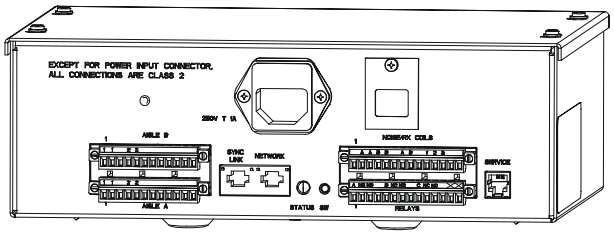
Sensormatic®

Preliminary

AMS-1070 Controller

Installation Guide



ZEDEX-1070

Contents

About this Guide

This installation guide explains how to install the controller for an AMS-1070 system. This document only describes how to install the controller and connect the antenna cables. Information on how to mount the antennas is in the antenna documents. Other related documents are:

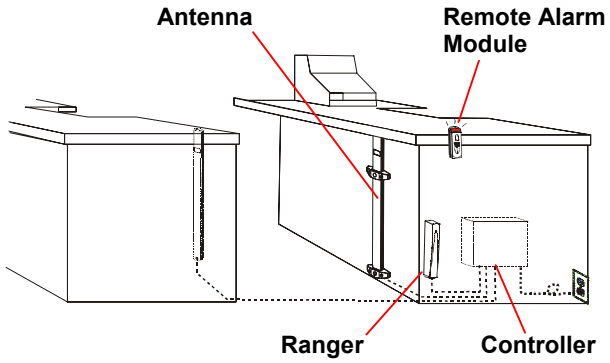
- Install Guide, AMS-1070 Antenna, P/N 8200-0127-01
- Quick Install Guide, AMS-1070 Remote Alarm Module, P/N 8200-0127-02
- Installation Guide, Digital 216 Noise Coils 8000-2693-05
- Quick Install Guide, AMS-1070 Antenna Flush-Mount Brackets, P/N 8200-0127-07
- Quick Install Guide, AMS-1070 Antenna Cantilever-Mount Brackets, P/N 8200-0127-08
- Quick Install Guide, AMS-1070 Antenna Pole-Mount Brackets, P/N 8200-0127-09
- Installation Guide, AMS-1070 Controller EMI Shield 8200-0127-12
- Installation Guide, AMS-1070 Controller Under Counter Installation Guide 8200-0127-13
- Installation Guide, AMS-1070/ScanMax Pro Deactivator Mounting Plate 8200-0127-14

Note: Because customer requirements dictate the placement of system components, your Sensormatic representative will supply this information separately.

About the Product

An AMS-1070 controller is part of an Ultra•Max® security label detector. The controller powers and controls up to four transceiver antennas, two optional remote alarm modules, and two noise canceling antenna kits. Figure 1 shows the system components.

Figure 1. System components



Installation Requirements

Verifying Equipment and Unpacking

- ❑ Verify that all equipment has arrived. Make sure the system configuration is the right one for the installation site.
- ❑ Unpack major components in a back room. At the install site, lay out parts in the order you will need them. Do not clutter the aisle or cause a trip hazard.

Installer/Contractor

- ❑ Shall have electrical work comply with the latest national electrical code, national fire code, and all applicable local codes and ordinances.
- ❑ Shall coordinate all work with other trades to avoid interference.
- ❑ Shall verify existing site conditions and coordinate with the owner's representative and appropriate utilities as required.
- ❑ Shall obtain copies of all related plans, specifications, shop drawings and addenda to schedule and coordinate related work.
- ❑ Shall thoroughly review the project to ensure that all work meets or exceeds the above requirements. Any alleged discrepancies shall be brought to the attention of Sensormatic Electronics.

WARNING!
Do not install this product in hazardous areas where highly combustible or explosive products are stored or used.

Site Requirements

Refer to Figure 2 for description of site requirements and placement considerations.

- ❑ Connect the controller to a 100-240Vac source. No fuse exchange is required for the controller.
- ❑ Use the appropriate power cord based on the country of use.
- ❑ Replace the controller's slow-blow fuses only with a fuse of the same type and rating.

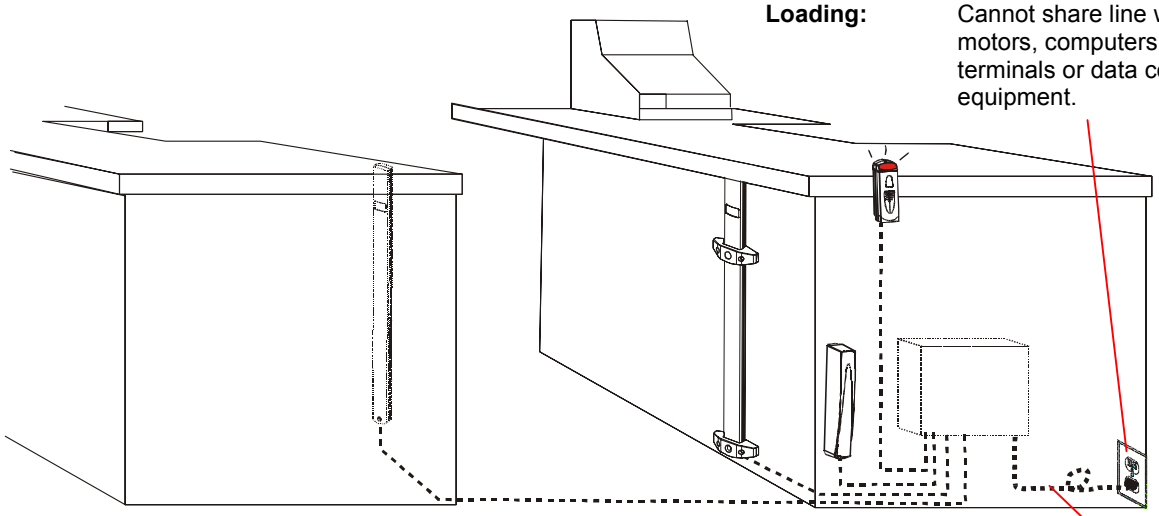
Tools and Equipment Required

For all controller installations:

- Phillips and slotted screwdrivers
- Wire strippers
- Cordless drill and phillips-head screwdriver bits

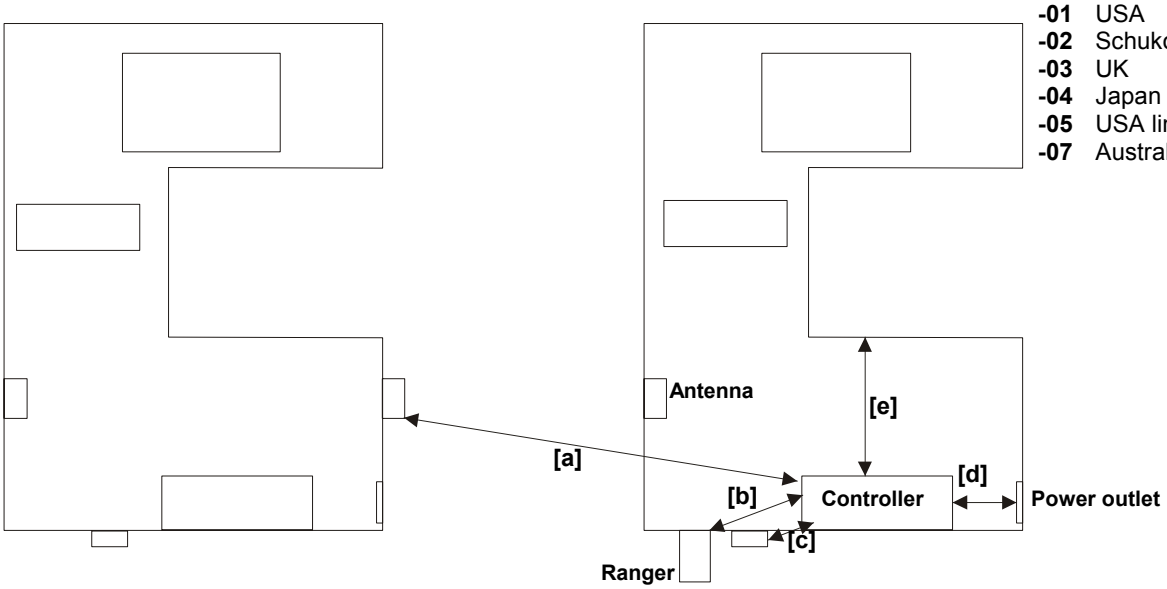
Figure 2. Component placement constraints

Power Outlet
Voltage Range: 100-240Vac (50-60Hz)
Type: Three-wire, unswitched. Do not use orange outlets; they are dedicated to computer equipment).
Availability 24 hours
Grounding: < 0.5Vac between neutral and ground
Loading: Cannot share line with neon signs, motors, computers, cash registers, terminals or data communications equipment.



Power cord options
P/N 0351-0547-0x

-01 USA
-02 Schuko
-03 UK
-04 Japan
-05 USA line filter
-07 Australia



Ref	Description	Distance	Reason
[a]	Controller to antenna separation	9m (30ft) max	Tx/Rx cable length
[b]	Controller to ranger separation	12m (40ft) max	Ranger cable length
[c]	Controller to remote alarm unit separation	9m (30ft) max	Remote alarm unit cable length
[d]	Controller to power outlet separation	2.3m (7.5') max (USA) 2.5m (8') max (non-USA)	Length of power cord
[e]	Space around all sides of controller	20cm (8in) min	Ventilation. May be mounted on shelf or wall. May be hidden (e.g. checkout counter, backroom, basement).

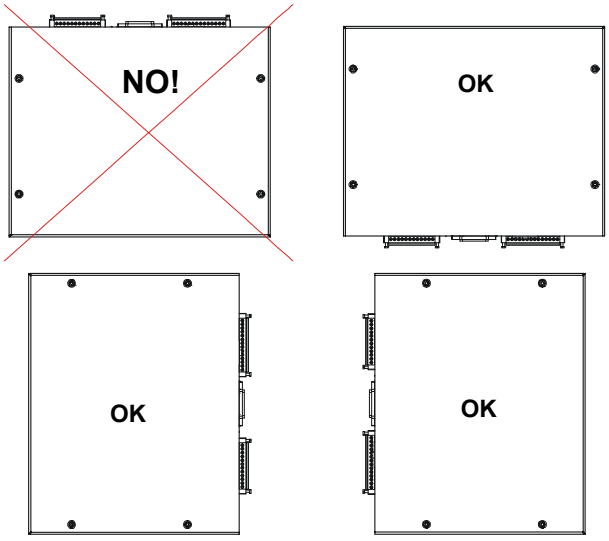
Installing the Controller

The controller can be mounted on a wall or rest on a shelf (no mounting procedure required).

- To mount the controller on a wall, proceed to the section below.
- Otherwise, go to **"**Connecting the Antennas and Remote Alarm Module**"** on page 5.

The pack may be mounted in any orientation except one. Do NOT mount the pack with the power cord and connectors on top. See Figure 3.

Figure 3. Wall mounting orientations



1. **Unscrew the mounting plate from the bottom of the controller.**

2. **Select the mounting method.**

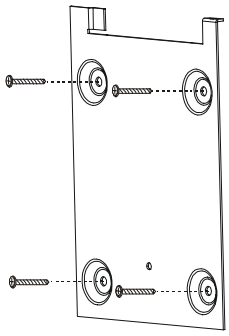
   The mounting method must be able to support 24kg (53 lbs.) if both the controller and the deactivator are mounted together and 12kg (27 lbs.) if the controller is mounted by itself. Therefore, the controller should only be mounted to metal or wood, not to hollow walls.

   For wood or metal walls, you can use 10 x 1-1/2" self-drilling phillips-head screws (P/N 5899-0031-01).

3. **Using a level, position the mounting plate on the wall and mark the four mounting hole locations.**

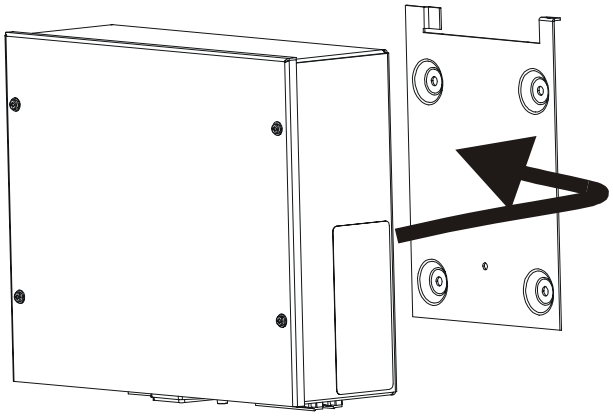
4. **Attach the mounting plate to the wall with screws.**

Figure 4. Attaching the mounting plate



5. **Hang the controller onto the mounting plate and slide it over to the left until it is secure, as shown in Figure 5.**

Figure 5. Attaching the controller to the mounting plate



6. **If the power pack for a ScanMax Pro deactivator is nearby, you can use the ScanMax Pro mounting plate (Figure 6) to mount the deactivator to the top of the controller to conserve space.**

   Refer to the AMS-1070/ScanMax Pro Deactivator Mounting Plate Installation Guide (8200-0127-14) for the installation procedure.

Figure 6. ScanMax Pro mounting plate

Connecting the Antennas and Remote Alarm Module

The cables from the antennas and remote alarm module are inserted into the Aisle A and Aisle B connectors. Table 1 below lists the signals the cables carry.

Table 1. Controller Aisle connector pinout

Wire Color	Signal Description
Red	Tx -
Black	Tx +
Shield	Shield*
Brown	Piezo
Orange	RS-232 Rx (from pack)
Yellow	RS-232 Tx (from pack
Green	Lamp 1
Blue	Lamp 2
Violet	+12V
Gray	Digital Ground*

* Never connect shield to Digital Ground

The correct wiring method depends on the antenna configuration. The following sections describe how to wire each of the basic antenna configurations listed in Table 2. A tall antenna is an alarming antenna; a short antenna is a non-alarming antenna.

Table 2. Basic antenna configurations

Configuration	Alarming Antenna	Non-Alarming Antenna	Remote Alarm Module
Tall/short	1	1	0
Short/short	0	2	1
Regular split	1	2	0

The EMI shields must be put on the antenna and alarm cables before you connect the wires to the connectors. Refer to the AMS-1070 EMI Shield Installation Guide (8200-0127-12) before proceeding.

Connecting a tall and a short antenna

If you are connecting an alarming antenna and a non-alarming antenna to the controller, use Table 3 to connect the antennas.

Table 3. Antenna connector pinout

Cable	Wire Color	Pin
Non-alarming	Red	1
	Black	2
Non-alarming and Alarming	Shield	3
Alarming	Black	4
	Red	5
	Brown	6
	Orange	7
	Yellow	8
	Green	9
	Blue	10
	Violet	11
	Gray	12

Connecting two short antennas and a remote alarm module

If you are connecting two non-alarming antennas and a remote alarm module to the wiring harness, use Table 4 to connect the antennas and remote alarm module.

Table 4. Antenna connector pinout

Cable	Wire Color	Pin
Non-alarming 1	Red	1
	Black	2
Non-alarming 1 and 2 and remote alarm module	Shield	3
Non-alarming 2	Black	4
	Red	5
Remote alarm module	Brown	6
	Orange	7
	Yellow	8
	Green	9
	Blue	10
	Violet	11
	Gray	12

Connecting a split-receiver (dual-aisle) configuration

If you are connecting two non-alarming antennas and one alarming antenna to the wiring harness, use Table 5 and Table 6 to connect the antennas.

Table 5. Aisle A connector

Cable	Wire Color	Pin
Non-alarming 1	Red	1
	Black	2
Both antennas	Shield	3
Alarming	Black	4
	Red	5
	Brown	6
	Orange	7
	Yellow	8
	Green	9
	Blue	10
	Violet	11
	Gray	12

For zone identification to work properly, the alarming antenna must be installed so the piezo on it faces non-alarming antenna 1.

Table 6. Aisle B connector

Cable	Wire Color	Pin
Non-alarming 2	Red	1
	Black	2
	Shield	3
Unused	Black	4
	Red	5
	Brown	6
	Orange	7
	Yellow	8
	Green	9
	Blue	10
	Violet	11
	Gray	12

Connecting the Noise Canceling Antennas

The table below lists the pinouts for the Noise/Rx Coils connector.

Pin	Signal
1	Shield
2	Coil A Return
3	Coil A
4	Coil B Return
5	Coil B
6	Shield
7	Inhibit Aisle A
8	Inhibit Aisle B
9	Digital Ground
10	I/O Port 1
11	I/O Port 2
12	I/O Port 3
13	Digital Ground
14	Shield

Connecting to Relays in the Controller

The table below lists the pinouts for the Relay connector.

Pin	Signal
1	Relay A Arm
2	Relay A NC
3	Relay A NO
4	Shield
5	Relay B Arm
6	Relay B NC
7	Relay B NO
8	Shield Ground
9	System Error Arm
10	System Error NC
11	System Error NO
12	Shield
13	Shield
14	Shield

Connecting Power to the Controller

For installation using a line cord, the socket-outlet must be installed near the equipment and at a location which is easily accessible.

Für Installationen mit einem Stromkabel muß die Steckdose an einem Standort installiert werden, welcher einfachen Zugang erlaubt.

WARNING—RISK OF ELECTRIC SHOCK!

The AC power line could be carrying 120Vac or 240Vac.

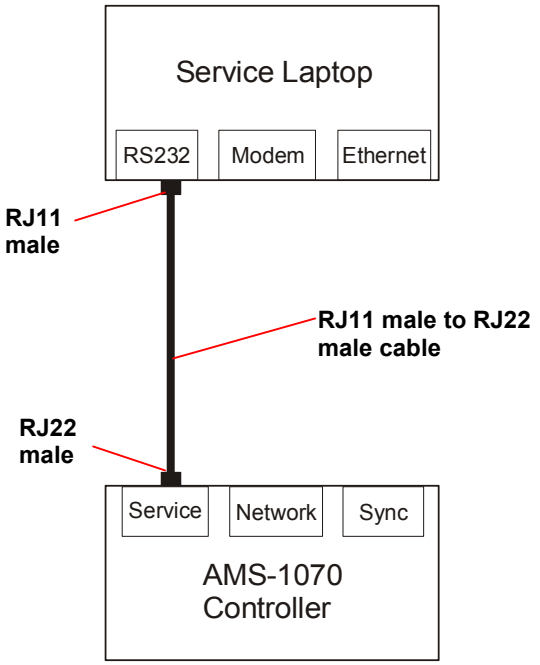
The AC power source can be 100-240Vac and is connected by an ac power cord. Attach the appropriate power cord based on the country of use.

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

Connecting a Service Laptop to the Controller

To use the configurator on your service laptop to configure the controller, connect your laptop to the Service connector on the controller.

Figure 7. Connecting a laptop to the controller



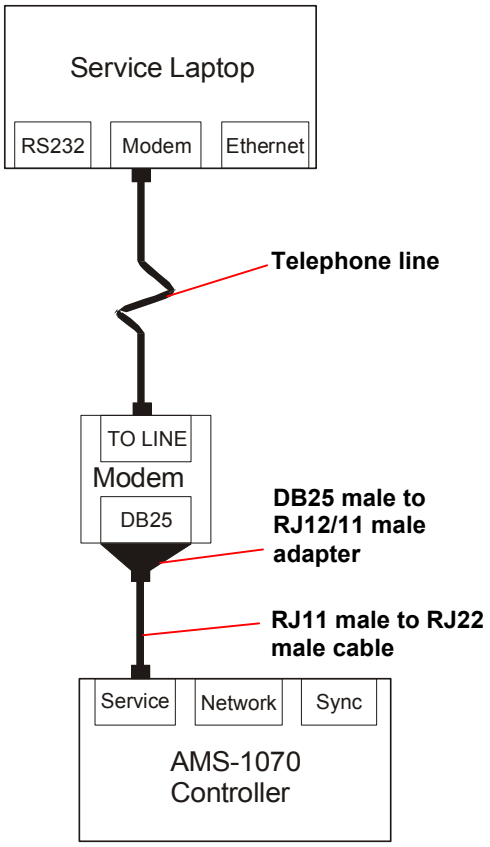
Connecting a Modem to the Controller

If you are not connecting a modem to the controller, skip this section.

When a modem is connected to the controller, a remote computer can dial-up and connect to the controller for remote service. The following hardware is required:

- External modem – you must flash the modem and set the dip switches before using. Refer to the AMS-1070 Setup and Service Guide for more information.
- DB25 male to RJ12/RJ11 female connector
- RJ11 male to RJ22 male cable

Figure 8. Connecting a modem to the controller



To connect the modem to the controller, do the following:

1. **Prepare the DB25 to RJ12/RJ11 connector. Follow the diagram in Figure 9.**
2. **Connect the DB25 connector to the modem.**
3. **Connect the RJ11 connector to the DB25 to RJ12/RJ11 connector (Figure 10).**
4. **Connect the RJ10 connector to the controller.**
5. **Connect the telephone line to the TO LINE port of the modem.**

Figure 9. Preparing DB25 to RJ12/RJ11 adapter

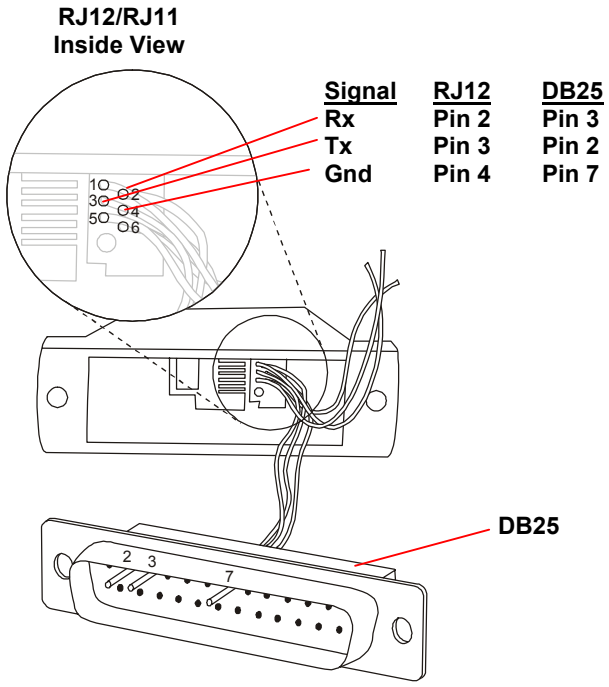
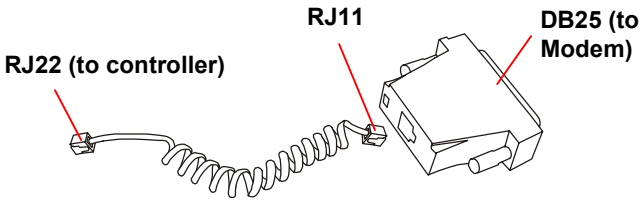


Figure 10. Modem cabling



Connecting a Controller to an RS-485 Network

If you are not connecting the controller to an RS-485 network, skip this section.

You can network controllers two different ways. The first way is to use the SyncLink port and the Network port to daisy-chain the controllers. This method is shown Figure 11. This method is only possible, however, if the SyncLink port is not used for the SyncLink feature.

If the SyncLink port is already in use (or will be in use), you can network the controllers by connecting an RJ-12 “T” adapter to the Network port, as shown in Figure 12.

You can connect a maximum of 32 controllers in an RS-485 network. More than 32 controllers requires multiple networks.

The following equipment is required:

- RS232/485 converter – one for every 32 controllers
- RJ-12 connectors – must be 6-wire
- RJ-12 T adapter - available from Black Box (part number CBCC47289)
- Cabling – you may use either flat telephone cable or CAT5 cable. Only 3 wires are used.

CAUTION: Do not put the RJ-12 connectors on upside down. Reversing the order of the conductors will connect +5V to ground, which will damage the controller.

CAUTION: Do not connect a Sync-Link port directly to another Sync-Link port. Doing so can cause damage to the controller if one of the controllers is turned off.

Figure 11. Using the SyncLink and Network ports to network several controllers

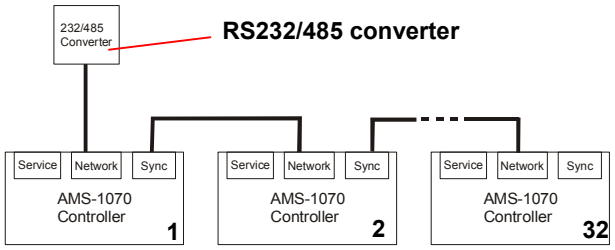


Figure 12. Using an RJ-12 "T" adapter to network several controllers

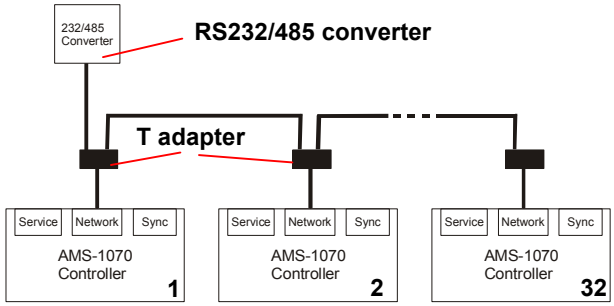


Figure 13. SyncLink and Network connectors

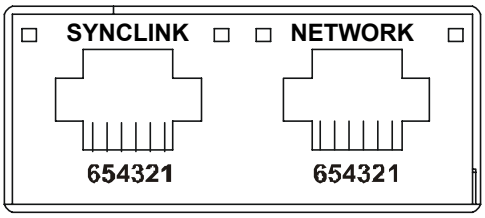


Table 7 and Table 8 show the pinouts for the SyncLink and Network ports. To connect the controllers in an RS485 network, you must connect pin 1 of either the SyncLink port (method 1) or the Network port (method 2) on one controller to pin 1 of the Network port on the next controller. Similarly, pin 4 must connect to pin 4 and pin 5 to pin 5.

Table 7. Sync Link connector pinout

Pin	Signal	Description
1	Gnd	Digital Ground
2	Synclinkout	
3	Synclinkin	
4	RS485A	Also known as 485-
5	RS485B	Also known as 485+
6	+5v	Not used

Table 8. Network connector pinout

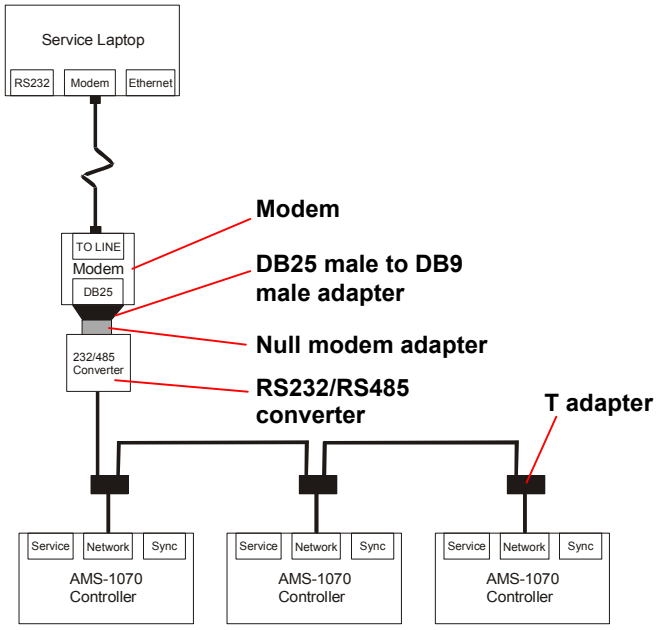
Pin	Signal	Description
1	Gnd	Digital Ground
2	NC	No connect
3	NC	No connect
4	RS485A	Tied to pin 4 on SyncLink port
5	RS485B	Tied to pin 5 on SyncLink port
6	NC	No connect

Connecting a Modem to an RS-485 Network

Figure 14 shows a service laptop connected to an RS-485 network of controllers. When a modem is connected to the network, a service laptop can dial-up and connect to the controllers for remote service. The following hardware is required:

- External modem – you must flash the modem and set the dip switches before using
- DB25 male to DB9 male adapter
- Null modem adapter
- RS-232/RS-485 converter

Figure 14. Connecting a modem to a RS-485 network



1. **Plug the RS-232/RS-485 converter into the DB25/DB9 adapter.**
2. **Plug the DB25/DB9 adapter into the DB25 connector on the modem.**
3. **Connect the telephone line to the TO LINE port of the modem.**

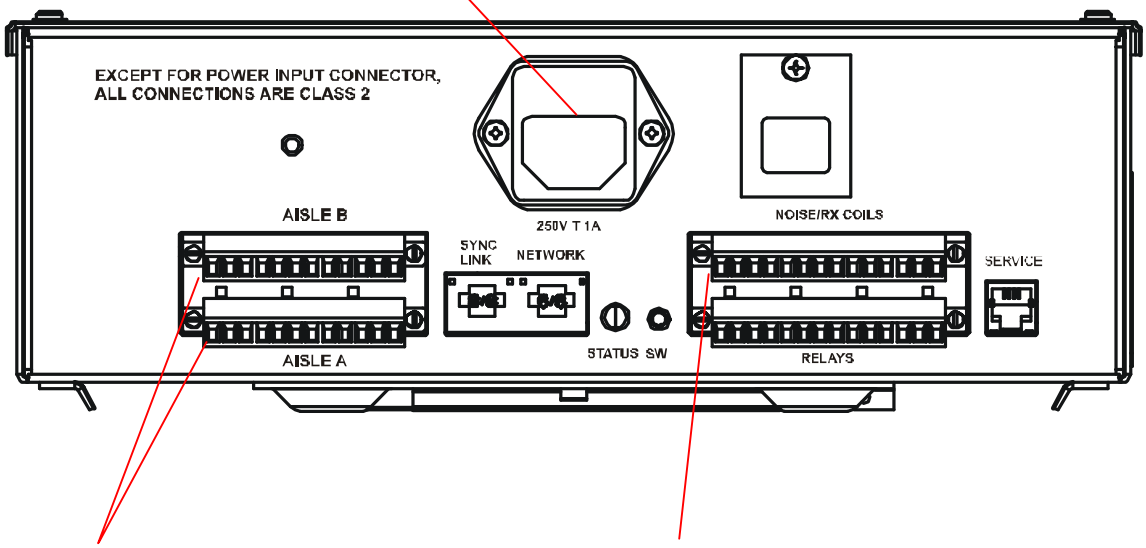
Specifications

For the electrical specifications, see Figure 15. For the mechanical (i.e. size and weight) and environmental specifications, see Figure 16.

Figure 15. Electrical specifications

Input Power

Voltage Range:	100-240Vac (50-60Hz)
Primary Power Fuse:	1A, 250V slo-blo
Input Power:	< 30 W per controller (<15 W per aisle)
Current Draw:	0.75A peak



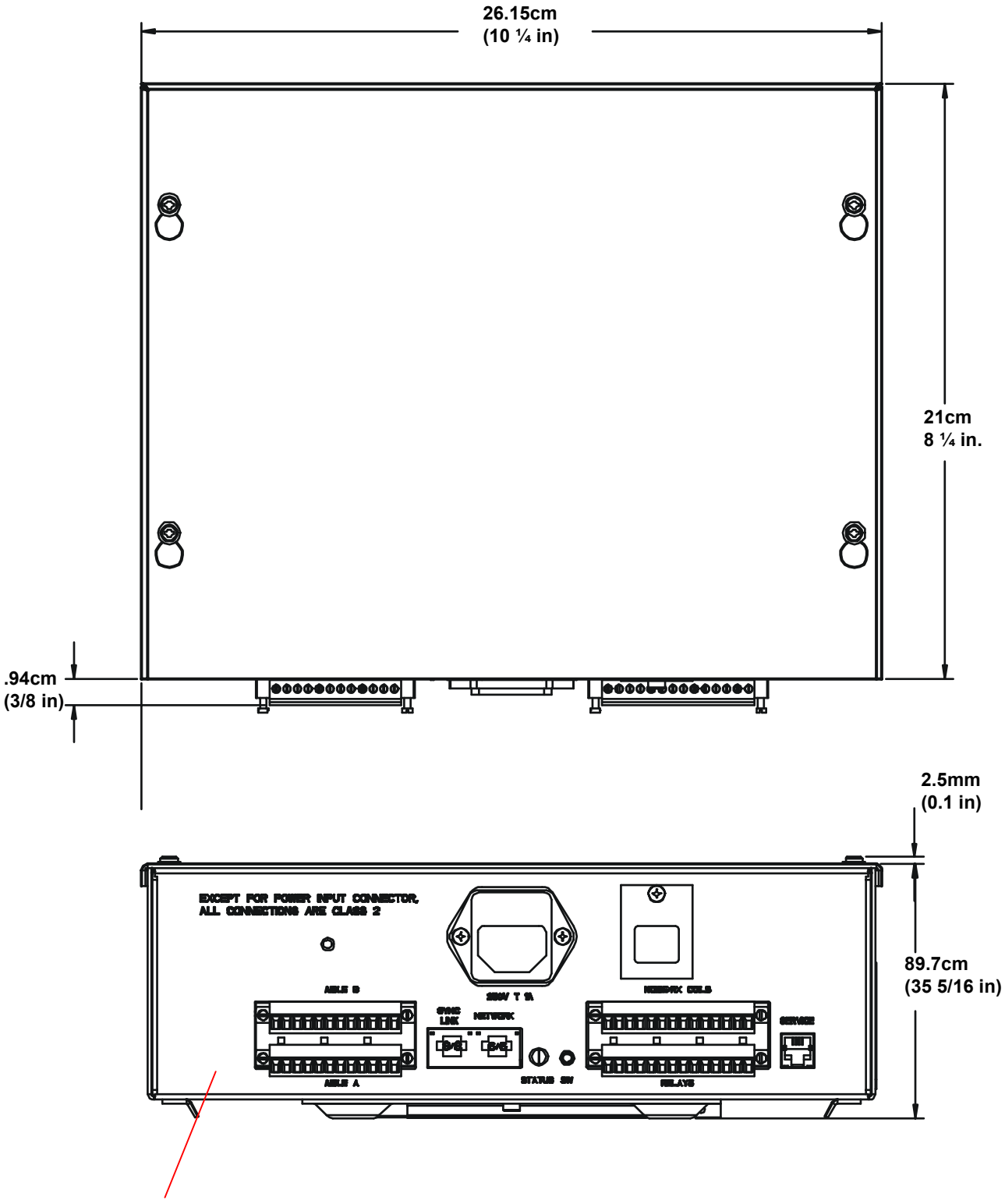
Transmitter/Receiver Ports

Ports:	2 (2 antennas per port)		
Operating freq.:	58 kHz (± 200 Hz)		
Coil resistance:	13 Ohms (at 58 kHz)		
Transmit current:	1 amp +/- 0.1 amps		
Tx burst duration:	1.6ms		
Burst rep rate:	System Type	50Hz	60Hz
	Two aisle	37.5 Hz	45 Hz
	One aisle	75 Hz	90 Hz
	Split receiver	37.5 Hz	45 Hz
	Split receiver when tag detected	150 Hz	180 Hz
Output Power:	NEC Class 2 IEC950 Limited Power Source		

Noise Coil Receiver

Ports:	1 (2 antennas)
Center freq:	58 kHz

Figure 16. Mechanical and environmental specifications



Operating temperature:	**0-40° C (32-104° F)**
Non-operating temperature:	**-40 – 70° C (-40 - 158° F)**
Relative humidity:	**0-90% non-condensing**
Weight (with power cord):	**2.9kg (6.4 lbs.)**

Declarations

Regulatory Compliance

Emissions ..... 47 CFR, Part 15
EN 300 330
EN 301 489
Safety..... UL 60950
CSA C22.2 No 60950
EN 60 950

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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RWH -7/02

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AMS-1070 Controller EMI Shield

Installation Guide

Two EMI shields are required. To install each shield:

1. Run the unterminated cable through the slot in the shield from the direction shown, and then connect the cable ends to the cable connector according to wiring diagrams in *AMS-1070 Controller Install Guide* 8200-0127-06.
2. Attach the shield to the controller using the four screws supplied.