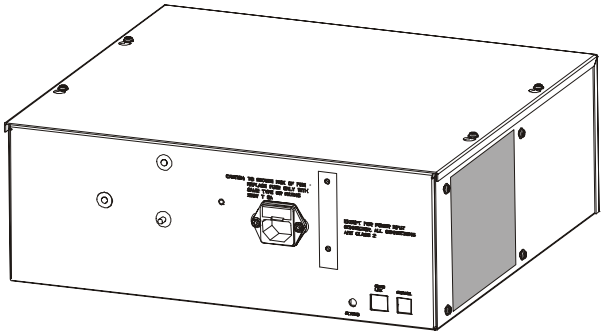
AMS-9030 Controller

Installation Guide



ZE9030

Contents

About this Guide 1
Controller Overview 2
Installation Requirements 2
Mounting the Controller 3
Connecting Antennas 4
Connecting Remote Alarms 12
Connecting External Devices to Controller Relays 12
Connecting Noise Canceling Antennas 13
Connecting Multiple 9030 Controllers 13
Connecting a Service Laptop 14
Connecting a SyncLink Device 14
Connecting an Ultra*Link Device 15
Connecting Power to the Controller 15
Specifications 15
Declarations 16

About this Guide

This installation guide explains how to install the AMS-9030 controller. Other related documents are:

- Planning Guide, 8200-0344-01
- Installation Guide, AMS-9030 Key Switch Option Kit, 8200-0344-05
- Installation Guide, AMS-9030 Plenum Option Kit, 8200-0344-06
- Setup and Service Guide, 8200-0344-08
- Reference Guide, 8200-0344-09

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

Note to the Installer: 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.

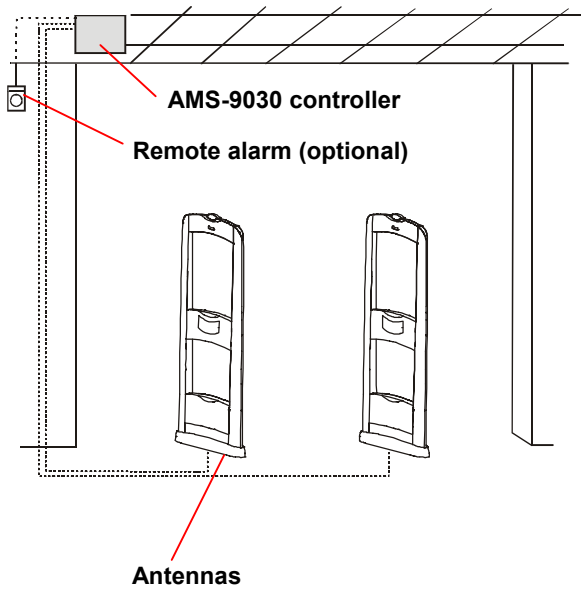
Note: There may be restrictions on the installation of certain antennas in certain countries. Please see the antenna installation guides for documentation of the restriction.

Controller Overview

An AMS-9030 controller is part of an Ultra•Max® security label detector. The controller supports the following system components, some of which are shown in Figure 1:

- Two transceiver antennas or two pairs of Tx/Rx antennas for tag and label detection.
- One remote alarm (optional), but the controller supports two-alarm configurations with two internal relays.
- Two noise canceling antenna kits to reduce the effect of electro-magnetic interference (optional).
- Four external devices, such as cameras, activated by two relays in the controller (optional).
- A service laptop for configuration and trouble-shooting.
- A SyncLink transmitter to synchronize the detectors with deactivators at the site (optional).
- An Ultra*Link device (optional).
- An RS-485 network (optional). This manual only describes how to connect a controller to an RS-485 network. For information on setting up an RS-485 network, refer to the *AMS-9030 Setup and Service Guide*.

Figure 1. AMS-9030 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 your local Technical Support representative.

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

Electrical and Site Requirements

- ❑ The controller connects to a 100-130Vac or 200-240Vac source. No fuse exchange is required for the controller.
- ❑ The ac source must be unswitched with less than 0.5Vac between neutral and ground.
- ❑ DO NOT share the ac source with neon signs, motors, computers, cash registers, terminals, or data communications equipment.
- ❑ DO NOT use orange-colored outlets dedicated for computer equipment.

Controller

- ❑ The controller can be placed on a shelf or mounted on a wall. It can be hidden in a remote location such as a back room or basement.
- ❑ Provide a minimum of 20cm (8") of unobstructed space around the controller for ventilation.
- ❑ Use 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

- ❑ Replace the slow-blow fuses only with a fuse of the same type and rating.
- ❑ Maximum cable distance from the antennas to the controller is 12.2m (40').

ZC30-ADS/ZC35-ADS Remote Alarm Unit

- ❑ If the system uses a transformer to power the remote alarm, plug the transformer into a 24-hour, unswitched outlet.
- ❑ Maximum cable distance from the controller to each alarm unit is about 7.6m (25').

Tools and Equipment Required

For all controller installations:

- Hammer
- Phillips and slotted screwdrivers, including a tweaker for the terminal block screws
- Wire strippers
- Pliers
- Cordless drill and phillips-head screwdriver bits
- Vacuum and broom

Mounting the Controller

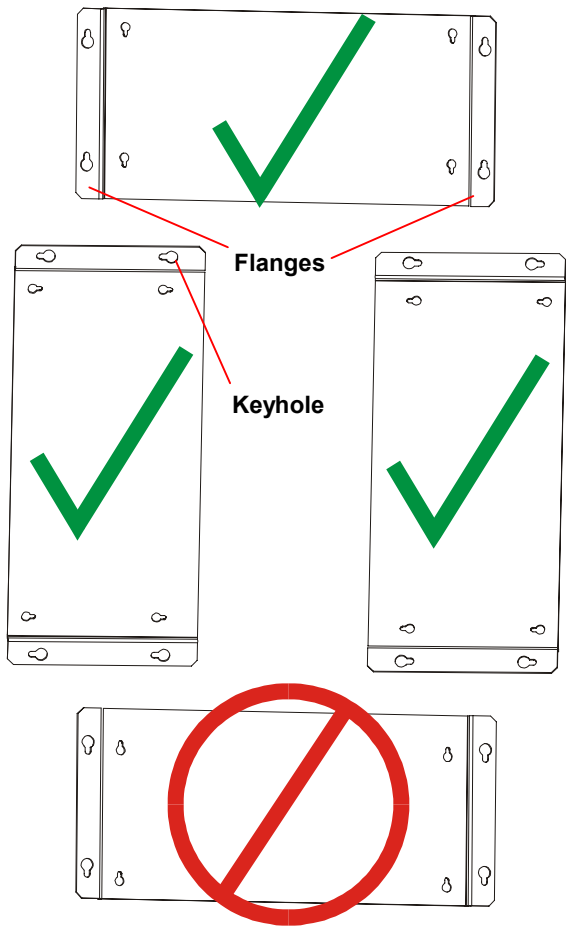
The controller can rest on a shelf, which requires no mounting procedure. It also can be mounted in a ceiling or on a wall, which requires a mounting bracket. If the controller is mounted in a ceiling that is used for return air (environmental “other air space”), an air handling option kit is required.

- Shelf-mounting – ensure the controller has 20cm (8”) clearance on all sides.
- Mounting controller to bracket – attach the mounting bracket to the wall, ceiling, or counter.

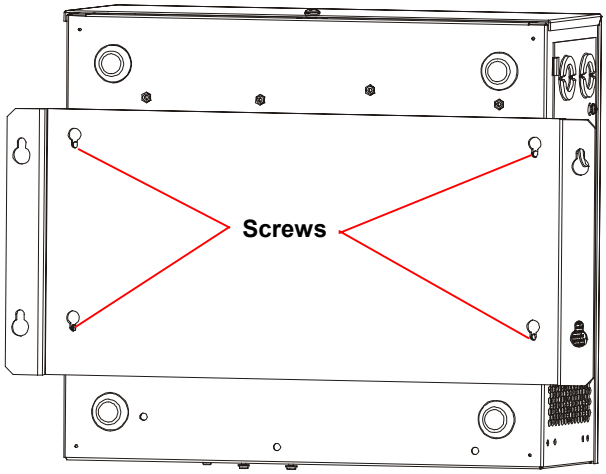
To mount the controller to a wall:

1. Using the mounting bracket as a template, mark four holes on the wall.

CAUTION: The mounting bracket can be oriented vertically or horizontally, but it must not be mounted with the keyholes on the flanges upside, down as shown below.



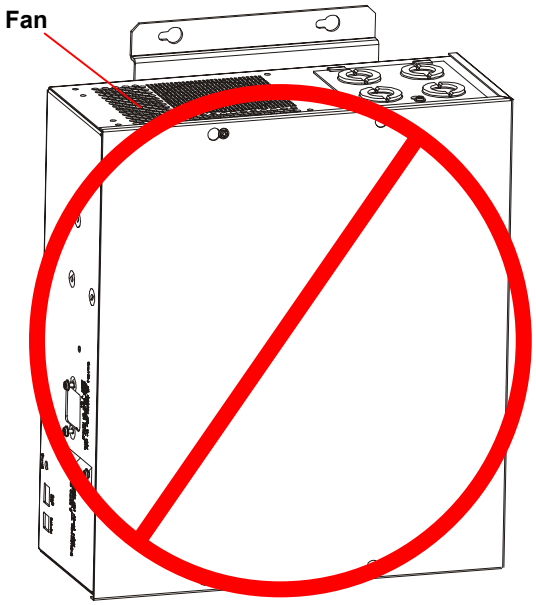
2. Drill holes into the wall and insert anchors. Note: The mounting method must be able to support 23.5 kg (52 lbs).
3. Secure the mounting bracket to the controller using the four screws provided.



4. Secure the mounting bracket to the wall. The preferred orientations for the controller are with the fan on the bottom or on the left side. It is acceptable to mount the controller with the fan on the right side.

CAUTION: Do not mount the controller with the fan on top as shown in Figure 2.

Figure 2. Prohibited controller orientation



Connecting Antennas

Currently you can only connect Ultra*Post Plus-compatible antennas to the AMS-9030 controller. The controller contains some connectors reserved for future antennas. The table below shows where you connect the cables. Figure 5 shows the locations of the connectors.

	Antenna A		Antenna B	
	Plus	**Future**	**Plus**	**Future**
Comm	P15	P14	P18	P17
Transceiver	P13		P16	
Receive only	P22		P23	

Rules

The controller has two transmit channels (A and B) and two receive channels (A and B). Observe the following rules when connecting antennas to these channels.

- The controller cannot transmit simultaneously on both the A and B channels. It can transmit on only the A or B channel or alternately on both.
- The controller receives on both the A and B channels simultaneously, even if it is only transmitting on one channel.
- Pulling jumpers P25-P28 enables connectors P22 and P23 as receive only and configures P13 and P16 as transmit only. Jumpers P25 and P26 control the reception of the Antenna A connector (P13 and P22) and jumpers P27 and P28 control the reception of the Antenna B connectors (P16 and P23).
- Before removing the knockouts in the controller for the antenna cables, unscrew the knockout plate from the controller to avoid bending the tabs on the plate.

CAUTION: Bridging alarm signals between two Comm ports (P15 and P18 or P14 and P17) will damage the controller. This was done on some Ultra*Post Plus controllers when an antenna without a built-in alarm (for example, Rangers) was used. Instead, use the configurator to cause alarms on one channel to activate the alarm on the other channel.

CAUTION: Do not connect ferrite receivers (for example, Rangers, Satellite receivers) to the transceiver connectors P13 and P16. They must only be connected to receiver ports P22 and P23.

CAUTION: Do not plug antennas into controller while the controller is on. Doing so can damage the power amplifier or power supply chip in the controller.

WARNING: RISK OF ELECTRIC SHOCK! Do not adjust tuning jumpers while controller is on. Doing so can expose you to ac voltage and damage the controller.

Connecting to P15 and P18

Connectors P15 and P18 are the Communication connectors for antennas compatible with Ultra*Post Plus antennas. Ultra*Post compatible antennas can be divided into three categories: those with 12V alarm lamps, those with 5V alarm lamps, and antennas without alarm lamps. The tables below list the antennas that are compatible with the AMS-9030 and which type of antenna they are.

Table 1. +12V Lamp antennas

ZSDDM	DoorMax Antenna

Table 2. +5V Lamp antennas

ZSEMPLUS	EuroMax Plus Pedestals
ZSEPPLUS	MegaMax Plus Pedestal
ZSDPMPLUS	Digital Pro-Max Plus Pedestal

Table 3. No alarm lamp antennas

ZAUPSH2	Ultra*Post Non-Alarming, Non-European
ZSDFMPLUS2-A	AMS-2001 (FloorMax) (12m)
ZSDFMPLUS2-A18	AMS-2001 (FloorMax) (18m)
ZSLOOP-2E	Loop antenna Kit

The following two tables show how to connect the +5V and +12V antennas; antennas without alarms do not connect to P15 and P18. Note that depending on how the controller motherboard has been configured, pin 3 provides either +5v or +12V for the antenna alarm lamp.

Table 4. +5V style pinouts

Pin	Signal	Wire Color
1	Audio +	Orange
2	Audio Return	Red
3	+5V Lamp	Yellow
5	Ground	Grey
10	Shield	Shield

Table 5. +12V style pinouts

Pin	Signal	Wire Color
1	Audio +	Black
2	Audio Return	Brown
3	+12V Lamp	Red
4	Not used	Orange
5	Ground	Yellow
6	Ant. A RS232 Rx	Green
7	Ant. A RS232 Tx	Blue
8	Not Used	Violet
9	+15V	Gray
10	Shield	Shield

Configurations

The following list describes the basic ways that antennas can be configured with the controller. Figure 3 and Figure 4 show examples of these configurations.

- **Single** – one transceiver (XCVR) antenna connects to P13 (A) or P16 (B).
- **Single with one receiver** – the transmitting antenna can be configured as a transceiver or a transmitter. If it is configured as a transceiver and it connects to P13 (A), then the receiver connects to the opposite receive-only channel, P23 (B). If the antenna is configured as a transmitter only, it connects to P13 (A), a receive-only antenna connects to P22 (A), and jumpers 25 and 26 (A) must be removed.
- **Single with two receivers** – one transmit-only antenna connects to P13 (A) or P16 (B). Two receive-only antennas are both connected to P22 (A) or P23 (B). Jumpers 25 and 26 (A) or 27 and 28 (B) must be removed.
- **Dual** – two transceiver antennas connect to P13 and P16.
- **Dual with two receivers** – Two transmit-only antennas are connected to P13 and P16. Two receive-only antennas are connected to P22 and P23. Jumpers 25-28 must be removed.
- **Split Tx Rx Tx** – Two transmit-only antennas are connected to P13 and P16. One receive-only antenna is connected to P22 or P23, but you must wire P22 to P23. Jumpers 25-28 must be removed.
- **Split (also called Triple)** – a two-controller system with three antennas. Two transceiver antennas are connected to P13 and P16 on one controller and one transceiver antenna is connected to P13 on another controller. If the antennas are near each other, a wired sync cable is required.
- **Triple with three receivers** – a two-controller system with three antennas. One controller has two transmit-only antennas connected to P13 and P16 and two receive-only antennas connected at P22 and P23. Jumpers 25-28 must be removed on this controller. The other controller has one transmit-only antenna connected at P13 and one receive-only antenna connected to P22. Jumpers 25 and 26 must be removed on this controller. If the antennas are near each other, a wired sync cable is required.
- **Quad** – a two-controller system with four antennas. Both controllers have two transceiver antennas connected to P13 and P16. If the antennas are near each other, a wired sync cable is required.

Figure 3. Single and dual antenna configurations

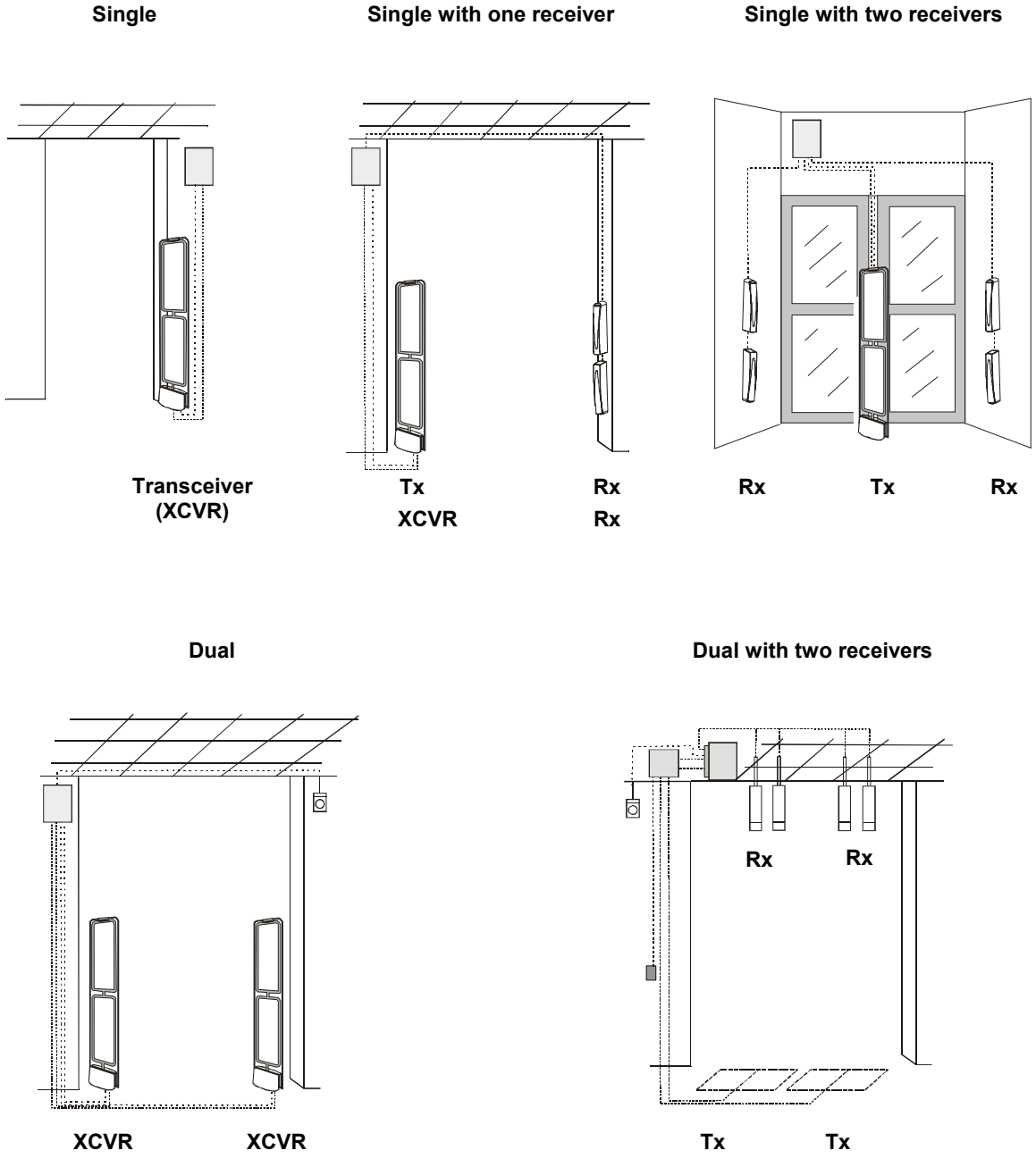


Figure 4. Split, triple, and quad antenna configurations

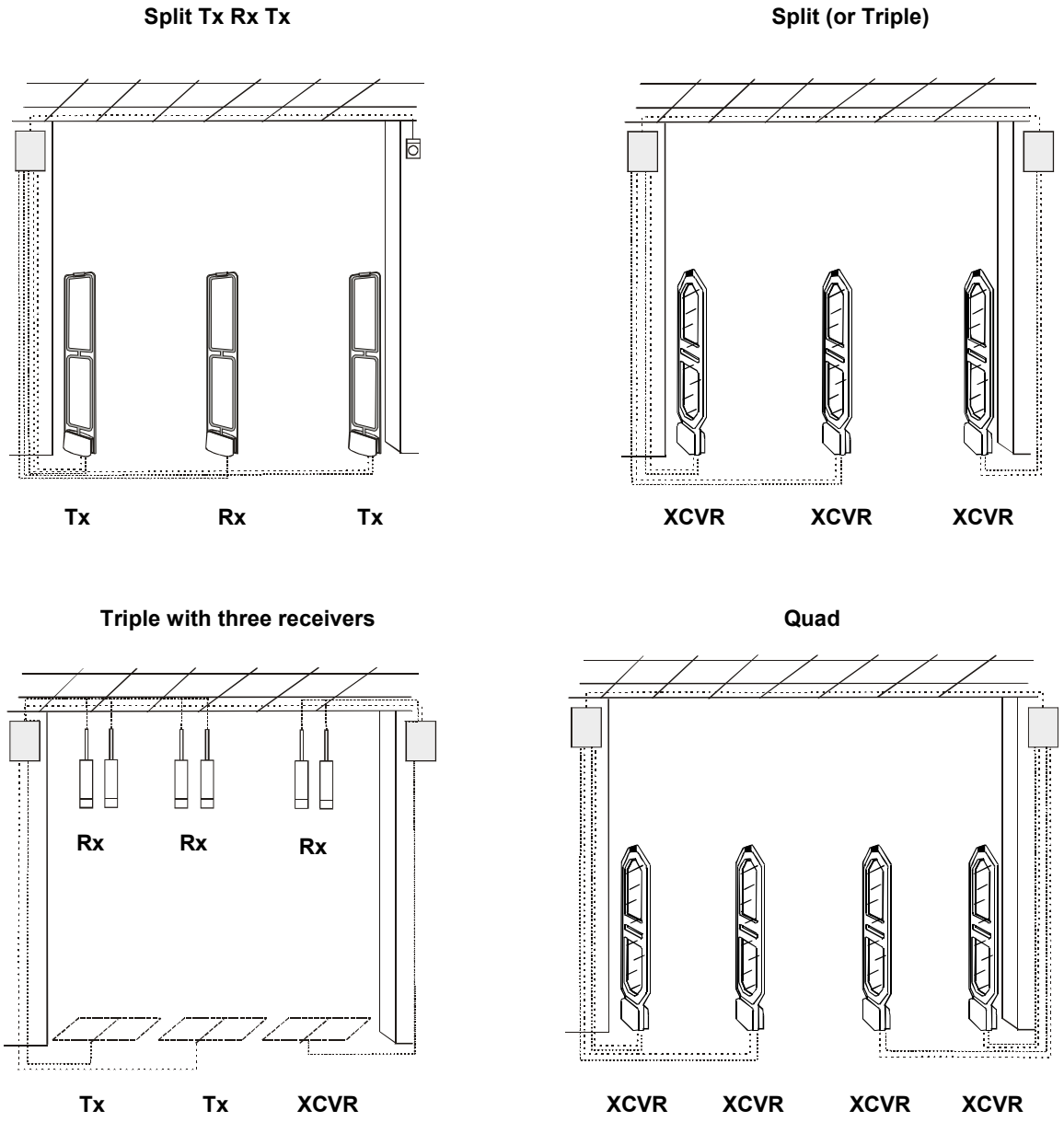


Figure 5. Controller antenna pinouts

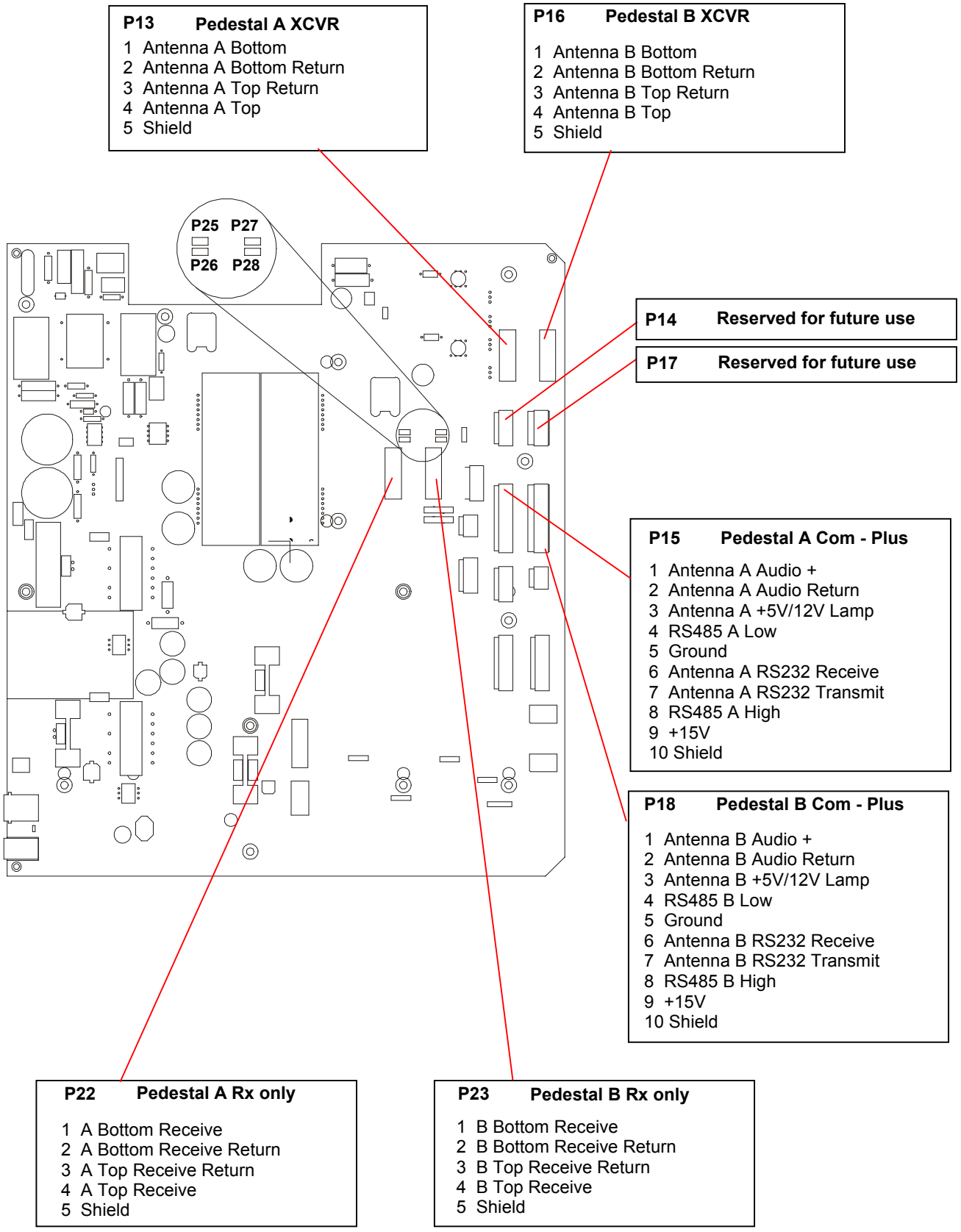


Figure 6. Controller device pinouts

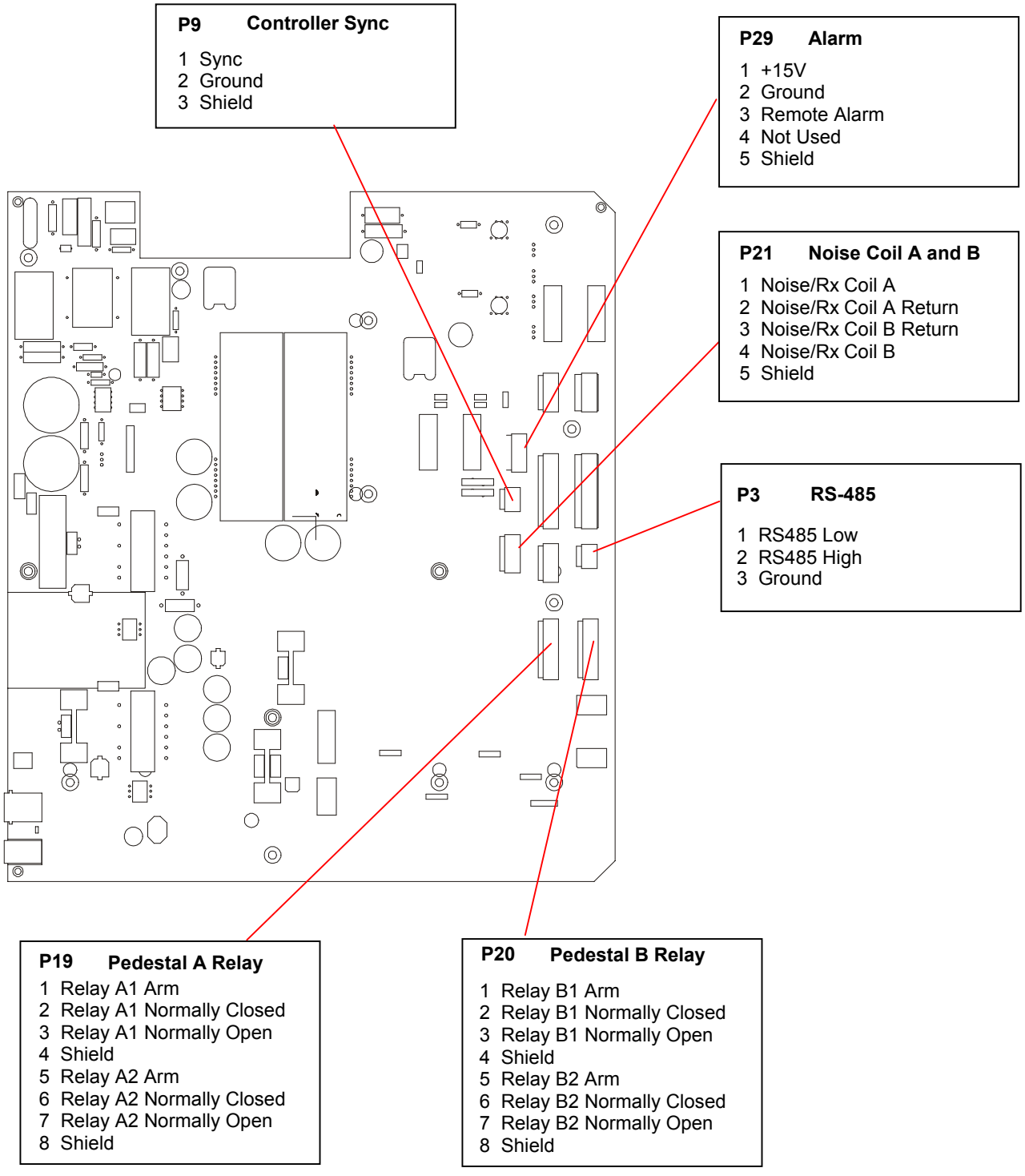
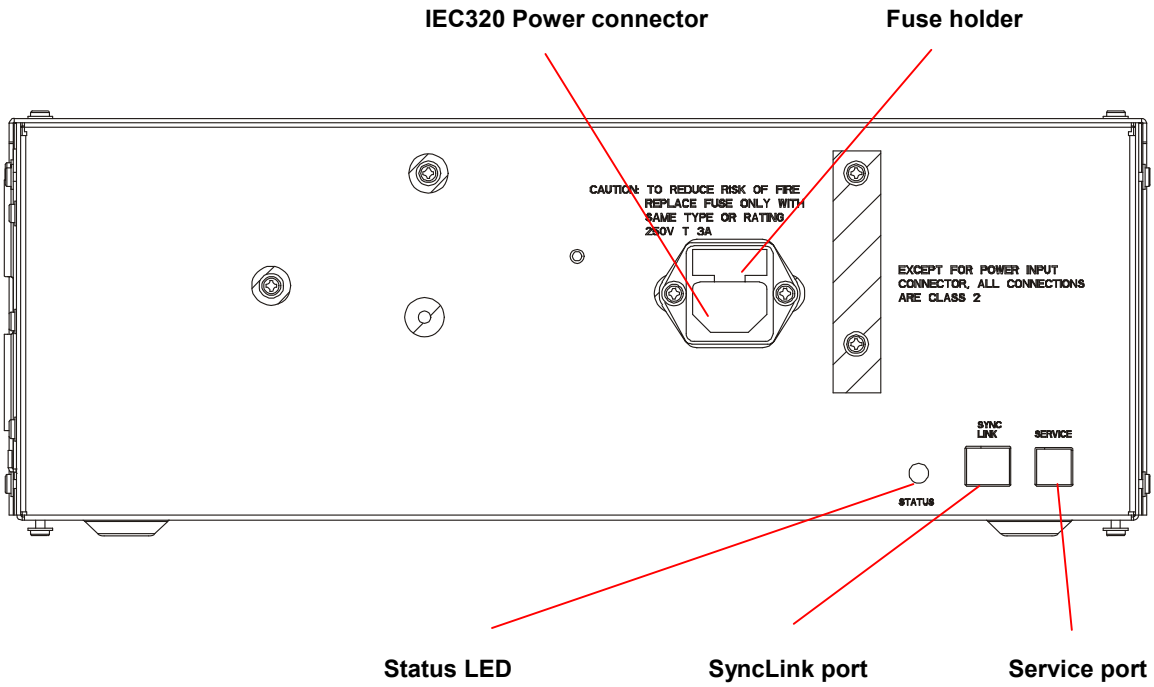


Figure 7. Front of controller



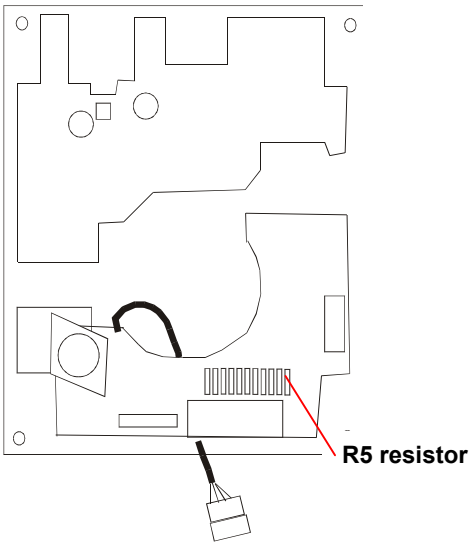
Connecting Remote Alarms

The AMS-9030 controller provides the power and control signals for a single remote alarm (ZC30-ADS/ZC35-ADS) at P29. (This is the only powered alarm port.) This remote alarm will sound whenever a tag or label is detected at either antenna; it will not provide zone detection.

Note: If you have the controller supporting two exits and you want to connect two independent alarms so that antenna A will control one alarm and antenna B will control the other alarm (zone detection), you need to connect the remote alarms to the relays at P19 and P20 instead. Refer to the section “Connecting External Devices to Controller Relays” on page 12.

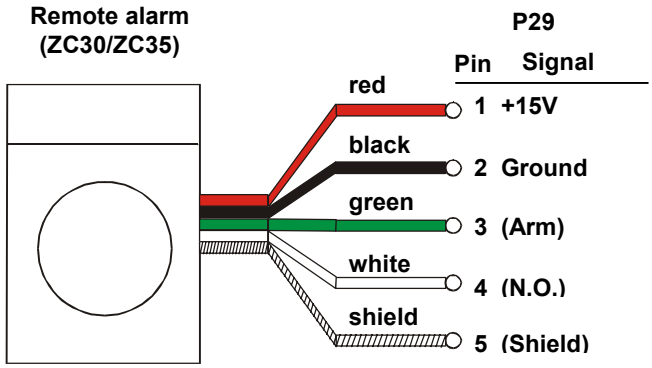
1. Ensure the remote alarm is ADS compatible. ADS compatible alarms are marked with a sticker on the box. If the remote alarm is not ADS compatible, remove resistor R5 from the main alarm board (0301-0241-01) of the remote alarm before installing.

Figure 8. Location of R5 resistor



2. Connect the remote alarm to the Remote Alarm connector (P29) on the controller. Figure 6 shows the location of P29 and Figure 9 shows how to connect the remote alarm. Note that the black and red wires are connected to different pins than other controllers.

Figure 9. Connecting a remote alarm to P29



Connecting External Devices to Controller Relays

The AMS-9030 controller has two internal relays (A and B) to which you can connect an external device, such as a remote alarm. Each relay can control two devices. The controller provides a contact closure only; the external device must supply its own power.

The relays are activated when the system alarms. The relays are double-pole double-throw (DPDT), which means relay A is activated only when antenna A alarms and relay B is activated only when antenna B alarms. The table below shows which relay is activated by which antenna.

Antenna	Antenna Connector	Relay Connector
A	P13, P15	P19
B	P16, P18	P20

Figure 6 shows the location of the P19 and P20 connectors and their pinouts.

1. Connect the green, white, and silver wires of the two remote alarms to Relays A and B (P19 and P20). Refer to Figure 10, Table 1, and Table 2.
2. Connect black and red wires to the transformer.

Figure 10. Connecting a remote alarm to P20

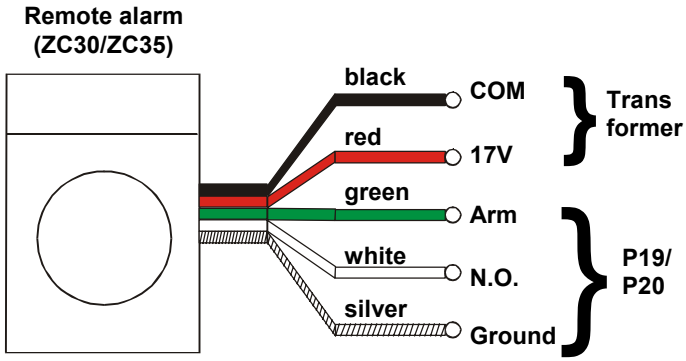


Table 6. Connecting remote alarm A

Alarm Wire	Connector	Pin	Signal
Black	Com	1	V Alarm Ret
Red	17V	2	+V Alarm
Green	P19	1	A - Arm
White	P19	2	A – N.O.
Silver	P19	5	Ground

Table 7. Connecting remote alarm B

Alarm Wire	Connector	Pin	Signal
Black	Com	1	V Alarm Ret
Red	17V	2	+V Alarm
Green	P20	3	B - Arm
White	P20	4	B – N.O.
Silver	P20	5	Ground

Connecting Noise Canceling Antennas

You can connect one set of noise canceling antennas to the AMS-9030 controller. You can use either the Ranger antennas (ZKNC-R) or the Skymax antennas (ZKNC-SM). You connect the noise canceling antennas at connector P21 on the controller. Figure 6 shows the location of the connector and its pinout.

Connecting Multiple 9030 Controllers

If you install adjacent (within 1.1m (3.5')) antennas attached to different controllers, the energy from one antenna can couple with the other and produce an over-current situation. The system will then shut down periodically for ten seconds and log an error. To prevent this, multiple controllers attached to adjacent antennas must be wired together to synchronize their transmissions.

In wired synchronization, one controller is designated as the master and the others as slaves. The master controller uses the P9 connector to send a synchronization signal to the P9 connector on the slave controllers. The procedure for installing wired synchronization follows.

CAUTION: If any controller goes off, wired sync does not work for any slave controller in the sequence. Disconnect wired sync before powering off a controller.

1. Route two 0.35mm (22 AWG) or heavier wires from the master controller to each slave controller.

   The maximum distance between the master and any slave for 22 AWG wire is 25m (80'). If the distance between controllers is greater than 25m (80'), consult Tech Support for the proper wire gauge.

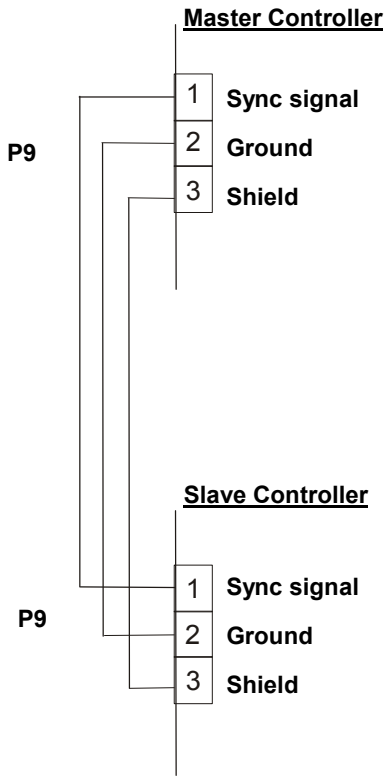
2. Connect the two wires to each master and slave controller as shown in Figure 11.

3. Turn on the controllers.

4. Use the configurator to set the Setup screen parameters in the controllers to the following values.

   - **Antenna Type** – This parameter should be set to Transceiver, even if only one antenna is connected to the controller. A single antenna should be set to Transceiver so that its transmit rep rate will match the rep rate of the adjacent antenna.
   - **Auto-Detection** – This parameter should be set to Off. Otherwise, if the site has a power outage, the controller will reboot and won't set single antennas to Transceiver Type.

Figure 11. Wired sync wiring diagram



5. Use the configurator to set the Advanced Settings parameters in the controllers to the following values.

Wired synchronization Advanced Settings parameters

Parameter	Master	Slave
Wired Sync Enable	*Enabled*	*Enabled*
Wired Sync Master	*Enabled*	*Disabled*

6. Check the status LED on the slave controllers. If the LED is flashing amber twice as fast as normal (two times per second), then the slave is not receiving a synchronization signal and you must recheck the installation or the software setup.

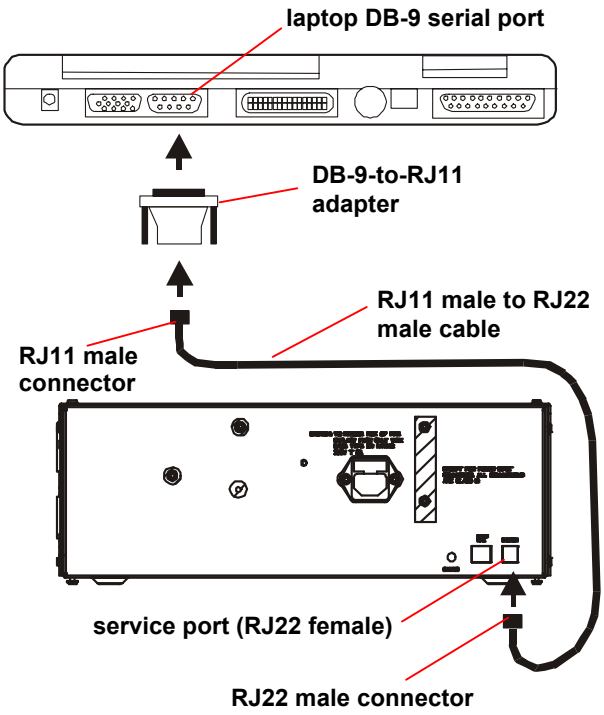
Connecting a Service Laptop

To use the configurator on your service laptop to configure the controller, connect your laptop to the female RJ22 port labeled “Service” on the controller. See Figure 7.

You can also connect a service laptop remotely over a network. For information on connecting a laptop remotely, refer to the Setup and Service Guide.

In addition to the controller, some antennas have a service port to which you can connect a service laptop.

Figure 12. Connecting a local service laptop



Connecting a SyncLink Device

SyncLink devices connect to the controller at the SyncLink port on the controller. The location and pinout of the SyncLink port is shown in Figure 7.

Connecting an Ultra*Link Device

Ultra*Link devices are connected to the controller at the Service port on the controller and at the COMM1 port on the Ultra*Link device. The location and pinout of the Service port is shown in Figure 1. Note: if the controller has an Ultra*Link device on its Service port, it cannot communicate with a laptop connected there or on an antenna.

Connecting Power to the Controller

The standard controller receives power through a power cord that is plugged into the IEC320 connector shown in Figure 7.

One power switching options is available for the controller: a keyswitch option. This option must be hardwired to a power source. Refer to the installation manual for this option for more information.

After connecting the controller to ac power, check the status light (Figure 7) to make sure it is flashing green once a second. If it is flashing two times a second or it is red, it indicates a problem with the system.

WARNING: RISK OF ELECTRIC SHOCK! Ensure power is turned off at circuit breaker before hardwiring controller.

Specifications

Electrical

Power Supply

Primary Input ..... 100-130Vac or 200-240Vac @ 50–60Hz

Primary Power Fuse 2.5A, 250V

Current Draw ..... 1.2A peak (120Vac) 0.8A peak (230Vac)

Input Power ..... <150W

Transmitter

Outputs ..... 2 ports (two antennas, multiplexed)

Operating Frequency ..... 58kHz (±200Hz)

Transmit Burst Duration 1.6ms

Transmit Current ..... 8A peak

Burst Repetition Rate:

Based on 50Hz ac ..... 37.5Hz (Normal) 75Hz (Validation)

Based on 60Hz ac ..... 45Hz (Normal) 90Hz (Validation)

Receiver

Inputs ..... 2 ports (two antennas, multiplexed)

Center Frequency 58kHz

Alarm

Alarm Relay Output ..... DPDT contacts

Contact Switching Current ..... 1.0A max.

Contact Switching Voltage ..... 28V max.

Lamp/Audio Duration ..... 1–30 sec. (1 sec. increments)

Environmental

Operating Temperature: ... 0° to 50°C (32° to 122°F) (32° to 122°F)

Non-operating Temperature ..... -40° to 70°C (-40° to 158°F)

Relative Humidity: ..... 0 to 90% non-condensing

Mechanical

Controller

Length.....36.8cm (14.5")
Width.....32.8cm (12.9")
Depth .....13cm (5.1")
Weight..... 5.85kg (12.9 lbs.)

Remote Alarm / Message Unit

Height .....20.3cm (8")
Length.....15cm (5.9")
Width.....6.4cm (2.5")

Declarations

Regulatory Product names

The following products are referenced in this manual.

Product name	Prod. Code	Regulatory ID
AMS-9030 controller	ZE9030	AMS-9030
Remote alarm	ZC30/ZC35	MC76
Ranger antenna	ZKNC-R	UM UPFAF
Sky-Max antenna	ZKNC-SM	UM SKYMAX

Regulatory Compliance

EMC..... 47 CFR, Part 15
EN 300 330
EN 301 489
RSS 210

Safety.....UL 60950
CSA C22.2 No 60950
EN 60950

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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