MILLENNIUM 2000

with

Internal IRL-3000

DESIGN
&
INSTALLATION

DEALER MANUAL

Revised February 2000

ada

Contents

SAFETY INSTRUCTIONS

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THE APPLIANCES IN THIS SYSTEM TO RAIN OR MOISTURE. REPLACE FUSE ONLY AS MARKED.

CAUTION:

TO PREVENT ELECTRIC SHOCK, DO NOT PLUG THE UNITS IN THIS SYSTEM INTO ANY OUTLET OR EXTENSION CORD WITHOUT THE STANDARD THREE-PRONG CONFIGURATION, WHERE THE CIRCULAR HOLE IS USED FOR THE GROUND PLUG.

IMPORTANT:

The lightning flash with the arrowhead, within an equilateral triangle, is intended to alert the user of the presence of un-insulated "dangerous voltage" within the products' enclosures that may be of sufficient magnitude to constitute a risk of electrical shock to persons.

CAUTION:
TO PREVENT RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS ARE INSIDE ANY OF THE UNITS IN THIS SYSTEM. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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

SAFETY INSTRUCTIONS

READ INSTRUCTIONS - All the safety and operating instructions should be read before the appliances are operated.

RETAIN INSTRUCTIONS - The operating instructions should be retained for future reference.

HEED WARNING - All warnings on the appliances and in the operating instructions should be adhered to.
.
FOLLOW INSTRUCTIONS - All operating and use instructions should be followed.

WATER AND MOISTURE - The appliances should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

LOCATION - The appliances should be installed in a stable location.

WALL OR CEILING MOUNT - The appliances should not be mounted to a wall or ceiling.

VENTILATION - The appliances should be situated so that their location or position does not interfere with their proper ventilation. For example, the appliances should not be situated on a bed, sofa, rug or similar surface that may block the ventilation openings.

HEAT - The appliances should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.

POWER SOURCES - The appliances should be connected to a power supply only of the type described in the operating instructions or as marked on the appliances.

GROUNDING - Make sure that the units in the system are always connected to a standard three-prong grounded outlet (the circular pin is ground). When operating this unit at a higher voltage with a different power cord configuration, consult your dealer for the proper power cord/outlet combination to use before operating this unit.

POWER CORD PROTECTION - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the points where they exit from the appliances.

CLEANING - The appliances should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the face plates.

POWER LINES - An outdoor antenna should be located away from power lines.

PERIODS OF DISUSE - The power cord of the appliances should be unplugged from the outlet when the units are not in use for a long period of time.

OBJECT AND LIQUID ENTRY - Care should be taken so that objects do not fall and liquids are not spilled into the enclosures through openings.

DAMAGE REQUIRING SERVICE - The appliances should be serviced by an authorized service center or qualified service personnel when:

- The power supply cords or plugs have been damaged; or
- Objects have fallen, or liquid has been spilled into the appliances; or
- The appliances have been exposed to rain; or
- The appliances do not appear to operate normally or exhibit a marked change in performance; or
- The appliances have been dropped; or the enclosures have been damaged.

SERVICING - The user should not attempt to service the appliances beyond that described in the operating instructions. For all other servicing, contact the factory.
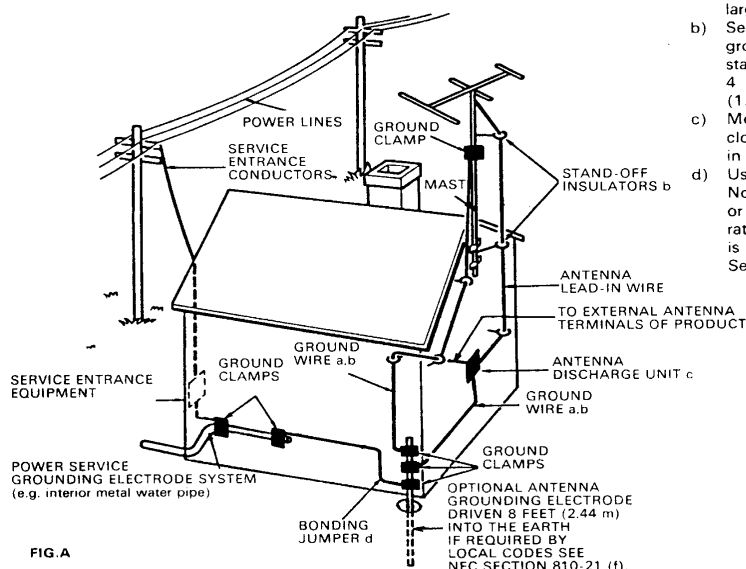
a) Use No. 10 AWG (5.3 mm^2) copper, No. 8 AWG (8.4 mm^2) aluminum, No. 17 AWG (1.0 mm^2) copperclad steel, bronze wire, or larger as ground wire.

b) Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.

c) Mount antenna discharge unit as closely as possible to where lead-in enters house.

d) Use jumper wire not smaller than No.6 AWG (13.3 mm^2) copper, or the equivalent, when a separate antenna-grounding electrode is used.
See NEC Section 810-21 (j).

POWER LINES

GROUND CLAMP

SERVICE ENTRANCE CONDUCTORS

MAST

STAND-OFF INSULATORS b

ANTENNA LEAD-IN WIRE

TO EXTERNAL ANTENNA TERMINALS OF PRODUCT

GROUND WIRE a.b

ANTENNA DISCHARGE UNIT c

GROUND WIRE a.b

SERVICE ENTRANCE EQUIPMENT

GROUND CLAMPS

GROUND CLAMPS

POWER SERVICE GROUNDING ELECTRODE SYSTEM (e.g. interior metal water pipe)

OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44 m) INTO THE EARTH IF REQUIRED BY LOCAL CODES SEE NEC SECTION 810-21 (f).

BONDING JUMPER d

FIG.A

Introduction

The Millennium 2000 was developed to provide greater control of source components within the Millennium (all-in-one) system construction. To understand fully the Millennium 2000's place in the ADA family of multi-room systems, one must have an understanding of both the Millennium and Delta systems.

For those of you familiar wiht the original Millennium System, it provided distribution of eight components, basic transport control, preamplification & amplification for six to thirty-six zones with volume and room off/system off control. This Millenium was based on solid state technology. While it did provide feedback, this too was solid state. Original Millennium keypads required ten wires for control from keypads, 2 wires for voltage and ground, 4 wires for control, and 4 for feedback (The current Millennium uses either ADA Bus or Cat. 5. Cable). Even the original Millennium's with the MIL-232 module, while permitting RS-232 control of the system, provided constant feedback. As no microprocessing took place in this Millennium, the system did not have the capacity to simply be polled for a status update.

The Delta System, on the other hand, is extremely sophisticated. It operates on the ADA Bus® and offers more control of both room acoustics (volume, bass, & treble with numeric status levels) and source transport functions (including numeric direct access). The wiring scheme dictates four wires; receive, transmit, power, and ground. The Delta mainframe has a facility to label both source names and room names. These labels are transmitted to keypads during operation of the system. The keypads are also capable of displaying radio stations, when operating an ADA triple tuner, and CD information, when operating an Esceint TuneBase system.

In essence, the current Millennium (Millennium 2000) is a combination of these two systems. It incorporates a microprocessor for system control and feedback. The keypads that are used with the Delta System, are also used by the Millennium 2000. The functional differences of keypads on a Millennium 2000 and Delta are minor. The Millennium 2000 features Party functions where the Delta allows you to scroll to specific rooms for control. The Delta keypads do feature Bass & Treble control where that function on the Millennium 2000 is set on the front of the Millennium 2000. Integrating Trinity Tuners, Escient TuneBase, and IRL-3000s on either system are the same.

Thus the major differences between Millennium 2000 and Delta, other than price, are primarily acoustical. While the Millennium 2000 sounds superb, the Delta sounds even better. Also, the Delta frame can hold eight room cards while the Millennium has only six zones per chassis. Lastly, the differences between these two systems is based on sound and its control. The Millennium features bass and treble settings but not remotely. The Delta does feature these contour controls on the non-2000 series controls. Also, Delta features individual room balance control, loudness contour and stereo enhancement filters per zone. Perhaps most important, is that the Delta features an acoustical preset per zone that can be recalled automatically upon start up.
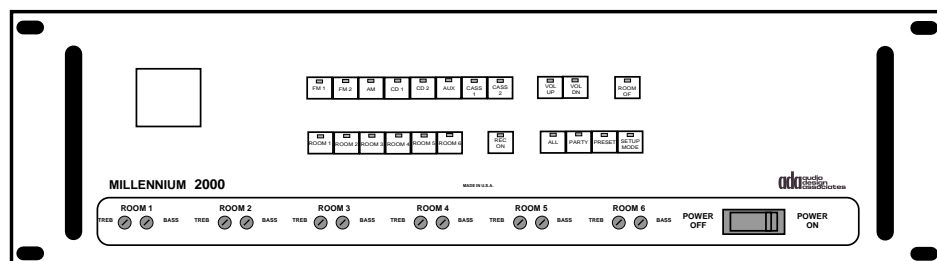
Millennium 2000 Keypad Options

While initially introduced with only a handful of keypad styles and options, today's Millennium 2000 can be controlled from any type of ADA Bus® Keypad using either, standard ADA Bus® wire or Cat. 5 wire. The choice is yours.

Currently, ADA offers four keypad series that work with the Millennium 2000 system. All keypad options can be ordered with either ADA Bus® or Cat Link™ connectors.
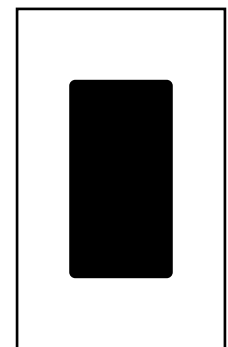
MC-2000 Series Controls

The MC-2000 Series is comprised of keypads that do not feature a 12 character alphanumeric LED display. These include the MC-2011 Single-Gang Decora Control, the MC-2000 Double-Gang Decora Control, as well as the MC-LUT1 and MC-LUT2 Single Gang and Double Gang controls that are attached to a Lutron button board. Please note, that the MC-LUT2, without any lighting controls, will actually take up three-gang space due to the layout of the Lutron button bezel. When using more than a single gang Lutron style keypad, always add one gang to the number of gangs used. For example, if you are using a single gang Lutron control for lights and a double gang Lutron control for audio (MC-LUT2), the electronics will fit into a four gang box. In the MC-2000 series we also include the IRT-3000 Single Gang IR Transceiver which is used as an infrared pickup. Finally, the MC-2000 features access of the Party 1 function.
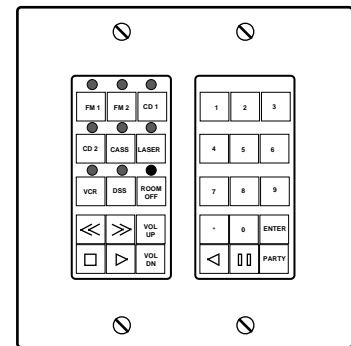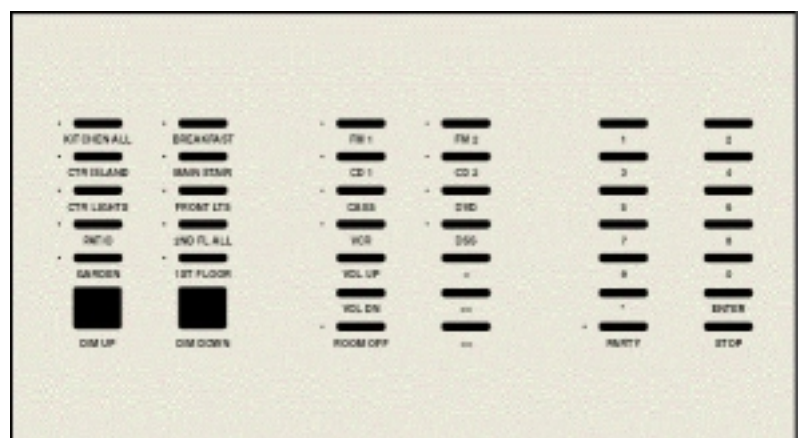

MC-2000
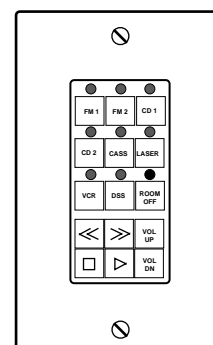
**MC-2011**

IRT-2000

MC-LUT

MC-3000 Series Controls

The MC-3000 Series is comprised of keypads that where previously devoted to Delta and Omega Systems. These include the MC-3000 and MC-3800 controls in either wall mount or table-top versions. Also included in this series, are the MC-3000 OD and MC-3800 OD All Weather Outdoor Controls.

All 3000 Series controls feature a 12 character alphanumeric display that will indicate source selected as well as feedback from the Trinity Triple Tuner, Escient TuneBase (Pro MK II), and the IRL-3000.

MC-3000

When using the MC-3000 (or MC-5000) series control, you have the opportunity to program the source register as you wish. The term source register refers to the source buttons secondary level of programming. For example, when the FM1, FM2, and AM buttons are selected on a keypad that has a source register with these buttons for the Trinity Triple Tuner, the keypad will both control and display feedback from the tuner. The source register is also used to lock into Escient or the IRL-3000. When using these controls, you can specify which source buttons talk to which components. When using MC-2000 controls, the source register is set by DIP switches and while several options exist, the register is more rigid. If you are mixing and MC-2000 and MC-3000/MC-5000 controls, you will want to program the MC-3000/MC-5000 source registers to correspond to the MC-2000's DIP switch source register.

MC-3800

The MC-3000's feature a display, they permit you to label the sources on the Millennium 2000. The indoor versions of these keypads also feature a built-in IR receiver. These control options are used when providing a distinctive look and the outdoor controls are the only options available for this system (MC-2000 OD is discontinued). The MC-3000 series controls feature access of both Party 1 and Party 2.
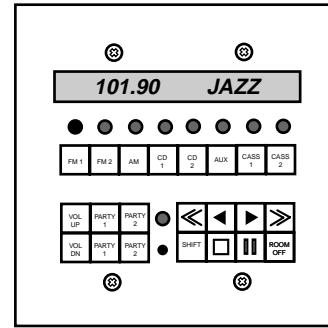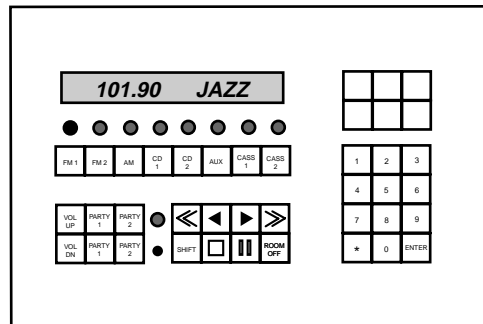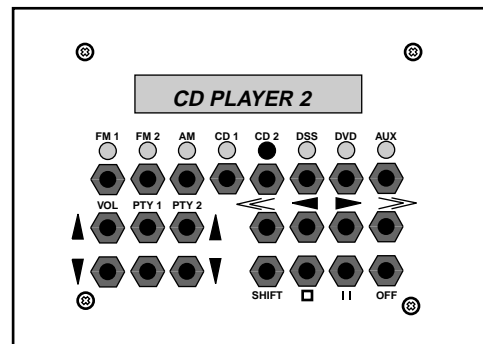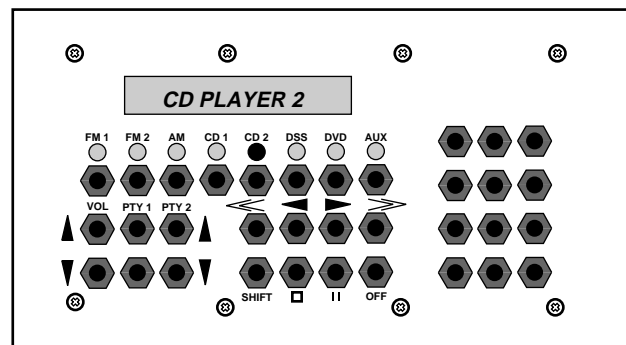
MC-3000 OD
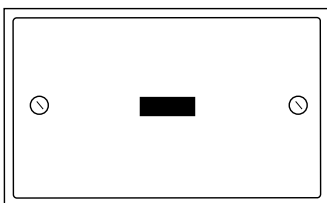
When using the MC-3000 or MC-3800 as a table top box, use the WPA-3000 Wall Plate Adaptor for systems that are run on ADA Bus®. For systems run on Cat. 5, create your own tabletop keypad connector.

MC-3800 OD

MC-5000 (Rapture) Control

The MC-5000 is by far the most popular new control that features backlit rubber buttons that can be set to illuminate in eight different options. Buttons are grouped by function and each function group has three DIP switches that turn on/off the red, green, and blue button LEDs individually. As such, you can mix the color of the keypad to either highlight specific features or provide an illuminated look that augments the room's decor. The MC-5000, features a 12 character display and an IR receiver, much like the MC-3000/MC-3800 indoor controls. Again, the MC-5000 is used to program the source names and source register of the Millennium 2000. Finally, the MC-5000 series controls feature access of both Party 1 and Party 2.

Please note, that unlike the MC-2000 and MC-3000 controls, the buttons of the MC-5000 are imprinted into the rubber as the rubber is curing. While the MC-2000 and MC-3000 keypads have removable chicklet type buttons with an available library of over 80 source names, the MC-5000 is pre-made and only has space for 3 characters per source. ADA offers eight standard source formats that should fit most installations. For jobs that absolutely require custom formats, please contact ADA.

Standard Formats:

FM1, FM2, AM, CD1, CD2, DSS, DVD, AUX
FM1, FM2, FM3, CD1, CD2, DSS, DVD, AUX
FM1, FM2, AM, CD1, CD2, CD3, DSS, DVD
FM1, FM2, FM3, CD1, CD2, CD3, DSS, DVD
FM1, FM2, AM, CD1, CD2, DSS, DSS, AUX
FM1, FM2, FM3, CD1, CD2, DSS, DSS, AUX
FM1, FM2, CD1, CD2, DSS, DSS, DVD, AUX
FM1, FM2, CD1, CD2, DSS, DSS, AUX, AUX

TS-3000 Touch Screens

The TS-3000 can also be used with the Millennium 2000. Featuring an electroluminescent display and fitting larger 3-gang boxes, the TS-3000 will also display feedback from the Trinity Tuner, Escient TuneBase, and IRL-3000, much like the MC-3000 & MC-5000 series controls. The TS-3000 software is easy to work with and in many cases, the TS-3000s will be preprogrammed by ADA.
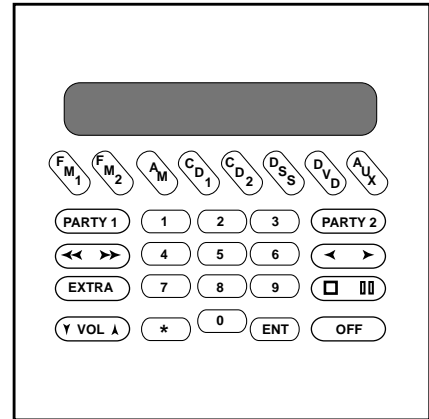
**MC-5000
(Rapture)**

TS-3000

RS-232 Control Simplified

The Millennium 2000 is therefore a cross between the Millennium and the Delta, combining the rock-solid, all-in-one performance of the Millennium with the sophisticated ADA Bus® features of the Delta. To this note, the control commands for the Millennium 2000 are very easily used with RS-232 control systems such as AMX, Crestron, Phast, and Vantage, etc. The control strings and feedback strings are extremely short, in that unlike the Delta, they do not need to contain words such as source names and room names. A typical five byte code will contain: Start Byte (FF), System Type Byte (2A), Room ID (01 to 24), Command Byte (01 to FE), and End Byte (FF) Unlike, the Millennium, the Millennium 2000 can be polled for status update only when needed. It is truly designed for system integration.

ROOM NUMBER	ROOM ID CODE	ROOM GROUP CODE	ADDRESS
	TX FROM KEYPAD	TX FROM MILLEN.	
ROOM 1	0 1	0 1	1
ROOM 2	0 2	0 1	1
ROOM 3	0 3	0 1	1
ROOM 4	0 4	0 1	1
ROOM 5	0 5	0 1	1
ROOM 6	0 6	0 1	1
ROOM 7	0 7	0 7	2
ROOM 8	0 8	0 7	2
ROOM 9	0 9	0 7	2
ROOM 10	0A	0 7	2
ROOM 11	0B	0 7	2
ROOM 12	0C	0 7	2
ROOM 13	0D	0D	3
ROOM 14	0E	0D	3
ROOM 15	0F	0D	3
ROOM 16	1 0	0D	3
ROOM 17	1 1	0D	3
ROOM 18	1 2	0D	3
ROOM 19	1 3	1 3	4
ROOM 20	1 4	1 3	4
ROOM 21	1 5	1 3	4
ROOM 22	1 6	1 3	4
ROOM 23	1 7	1 3	4
ROOM 24	1 8	1 3	4
ROOM 25	1 9	1 9	5
ROOM 26	1A	1 9	5
ROOM 27	1B	1 9	5
ROOM 28	1C	1 9	5
ROOM 29	1D	1 9	5
ROOM 30	1E	1 9	5
ROOM 31	1F	1F	6
ROOM 32	1F	1F	6
ROOM 33	1F	1F	6
ROOM 34	1F	1F	6
ROOM 35	1F	1F	6
ROOM 36	1F	1F	6

NOTE THAT ROOMS 31-36 CANNOT BE ACCESSED BY MC-2000, MC-2011, & MC-2000 O

Note: That Room Group 1 refers to the Millennium 2000 set to address 1, Room Group 2 refers to Millennium 2000 set to address 2, etc. The next page shows how code strings are put together. and explains, the Party functions.

COMMAND	COMMAND CODE
SELECT SOURCE 1	0 0
SELECT SOURCE 2	0 1
SELECT SOURCE 3	0 2
SELECT SOURCE 4	0 3
SELECT SOURCE 5	0 4
SELECT SOURCE 6	0 5
SELECT SOURCE 7	0 6
SELECT SOURCE 8	0 7
ROOM OFF	0 8
ALL OFF	0 B
ALL ON	FB
VOLUME UP	0 9
VOLUME DOWN	0A
RECORD POWER ON	0C
RECORD POWER OFF	0D
ALL (PER MILLENNIUM)	FC
PARTY 1 (Select Button {same as keypad Party button} but only per Millennium)	FE
PARTY 2 (Preset Button only per Millennium)	FD
PARTY 1 TO SOURCE 1 (Engages all Millenniums to their Party 1 {Keypad Party})	E1
PARTY 1 TO SOURCE 2 (Engages all Millenniums to their Party 1 {Keypad Party})	E2
PARTY 1 TO SOURCE 3 (Engages all Millenniums to their Party 1 {Keypad Party})	E3
PARTY 1 TO SOURCE 4 (Engages all Millenniums to their Party 1 {Keypad Party})	E4
PARTY 1 TO SOURCE 5 (Engages all Millenniums to their Party 1 {Keypad Party})	E5
PARTY 1 TO SOURCE 6 (Engages all Millenniums to their Party 1 {Keypad Party})	E6
PARTY 1 TO SOURCE 7 (Engages all Millenniums to their Party 1 {Keypad Party})	E7
PARTY 1 TO SOURCE 8 (Engages all Millenniums to their Party 1 {Keypad Party})	E8

NOTE: WHEN THE ABOVE 8 CODES ARE USED, THE ROOM ID CODE IS IGNORED.

When putting control codes together to form strings the following format is used.

START CODE	SYSTEM TYPE CODE	ROOM ID CODE	COMMAND CODE	END CODE
FF	2A	*01 TO 24*	*01 TO FE*	FF

To select Source 6 for Room 2, use the code example below.

START CODE	SYSTEM TYPE CODE	ROOM ID CODE	COMMAND CODE	END CODE
FF	2A	*0 7*	*0 5*	FF

To turn off Room 3, use the code example below.

START CODE	SYSTEM TYPE CODE	ROOM ID CODE	COMMAND CODE	END CODE
FF	2A	*0D*	*0 8*	FF

To engage Party 1 ("Select" button on some Millennium 2000s) just like the keypads.

START CODE	SYSTEM TYPE CODE	ROOM ID CODE	COMMAND CODE	END CODE
FF	2A	*01 to 24*	*E3*	FF

The above code will engage all Millennium 2000 Room's locked to track Party 1, to Source 3. Note that the Room ID Code can be any code. This code, while needing to be inserted to complete the string, is simply ignored when the fourth byte begins with E.

System Status information is also available using the chart below.

		SOURCE STATUS		
HIGHER 4 BITS OF ROOMS 1, 3, 5		LOWER 4 BITS OF ROOMS 2, 4, 6		
	0	SOURCE 1	0	SOURCE 1
	1	SOURCE 2	1	SOURCE 2
	2	SOURCE 3	2	SOURCE 3
	3	SOURCE 4	3	SOURCE 4
	4	SOURCE 5	4	SOURCE 5
	5	SOURCE 6	5	SOURCE 6
	6	SOURCE 7	6	SOURCE 7
	7	SOURCE 8	7	SOURCE 8
	8	ALL OFF	8	ALL OFF
	9	ROOM OFF	9	ROOM OFF
	A	N/A	A	N/A
	B	N/A	B	N/A
	C	N/A	C	N/A
	D	N/A	D	N/A
	E	N/A	E	N/A
	F	N/A	F	N/A

The code structure for status is as follows.

START CODE	ROOM GROUP CODE	ROOMS 1 & 2	ROOMS 3 & 4	ROOMS 5 & 6	SYSTEM TYPE	END CODE
0F	01 TO 1F	00 TO FF	00 TO FF	00 TO FF	2A	F0

ISO-232 ADA Bus to RS-232 Isolated Converter

The ISO-232 replaces the BC-232 as it offers several additional features while providing the same interface between ADA Bus® components and RS-232 control systems. The 9 pin D connector uses pin 2 (TX), Pin 3 (RX), and Pin 5* (Gnd now IEEE Standard, *BC-232 used pin 6*). ISO-232 also optically isolates the ADA Bus® data port from the 9 pin D and does not require an additional power supply.
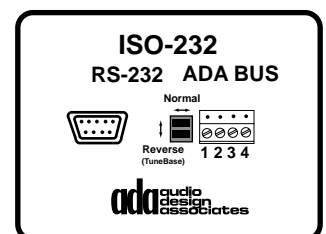
The ISO-232 also features Normal/Reverse jumpers making it easier to connect an Escient TuneBase Pro system. When using the ISO-232, not only will it isolate the Escient from the house-wide control system wiring array, but it will also permit you to set the jumper pins to the Reverse position without switching pins 2 and 3 on the ADA Bus wire. Please note, that when using the ISO-232 to provide RS-232 control of the Millennium 2000, the jumper pins are set to the Normal position.

Cat. 5 Cable

ADA has revisited the wiring requirements for all of its data level systems including Millennium 2000, Delta, Omega, & 8000. Up until 1999, Delta, Omega, and 8000 required runs of ADA Bus® wire, a specific 18 gauge three conductor wire with an overall braided shield (at least 90% braid) (tin coated copper wire). The braid was used for ground, one wire for voltage, one for receive, and one for transmit.

With the introduction of Millennium 2000, the engineers at ADA wanted to provide a platform whereby one can use standard Cat. 5 cable to wire keypads. Even though ADA still recommends individual home runs for each keypad, Millennium 2000 controls can run on long Cat. 5 runs (tested up to 1000' per keypad run, over 5000' feet total tested). ADA has developed two new devices, the Cat-Link Module which is mounted to the keypad and incorporates an RJ-45 eight pin female connector, and the WH-2000 Cat-Link Wiring Harness, which features eight female RJ-45 connectors and five ADA Bus® four-pin removable screw terminal connectors.

RJ-45 Cat. 5 Cable Connector

Front　　　**Top**
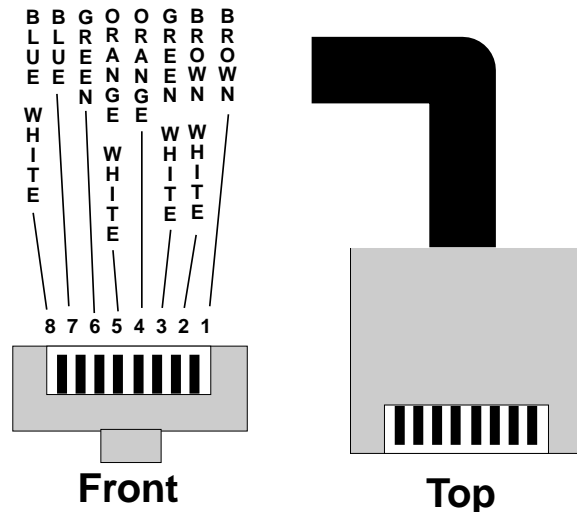
This research and development has been expanded across other ADA components so that Delta, Omega, and 8000 systems can now also be run on Cat. 5 Cable. While standard MC-3000 & MC-3800 keypad connectors will be ADA Bus®, you can opt to request these keypads with Cat-Link Modules. When or-

PIN NUMBER	COLOR	FUNCTION
PIN 1	BROWN	+20V
PIN 2	BROWN/WHITE	GND
PIN 3	GREEN/WHITE	TX-
PIN 4	ORANGE	RX+
PIN 5	ORANGE/WHITE	RX-
PIN 6	GREEN	TX+
PIN 7	BLUE	+20V
PIN 8	BLUE/WHITE	GND

dering keypads that operate on Cat. 5 cable, you will need to specify (and purchase) the Cat-Link Module for controls working on Delta, Omega, and 8000 Systems. Since most systems currently being sold are already prewired with standard ADA Bus® cable, Cat-Link Modules are an optional accessory for these systems.

Since Millennium 2000 is a new system, all Millennium 2000 keypads come standard with the Cat-Link Module built in. When ordering a Millennium 2000 System with MC-2000 series controls, you do not need to order Cat-Link Modules for each control. Millennium 2000 keypads can be special ordered with the standard four pin ADA Bus® connectors.

Millennium 2000 Physical Differences

The Millennium 2000 differs from the original Millennium in five visible areas.

1   The Microprocessor is recessed behind the front panel and a small plate provides access to this chip.
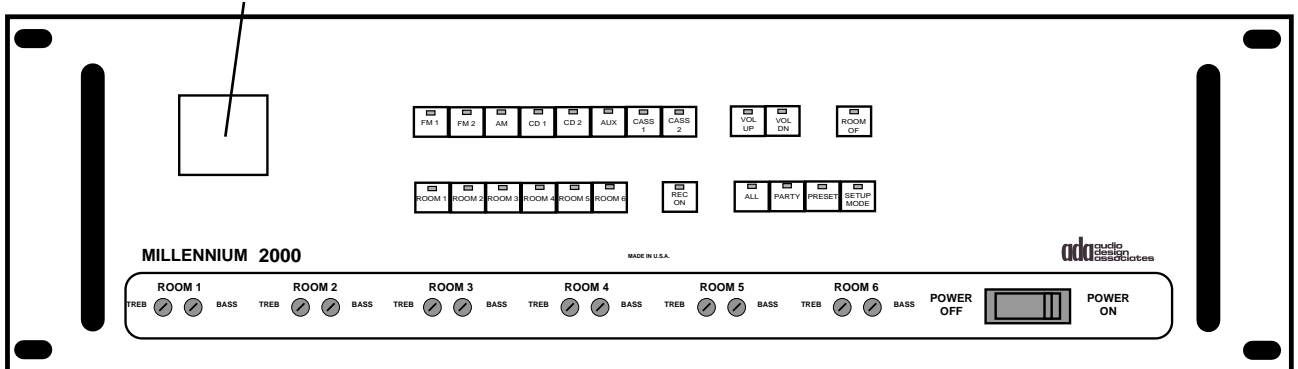

2   The IR learner module internal to the Millennium 2000 is the same device found in the IRL-3000. Also, there are now eight IR outputs, one for each source.

3   Because the IR learner is internal, you need a PC connected to the Millennium 2000 during both IR capture and downloading of the IR information to the Millennium 2000's IR learner.

4   Four front panel buttons on the Millennium are now used to program the Millennium 2000's address (6 Millennium 2000's can be used on a single network, 36 Zones), program rooms to turn on with one of two Party modes, and engage Party 1, Party 2, or All On.

5   The rear panel features an ADA Bus® jack (removable screw terminal jack).
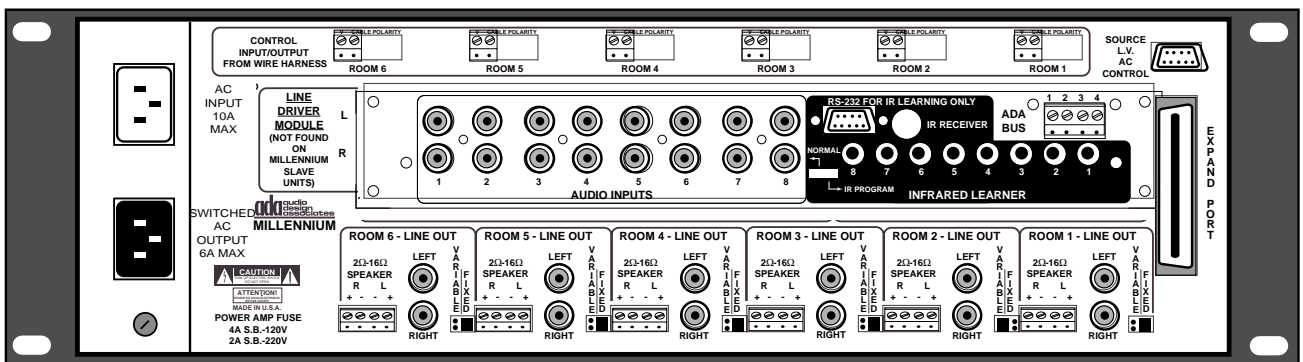
These are the only real differences that you will be able to see upon visual inspection of the unit.

Party Mode

The Millennium 2000 Keypads which feature numeric buttons (MC-2000, MC-2000 OD, & TS-2000), also feature a PARTY button. This button will turn on several rooms at once and switch them to the source selected on the keypad from which the Party button has been pressed.

The ability for a room to be controlled from the keypads Party button, is based on the setup of that room's Millennium 2000 (see below). The Millennium 2000 features three buttons on its front panel, Party 1 (or Party), Party 2 (or Preset), and All. While these buttons are used for programming the Millennium 2000, they also have operate the Millennium 2000. Unlike the keypads' Party buttons, the Millennium 2000's Party buttons (& All button) operate only the zones on that Millennium 2000. While All engages all rooms, Party 1 and Party 2 are pro- grammable. In order for any three of these functions to be accessed, a room button must be on. Its source will engage in all rooms set to party. Keypads, unlike the buttons on the front of each Millennium, will cause all Millennium Rooms (set to track Party 1), to engage.

Programming Millennium Room Groups & Party Rooms

The Millennium 2000 has two levels of programming that can be accomplished in one quick step. The first level assigns the Millennium's Room Group number. If you are only using one Millennium in the system, chances are its Room Group number will be 1. If you are using more than one Millennium 2000, each one will require a different Room Group number. The second function if the programming of Rooms to engage with Party mode functions.

To enter the Millennium 2000's program mode, press and hold the SETUP MODE button until both the PRESET button and the SETUP MODE button are flashing in sequence.

Room Groups
Press the ALL button and the ALL button and SETUP MODE button will begin flashing in sequence. Also, one of the first five room buttons will flash. The room buttons correspond to the Millennium 2000's address Room Group. Normally, the ROOM 1 button will flash indicat- ing that this Millennium 2000 is set to Room Group address 1. To change the address, press another room button (Room 6 not used).

Party Modes
The Party mode accessed by the keypad is programmed by first pressing the PARTY button while in the program mode. At this time, the PARTY and SETUP MODE button will flash. To have rooms respond to the keypad's Party button, press their respective room buttons. Note that the room buttons will begin flashing in sequence for the rooms you have selected to track this function. This same procedure is used to set rooms for Party 2 (or Preset) buttons. While these rooms are turned on via the Millennium front panel, an RS-232 system can engage Party 2 just like keypads engage Party 1 (Party 1 can also be activated from RS-232 sys- tems). To program Party 2, press the Preset button and then the appropriate room buttons. If you simply wish to see which rooms are set to Party, simply press either the Preset or Party buttons. The rooms scheduled to work with these functions will flash in sequence. To exit the Millennium 2000's program mode, press and hold the SETUP MODE button.
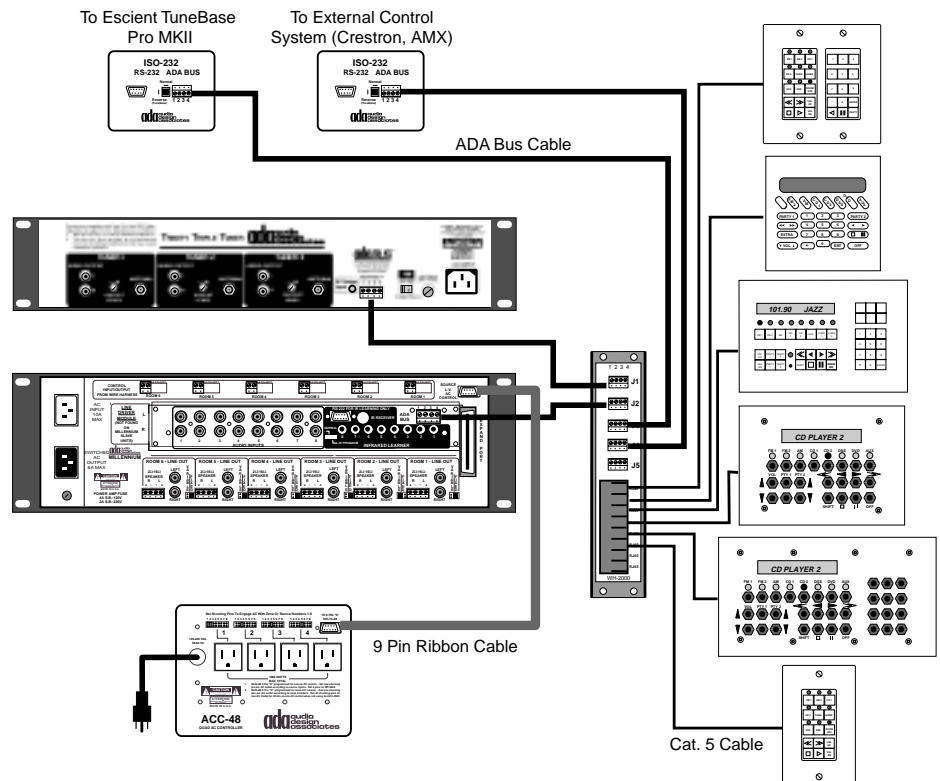
Cat-Link & The Millennium 2000

The Millennium 2000 keypads can be home run using either ADA Bus wire or Cat. 5. cable. If you are using ADA Bus wire, then order your Millennium System with WH-3000 Wiring Harnesses (1 per Millennium). If you are running your keypads on Cat. 5 cable, then you will need to order WH-2000 Wiring Harnesses. When using the WH-2000, the Millennium connects directly to one of the five ADA Bus® connectors on the WH-2000 Wiring Harness. If you are running several Millennium 2000's you will run each Millennium 2000 to its own WH-2000, and then using a four conductor wire, interconnect the WH-2000's using the ADA Bus® connectors. The Millennium 2000 has a total of six different addresses, permitting you connect up to six units together for a full 36 zone system. Please note that while you can have six Millenniums connected for a 36 zone system, MC-2000 and MC-2011 keypads only have the capacity to control zones 1-30. Zones 31-36 can only be controlled by MC-3000, MC-3800, MC-3000 OD, MC-3800 OD, MC-5000, and TS-3000 controls. These last six zones can also be controlled by an external control system via RS-232.

The other ADA Bus® connectors found on the WH-2000 can be used for keypads running on ADA Bus® wires or connection of ADA Tuners, ISO-232's used to connect to Escient CD library systems, other ADA Bus® components, and an ISO-232 for connection to a third party control system such as AMX, Crestron, Phast, Lutron, or Vantage. When using any of these sub-systems in conjunction with multiple Millennium 2000's, you need only to connect the sub-system to one WH-2000, not each WH-2000 in the system.

Each WH-2000 also features eight (8) RJ-54 Cat-Link™ connectors (female). ADA keypads with Cat-Link™ connectors, wire to RJ-45 connectors that plug into the WH-2000. If you are using an ADA keypad with an ADA Bus® connector, you will connect it to an open ADA Bus® terminal on the WH-3000 or an open terminal on the WH-2000, not to a Cat-Link™ connector.

The Millennium 2000 is easy to wire. Most components that are associated to the system mainframe, wire directly to the ADA Bus® data ports on the WH-2000 using an 18 gauge four conductor cable. If any of these cables are longer than 10 feet, an ADA Bus® wire would most likely work better. The keypads, running on Cat. 5 cable connect to the WH-2000.

To Escient TuneBase Pro MKII

To External Control System (Crestron, AMX)

ADA Bus Cable

9 Pin Ribbon Cable

Cat. 5 Cable

Multiple Millennium 2000's

When connecting several Millennium 2000s (Up to six Max), each Millennium 2000 connects to its own WH-2000 wiring harness. The WH-2000's connect to each other using a four conductor 18 gauge wire (ADA Bus®) as well. Components common to the entire system, such as IRL-3000 source controllers, ISO-232's for RS-232 systems including Escient's TuneBase products, are connected to any of the WH-2000's ADA Bus ports since the WH-2000s are connected to each other.
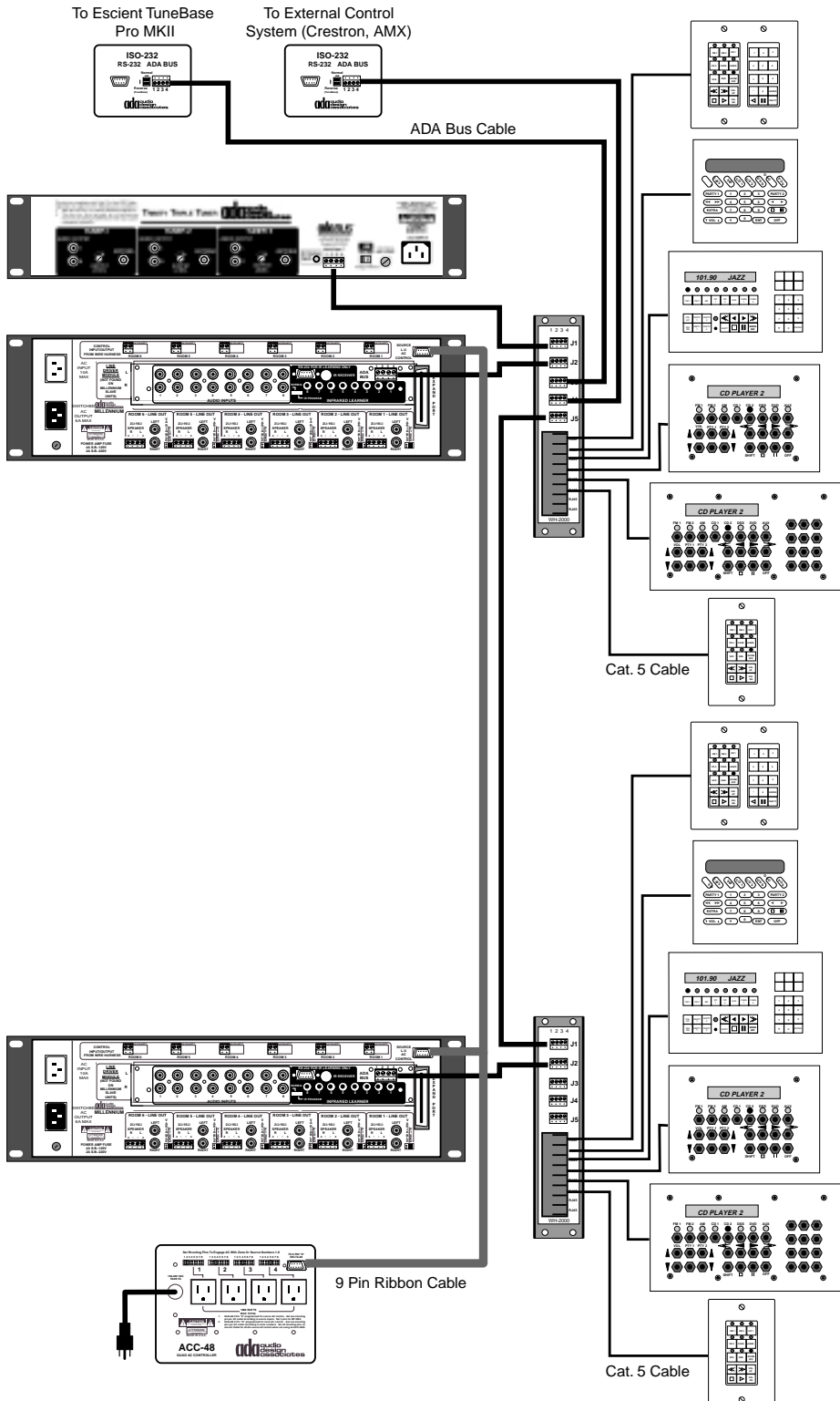
Keypad Settings - MC-2011, MC-2000, & MC-2000 OD

For these keypads to operate properly, they will need to have their DIP switches set to the correct room number and source configuration.

The first five DIP switches set the room number. The last three DIP switches set the source control options. To set the room numbers, it is suggested for first disconnect the keypad from the system by unplugging the RJ-45 connector (or ADA Bus® jack). Set the switches correctly and reconnect to the system. The chart to the right details the switch settings for rooms (switches 1 -5).

The final three switches (6-8) determine what the source buttons will be controlling after they have been selected. For example, if you are using a Trinity Triple Tuner for FM 1, FM 2, AM, an Escient TuneBase Pro for CD 1, with the remaining four devices (CD 2, CASS, DSS, DVD, VCR) controlled by IR (or serial data) using the IRL-3000. This scenario is solved using format number three in the chart below where DIP switch 7 is in the UP position.

The last three DIP switches determine the source control options and the eight options listed below are available. Please note, that you cannot alter the order of the sources with respect to the Millennium 2000's inputs. The options are fixed to the assigned inputs.

MILLENNIUM DIP SWITCH SETTINGS	1	2	3	4	5
ROOM 1					
ROOM 2					UP
ROOM 3				UP	
ROOM 4				UP	UP
ROOM 5			UP		
ROOM 6			UP		UP
ROOM 7			UP	UP	
ROOM 8			UP	UP	UP
ROOM 9		UP			
ROOM 10		UP			UP
ROOM 11		UP		UP	
ROOM 12		UP		UP	UP
ROOM 13		UP	UP		
ROOM 14		UP	UP		UP
ROOM 15		UP	UP	UP	
ROOM 16		UP	UP	UP	UP
ROOM 17	UP				
ROOM 18	UP				UP
ROOM 19	UP			UP	
ROOM 20	UP			UP	UP
ROOM 21	UP		UP		
ROOM 22	UP		UP		UP
ROOM 23	UP		UP	UP	
ROOM 24	UP		UP	UP	UP
ROOM 25	UP	UP			
ROOM 26	UP	UP			UP
ROOM 27	UP	UP		UP	
ROOM 28	UP	UP		UP	UP
ROOM 29	UP	UP	UP		
ROOM 30	UP	UP	UP		UP

MILLENNIUM DIP SWITCH SET				MILLENNIUM 2000 INPUTS AND THERE RESPECTIVE SOURCE OPTIONS (IRL-3000 FOR ADDRESS 1 ONLY)							
	6	7	8	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8
OPTION 1				IRL PORT 1	IRL PORT 2	IRL PORT 3	IRL PORT 4	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 2			UP	TRINITY TUN 1	TRINITY TUN 2	TRINITY TUN 3	IRL PORT 4	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 3		UP		TRINITY TUN 1	TRINITY TUN 2	TRINITY TUN 3	SPECIAL CD 1	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 4		UP	UP	TRINITY TUN 1	TRINITY TUN 2	TRINITY TUN 3	SPECIAL CD 1	SPECIAL CD 2	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 5	UP			TRINITY TUN 1	TRINITY TUN 2	IRL PORT 3	IRL PORT 4	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 6	UP		UP	TRINITY TUN 1	TRINITY TUN 2	SPECIAL CD 1	IRL PORT 4	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 7	UP	UP		TRINITY TUN 1	TRINITY TUN 2	SPECIAL CD 1	SPECIAL CD 2	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8
OPTION 8	UP	UP	UP	IRL PORT 1	IRL PORT 2	SPECIAL CD 1	IRL PORT 4	IRL PORT 5	IRL PORT 6	IRL PORT 7	IRL PORT 8

If you require an alternate configuration than that stated above, you will need to contact ADA for custom programming at an additional charge. Please note that you will need to have custom programmed microprocessors installed in each system keypad.

MC-3000 & MC-5000 Series Programming

The MC-3000, MC-3800, MC-3000 OD, MC-3800 OD, and MC-5000 (Rapture) controls are void of DIP switches for room addressing and source register. As such, these controls will need to be programmed using there buttons and a special setup mode.

The room address determines what room this keypad is controlling. The source register determines what the source buttons are controlling and getting feedback from. So that when the FM 1 button, set to Trinity Tuner module 1, is selected, the keypad displays tuner feedback and the transport buttons control tuner 1. Other register options include the additional tuner modules, Special CD addresses 1 through 8 (for Escient TuneBase Pro Mark II), and IRL-3000 ports. In the case of the Millennium 2000, the IRL-3000 is internal.

A second external IRL-3000 could be used in conjunction with the internal IRL-3000, but only on systems void of MC-2000 series keypads (their limited programming via DIP switches do not permit accessing a second IRL address). However, in systems using only MC-3000, MC-5000 and TS-3000 Series controls, this second IRL-3000 option might assist in controlling sources at some distance from the mainframe. For example, the mainframe including the Millennium 2000 is buried in the basement with a two DSS receivers and the Trinity Tuner. Two CD changers, a DVD, and VCR are located in the family room rack. Perhaps the mainframe was based in another room due to space limitations. In this case, instead of running four IR lines from the Millennium 2000 to the four remote sources, simply run an single ADA Bus line and place the second IRL-3000 behind the remote sources. Again, this scenario won't work for the MC-2000 or MC-2011 because they cannot be configured outside their eight source register options.

Consideration A
When working with MC-3000/MC-5000 keypads and MC-2000 or MC-2011s, you will need to first configure the MC-2000's source register, setting their DIP switches according to the source chart on the bottom of the previous page. Use the same options when programming the MC-3000/MC-5000s.

Consideration B
When working with MC-5000 Keypads, because of the silk-screened rubber button pad, you will want to place the sources on the appropriate input as the rubber pads source layout (inputs 1-8) cannot be changed.

Programming
1   To enter the program mode of a keypad, press and hold the SHIFT (MC-3000 Series) or EXTRA (MC-5000 Series) button until the display reads CODE. Then release the SHIFT button.

2   Using the source buttons, reading left to right (where source 1 is on the left and source 8 is on the right) enter the code 1867 using the sources buttons (not the numeric buttons.). The keypad will display the code as you are entering it.

Room Address

3   Press the BASS UP button once and the display will show the System Type "1:MIL-LENNIUM". Press BASS UP again and the keypad will display "1:SETUP". Press BASS UP again and the display will read "1:ROOM   ###", where the number represents the room address. While the counter can go from 001 to 225, the first 36 addresses are the only ones used with the Millennium 2000 System. As such, only 001 to 036 are used.

4   To change the room address use the VOL UP & DN buttons. When you have the keypad locked into the desired room and wish to program other parameters, continue with step 5. If you are done programming this keypad, press and release the SHIFT or EXTRA button.

Checking the Source Register

5   Press the BASS UP button and the display will read "2:CHECK 1-8". In this mode, pressing the various source buttons will display the current source settings. The source register will read one of the options to the right.

Preventing Devices From Being Controlled

6   Pressing the BASS UP button again will display "2:EDIT   1-8" which will quickly change to reading "2:NONE". If a source button is not intended to track any function (if you do not want a particular keypad to control a device), simply press the devices button at this time. The display will quickly read DONE and then return to the 2:NONE setting.

DISPLAY	WHAT IT MEANS	WHAT YOU USE
2:NONE	NO SOURCE CONTROL	
TRNTY 0/TUN1	TRIINITY TUNER MODULE 1 ADDRESS 0	STANDARD
TRNTY 0/TUN2	TRIINITY TUNER MODULE 2 ADDRESS 0	STANDARD
TRNTY 0/TUN3	TRIINITY TUNER MODULE 3 ADDRESS 0	STANDARD
IRL3K 0/OUT1	IRL-3000 ON ADDRESS 1 PORT 1	STANDARD
IRL3K 0/OUT2	IRL-3000 ON ADDRESS 1 PORT 2	STANDARD
IRL3K 0/OUT3	IRL-3000 ON ADDRESS 1 PORT 3	STANDARD
IRL3K 0/OUT4	IRL-3000 ON ADDRESS 1 PORT 4	STANDARD
IRL3K 0/OUT5	IRL-3000 ON ADDRESS 1 PORT 5	STANDARD
IRL3K 0/OUT6	IRL-3000 ON ADDRESS 1 PORT 6	STANDARD
IRL3K 0/OUT7	IRL-3000 ON ADDRESS 1 PORT 7	STANDARD
IRL3K 0/OUT8	IRL-3000 ON ADDRESS 1 PORT 8	STANDARD
IRL3K 1/OUT1	IRL-3000 ON ADDRESS 2 PORT 1	
IRL3K 1/OUT2	IRL-3000 ON ADDRESS 2 PORT 2	
IRL3K 1/OUT3	IRL-3000 ON ADDRESS 2 PORT 3	
IRL3K 1/OUT4	IRL-3000 ON ADDRESS 2 PORT 4	
IRL3K 1/OUT5	IRL-3000 ON ADDRESS 2 PORT 5	
IRL3K 1/OUT6	IRL-3000 ON ADDRESS 2 PORT 6	
IRL3K 1/OUT7	IRL-3000 ON ADDRESS 2 PORT 7	
IRL3K 1/OUT8	IRL-3000 ON ADDRESS 2 PORT 8	
SPECIAL CD 1	ESCIENT I/O ADDRESS 1	STANDARD
SPECIAL CD 2	ESCIENT I/O ADDRESS 2	
SPECIAL CD 3	ESCIENT I/O ADDRESS 3	
SPECIAL CD 4	ESCIENT I/O ADDRESS 4	
SPECIAL CD 5	ESCIENT I/O ADDRESS 5	
SPECIAL CD 6	ESCIENT I/O ADDRESS 6	
SPECIAL CD 7	ESCIENT I/O ADDRESS 7	
SPECIAL CD 8	ESCIENT I/O ADDRESS 8	
LVI-3800	SOURCE RELAY CONTROLLER	
TRNTY 1/TUN1	TRIINITY TUNER MODULE 1 ADDRESS 1	
TRNTY 1/TUN2	TRIINITY TUNER MODULE 2 ADDRESS 1	
TRNTY 1/TUN3	TRIINITY TUNER MODULE 3 ADDRESS 1	

Locking Source Buttons To Control Specific Tuner Modules, Special CDs, & IRL Ports

7   To lock a source button to a specific device, first select the device by pressing VOL UP. The display will scroll through the register as listed in the chart above. If you pass the device you are looking for, use the VOL DN button to return to it. The source register ends at the bottom and top. When the right register is displayed, press the source button. The display will briefly read DONE and then return to the setting you selected. Repeat this step for all eight sources as needed.

At this time, if you do not want to load other MC-3000/MC-5000 keypads with this revised register, simply press and release the SHIFT or EXTRA button to exit the setup mode. If you want to program other keypads with this register continue.

Proceeding to the Label and Programming Steps

8   Press the BASS UP button and the display will read "1:EXTRA A-F. Press the BASS UP button again and the display will read "2:EXTRA 0-9".

Labeling Source Names

9 Press the BASS UP button again and the display will read LABEL SOURCES immediately followed by one of the source names. The first letter in the source will also be flashing. At this time, pressing VOL UP or DN will cause this letter to change. Use the >> or << buttons to advance the cursor to the next position. To label a different input, select the source button and repeat these steps.

Programming Millennium & Other MC-3000/5000 Keypads w/Source Register & Names

10 Before proceeding with this step make certain that only one keypad is in this setup mode. This step takes the information programmed in the keypad you are working on and copies its contents to the Millennium 2000 chip. If you have more than one Millennium 2000 in your system, the one set to address one (the first unit with the IRL-3000 in it) will be the only one capable of receiving this program. Press the BASS UP button and the display will read PROGRAM ALL. At this time press the VOL UP or DN once to initiate the programming procedure.

The display will say PROGRAMMING and then the display will read through all eight sources from the first to the last. Other MC-3000/5000 keypads on the system will display PROGRAMMING and have there source LEDs move left to right. When the load to the primary Millennium 2000 and keypads is done, the display will read FINISHED. Press the SHIFT or EXTRA button to exit the setup mode. The display will read REQUEST DATA and the keypad will return to its operational mode.

If the display will continues to constantly read PROGRAMMING, the Millennium is not responding to the program. Press the SHIFT or EXTRA button to get out of the setup mode. Re-enter the keypad's program mode and repeat this step. If you still have are stuck in PROGRAMMING, verify that the Millennium Master is in fact on address one. If you want to reset power to the Millennium, turn off its power switch. Please note, if you have more then one Millennium on the system or other ADA Bus devices that provide power (ie. Cinema Reference), you will need to unplug or remove power from these units as well for a clean reset.

CRC Errors

If the other keypads in the system have an interruption during their load, they may will display CRC ERROR. As such, something caused the keypad to not fully received the file load. If this occurred to several keypad, you can repeat step 10. If it occurred to one or two keypads, you can use the Polling procedures described in step 11 to load these keypads individually.

Polling A Keypad or Adding A New MC-3000/5000 To An Existing System

11 After the new keypad is connected, enter its program mode as before. Repeatedly press BASS UP button until the "1:ROOM ###" appears in the display. Using the VOL UP or DN buttons, lock in the room address for this keypad. Then press the BASS UP button until the display reads POLL INFO. Press VOL UP or DN and the keypad will download the source register and source names from the primary Millennium. As this procedure occurs, the source lights will advance from left to right. When the poll is complete, the keypad will read FINISHED. At this time, press the SHIFT or EXTRA button to exit the program mode.

MC-3000, MC-3800, and MC-5000 IR Receiver On/Off

To turn toggle the keypad's IR receiver on or off, press and hold the SHIFT or EXTRA button until the display reads "CODE: ####". Then using the source buttons, where 1 is to the left and 8 is to the right, enter the code 1112. The keypad will display the numbers as they are entered. Then press and release the BASS UP button. The keypad's display will indicate if the IR receiver is on or off. To change the setting, repeat this procedure.

Millennium 2000 - What you will need.

When ordering the Millennium 2000 System, you will need to include the following items in your proposal.

Millennium 2000	One mainframe per system.
Millennium 2000 Slave	One slave unit for every additional six zones.
WH-2000 or WH-3000	One Wiring Harness per Millennium 2000 or Slave unit.
ACC-48 Source AC Controller	1 for every 4 sources, typically one per system will do.
Keypads	As needed.
Optional	
Trinity Triple Tuner	Triple Tuner - One per system.
PhoneBell Alert Override	Doorbell & Telephone Paging - One for every six zones as needed.
For IR Control of a Zone	
IRT-3000 IR Transceiver	Needed for any room that will require an IR pickup.
IRT-232 & Bits™ Program	Used to program learning IR remote controls with IR codes to control Millennium 2000s (make your own IR remote).
To integrate an Escient TuneBase	
ISO-232 ADA Bus®/RS-232	One per TuneBase
To integrate a third party control System (AMX, Crestron, Phast)	
ISO-232 ADA Bus®/RS-232	Only one unit is typically required.

Millennium Devices You <u>Cannot</u> Use with Millennium 2000

While it is clear that you can use some of the same components that are used by the standard Millennium System, there are some components that will not integrate with Millennium 2000.

VSU-8	Video Switching Unit
ZT-1	Zone Tracker
ZS-1	Zone Splitters

Using a UPS (Uninterrupted Power Supply)

The Millennium 2000 sounds warm and clean, in particular due to the selection of VCAs (Voltage Control Attenuators) used for volume control. These high quality VCAs do, however, have one drawback, when power is removed from the Millennium 2000, they reset to a zero (no sound) volume level. The only way restore the volume for every zone after power has been restored, is to raise the volume.

If you are installing a Millennium 2000 in an environment where voltage drops, brownouts or power outages are frequent, you may wish to provide a UPS (same ones used for PCs) to maintain power during brief or momentary power outages. ADA suggests using a quality UPS with at least a 600 Watt amp power rating.

Multiple Millenniums - Installation of the System Bus

The Millennium is uniquely designed to be expandable to up to 36 zones using a maximum of six Millenniums. While this flexibility typically exceeds the requirements of the most common system, you may need to provide a system with 12 or 18 zones of audio.

The main (master) Millennium, with six zones, can have additional Millenniums connected to it. The additional Millenniums do not require the source component audio input board or the source IR controller board because the master Millennium already has these circuits built-in. Subsequently, the additional Millenniums (slave units) will have a blank plate were these connectors are found on the master Millennium. All Millenniums are then connected together using a 50 pin ribbon cable (System Bus) provided with the system.

The System Bus (50 pin ribbon cable) carries source selection commands, balanced line-level audio, source selection conformation feedback, and system on/system off status. This clean and professional interconnect between multiple Millenniums makes this system ideal, not only for small six room projects but also for the larger multi-room systems as well. No longer will you need to split the source components audio line-level output to connect multiple mainframe servers. Best of all, the master Millennium provides a boost to standard audio line-level permitting up to six Millenniums to be connected together on one system.

When installing several Millenniums, you will plug each Millennium into its own wall AC outlet. ADA suggests using one 15 Amp - 20 Amp circuit per two Millenniums. The AC cords which connect the Millennium to the AC outlets is provided with each Millennium in a U.S. male AC version.
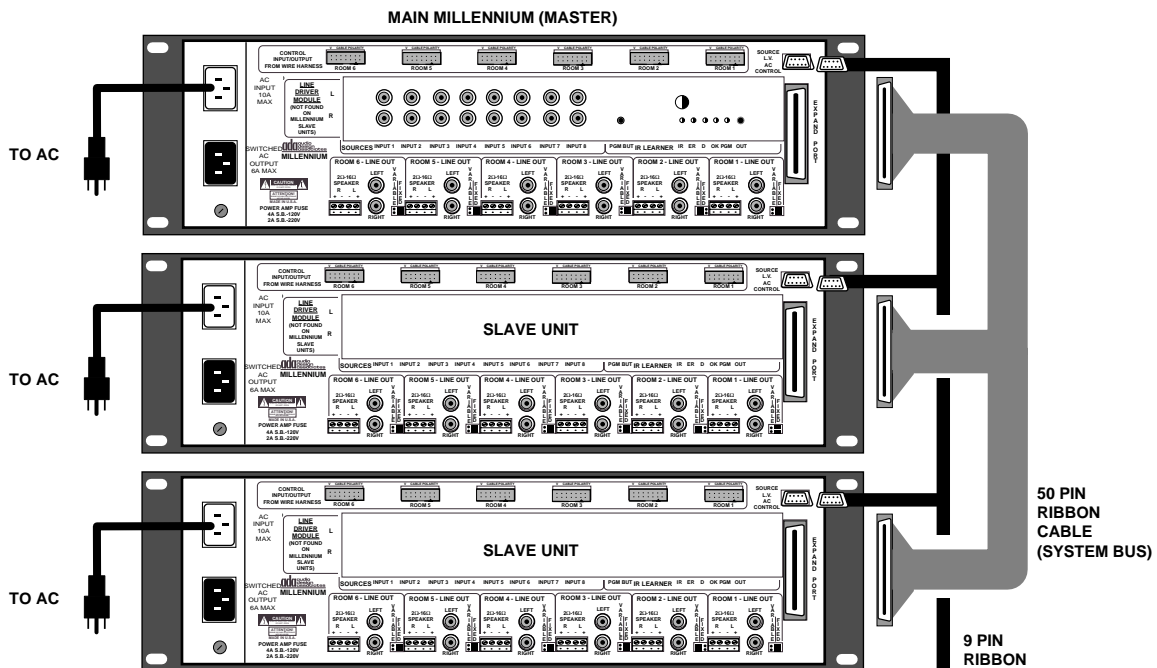

Note: When using more than one Millennium, you must use either the ACC-48 or ASU-10 for source AC Switching.
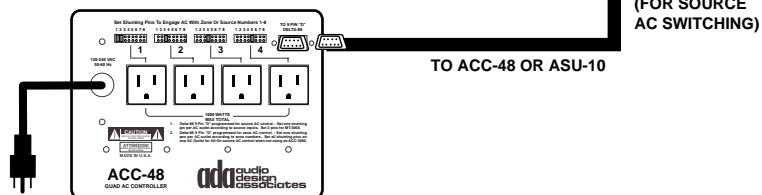
Source AC Connections to the Millennium (cont.)

For more advanced AC switching of sources such that sources engage only as needed, ADA provides two options, the ACC-48 and the ASU-10. The ACC-48 is a black box which can be located behind the equipment rack and each ACC-48 can trigger four outlets only as needed. The ACC-48 is designed to provide independent AC switching at a low price as compared to the rack-mounted ASU-10. While one ACC-48 will switch up to four sources, two ACC-48s can be daisy-chained to provide independent AC switching for up to eight sources.

The ACC-48 has four AC Outlets and each outlet has eight jumper pins (shunting pins) which determine when that particular AC outlet is going to engage. Each outlet can therefore be set to engage with one source or can engage when more than one source is selected. Therefore, while you may have eight sources of which six could have their AC switched, you may opt to use only one ACC-48 to keep the budget low. As an example using the following source format:
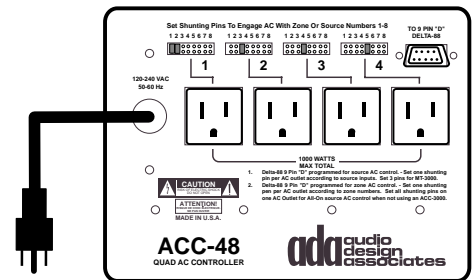
FM 1, FM 2, CD 1, CD 2, CASS, LASER, VCR, DSS

Since the VCR and DSS will need AC at all times and since the Laser disc player could also be plugged directly into a wall outlet leaving only five sources to be switched by the ACC-48. While the two CD changers and the one cassette changer will need to be switched independently (to make full use of their "timer play" function, the two tuners can be switched on the same AC outlet. Thus, you can provide advanced AC switching without purchasing two ACC-48s or one ASU-10.

To set the ACC-48 for operation as described in the example above, you will need to set
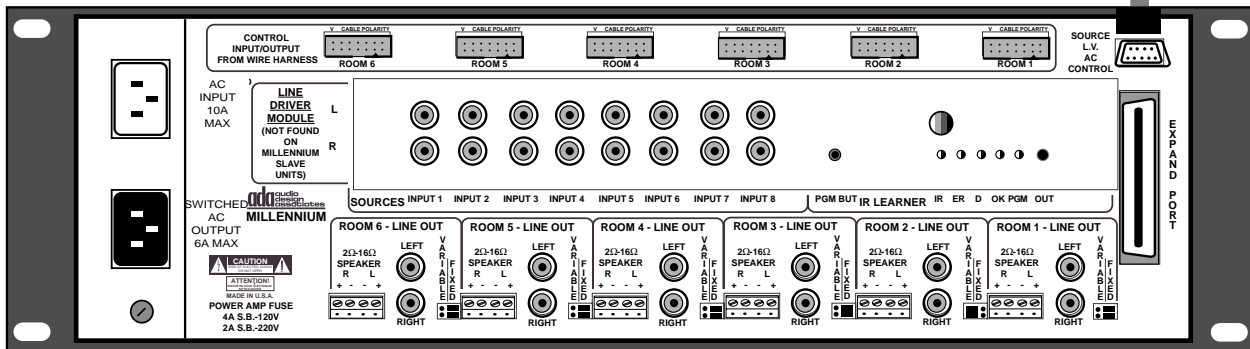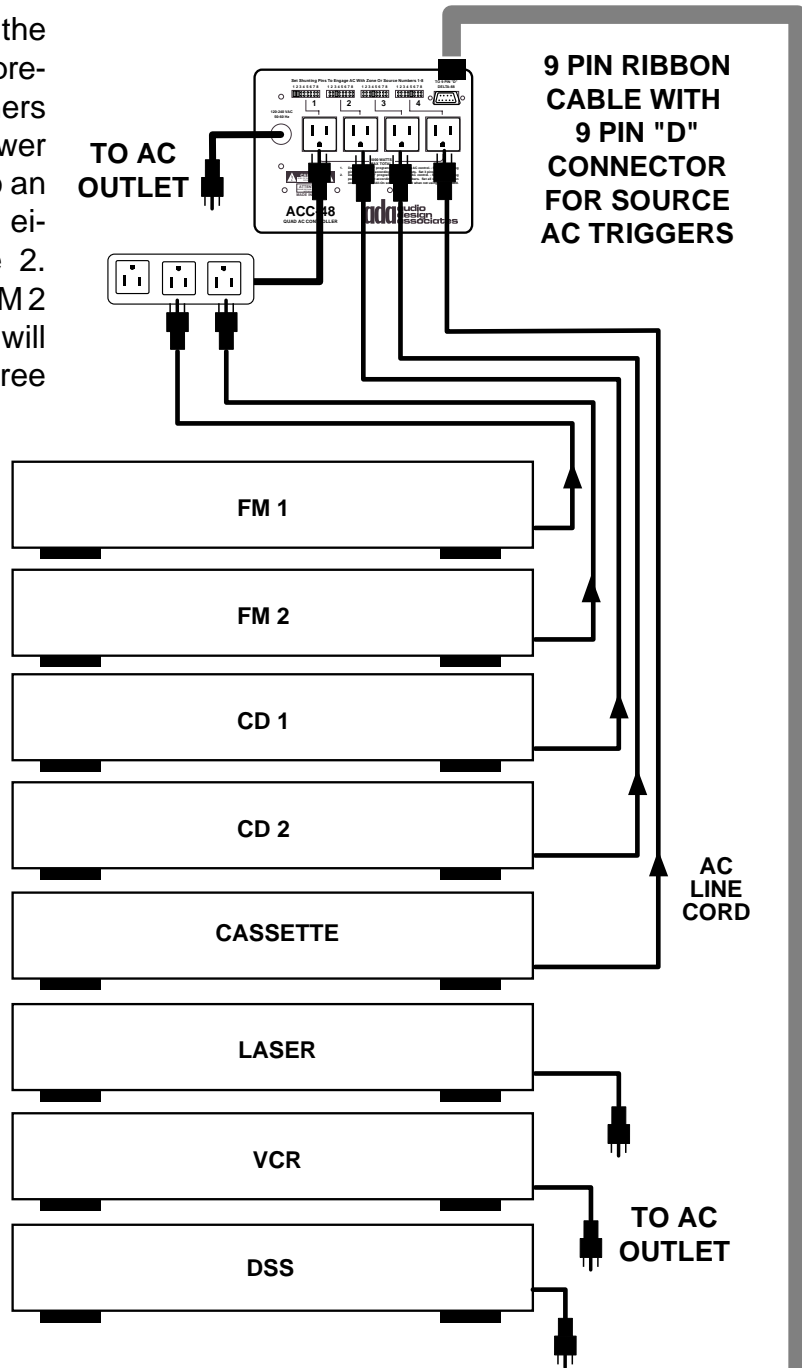
1. Two jumper connectors on pins 1 & 2 (sources 1 & 2) for the first AC outlet (#1), to which the two tuners (FM 1 & FM 2) are connected through an AC outlet strip.
2. One jumper connector on pin 3 for CD 1 (source 3) on AC outlet #2.
3. One jumper connector on pin 4 for CD 2 (source 4) on AC outlet #3.
4. One jumper connector on pin 5 for CASS (source 5) on AC outlet #4.
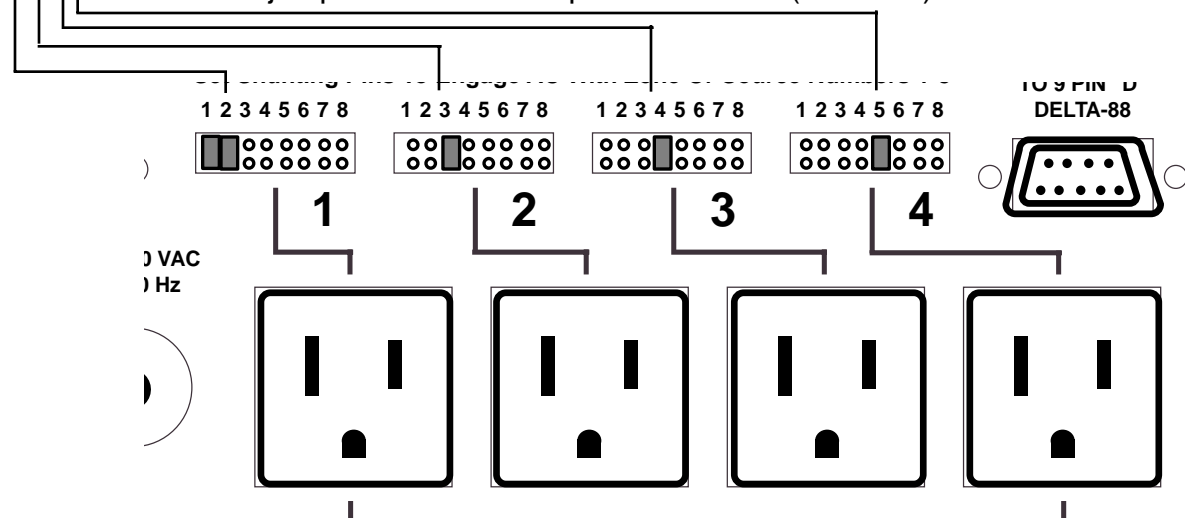
# Source AC Connection Option 1 - Using One ACC-48

In this configuration, using the example described on the previous page, the two tuners are connected to an AC power strip which is plugged into an outlet set to engage with either source 1 or source 2. Thus, whenever FM 1 or FM 2 are selected, both tuners will turn on. The remaining three audio sources are each connected to their own switched AC outlet. The three video sources will not have their AC triggered by the Millennium System.

The ACC-48 connects directly to the Millennium through a 9 pin ribbon cable provided with the ACC-48. This cable has two 9 pin "D" type connectors, one on each end of the cable and this cable plugs into both the Millennium and the ACC-48.

9 PIN RIBBON CABLE WITH 9 PIN "D" CONNECTOR FOR SOURCE AC TRIGGERS

TO AC OUTLET

ACC-48
QUAD AC CONTROLLER

AC LINE CORD

FM 1

FM 2

CD 1

CD 2

CASSETTE

LASER

VCR

TO AC OUTLET

DSS

MILLENNIUM

CONTROL INPUT/OUTPUT FROM WIRE HARNESS

ROOM 6 — ROOM 5 — ROOM 4 — ROOM 3 — ROOM 2 — ROOM 1

SOURCE L.V. AC CONTROL

AC INPUT 10A MAX

LINE DRIVER MODULE (NOT FOUND ON MILLENNIUM SLAVE UNITS)

SWITCHED AC OUTPUT 6A MAX

CAUTION ATTENTION! POWER AMP FUSE 4A S.B.-120V 2A S.B.-220V

MADE IN U.S.A.

SOURCES INPUT 1 INPUT 2 INPUT 3 INPUT 4 INPUT 5 INPUT 6 INPUT 7 INPUT 8

PGM BUT IR LEARNER IR ER D OK PGM OUT

ROOM 6 - LINE OUT / ROOM 5 - LINE OUT / ROOM 4 - LINE OUT / ROOM 3 - LINE OUT / ROOM 2 - LINE OUT / ROOM 1 - LINE OUT

EXPAND PORT

Source AC Switching Option 3 - 2 ACC-48s

This option extends the functionality of the system as described in Option 2 such that each source turns receives AC only when selected with the exception of the VCR. Thus, each tuner will turn on and off only as needed. Furthermore, the DSS and laser disc player will receive AC only when selected. This will not engage these units (turn them on) since most such devices have a soft-contact power switch which resets to off when the unit is unplugged. However, this AC switching function still provides automatic power off in that when, for example, someone is finished using the laser disc player, the laser disc will turn completely off when not selected.
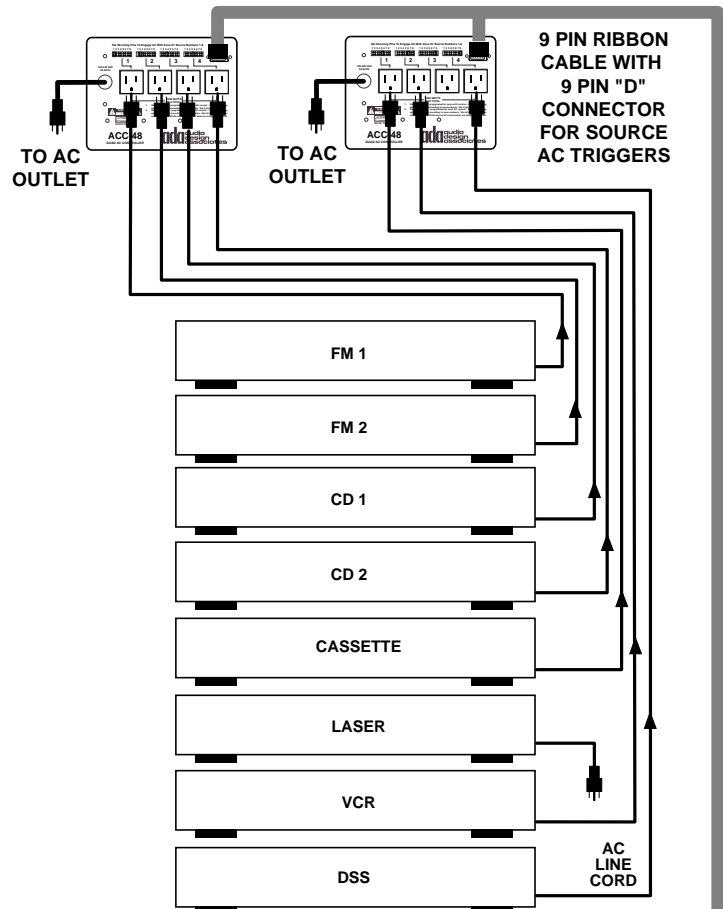
The 9 pin ribbon cable which connects the Millennium to both ACC-48s is provided with the system.
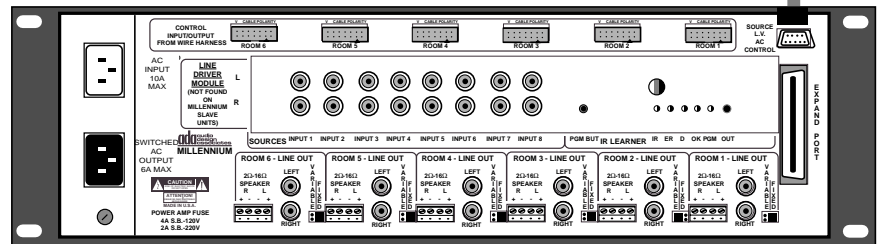
The diagram below details the jumper pin settings such that each source AC outlet has only one jumper pin connector in place corresponding to that sources input position on the Millennium.
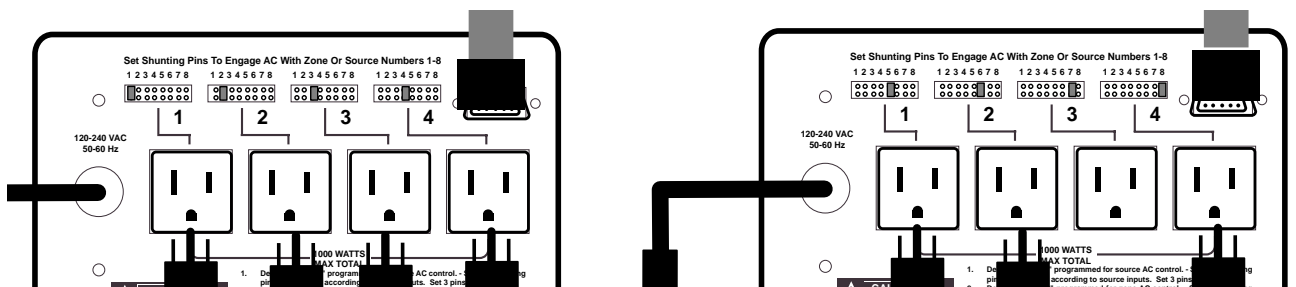
Power Amplifier Automatic AC Switching & Installation

The Millennium 2000 provides several built-in features, one of which is, the ability to easily integrate an external power amplifier and have it automatically turn on when zone is turned on. ADA recommends using the ACC-3 Low Voltage Triggered Switched AC Outlet. The ACC-3 has two AC outlets which switch on and off together. The ACC-3 can handle a 15 Amp load.

The following diagram details the connection of the ACC-3 to the system such that it receives a low voltage signal, emanating from the Millennium 2000, when a specific zone is turned on. This signal is derived from pin #2 (ground) and pin #1 (+5VDC) on the two pin screw terminal connector at the top of the Millennium 2000. These two wires are connected to the appropriate contacts on the ACC-3. When a zone is on, it will cause the ACC-3's two AC outlets to turn on and subsequently, the power amplifier plugged into the ACC-3 will turn on (providing its power switch is left in the on position). When the room turns off, the ACC-3 will turn the power amplifier off.

Please note, that when using an external power amplifier, you will want that zone on the Millennium 2000 to provide a "variable" line-level audio signal to the amplifier. Make certain that the jumper pins (shunting plugs) are positioned to the left in the "variable" position.
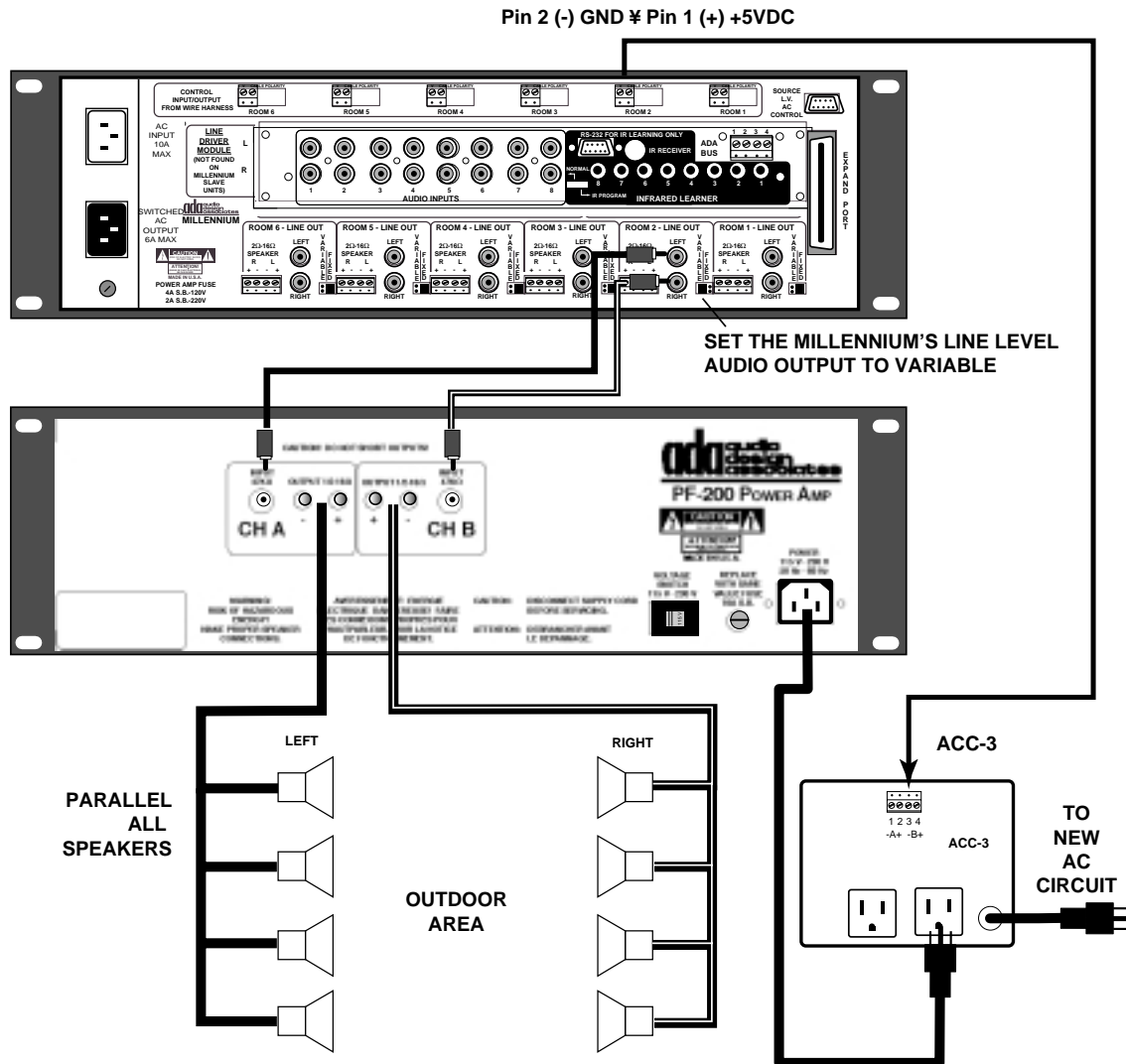
Subwoofers and Satellite Speakers

The Millennium 2000 is ideal when a situation calls for bass reinforcement using a self-powered subwoofer. As both the line-level outputs and speaker level outputs are active at the same time. You can run variable audio to both a subwoofer (line-level) and satelite speakers (amplified audio) simultaneously.

To set this up, run line-level audio from a zone's output directly to your subwoofer. Set the jumper pins for that zone's line-level outputs to variable. Connect the satelite speakers to that zone's speaker outputs. With the subwoofer on but its own level control set to off (or very low), raise the volume in the room using the ADA keypad. When a comfortable level is reached, go the subwoofer and bring its level up slowly until the subwoofer is balanced with the room speakers. At this time, leave the subwoofer alone. When the user raises or lowers the room's volume level using the keypad, the subwoofer will track the audio level of the satelite speakers.

Speaker Wire

Line-Level Audio
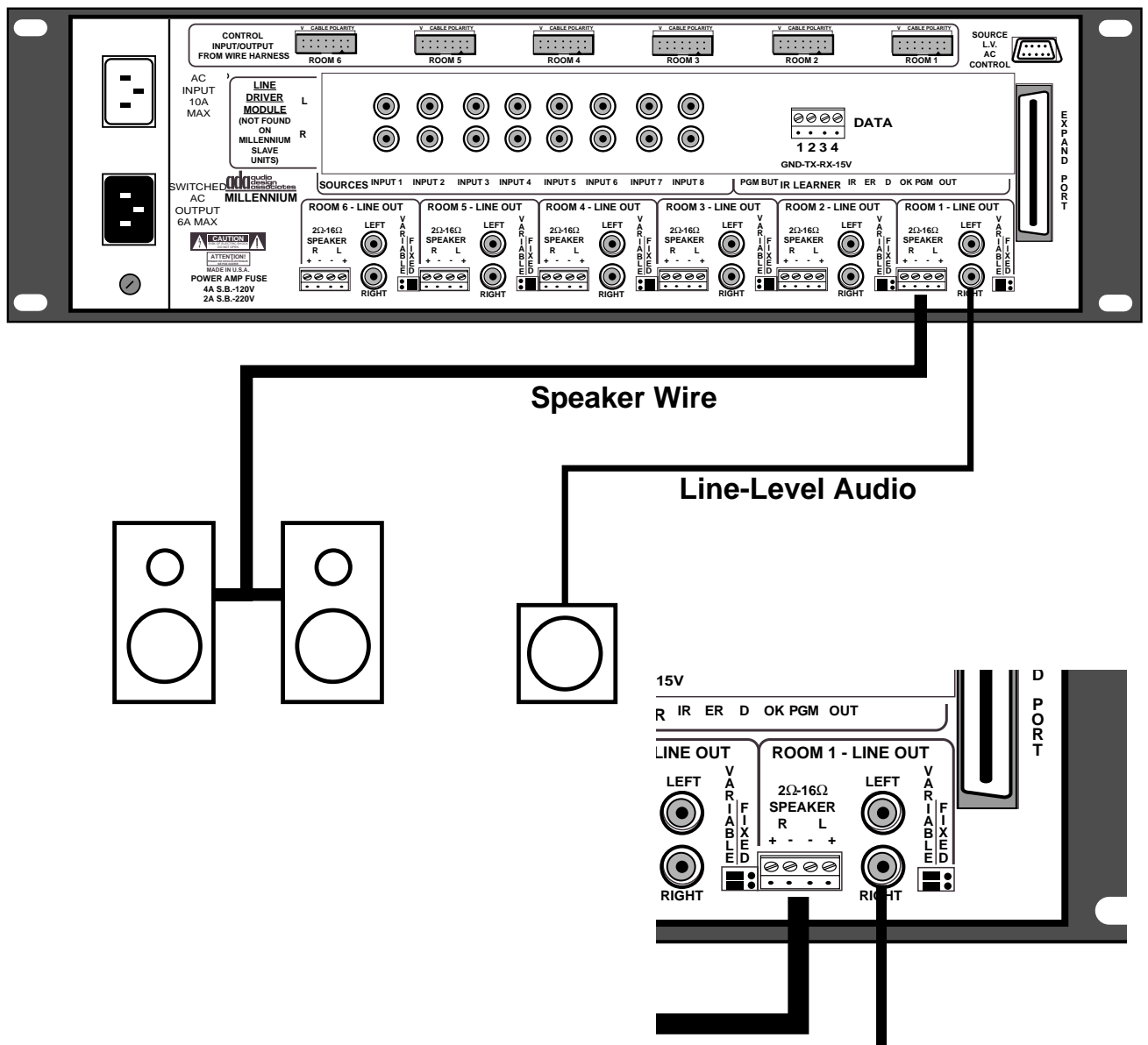
IR Capture - Internal IRL-3000

The Millennium 2000 incorporates a built-in IR capture device that loads IR commands from source components into nonvolatile memory. As such, you can program your components in your facility and then disconnect power from the Millennium and install it in your project.

To capture IR commands with the Millennium 2000, you will require a PC and the IRL-3000 Software. It is also recommended that you get a copy of the IRL-3000 Programming Instructions. Please read these prior to proceeding.
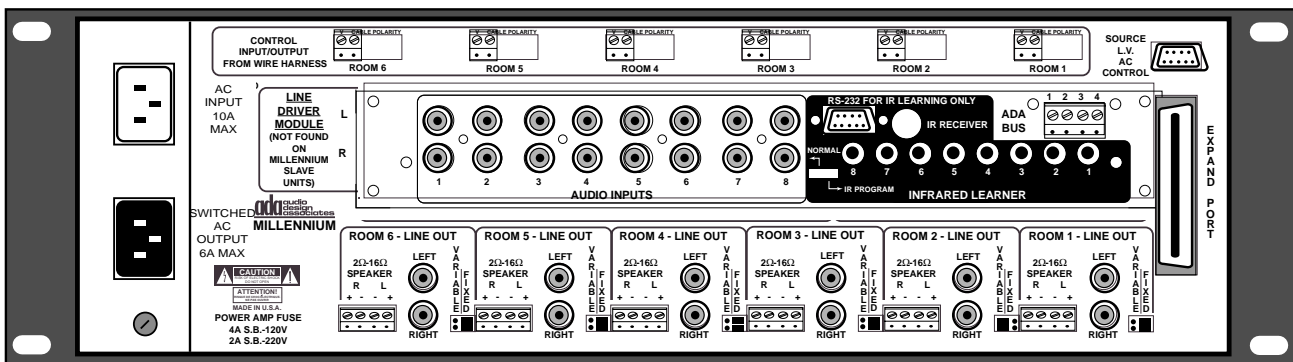
Rear panel of the Millennium 2000 (the primary Millennium in systems that have more than one Millennium) features:

> An IR receiver for IR capture when operating the IRL-3000 software.
> A 9-Pin D port that connects to your PC for programming of the IR Learner.
> A red switch which engages the IR Program mode or sets to Normal operation.
> 8 IR output ports set up for IR flashers without repeating. (note they run right to left.)

1   If you already have IR code sets from projects using the IRL-3000, and do not need to capture any IR codes, you can simply proceed to downloading the codes.

2   To capture IR codes, connect your PC's com port to the Millennium 2000. Set the red switch to the IR Program position (In the IRL-3000 Manual, this is the same as pressing the IRL-3000 into the RS-232 position. Open the IRL-3000 software on your PC. Proceed to capture codes through the IR window in the back of the Millennium.

3   When testing IR codes using the IRL-3000 testing function, connect an IR flasher to IR port 1 on the Millennium.

4   When running the IRL-3000 simulator, connect IR flashers to the appropriate IR ports.

5   When completed, return the red switch to the Normal position.

Advanced Millennium IR Options

The Millennium 2000 is setup so that it operates with IR flashers and that all outputs will pass IR for IR repeating from ADA IR receivers (IRT-3000 or those found in MC-3000, MC-3800, MC-5000, and TS-3000). If you wish to alter these settings, it will require that you open the cover of the Millennium 2000. If you do not want to open the Millennium and wish to make certain IR repeating is defeated, you can simply turn off the IR receivers (in software) of the keypads and touch screens.

Prior to jumping right in, here are some features that you can control if you do proceed.

1   Each port can be set individually to be used with either an IR flasher or a direct serial connection. Direct serial connections are found on the back of many source components, thus permitting you to avoid using a flasher on the units front panel. For tricks and helpful hints on serial connections, see the IRL-3000 Manual.

2   When using a direct serial connection, you may need to invert the data as some sources do invert the data when connected via a serial link. For more information on inverting serial data, see the IRL-3000 Manual.

3   IR Repeating can be defeated individually per output. As such, if several components in your system operate on the same IR command, you can selectively determine which devices will receive IR commands when IR repeating. Other devices will only activate from keypad functions.

4   You can set ports that are controlling components via a serial link to also operate when IR repeating.

5   For components that are IR repeating via an IR flasher, you can adjust the global (effects all ports) IR carrier frequency.

As this procedure will take a little time, just opening the cover requires that you remove 18 screws and two nuts, you should ask yourself.

1   Will I be using serial connectors instead of flashers? If the answer is yes, proceed.
2   Do I need IR repeating for some but not all sources? If the answer is yes, proceed.
3   If you are doing IR repeating but are not having any success and you are certain the keypads' IR receivers are on, proceed.

WARNING!
As you proceed with the adjustments to the Millennium 2000, you will in many cases want to have your source components available so that their operation with the system can be confirmed prior to closing up the Millennium 2000. As such, you may actually have the Millennium plugged in while its cover is open. To ensure that all goes well, find a clean and clutter-free working surface that is at least twice as wide as the Millennium. Disconnect power while removing the cover. Prior to applying power with the cover off, make certain all wiring connections are in tact. Remove power while replacing the cover.

The Millennium 2000 cover has both a circuit board and transformer mounted to the inside of the cover. As such, do not remove all screws.

1   Disconnect the AC Power cord connected to the Millennium 2000.
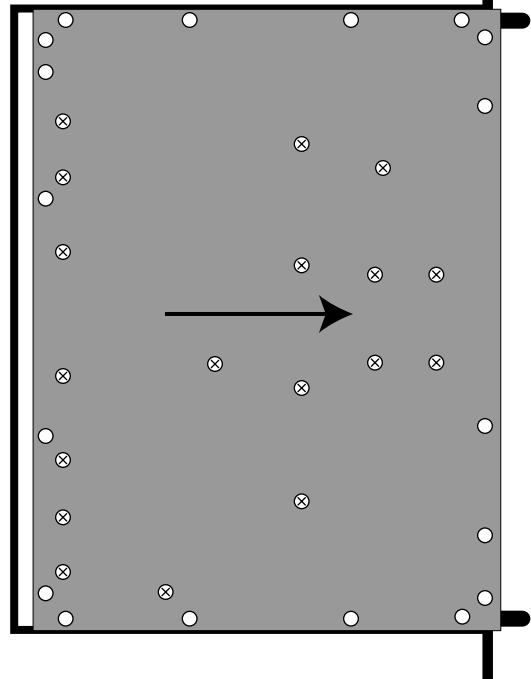
2   Remove the 18 perimeter screws that hold the cover in place. Please note, that in the diagram to the right, these screws are marked with in solid black. The screws that should be left alone are marked with an X.

3   Remove the two nuts that flank the 9 pin D type connector marked "SOURCE L.V. AC CONTROL" on the upper right hand corner of the back of the Millennium.

LIFT FRONT EDGE OF COVER 1/2 INCH AND THEN PULL FORWARD

FRONT

SIDE

4   Gently lift the front edge of the cover and then slowly slide the cover forward 1/2 to 1 inch, just enough, for the 9 pin D connector that you unfastened, to clear the rear panel chassis cut out.

5   Get a stack of books that, when stacked, measure approximately, 5-1/4 inches in height and place them to the right side of the Millennium (when viewing from the rear).

6   Slowly open the cover as illustrated in the diagram at the top of the next page. As several wires are connected to the bottom of the top cover, be careful not to move too quickly, thus preventing these wires from coming loose.

● REMOVE SCREWS MARKED AS BLACK CIRCLE (18 TOTAL)

⊗ DO NOT REMOVE SCREWS THAT ARE INDICATED WITH AN X

9 PIN D

Remove Both Screws Flanking 9 Pin D Connector
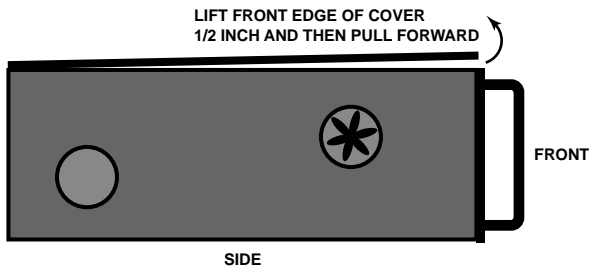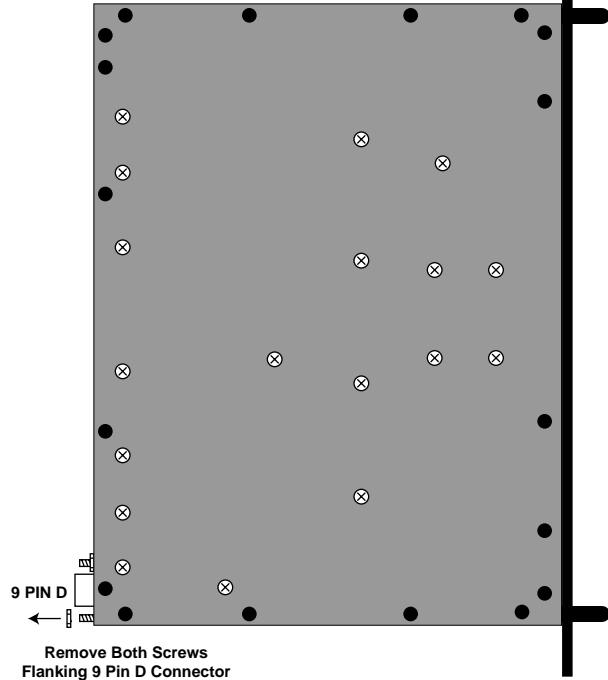
SLIDE COVER FORWARD 1/2 INCH JUST ENOUGH FOR THE 9 PIN D CONNECTOR TO CLEAR ITS REAR PANEL SOCKET

FLIP COVER OVER THIS WAY WIRES WILL FOLLOW

**STACK OF BOOKS ~ 5-1/4 INCHES TALL**
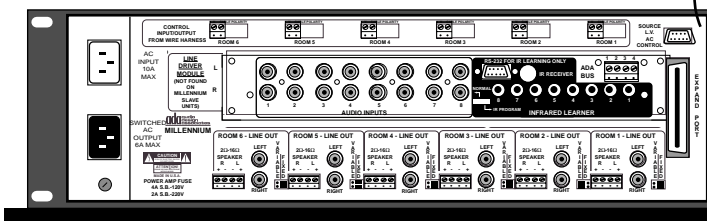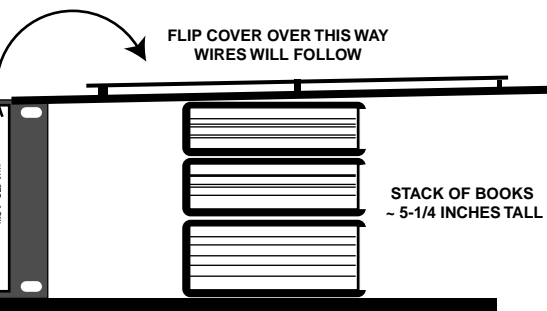
Once the cover is open, you will have access to the IR Learning module. While some ribbon cables may get in the way, they can be gently pushed aside when setting the jumper pins. Open the IRL-3000 Manual to the sections that discuss the setting of jumper pins. Note that the layout below looks similar to the IRL-3000 on its side. In fact, the two are the same. Each IR output port has actually three jumper pins assigned to it. Two of these pins sit side-by-side, and one pin is grouped with the same pins for all other ports.

The single pin (actually eight of them together, one for each port) is located to the right side of the board. These pins determine if you are using a flasher or serial connector (remove for flasher, insert for serial connection.) Currently, these jumper connectors may be in place, but if you look closely, they are only covering one of the two pins, thus not closing the circuit.

The jumpers marked IR or DATA are for setting the port to IR repeat. If you are not IR repeating this port, ADA suggests removing the jumper.

The jumpers marked NORM or INVERT are used primarily for sources connected via a serial jack. Refer to the IRL-3000 manual.

The Trim Pot, located just above the grouping of eight jumper pins, is used to set the IR carrier level, for sources connected via an IR flasher that are set for IR repeating. The 2 o'clock setting is 40KHz.
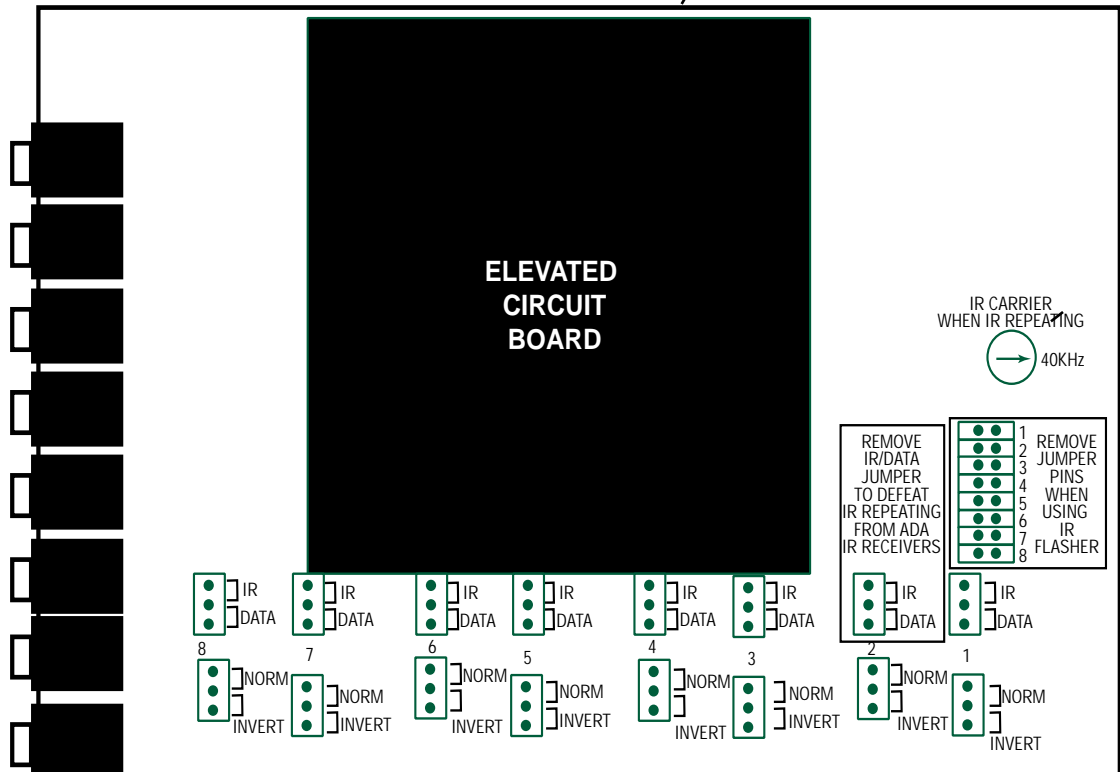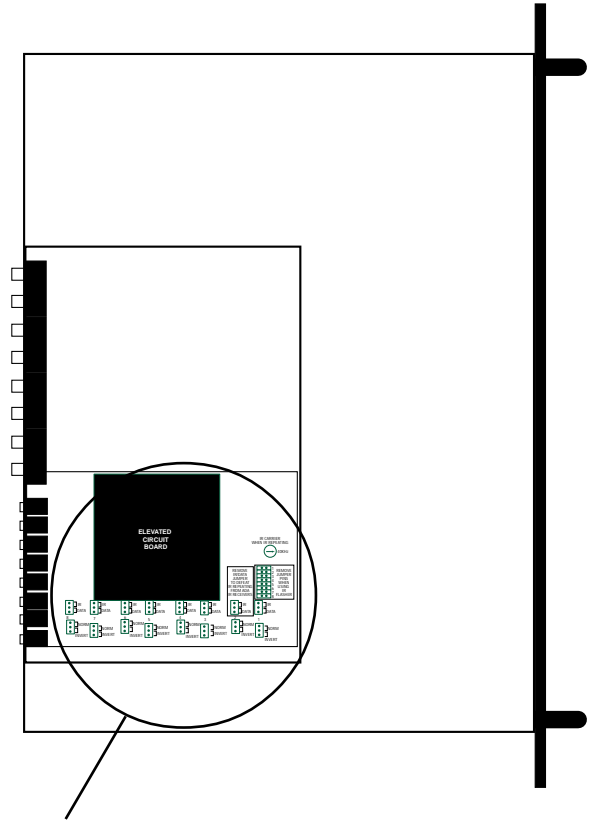
Installation of ADA Keypads

Most ADA Keypads are provided on a custom plate which is 1/8" thick. Typically, screws provided with these plates are 1" long. The plates do not provide any play once installed. It is therefore essential that the box in which the keypad is mounted into is completely square. If the box is even slightly off-angle, the keypad, once installed will appear crooked.

Furthermore, the box used, should be checked against a keypad to make certain that the keypad and circuit board will fit into the box. The box should be close to flush with the surface of the wall but should not extend beyond the surface of the wall. The plate should rest flush on top of the wall. For MC-2000 OD All Weather Outdoor Keypads (double gang keypad), ADA suggests using a watertight masonry box.
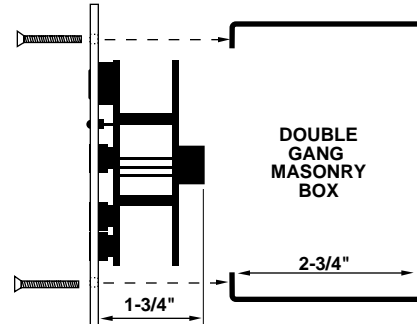

When installing a keypad, be extremely careful with the handling of the plate and screws. The plates can easily be scratched if handled improperly.

When wiring the keypad, you can remove the screw terminal connector from the keypad's circuit board and first connect the wire to the connector. The shield (or ground) wire is typically completely exposed (without a jacket) and will require taping. This protection will prevent the ground wire from making contact with circuit board traces once the keypad is installed. Since the other wires are not exposed when they are inserted into the connector, they will not require taping.

Rack Rail & Hardware and
Rack Mounting Source Components.

ADA makes available to dealers, custom cut rack rail sections and rack hardware. Unlike most rack rail available, ADA Rack Rail is 4.5" deep, capable of mounting inside the cabinet, not just along the front edge, but firmly against a larger section of the cabinet's wall. Furthermore, ADA's Rack Rail is not pre-threaded, but rather, has holes spaced at EIA Rack Mount Standard intervals for rack nuts which clip onto the rack rail. Thus, if a hole is stripped, the stripped rack nut clip can be removed and a new one can be inserted in its place. Furthermore, the clip-on rack nuts provide some play, permitting you to adjust the component as it is inserted into the rack. ADA provides the rack nuts, rack screws, and rack washers by the dozen and rack rail by linear inch. Please note, if your rack height is 21 inches tall, you will need to order two 21 inch rack rails for a total of 42 inches of rack rail.
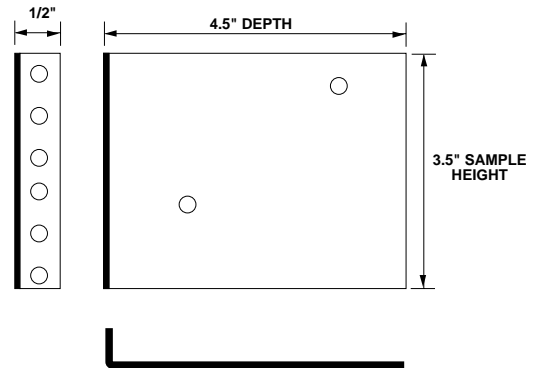
If you wish to provide the same 1/8" thick qaulity plate finish for sources (and other non-ADA components), complete with rack handles (some units cannot be rack mounted with handles), ADA can custom rack mount source components to match the look of the ADA rack of equipment. These surround plates are custom cut to a component's dimensions and are mounted to the plate itself, permitting easy installation into the rack using the functional rack handles to position the component into place. Unlike other rack plate manufacturers, components rack mounted by ADA are completely mounted to the plate and do not just sit on a shelf and slide through an opening. Also, because the plate is custom cut to the specific source component, the fit is much tighter than plates provided by other manufactures. To properly manufacture and mount the non-ADA components, ADA will require the sources in-house for a period of two to four weeks. As with all ADA components, custom rack plates for non-ADA components can also be made in Brass, Chrome, and Black Chrome.

When combining ADA components and other components (such as sources) which are racked in another manufacturer's rack plate, ADA recommends you allow a space between the other rack plates and the ADA components. This space can be small and could be filled with a piece of wood from the cabinet, providing a separation between the two types of plates. Even though another manufacturer's rack plates and ADA plates are both black anodized, there are usually definite differences in plate finish and thickness which may be noticeable. The cabinet separation will limit these difference from being obvious.