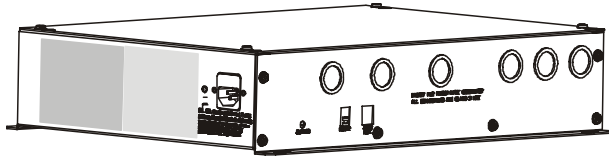


AMS-9050 Controller

Installation and Service Guide



ZE9050

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To the Installer

This installation and service guide explains how to install, setup, and service the AMS-9050 controller.

Parts required to install this system are:

- AMS-9050 controller
- AMS-1100/1101 exit antenna(s) or AMS-1080 aisle antenna(s)

Other documents that may be required for installation are:

- AMS-9050 Planning Guide, 8200-0537-01.



Note: There may be installation restrictions on antennas in certain countries. See antenna installation guides for restrictions, if any.

Regulatory Restriction: This device is only intended to be installed as described in the installation guide.

- Because customer requirements dictate the placement of system components, your Sensormatic representative will supply this information separately.
- If this product was installed in a European Union or European Free Trade Association member state, please give the Declaration of Conformity included with this product to the manager or user. By law, this information must be provided to the user.
- Because of the number of antennas and accessories that can connect to this controller, methodically install this system to avoid problems. See “System Setup” in this guide for guidance on how to setup antennas.

About the Product

The AMS-9050 controller is part of an EAS system that:

- Includes pedestal type antennas.
- Deters theft by activating an alarm when it detects the unique response of an active Ultra•Max hard plastic tag or disposable label when its signal is picked up by an antenna.

Installation Features

- Built-in mounting flange enables the controller to mount to a wall or inside a checkout counter. The controller can also rest on a shelf or attach to a ceiling.
- Six knockouts receive exposed cables or cables in conduit. Knockouts are available for Class 2 wiring from antennas and low voltage devices.

Setup Features

- Supports various pedestal antennas used to detect tags/labels at exits or in food store checkout aisles.
 - Supports up to four AMS-1100/-1101 uncoil transceiver exit pedestals, or up to four AMS-1080 aisle pedestals, each with separate transmit and receive coils.
 - Antennas can be set up as four transceivers, or four transmit/receive pairs, or combinations of both using a laptop computer and ADS 4 service configurator software. Two receivers can be noise canceling coils. Automatic configuration is available for the commonly used system configurations.
 - Antenna coils can be set for phase flipping (default), aiding, or figure-8 operation.
Note: Phase flipping is unavailable when noise canceling coils are used.
- Supports auto synchronization
- Supports the following alarm devices:
 - Built-in alarm in the antenna (if used)
 - Up to two externally-powered remote alarms
 - Externally-powered Sensormatic alarm management or traffic flow device
 - Up to two relays for devices such as security cameras.

- Connection for hardwired sync and transmit inhibit function.
- Supports RS-232 (local diagnostics) and RS-485 (remote diagnostics).
- Supports RS-485 network communication to antennas (if supported by antenna).

Service Features

- The controller detaches from its cable access panel to facilitate servicing.
- System status LED on controller displays error codes used for troubleshooting.

Basic Operation and Setup

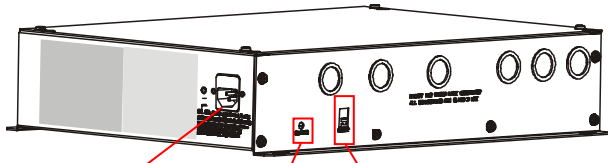
To detect a tag:

- Antenna(s) connected to the controller emit a 58kHz magnetic field close to the tag/label's natural frequency causing it to vibrate or "ring" at the frequency of the field. When the field is removed, energy in the tag/label dissipates causing an exponential ring down.
- The controller processes signal inputs picked up by the antennas to determine if they are indicative of a tag/label signal.
- If the controller detects a tag/label signal, it activates audio-visual indicators on each antenna that picked up the signal and/or activates remote alarm devices, if used.

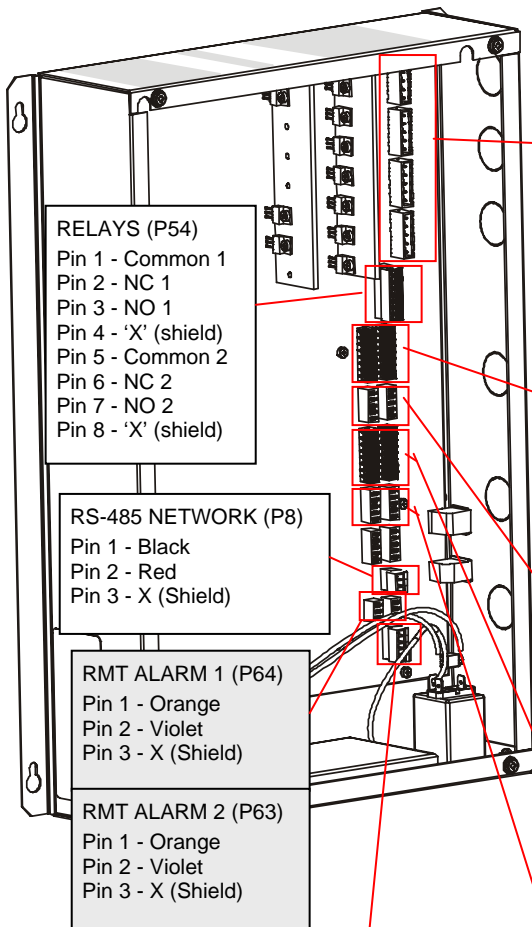
ADS 4 service configurator software enables the field technician to:

- Adjust the system
- Synchronize the controller to other EAS systems using the ac line, or wired synchronization
- Monitor and adjust for noise interference and use of a 58kHz jammer device
- Download software application updates
- Monitor internal temperature of the controller
- Perform diagnostic tests and read error codes.

Device Connections



- AC IN (120Vac/240Vac)**
- System Status LED**
- RS-232 SERVICE (J2)**
 - Pin 1 - Rx
 - Pin 2 - Tx
 - Pin 3 - Ground
 - Pin 4 - Ground



- RELAYS (P54)**
 - Pin 1 - Common 1
 - Pin 2 - NC 1
 - Pin 3 - NO 1
 - Pin 4 - 'X' (shield)
 - Pin 5 - Common 2
 - Pin 6 - NC 2
 - Pin 7 - NO 2
 - Pin 8 - 'X' (shield)

- RS-485 NETWORK (P8)**
 - Pin 1 - Black
 - Pin 2 - Red
 - Pin 3 - X (Shield)

- RMT ALARM 1 (P64)**
 - Pin 1 - Orange
 - Pin 2 - Violet
 - Pin 3 - X (Shield)

- RMT ALARM 2 (P63)**
 - Pin 1 - Orange
 - Pin 2 - Violet
 - Pin 3 - X (Shield)

- WIRED Tx SYNC (P2)**
 - Pin 1 - Black (Tx Burst High)
 - Pin 2 - Red (Tx Burst Low)
 - Pin 3 - Green (Arm High)
 - Pin 4 - White (Arm Low)
 - Pin 5 - 'X' (Shield)

Tx A TRANSMIT ANTENNA (P58) Pin 1 - Black (Figure-8 return) Pin 2 - Red (Antenna A2) Pin 3 - Silver (Shield) Pin 4 - Green (Aiding return) Pin 5 - White (Antenna A1)	Tx B TRANSMIT ANTENNA (P59) Pin 1 - Black (Figure-8 return) Pin 2 - Red (Antenna B2) Pin 3 - Silver (Shield) Pin 4 - Green (Aiding return) Pin 5 - White (Antenna B1)
Tx C TRANSMIT ANTENNA (P88) Pin 1 - Black (Figure-8 return) Pin 2 - Red (Antenna C2) Pin 3 - Silver (Shield) Pin 4 - Green (Aiding return) Pin 5 - White (Antenna C1)	Tx D TRANSMIT ANTENNA (P91) Pin 1 - Black (Figure-8 return) Pin 2 - Red (Antenna D2) Pin 3 - Silver (Shield) Pin 4 - Green (Aiding return) Pin 5 - White (Antenna D1)
PEDESTAL ALARM C (P93) Pin 1 - White with an 'X' (Shield) Pin 2 - Yellow (Audio 3) Pin 3 - Orange (Alarm 3) Pin 4 - Blue (N/A) Pin 5 - Brown (12V) Pin 6 - Black (PED485_LO) Pin 7 - Red (PED485_HI) Pin 8 - Green (TX_INHIBIT 1)	PEDESTAL ALARM D (P100) Pin 1 - White with an 'X' (Shield) Pin 2 - Yellow (Audio 4) Pin 3 - Orange (Alarm 4) Pin 4 - Blue (N/A) Pin 5 - Brown (12V) Pin 6 - Black (PED485_LO) Pin 7 - Red (PED485_HI) Pin 8 - Green (TX_INHIBIT 1)
Rx C RECEIVE ANT (P99) Pin 1 - Black (Ant C1) Pin 2 - Red (Ant C1 return) Pin 3 - Green (Ant C2) Pin 4 - Gray or White (Ant C2 return) Pin 5 - Violet / 'X' (Shield)	Rx D RECEIVE ANT (P103) Pin 1 - Black (Ant D1) Pin 2 - Red (Ant D1 return) Pin 3 - Green (Ant D2) Pin 4 - Gray or White (Ant D2 return) Pin 5 - Violet / 'X' (Shield)
PEDESTAL ALARM A (P92) Pin 1 - White with an 'X' (Shield) Pin 2 - Yellow (Audio 1) Pin 3 - Orange (Alarm 1B) Pin 4 - Blue (Alarm 1A) Pin 5 - Brown (12V) Pin 6 - Black (PED485_LO) Pin 7 - Red (PED485_HI) Pin 8 - Green (TX_INHIBIT 1)	PEDESTAL ALARM B (P97) Pin 1 - White with an 'X' (Shield) Pin 2 - Yellow (Audio 2) Pin 3 - Orange (Alarm 2B) Pin 4 - Blue (Alarm 2A) Pin 5 - Brown (12V) Pin 6 - Black (PED485_LO) Pin 7 - Red (PED485_HI) Pin 8 - Green (TX_INHIBIT 1)
Rx A RECEIVE ANTENNA (P98) Pin 1 - Black (Ant A1) Pin 2 - Red (Ant A1 return) Pin 3 - Green (Ant A2) Pin 4 - Gray or White (Ant A2 return) Pin 5 - Violet / 'X' (Shield)	Rx B RECEIVE ANTENNA (P101) Pin 1 - Black (Ant B1) Pin 2 - Red (Ant B1 return) Pin 3 - Green (Ant B2) Pin 4 - Gray or White (Ant B2 return) Pin 5 - Violet / 'X' (Shield)

Device connections consist of:

- Transceiver connectors
- Antenna alarm/Communication connectors
- Receiver connectors
- Relay connectors
- Remote alarm connectors
- RS-485 network connector
- Wired Tx sync connector
- Wireless AC sync connector
- RS-232 service connector.

Transceiver connectors (P58, P59, P88, P91). These four connectors support Tx/Rx antennas designated A, B, C, and D. The tables below show connections for various antenna configurations. If “auto configuration” is enabled, the system automatically attempts to configure itself based on the number of antennas detected. Only the most commonly used configurations are auto configured.

Note: DIP switches S1 and S2 in controller need to be set for antenna operation. See explanation on next page.

Table 1. Aisle System

AISLE SYSTEM MODE	Aisle A			Aisle B			Aisle C		Aisle D		Auto Configuration
	RX A	TX A	RX C	RX B	TX B	RX D	RX C	TX C	RX D	TX D	
None	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	YES
Transceiver	Ped Rx	Ped Tx	N/A	Ped Rx	Ped Tx	N/A	Ped Rx	Ped Tx	Ped Rx	Ped Tx	YES
Transceiver – Ferrite*	Ped Rx	Ped Tx	Ferrite	Ped Rx	Ped Tx	Ferrite	N/A	N/A	N/A	N/A	NO
Backfield	Ferrite	Ped Tx	N/A	Ferrite	Ped Tx	N/A	Ferrite	Ped Tx	Ferrite	Ped Tx	NO
Zone Detect*	Ferrite	Ped Tx	Ferrite	Ferrite	Ped Tx	Ferrite	N/A	N/A	N/A	N/A	NO

* If Aisle A is in this mode, Aisle C is disabled. If Aisle B is in this mode, Aisle D is disabled.

Table 2. Exit System

Note: Numbers 1, 2, 3, and 4 under mode column indicate the pedestals used. 1-2_3-4 indicates that 1 and 2 pedestals are in one exit, and 3 and 4 pedestals are in another. 1-2-3-4 indicates all pedestals are in one exit.

Note: Disregard receiver settings when using antennas as transceivers.

EXIT SYSTEM MODE	Exit 1				Exit 2				Auto Config.*
	PED 1 Connections		PED 2 Connections		PED 3 Connections		PED 4 Connections		
None	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	NO
1-2_3-4 Dual	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	RX D / Alrm D	TX D	NO
1-2_3-4 Alternating	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	RX D / Alrm D	TX D	NO
1-2-3 Split	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	NA	NA	YES
1-2-3-4 Quad	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	RX D / Alrm D	TX D	YES
1-2_3-4 Backfield	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	RX D / Alrm D	TX D	NO
Single Transceiver	RX A / Alrm A	TX A	NA	NA	NA	NA	NA	NA	YES
1_2_3_4 Single**	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	RX D / Alrm D	TX D	NO
1-2 Dual	RX A / Alrm A	TX A	RX C / Alrm C	TX C	NA	NA	NA	NA	YES
1-2 Dual 3-4 Bfield	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	RX D / Alrm D	TX D	NO
1-2 Dual 3 Single	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	NA	NA	NO
1-2 Bfield 3 Single	RX A / Alrm A	TX A	RX C / Alrm C	TX C	RX B / Alrm B	TX B	NA	NA	NO
1-2 Backfield	RX A / Alrm A	TX A	RX C / Alrm C	TX C	NA	NA	NA	NA	NO
1-2 Alternating	RX A / Alrm A	TX A	RX C / Alrm C	TX C	NA	NA	NA	NA	NO

* Only applies to AMS-1100 and AMS-1101 antennas.

** In 1_2_3_4 Single Mode (where each antenna protects an exit), each antenna alarms independently.

IMPORTANT! DIP S1 and DIP S2 are located on the circuit board of the controller. When connecting antennas, set switches 1–8 of each DIP according to the number and type of antennas used.

Table 1. Rules for using DIP switches

Antenna	Controller Input	DIP S1	DIP S2
AMS-1100/1101 Transceiver	TXA	1–4 On, rest don't care	Don't Care
	TXB	5–8 On, rest don't care	Don't Care
	TXC	Don't Care	1–4 On, rest don't care
	TXD	Don't Care	5–8 On, rest don't care
AMS-1080 Tx/Rx	TXA–D	1–8 Off	1–8 Off
Rx Only	RXA	1–4 Off, rest don't care	Don't Care
	RXB	5–8 Off, rest don't care	Don't Care
	RXC	Don't Care	1–4 Off, rest don't care
	RXD	Don't Care	5–8 Off, rest don't care
Noise Coil 1	RXC (top coil)	Don't Care	1–2 Off, rest don't care
Noise Coil 2	RXD (top coil)	Don't Care	5–6 Off, rest don't care

For example, if using a:

- **1-2 dual pedestal exit system using two AMS-1101 alarm antennas as transceivers:**
 - Set S1 switches 1–4 and S2 switches 1–4 to “on” (switches 5–8 of S1 and S2 can be left either on or off).
 - Also ensure no receive antennas such as noise coils are connected to the controller when using transceivers.
- **1-2_3-4 dual pedestal exit system or 1-2-3-4 quad system using four AMS-1101 alarm antennas as transceivers:**
 - Set S1 switches 1–8 and S2 switches 1–8 to “on”.
 - Also ensure no receive antennas such as noise coils are connected to the controller when using transceivers.
- **Dual pedestal aisle system using two AMS-1080 aisle antennas, one a transmitter, the other a receiver:** Set S1 switches 1–8 and S2 switches 1–8 to “off”.
- **Noise coils:** If using noise coils, turn off S1 switches 1–2 for RxC and/or S2 switches 5–6 for RxD.

Antenna alarm/Communication connectors (P92, P93, P97, P100): Four connectors support the antennas audio/visual alarms, transmitter/alarms inhibit function, and peripheral RS-485 network communication.

Note: Transmitter/Alarms inhibit function and peripheral RS-485 network communications are only available in AMS-1101 antennas.

Receiver Connectors (P98, P99, P101, P103):

Four connectors accept up to four receive antennas. Top coils use the Coil 1 connections; bottom coils use the Coil 2 connections.

Noise canceling coils can also share two of these connectors (P99, P103), with each coil using the top coil (Coil 1) connection. If connecting a noise canceling coil and a receive antenna into the same connector, the top and bottom coils of the receive antenna must share the Coil 2 connection (done in the field by the technician switching the antenna wire connections). Thus phase flipping is unavailable when noise canceling coils are used.

Antennas/coils connected to receiver inputs are designated A, B, C, and D. These connectors default to receive function with no auto detection.

ABOUT NOISE CANCELING COILS: Noise canceling coils, such as a Ranger antenna or the top coil of a pedestal antenna, are used to cancel noise that interferes with detector operation.

- Noise canceling coils only connect to the Coil 1 input.
- To accept a noise canceling coil, the auxiliary input must be in noise canceling mode (set using service configurator software). Save adjustments to default settings if they are to be used on the next power cycle or system reset.
- Move the noise canceling coil around while monitoring power levels on a laptop computer to find where noise cancellation is best. This is where the coil should be installed.
- The location for the noise canceling coil must be practical as well as yield satisfactory results.

Relay connectors (P54): The controller has two double-pole, double-throw (DPDT) relays, each configurable using service configurator software. Each relay:

- Triggers devices such as externally powered remote alarms, time-lapse VCRs, and security cameras; one device per detection zone.
- Accepts three wires and a shield. Cable shields share one pin on the connector.

Remote alarm connectors (P63, P64): This connector can control up to two externally-powered digital remote alarms, such as an AMS-1060.

RS-485 network connector (P8): This connector supports RS-485 communication for remote diagnostics.

Wired Tx sync connector (P2): This connector is used to wire two or more AMS-9050 controllers together to synchronize them to avoid cross interference.

RS-232 service connection: Protected by a cover plate on the controller, the RJ-22 connector receives the cable from a laptop computer that is used to locally setup and diagnose the detection system.

Installation Features

The AMS-9050 controller provides the following installation features:

- Auto Synchronization
- Wired Synchronization
- Transmitter Current Control
- Controller Mounting.

Auto Synchronization

Auto synchronization occurs during power up or system reset. Auto sync can have different outcomes depending on whether or not nearby EAS transmitters are detected, they are properly aligned to the ac-derived timing of the controller, or too much ambient noise exists.

No transmitters detected. During initialization, the controller determines if EAS transmitters are nearby. If none are found, transmitter delay is set to zero if this is the initial power on, or set to the value stored in the controller if not the initial power on.

Transmitters detected:

- *Transmitters detected and aligned.* If transmitters are correctly aligned, the transmitter delay is calculated and stored in the controller for reference.
- *Transmitters detected and not aligned.* If transmitters are not aligned, the transmitter delay is set to zero if this is the first power on of the controller, or set according to the value stored the controller if not the initial power on.

Too much ambient noise. During initialization, the controller locates other nearby EAS transmitters.

- If ambient noise prevents the controller from locating nearby EAS controllers and if this is the first power on of the controller, transmitter delay is set to zero.
- If this is not the first power on of the controller, the zero crossing delay stored in the controller is used.

Note: The controller stores the zero crossing delay for when the controller could not determine a reliable lock during subsequent power cycles. Instead of using zero for the delay, the controller uses the stored zero crossing delay.

Wired Synchronization

If a wired Tx sync device is connected to the controller, the controller automatically uses its signal as the timing reference instead of the ac line. The service configurator indicates that wired sync is active.

Transmitter Current Control

This function enables you to inhibit the transmitter and/or alarms of the desired pedestal using the Tx/Alarms inhibit switch located in the top of antennas that support this function.

Controller Mounting

The controller has a built-in flange used to attach the controller to a wall or ceiling using suitable hardware.

- Ceiling attachment requires plywood be first attached to the ceiling and then the controller attached to the plywood.
- Structure and mounting hardware must support 25.6kg (56.5 lbs) or four times the weight of the controller assembly.

Service Features

The AMS-9050 controller provides the following service features:

- “Tag Too Close” function
- Service configurator software
- Internal diagnostics
- LED system status indicator
- Remote diagnostics via an Ethernet or RS-485 network
- Transmit/Alarm Inhibit function
- Detachable cable access panel.

“Tag Too Close” function: Using the service configurator, you can select the “tag-too-close” function to help prevent false alarms. With this function selected, the red lamp on top of the antenna blinks twice every four seconds for one minute when the system detects one or more stationary tags or labels are too close to it. The lamp goes out when these tags/labels are moved away from the system.

Tagged items must be kept at least 1.5m (5ft) away from all sides of the antenna.

Service configurator software: Operating software required: Windows® 95, 98, NT, 2000, or XP.

Service configurator software downloaded to a laptop computer is required to setup and troubleshoot the controller. The service configurator enables you to:

- Set antenna configurations
- Customize detection for each antenna
- Monitor transmit and noise levels from each antenna
- Monitor transmit current from each antenna
- Customize alarm setup
- Turn off transmitters
- Monitor temperature inside the controller
- Download new software features/updates to flash memory
- Provide a system error report.

Note: Special tools are not required when installing the controller as long as the antennas are installed in a reasonable noise environment and local transmitters are properly adjusted.

Note: If default settings are changed, you do not need to turn the controller off and on to store them.

Internal diagnostics:

- The service configurator displays the operating current for each antenna. Operating current is 15A peak for all countries.
- The service configurator displays ambient temperature within the controller.
- The hardware supports software with a remote command to reset the system.
- Hardware within the controller protects it from runaway software.

LED system status indicator: An LED system status indicator on the controller indicates the following:

- Green flashing (system on and okay)
- Yellow flashing (performance downgraded; service recommended)
- Red flashing in a particular sequence (fault detected, call for service)

The number of red flashes identifies a digit in a two-digit alert code (for example, four flashes is the number four). The start of an alert code is indicated by a long LED interval. Then the first digit of the code occurs, followed by a short delay, followed by the second digit.

Alert codes are listed on page 13.

Remote diagnostics via an Ethernet or RS-485

network: Using a service laptop, service personnel can dial-up and connect to a network of controllers to troubleshoot problems and change controller parameters (see page 14).

Transmit/Alarm Inhibit function: This function enables you to inhibit the transmitter and/or alarms of the desired pedestal using the Tx/Alarms inhibit switch located in the top of antennas supporting this function.

Detachable cable access panel: By removing six screws from the perimeter of the cable access panel and disconnecting cables, the electronics can be removed for easy servicing or replacement without disturbing cabling.

Installation Requirements

Verifying Equipment and Unpacking

- Verify that all equipment has arrived. Ensure the system configuration is correct for the site.
- Unpack major components in a back room. At the install site, lay out parts in the order used. Do not clutter the aisle or cause a trip hazard.

Installer/Contractor

- Have electrical work comply with the latest national electrical code, national fire code, and all applicable local codes and ordinances.
- Coordinate work with other trades to avoid interference.
- Verify existing site conditions and coordinate with the owner's representative and appropriate utilities as required.
- Obtain copies of all related plans, specifications, shop drawings and addenda to schedule and coordinate related work.
- Thoroughly review the project to ensure that all work meets or exceeds the above requirements. Bring alleged discrepancies to the attention of Sensormatic Electronics.

Mounting Requirements

- The controller has a built-in flange used to attach the controller to a wall or ceiling using suitable hardware. Structure and hardware must support 25.6kg (56.4 lbs) or four times the weight of the controller assembly.
- Do not mount controller with its fan facing up.

AC Requirements



WARNING—RISK OF ELECTRIC SHOCK! During installation, if the antenna must be left unattended, turn off power or cover high voltage components to prevent unauthorized access to hazardous voltages.

WARNING—RISK OF ELECTRIC SHOCK! The ac power cord could be carrying 120Vac or 240Vac.



WARNING! Do not install this device where highly combustible or explosive products are stored or used.

WARNING! The ac source must be a 2-wire type with ground. It also must be a 24-hour, unswitched outlet with less than 0.5Vac between neutral and ground.



WARNING! This device is not suitable for an IT power distribution system where impedance exists between neutral and protective earth contacts.



CAUTION: When using a power cord, install a socket-outlet near the controller in an easily accessible location. The appliance coupler or plug on the power supply cord are the specified disconnect devices.

CAUTION: DO NOT share the ac source with neon signs, motors, computers, cash registers, terminals, or data communications equipment.

CAUTION: DO NOT use orange-colored outlets dedicated for computer equipment.

CAUTION: Select the appropriate power cord based on the country of use.

Mounting the Controller



WARNING! Do not mount controller with its fan or cable tray face up.

The controller can be mounted as follows:

- On a shelf.
- On a wall. DO NOT mount the controller with its fan facing up!
- To a ceiling. Plywood with a surface larger than the controller is secured to the ceiling studs that hold the drywall. The controller then attaches with suitable hardware to the plywood.

Equipment Required

Basic setup requires the following equipment:

- AMS-9050 controller
- Pedestal antennas
- Hard tag (non-deactivateable Ultra•Max tag)
- Ultra•Max low energy labels.

Advanced setup requires the following additional equipment:

- Laptop with Windows® 95, 98, NT, 2000, or XP operating software
- RS-232 Ultra•Max programming cable
- ADS 4 service configurator software.

People with Implanted Medical Devices

Although this anti-theft system meets standards for interaction with implanted medical devices, place the system in such a way that customers:

- do not linger near or lean on its antenna(s) while making their purchase
- are only directly in front of the antenna(s) while exiting the checkout area.

Controller Installation

Tools required:

- Tape measure
- Pencil or marker
- Electric drill
- Phillips-head screwdriver or bit
- Hand vacuum or broom

Parts required:

Install Kit 0352-0203-01			
Screw, self-drilling, M4, 8x25, PHP	4	5899-0031-01	
Install Kit 0352-0286-01			
Clamp, conduit	6	6010-0107-01	

PROCEDURE

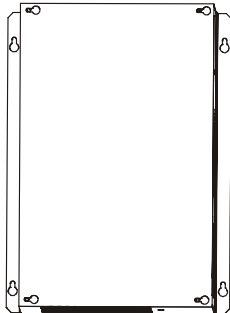


CAUTION: Keep 22.9cm (9in) of free space to the right of the controller for screwdriver access (to facilitate detachment of controller electronics).

1. Detach the top cover from the controller.
2. Remove knockouts closest to the connectors to be used, then reattach the side plate.
3. Set the controller on a shelf, or using suitable anchors and hardware, mount it to a wall (fan facing down) or to a ceiling.



WARNING! Both the anchor system and the wall or ceiling must be able to support 25.6kg (56.4 lbs).



4. Run cables through the appropriate knockouts and secure them using cable clamps provided.

AC Hookup

1. Choose a power cord for the country of use.

USA-IEC 320, 18/3, 125V, 10A, 7.5ft.	0351-0547-01
Schuko-IEC 320, 1mm sq., 250V, 10A, 2.5m	0351-0547-02
UK-IEC 320, 1mm sq., 250V, 10A, 2.5m	0351-0547-03
Japan-IEC 320, 2mm sq., 250V, 15A, 2.5m	0351-0547-04
US-Filter, Line, 125V, 6A, Plug-in	0351-0547-05
Australia to IEC 320, 2.5m, 250V, 10A	0351-0547-07

2. Plug in the power cord. The controller automatically senses the voltage (100-120Vac or 200-240Vac). No adjustments are required.



WARNING—RISK OF ELECTRIC SHOCK! The ac power cord may carry 120Vac or 240Vac.



CAUTION: When using a power cord, a socket-outlet must be installed near the controller and in an easily accessible location.

System Setup

1. Ensure controller power is off.
2. Connect antenna cables to the controller according to how the antennas are intended to perform. Refer to diagrams and tables on pages 3 and 4 of this guide. See examples of pedestal installations in the antenna installation guide.
3. Set DIP switches S1 and S2 in the controller for the pedestal type, number of pedestals, and the antenna configuration used (see page 5).
4. Turn on the laptop computer and launch the ADS 4 service configurator.

Note: For instructions on how to use configurator settings, click *Help* on the configurator.

IMPORTANT! Ensure the controller power is off. Never restart or boot up a computer connected to an active controller. Doing so disables the mouse function on the computer.

5. Turn on the controller and connect the laptop computer to the service port.
6. Using the “Setup” page on the configurator:
 - a. Check that antenna selections match antennas physically installed. If not, check antenna connections to the controller.
 - b. Setup parameters for lamps, audio, relays, and remote alarms.
7. Using the “Tx Configuration” page, set Tx current for each antenna and enable/disable transmitters, if necessary.
8. Pass an active security tag by each antenna to verify antenna performance. Refer to *Help* if monitoring or adjustments are necessary.

Verifying Operation

Check that the antenna alarm lamp lights when a tag/label is passed through the checkout aisle, or if the system is covering adjacent aisles, that the lamp lights only in the aisle the tag/label was in.

If the pick rate is acceptable, installation is complete. Reattach the top cover.

Troubleshooting

Note: Should the electronics require servicing or replacement, detach the electronics from the cable access panel as follows:

1. Loosen the four top screws and detach the cover from the controller.
2. Unplug all cable connectors and the ac power cord.
3. Remove six screws securing the cable access panel to the controller.
4. On the left side of the controller, loosen the two screws holding the controller to the wall.
5. Lift the electronics enclosure up and off the wall.

System Status Alert Codes

The System Status LED on the controller displays system status alert codes. When an alert code occurs, the LED changes color and pattern. Red is for serious alerts while yellow is for those less serious.

- a. The number of red flashes identifies a digit in a two-digit alert code (for example, four flashes is the number four). The start of an alert code is indicated by a long LED interval. Then the first digit of a two-digit error code occurs, followed by a short delay, followed by the second digit.
- b. See the table opposite for the significance of the alert code. Most alert codes are automatically resolved.
- c. Some codes can only be accessed using the service configurator. They are not displayed by the Status LED.
- d. Alert codes are lost when the controller is reset. Code storage has a time stamp in days, hours, minutes, seconds, milliseconds/ ticks of when the system alert occurred.

The following critical faults are backed with hardware support and provide the necessary action when encountered.

- Current fault 1 per channel
- Temperature fault
- Primary current fault
- Secondary current fault
- Last resort current fault to maintain Class 2 wiring requirements.

Alert codes repeat until the condition is resolved or a timer resets the system.

Alert Codes

Alert Code		Significance
11	Illegal Instruction	Return controller
12	Unimplemented Interrupt	Return controller
13	NVM Write Failed	Return controller
14	Invalid Device	Return controller
15	Sequence Table Error	Return controller
16	Out of Memory	Return controller
17	Undecided: No Split	N/A
18	Watchdog: Task Reset	Return controller
21	AntA S/W Current Fault	Recoverable
22	AntB S/W Current Fault	Recoverable
23	AntC S/W Current Fault	Recoverable
24	AntD S/W Current Fault	Recoverable
25	H/W Current Fault	Recoverable
26	AntA Current Sense Fault	Recoverable
27	AntB Current Sense Fault	Recoverable
28	AntC Current Sense Fault	Recoverable
29	AntD Current Sense Fault	Recoverable
39	Sequence Table Mismatch	Recoverable
41	Missing Zero Crossing	Return controller
42	Wired Sync: Missing Signal	Recoverable
43	Temperature Fault	Recoverable
44	S/W Temperature Fault	Recoverable
45	PWM Fault	Return controller
46	Fan Fault	Recoverable
49	Realtime Error	Return controller
51	Autosetup Owner Timeout	Recoverable
52	Autosetup Release W/O Lock	Recoverable
53	Autosetup Buffer Overrun	Recoverable
54	Autosetup Mailbox Full	Recoverable
56	Notch Select Timeout	Recoverable
57	Window Select Timeout	Recoverable
58	Autosetup Illegal Owner	Recoverable
61	Detector Overrun	Recoverable
62	Alarm Mailbox Full	Recoverable
63	Host Comm Mailbox Full	Recoverable
64	Host Comm Mailbox Full	Recoverable
71	Host Comm Mailbox Full	Recoverable

Local Diagnostics

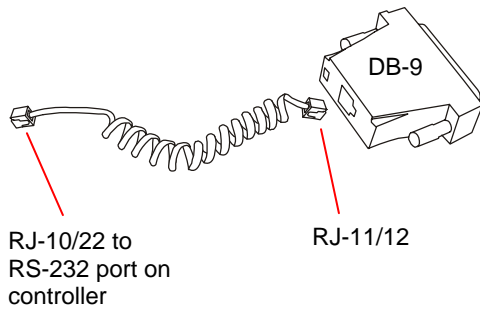
The AMS-9050 controller enables you to troubleshoot and change controller parameters using your laptop computer and the ADS 4 service configurator.

The following hardware is required:

- Laptop computer
- Service cable with a male RJ-10/22 phone connector on one end and a male RJ-11/12 connector on the other
- DB-9-to-RJ-11/12 connector.

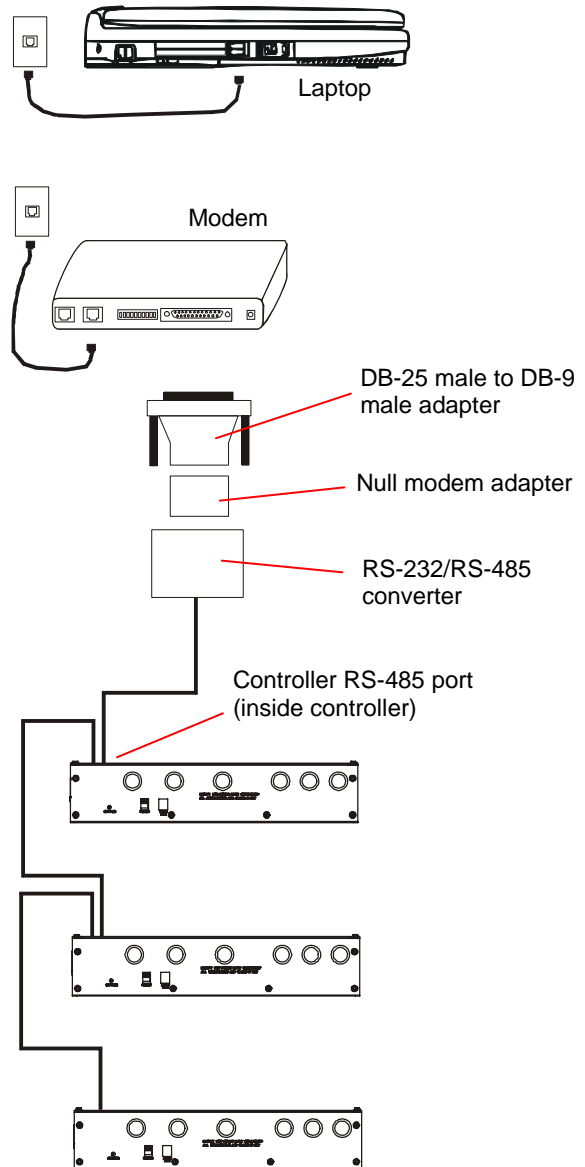
How to Connect Cables

1. Connect the DB-9-to-RJ-11/12 connector to the DB-9 serial port on your laptop computer. Only pins 2, 3, and 5 are used.
2. Connect the RJ-11/12 connector of the service cable to the DB-9 connector and the RJ-10/22 connector on its other end to the RS-232 port (RJ-10/22) on the controller.



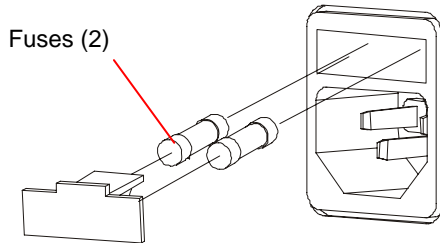
Remote Diagnostics

The AMS-9050 controller enables you to use an RS-485 network to troubleshoot and change controller parameters from a remote site. To connect to the network, connect the laptop, modem and accessories as shown below. The cables connect to the RS-485 connector inside the controller using a T adapter.



Fuse Replacement

The controller has two 2.5A, 250V slow-blow fuses in the IE320 ac receptacle.



1. Pry the rectangular cover plate from the ac receptacle using a small slotted screwdriver. Two spring-loaded fuses should pop out.
2. Replace the blown fuse (or fuses) with 2.5A, 250V slow-blow fuses (P/N 5111-0028-08).

Specifications

Electrical

POWER SUPPLY

Primary input.....	100-120Vac or 200-240Vac @ 50–60Hz
Primary power fuse	2.5A, 250V, slo-blow, hi-breaking
Current draw (120V).....	<1.5Arms
Current draw (240V).....	<1Arms
Input power (120V).....	<130W
Input power (240V).....	<123W

TRANSMITTER

Operating frequency.....	58kHz (±200Hz)
Transmit burst duration	1.6ms
Transmit current maximum	15A peak
Burst Repetition Rate:	
Based on 50Hz ac.....	75Hz or 37.5Hz
Based on 60Hz ac.....	90Hz or 45Hz

RECEIVER

Center frequency.....	58kHz
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Environmental

Ambient temperature.....	0°C to 50°C (32°F to 122°F)
Relative humidity.....	0 to 90% non-condensing

Mechanical

Length	44.6cm (17.6in)
Width.....	33.5cm (13.2in)
Height.....	9.2cm (3.6in)
Weight.....	6.4kg (14.1 lbs)

Declarations

TYPE: AMS-9050

Regulatory Compliance

EMC.....	47 CFR, Part 15 EN 61000-3-2 EN 61000-3-3 ETSI EN 300 330-2 ETSI EN 301 489-3 ETSI EN 301 489-1 RSS-310
Safety	UL 60950-1 CSA C22.2 No 60950-1 EN 60950-1

FCC COMPLIANCE: This equipment complies with Part 15 of the FCC rules for intentional radiators and Class A digital devices when installed and used in accordance with the instruction manual. Following these rules provides reasonable protection against harmful interference from equipment operated in a commercial area. This equipment should not be installed in a residential area as it can radiate radio frequency energy that could interfere with radio communications, a situation the user would have to fix at their own expense.

EQUIPMENT MODIFICATION CAUTION: Equipment changes or modifications not expressly approved by Sensormatic Electronics Corporation, the party responsible for FCC compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

Other Declarations

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