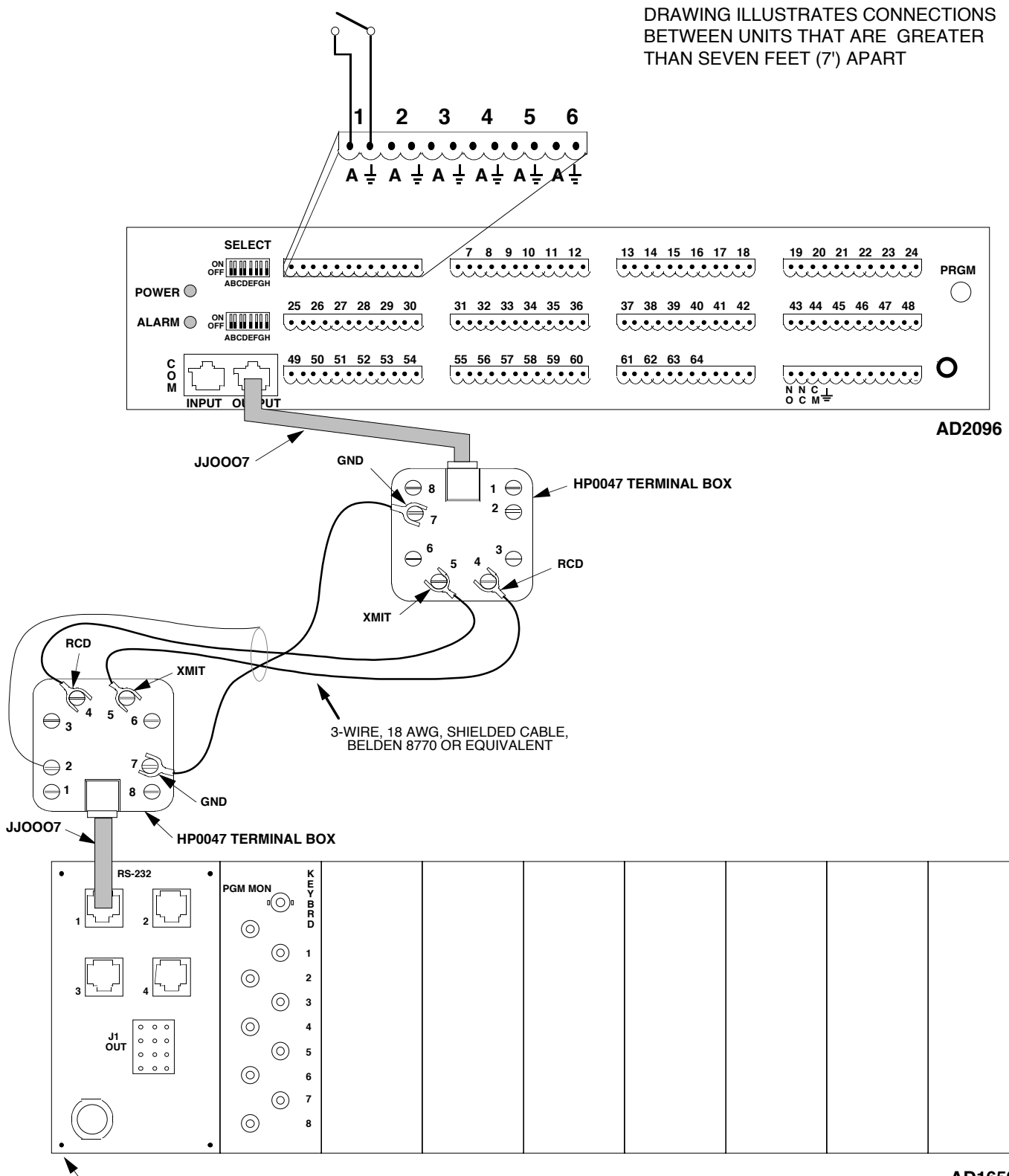


NOTE : THESE CONNECTIONS ARE TYPICAL OF ONE KEYBOARD.
- EACH RS232 PORT IS PROGRAMMABLE.

TYPICAL SYSTEM CONNECTIONS
AD1691 CODE DISTRIBUTOR TO AD1650B



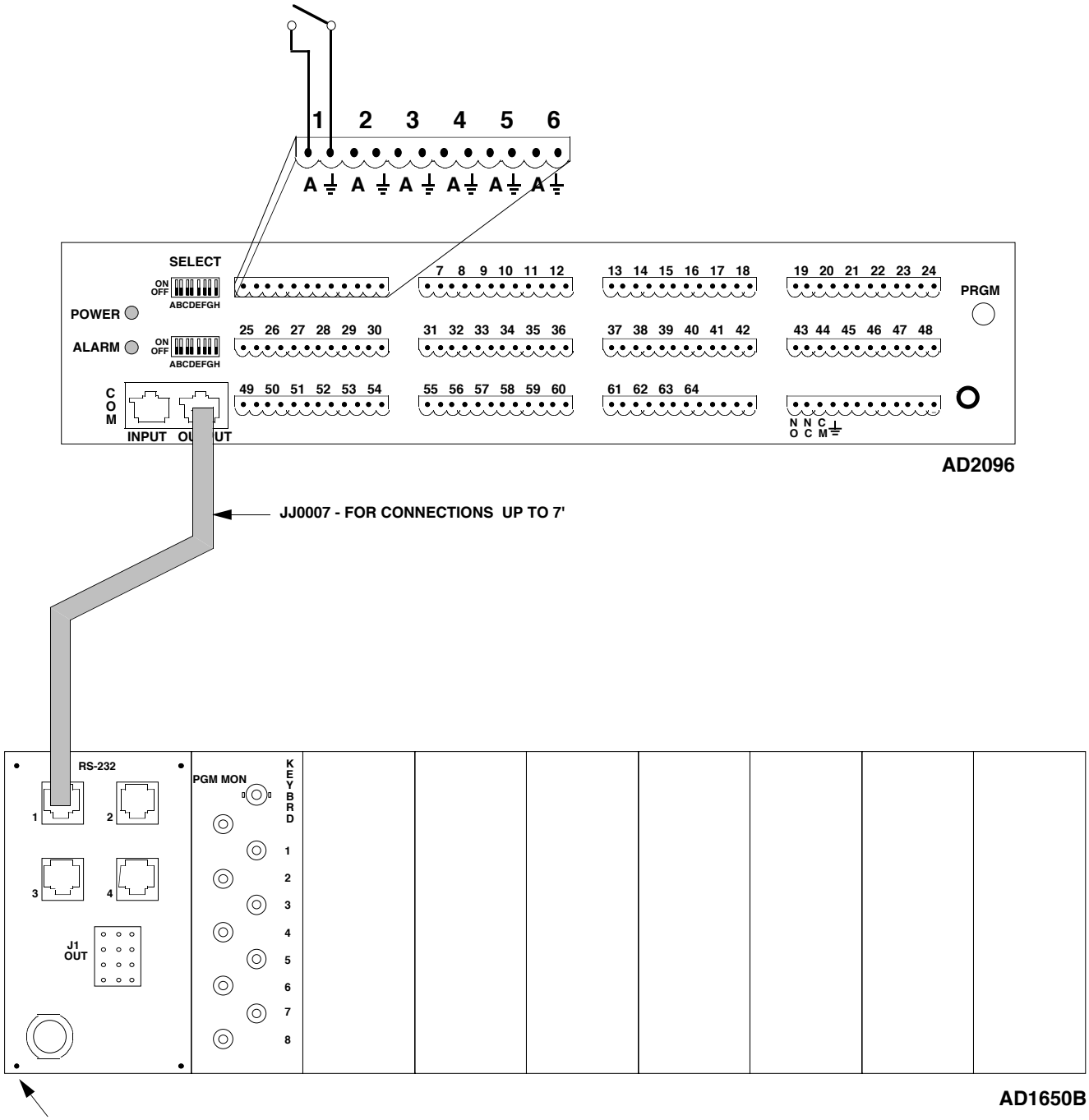
TYPICAL SYSTEM CONNECTIONS
AD2096 ALARM INTERFACE TO AD1650B



NOTE : THESE CONNECTIONS ARE TYPICAL OF ONE ALARM INTERFACE,
- EACH RS232 PORT IS PROGRAMMABLE.

TYPICAL SYSTEM CONNECTIONS
2096 ALARM INTERFACE TO 1650B

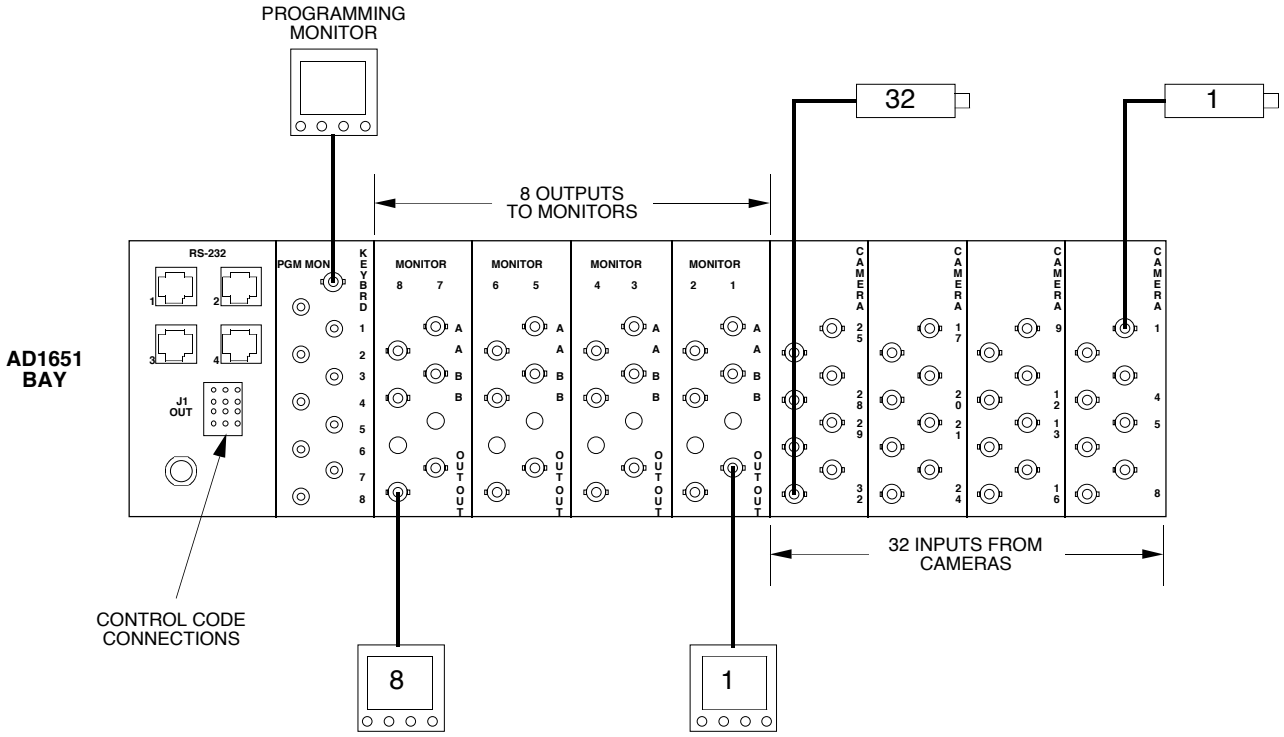
DRAWING ILLUSTRATES CONNECTIONS
BETWEEN UNITS THAT ARE LESS
THAN SEVEN FEET (7') APART

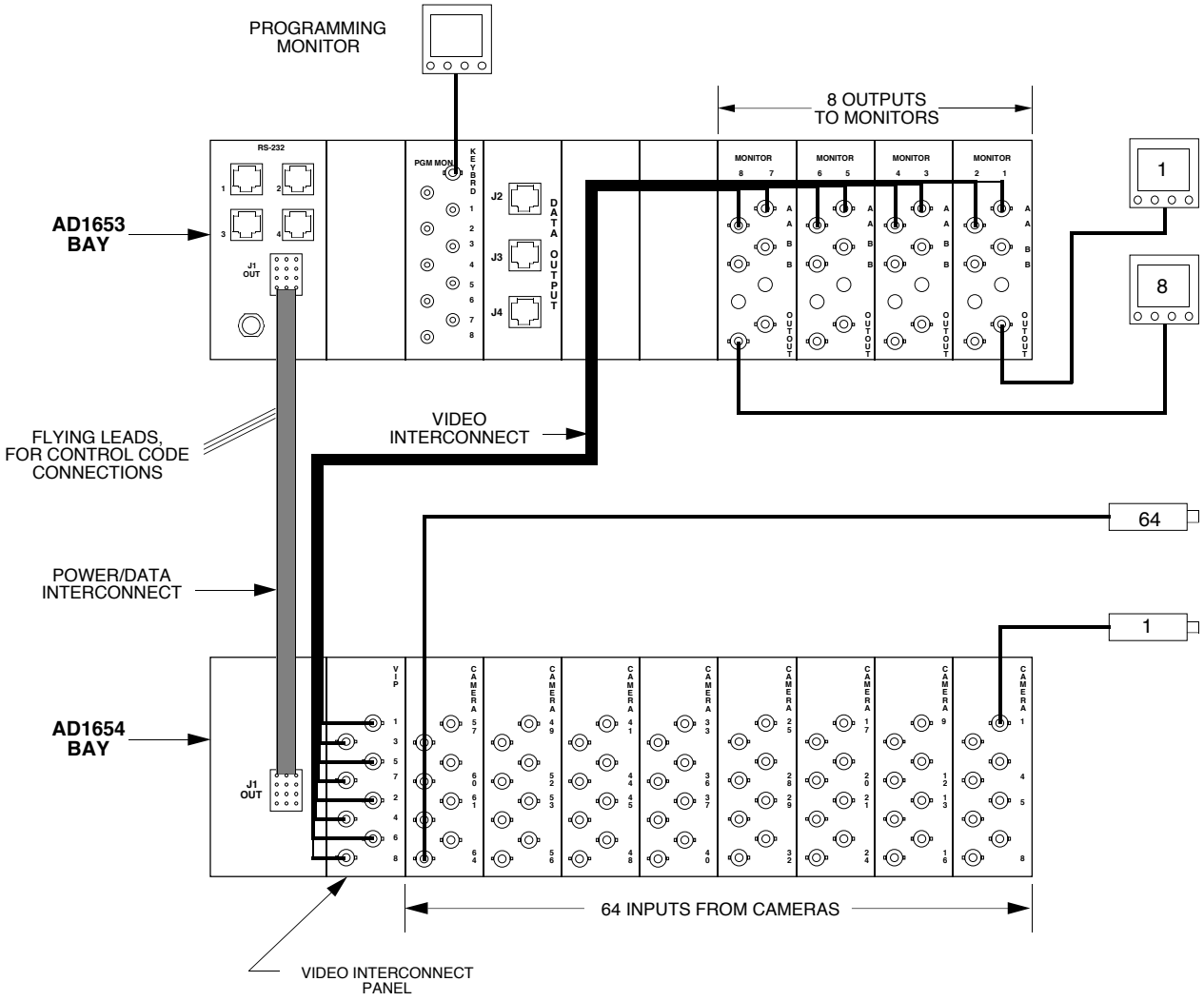


Connect the cable ground on the cable assembly to one of the four corner screws.

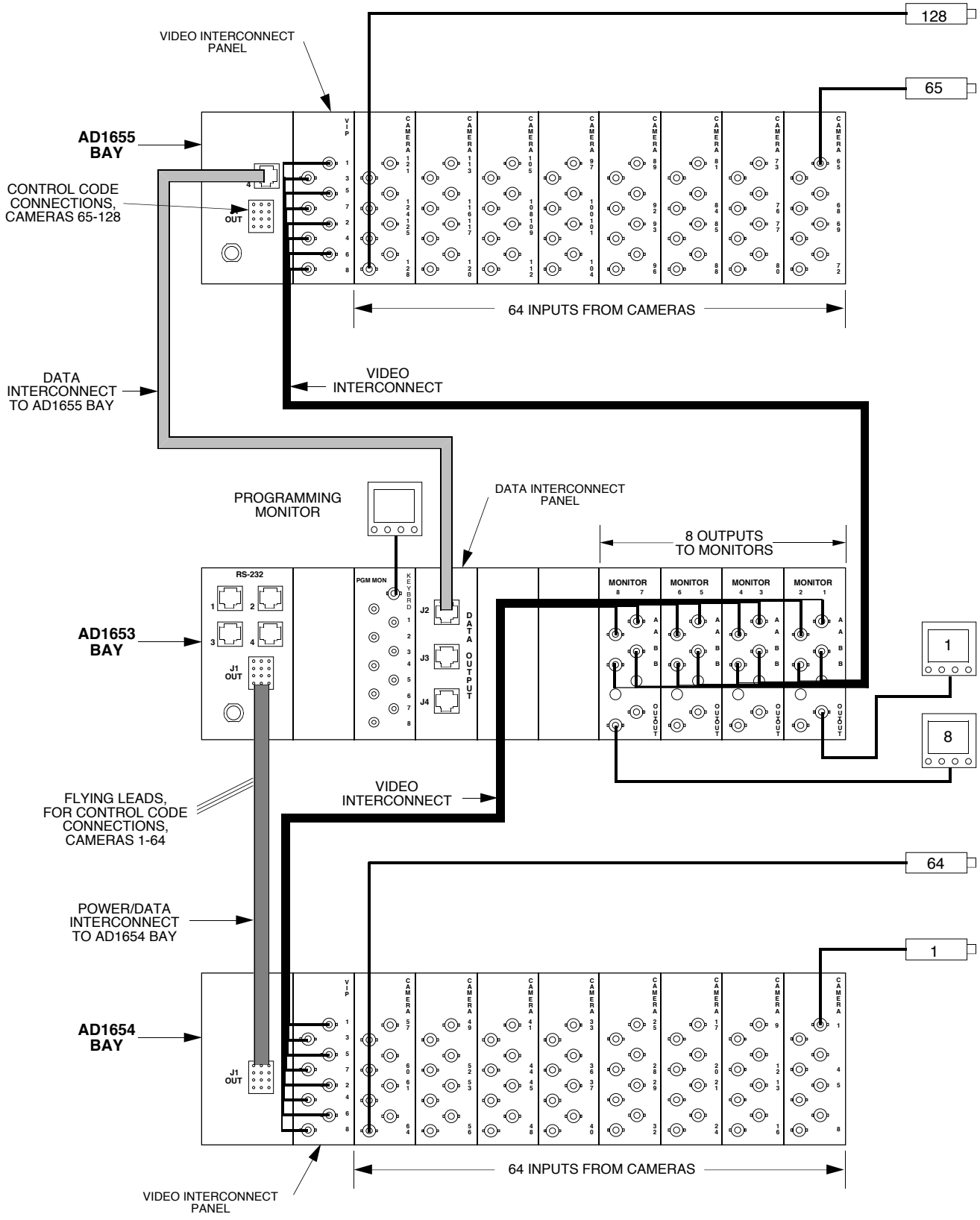
NOTE : THESE CONNECTIONS ARE TYPICAL OF ONE ALARM INTERFACE,
☐ EACH RS232 PORT IS PROGRAMMABLE.

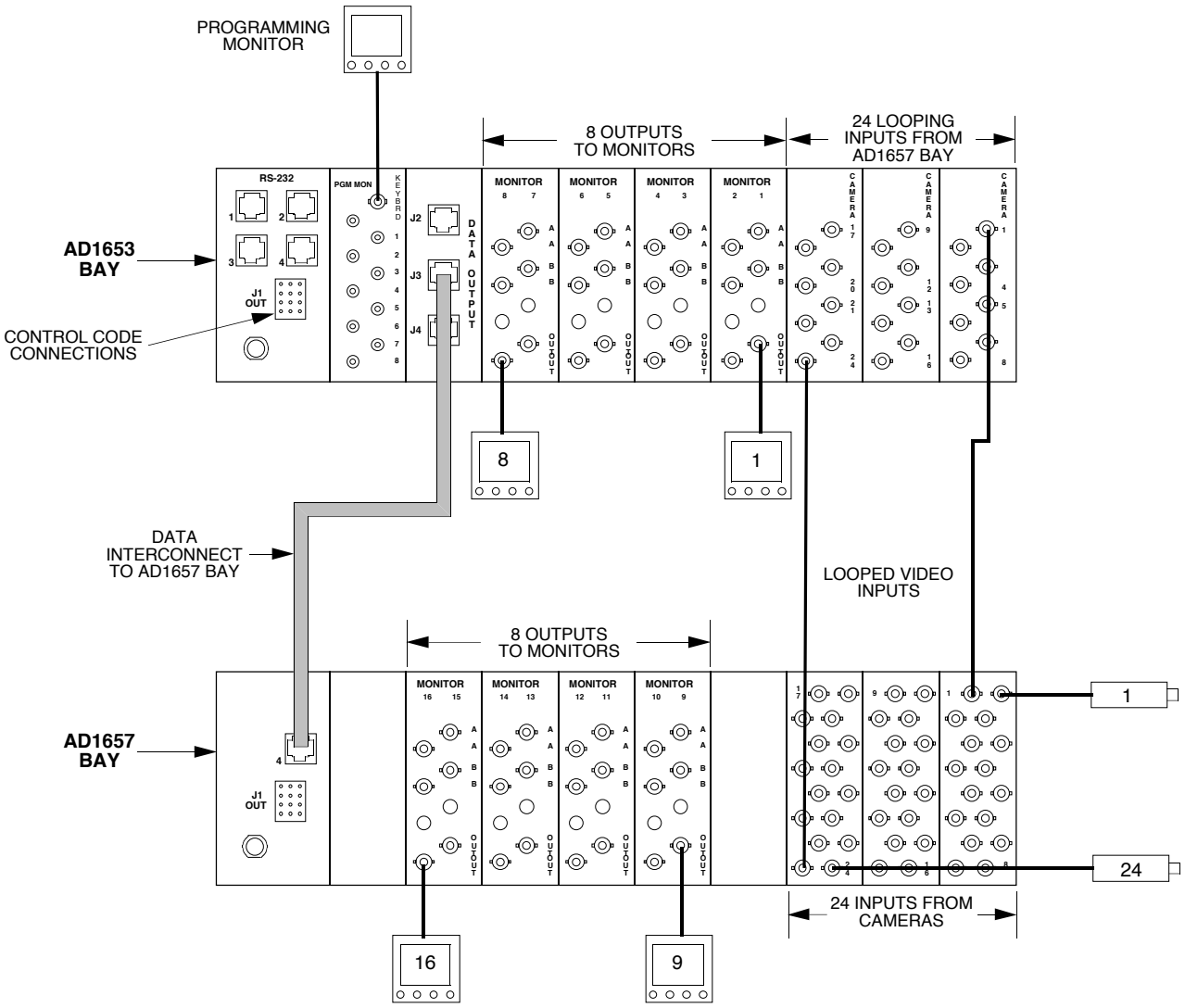
TYPICAL SYSTEM CONFIGURATIONS
SINGLE BAY, 32 Cameras, 8 Monitors



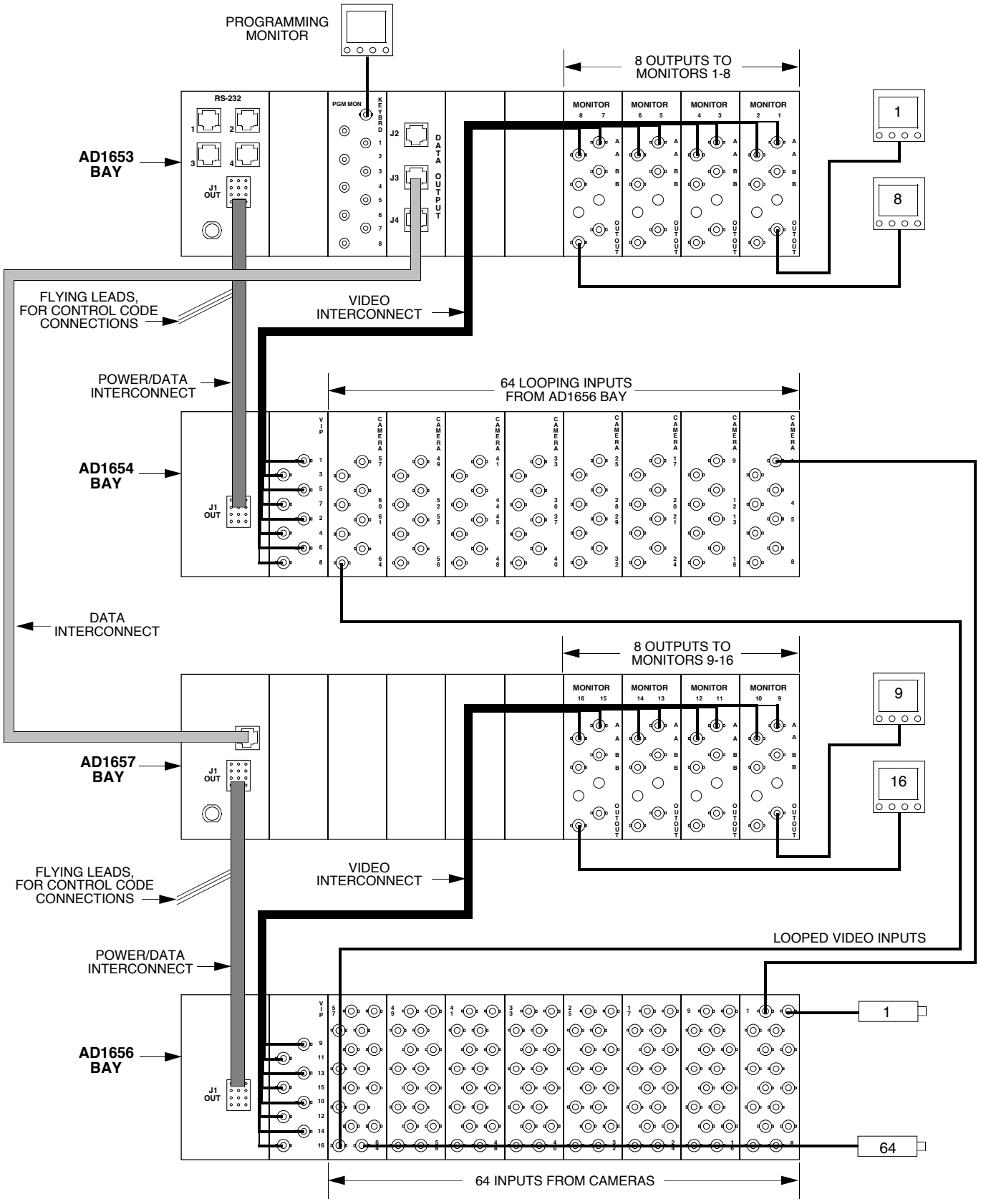

PROGRAMMING MONITOR
8 OUTPUTS TO MONITORS
AD1653 BAY
RS-232
PGM MON
KEYBRD
J2
J3
J4
DATA OUTPUT
J1 OUT
MONITOR 8 7
MONITOR 6 5
MONITOR 4 3
MONITOR 2 1
A OUTOUT
B OUTOUT
1
8
FLYING LEADS, FOR CONTROL CODE CONNECTIONS
VIDEO INTERCONNECT
64
POWER/DATA INTERCONNECT
1
AD1654 BAY
J1 OUT
VIP
CAMERA 57
CAMERA 49
CAMERA 41
CAMERA 33
CAMERA 25
CAMERA 17
CAMERA 9
CAMERA 1
64 INPUTS FROM CAMERAS
VIDEO INTERCONNECT PANEL

TYPICAL SYSTEM CONFIGURATIONS
THREE BAYS, 128 Cameras, 8 Monitors

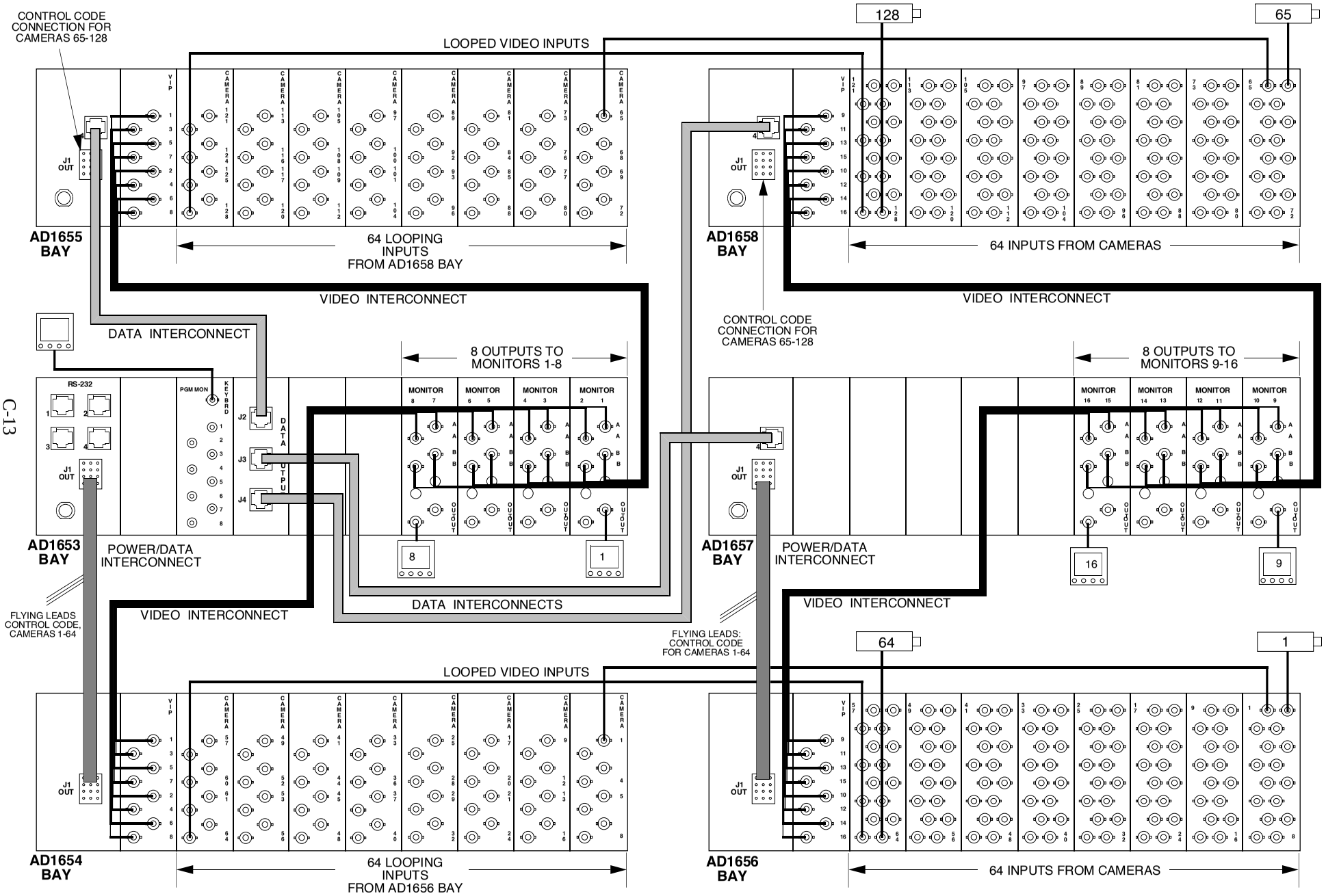



PROGRAMMING MONITOR
8 OUTPUTS TO MONITORS
24 LOOPING INPUTS FROM AD1657 BAY
AD1653 BAY
CONTROL CODE CONNECTIONS
DATA INTERCONNECT TO AD1657 BAY
LOOPED VIDEO INPUTS
8 OUTPUTS TO MONITORS
AD1657 BAY
24 INPUTS FROM CAMERAS
RS-232
PGM MON
KEYPAD
DATA OUTPUT
J1 OUT
J2
J3
J4
MONITOR
CAMERA
8
1
16
9
24

TYPICAL SYSTEM CONFIGURATIONS
FOUR BAYS, 64 Cameras, 16 Monitors



TYPICAL SYSTEM CONFIGURATIONS - SIX BAYS, 128 Cameras, 16 Monitors



INDEX

Declaration of Conformity

Manufacturer:

Sensormatic
CCTV Systems Division

Manufacturer's Address:

Sensormatic
CCTV Systems Division
10 Corporate Drive
Orangeburg, New York 10962 USA

Sensormatic Electronics Corporation
American Dynamics Business Unit
State Rd. 110 Km 5.8
Poblado San Antonio
Aguadilla P. R. 00690

Declares, that the product(s) listed below:

Name/Type:	Micropower EP Video Matrix Switching System
Model Numbers:	ADE1650B All Versions ADK1650B All Versions
Name/Type:	Bays
Model Numbers:	ADE1651B, ADK1651B ADE1653B, ADK1653B ADE1654, ADK1654 ADE1655, ADK1655 ADE1656, ADK1656 ADE1657, ADK1657 ADE1658, ADK1658 all models may be followed by "D" for desktop or "R" for rackmount
Name/Type:	Modules
Model Numbers:	ADE1603N, ADK1603N (Power Supply) AD1661B, AD1663 (CPM) AD1611 (VIM) AD1626 (VOM) AD1626NA (VOM, no text) AD1609CM (LVIM)

comply with the Generic Standards EN55022 , EN50081-1, EN50082-1 in accordance with the following International Standards:

1. IEC 801-2 (1991), 4 kV CD, 8 kV AD
2. IEC 801-3 (1984) 3V/m
3. IEC 801-4 (1988) 1 kV Power lines, 0.5 kV Signal lines
4. EN55022 (1988) Class B

Additional information:

These products herein, comply with the requirements of the EMC Directive 89/336/EEC. The equipment was tested in a typical configuration.

Orangeburg, NY, USA, 31 January 1996

Dennis Dodrill, Manager
Quality Assurance and Technical Services

This representative has the technical documentation and the declaration of conformity on file.

SPECIFICATIONS

Supply Voltage: AD1650B: 120VAC, 50/60 Hz
ADE1650B: 230V~, 50 Hz
ADK1650B: 230V~, 50 Hz

Power per Bay: 35 watts max.

Mounting: Free standing or Rack mount

Size per Bay: Desktop - 5.5" H x 14" D x 17" W (140 x 356 x 432 mm)
Rack-mount - 5.25" H x 14" D x 19" W (13 x 356 x 483 mm)

Weight per Bay: 35 lbs (16 Kg)

An **American Dynamics** Product
Designed and built by
Sensormatic CCTV Systems Division
One Blue Hill Plaza
Pearl River, New York, 10965
(914) 624-7600
Technical Support Center: 800-442-2225
FAX: (914) 624-7685

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