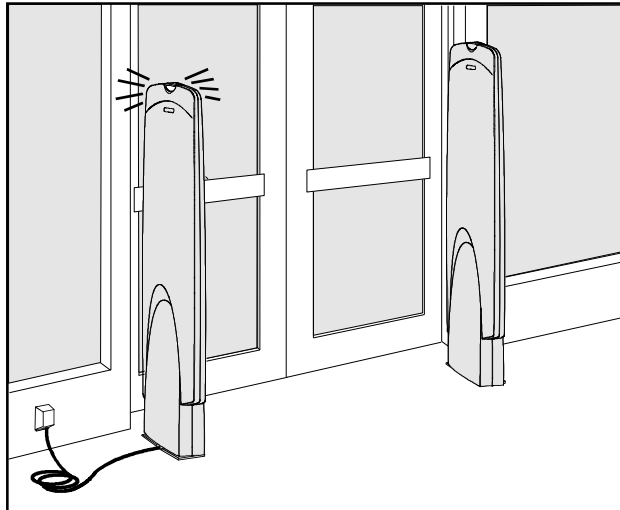


APS-1002 Exit Anti-Theft System Installation/Troubleshooting Guide



ZS1002-P

Contents

About this Guide	1
To the Installer	1
About the Product	2
Installation Requirements	2
APS-1002 System with Cables Over Doorway (Dual-Pedestal Installation)	3
APS-1002 System with Cables Over Floor (Dual- Pedestal Installation)	4
APS-1002 System with Cables In Floor (Dual- Pedestal Installation)	4
Troubleshooting	5
Advanced Troubleshooting	7
Specifications	9
Declarations	9

Do Not Discard!

Document may be needed by code inspectors.
Leave it at the site until the installation is
complete and the system has been approved.

About this Guide

This guide adds information not already covered in the following Quick Install Guides:

- APS-1002 Interconnect Cables Over Doorway
- APS-1002 Interconnect Cables Over Floor
- APS-1002 Interconnect Cables in Floor

Please read this guide first; then refer to the Quick Install Guides for the detailed procedures. Other documents you might want to reference are:

- APS-1002 User Guide, 8200-0724-33
- APS-1002 Planning Guide, 8200-0724-34

To the Installer



Regulatory Restriction: None.

All cables referenced in this installation guide to be buried in concrete have been investigated and found acceptable as suitable for direct burial in concrete. See 8200-0724-37.

Keep this manual on the installation premises to show to the inspector who will approve the installation.

Intended Use: Only install this device as described in this guide.

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

About the Product

Product Description

The APS-1002 System (also known as Ultra•Shield) is a pedestal-based Electronic Article Surveillance (EAS) detection system providing retailers with an Ultra•Max Acousto-Magnetic solution for double-door exit widths. The APS-1002 System is designed to help retailers reduce shoplifting losses. The system is easy to install and maintain and attractively styled to complement most store decors while providing a strong visual deterrent to shoplifters.

The APS-1002 system is comprised of one or two transceiver pedestals, internal electronics, visual and audible alarms, cabling, and a power cord.

The primary pedestal contains the power electronics, alarm light, relays, and audible alarm and it provides power to the secondary pedestal. The secondary pedestal contains an alarm lens for aesthetic purposes, but does not alarm either visually or audibly.

Features

- **Installation simplicity.** The system is designed for installation simplicity to save retailers from higher installation expenses. The primary pedestal plugs into an ordinary A/C outlet.
- **Tags-too-close.** The system detects when an EAS tag or label has been left in the detection field. When the system detects this situation, the red lamp blinks twice every four seconds for one minute; there is no audible alarm.
- **Jammer detect.** If someone turns on a 58kHz jamming device near the antenna, the system triggers a visual and auditory alarm that is different from a normal “tag detected” alarm.
- **Wireless synchronization.** The system can detect other APS-1002 antennas in the vicinity and avoid interfering with them as long as their ac lines are synchronized.

Installation Requirements

Equipment Required

Basic setup requires the following equipment:

- APS-1002 antennas
- Hard tag (non-deactivateable Ultra•Max tag)
- Ultra•Max low energy labels.

Advanced setup requires the following additional equipment:

- Laptop with Windows® NT, 2000, or Windows® XP operating software
- RS-232 Ultra•Max programming cable
- Service configurator software.

Note:

- 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.

Safety Requirements



WARNING: RISK OF ELECTRIC SHOCK! The transmit pedestal contains hazardous voltages. If the pedestal must be left unattended with its high voltage components exposed, turn off power or cover these components to avoid unauthorized persons access to hazardous voltages.



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

Antenna Requirements



CAUTION: DO NOT space pedestals more than 1.8m (6ft) apart.

Implanted Medical Devices

Although this anti-theft system complies with all applicable safety standards, place the system in such a way that customers:

- do not linger near or lean on its antenna(s)
- are only directly in front of the antenna(s) while exiting the store or facility.

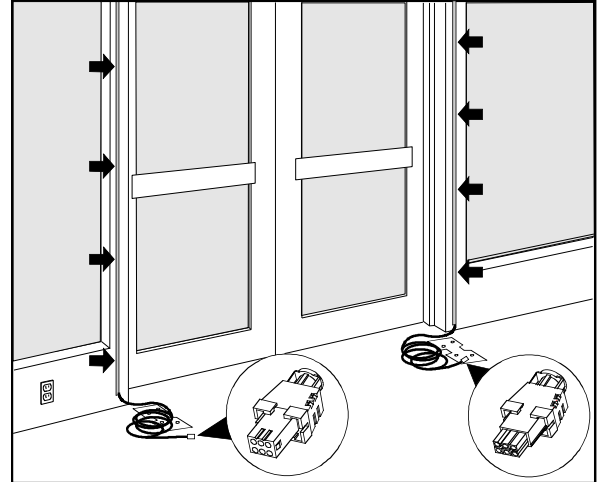
If the country's language is different from English, apply "Anti-Theft" labels in the local language to the antennas. Labels in your local language (2412-0170-XX) can be ordered from your distribution center.

Tools You Will Need

Tools you will need to complete the installation are:

- Hammer drill with 1.25cm (1/2in) masonry bit
- 1.25cm (1/2in) socket with extension
- 10.0mm hex socket with extension (optional)
- Wire cutters
- Wire strippers
- Wire crimping tool
- 2mm slotted screwdriver
- #2 Phillips screwdriver
- Duct tape
- 6mm plastic material to protect area from dust
- Box cutter for cutting carpet

APS-1002 System with Cables Over Doorway (Dual-Pedestal Installation)



This installation uses a primary pedestal (the one with the power cord), a secondary pedestal, and an interconnect cable routed over the doorway between them. For additional information, see Quick Install Guide 8200-0724-35.

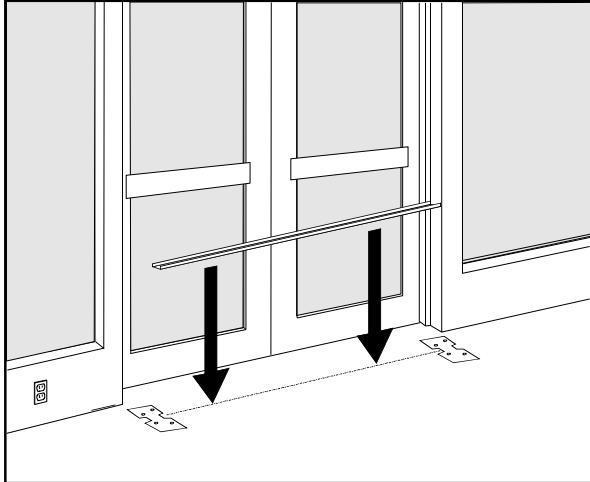
IMPORTANT! The primary pedestal can be installed either on the right or left side of the exit. In this example, the primary pedestal is mounted on the right side and the secondary pedestal on the left.

Note: Installation over a doorway requires a longer interconnect cable. The interconnect cable must be the 9m (30ft) non-burial cable (part 0652-0078-01). This cable can be found in kit 0352-0088-01.

Parts Required

<u>Item</u>	<u>Qty</u>	<u>Part number</u>
Pedestal, Primary	1	ZS1002-P
Pedestal, Secondary	1	ZS1002-S
Interconnect non-burial cable kit	30ft	0352-0088-01
Power cord	1	Site dependent
Enclosure, receptacle (optional)	1	1400-0179-01
Install kit	2	0352-0429-01
Anchor, expansion, 5/16" x 1-3/4"	4	2880-0105-01
Washer, flat	4	2848-0025-01
Bolt, Lag, 5/16" x 2.5", 1/2" Hex	4	2880-0106-01
Washer, flat, M8 (optional)	2	5840-0700-020
Screw, Hex, M6x60 (optional)	2	5801-4174-520
Wiremold Kit (not included)		

APS-1002 System with Cables Over Floor (Dual-Pedestal Installation)



This installation uses a primary pedestal (the one with the power cord), a secondary pedestal, and an interconnect cable routed over the floor between them. For additional information, see Quick Install Guide 8200-0724-36.

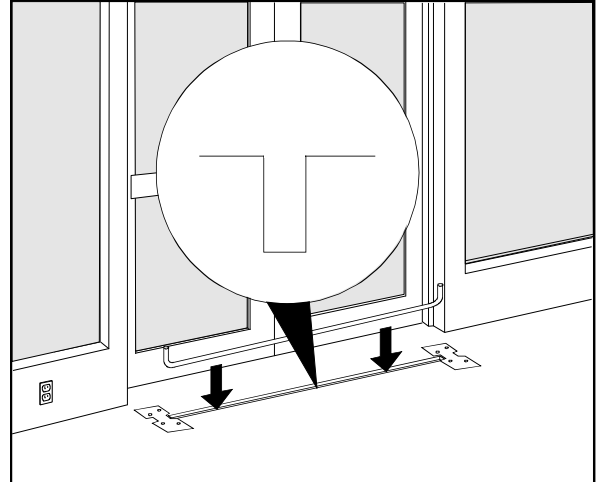
IMPORTANT! The primary pedestal can be installed either on the right or left side of the exit. In this example, the primary pedestal is mounted on the right side and the secondary pedestal on the left.

Note: The interconnect cable mentioned in these instructions is the 3m (10ft) direct burial cable (part 0652-0078-02). This cable can be found in kit 0352-0088-02.

Parts Required

Item	Qty	Part Number
Pedestal, Primary	1	ZS1002-P
Pedestal, Secondary	1	ZS1002-S
Power cord	1	Site dependent
Enclosure, receptacle (optional)	1	1400-0179-01
Install kit	2	0352-0429-01
Anchor, expansion, 5/16" x 1-3/4"	4	2880-0105-01
Washer, flat	4	2848-0025-01
Bolt, Lag, 5/16" x 2.5", 1/2" Hex	4	2880-0106-01
Washer, flat, M8 (optional)	2	5840-0700-020
Screw, Hex, M6x60 (optional)	2	5801-4174-520
Wireway (not included)		

APS-1002 System with Cables In Floor (Dual-Pedestal Installation)



This installation uses a primary pedestal (the one with the power cord), a secondary pedestal, and an interconnect cable routed in the floor between them. For additional information, see Quick Install Guide 8200-0724-37.

IMPORTANT! The primary pedestal can be installed either on the right or left side of the exit. In this example, the primary pedestal is mounted on the right side and the secondary pedestal on the left.

Note: The interconnect cable mentioned in these instructions must be a 3m (10ft) direct burial cable (part 0652-0078-02). This cable can be found in kit 0352-0088-02.

Parts Required

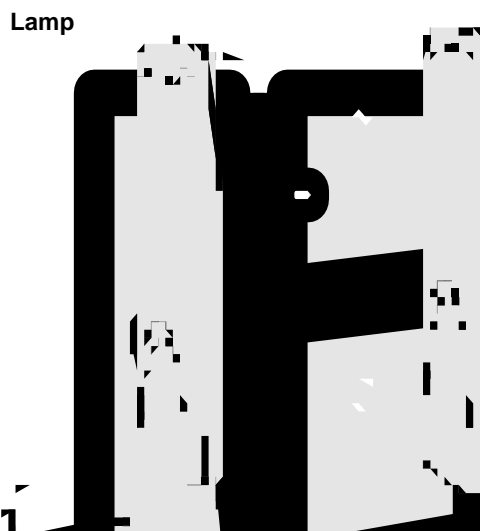
Item	Qty	Part Number
Pedestal, Primary	1	ZS1002-P
Pedestal, Secondary	1	ZS1002-S
Power cord	1	Site dependent
Enclosure, receptacle (optional)	1	1400-0179-01
Install kit	2	0352-0429-01
Anchor, expansion, 5/16" x 1-3/4"	4	2880-0105-01
Washer, flat	4	2848-0025-01
Bolt, Lag, 5/16" x 2.5", 1/2" Hex	4	2880-0106-01
Washer, flat, M8 (optional)	2	5840-0700-020
Screw, Hex, M6x60 (optional)	2	5801-4174-520

Troubleshooting

An APS-1002 can have the following problems:

- **No detection.** System does not detect any tags at all.
- **Weak Detection.** System only detects a tag if it is close.
- **False Alarms.** System alarms when no one is near.

See the appropriate following section to diagnose and correct these problems.



No Detection

1. Try a different tag or label, preferably a known-good one. Tags and labels can sometimes be damaged, defective, or deactivated.
2. Look through the lens at the top of the pedestal. Is the power-on green LED on?
 - **Yes.** The system has power. Either the transmitter is off or the system is damaged or defective. Refer to the Advanced Troubleshooting section in this manual for information on how to see if the transmitter is enabled.
 - **No.** The pedestal may be without power. Go to step 3.

3. Is the detector plugged into the ac outlet?
 - **Yes.** Go to step 4.
 - **No.** Plug the system in and wait for the system to start up.
4. (Dual pedestal systems only.) Does the primary antenna detect tags but not the secondary? If so, check the connections for the interconnect cable at both ends of the cable.
5. Is the circuit breaker in the store's circuit breaker box tripped? If it is, reset the breaker and recheck system performance.
 - If the breaker does not stay on, have the store call an electrician for service.
 - If the breaker stays on and if the green LED remains out, call for service.

Weak Detection

If a system will detect a tag but not until is very close, say 0.3m (1ft), the system has weak detection. This is typically caused by electronic devices that are emitting electro-magnetic "noise" that interferes with the system. Almost any electronic device can do this, but the following devices are potential noise sources: computer monitors, TV's, switching power supplies, and neon displays.

1. Try to identify the source of the noise by turning off any potentially interfering devices and see if the detection improves.
2. Move all electronic devices at least 2.4m (8ft) away from the pedestals.
3. If no electronic devices are nearby or they cannot be moved, it is possible to desensitize the system a little to compensate for the noise. Desensitizing the system usually reduces the size of the detection field, so eliminating the noise source or moving it further away is usually preferred. Go to **Advanced Troubleshooting** for more information.

False Alarms

Your system has three different types of alarms:

- **Tag detected alarm** – the red lamp flashes three times every second and the audible alarm sounds (unless it has been disabled). This is the normal alarm that sounds when a customer nears the system with an active tag or label, but it can occur when no one is around.
- **Tag-too-close alarm** - the red lamp flashes twice quickly and then pauses for 4 seconds; there is no audible alarm. This is a special alarm sequence the system starts when it detects a tag (or tags) has been left near the pedestal for one minute.
- **Jammer detect alarm** – the red lamp flashes rapidly (5 times per second) and the audible alarm beeps 10 times per second. This alarm sounds when someone is trying to use a jamming device to defeat the system.

Any of these alarms can occur when no one is near the system. Determine which type of alarm is occurring and then use the appropriate procedures that follow to correct the situation.

Tag detected alarm

If the system emits a normal alarm (it emits an audio alarm and the red lamp flashes twice every second) but no one is nearby, it may be from one of the following causes:

- **Stray tags.** A tag/label has fallen off an item and is hidden from view.
- **Merchandise too close.** Tagged merchandise was placed near the edge of the system's detection area and is not detected sometimes and is detected other times.
- **Interfering systems.** An anti-theft system elsewhere in the store or in another store is causing this system to alarm.

To correct this situation, do the following:

1. Search for stray tags within 1.8 meters (6ft) of the system and remove them.
2. If you do not find a stray tag, move nearby tagged store items farther from the system. (The sensitivity of the system can vary at times during the day.)
3. If there are no stray tags and no nearby merchandise, you will need to go to **Advanced Troubleshooting** to find out what to do next.

Tag-too-close alarm

If an anti-theft tag is left too close to your anti-theft system for a minute or more, your system may alert you by flashing a red alarm light for one minute (no audible alarm). (This alarm can be disabled with the configurator.) If this happens,

1. Search for stray tags within 1.8 meters (6ft) of the system and remove them.
2. If you do not find a stray tag, move nearby tagged store items farther from the system. (The sensitivity of the system can vary at times during the day.)
3. After the silent alarm stops, wait for another minute. (The silent alarm always lasts one minute, even if you remove the tags during that time.) If it resumes, go back to step 1.

Jammer detect alarm

If someone has turned on a jamming device to defeat the system, the system can emit a jammer detect alarm. (This alarm can be disabled with the configurator.) If this happens, look around for someone in the vicinity of the system who might have a jammer somewhere on their person.

Advanced Troubleshooting

This section describes how to use the configurator software to diagnose and correct problems with an APS-1002. It assumes that you have been trained in the use of Ultra•Post technology. If you have not, contact your Sales Representative.

What You Will Need

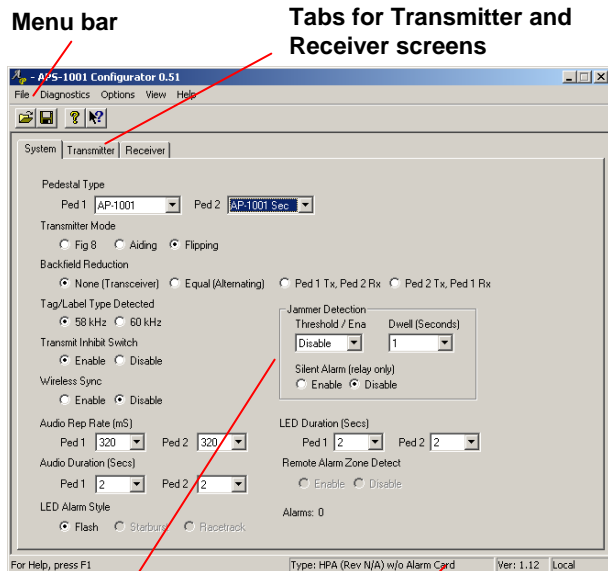
- Laptop computer with Ultra•Post Configurator software, Version 6.42 or later
- RS-232 programming cable

Starting the Configurator

To use the configurator to troubleshoot problems with the system, do the following:

1. Connect the programming cable to connector J4 on the top-left corner of the receiver board.
2. Select **Start > Sensormatic > UPost Platform > UPost Platform 6.42**

The following screen appears:



System screen

Status bar

Troubleshooting

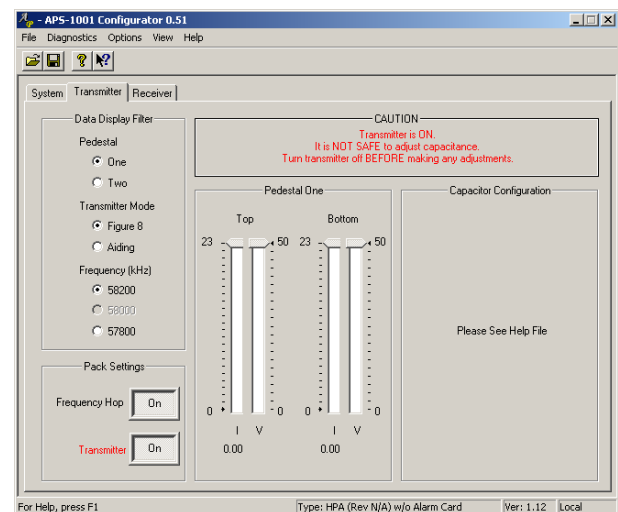
What you do next depends on which of the following problems your system has:

- No or weak detection
- False alarms

No or Weak Detection

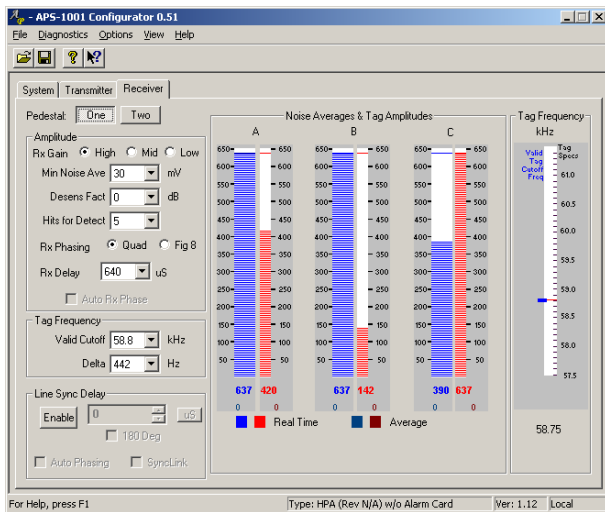
If a known good tag or label will not alarm the system unless it is held near a pedestal (or not even then), use the procedure below to diagnose and correct the problem.

Figure 1. Transmitter screen



1. Make sure the transmitter is on.
 - a. Click on the tab for the Transmitter screen (see Figure 1).
 - b. In the Pack Settings section, does the button next to the Transmitter label say On or Off?
 - **Off.** The transmitter is Off. Click the On button to turn on the transmitter. Use a known-good tag or label to check the system. If the system works, you are finished with this procedure.
 - **On.** The transmitter is On. Go to the next step.

Figure 2. Receiver screen



2. Determine if one or both receivers are seeing high noise averages.
 - a. Click on the Receiver tab to bring up the Receiver screen (see Figure 2). The bar charts that are displayed show how much noise the system sees and how strong a signal the system sees from tags.
 - b. Look at the lines labeled Avg. If any of the numbers in this line are consistently high while the Rx Gain is set to Medium, that antenna is seeing high noise averages. If you have a second pedestal, click on the Pedestal Two button and view the noise averages for it also.
 - If the noise averages are higher much higher on one antenna than the other, the noise source may be close to the antenna with the high noise source. Move or turn off any potential noise sources and see what affect it has on the noise averages.
 - If moving or turning off noise sources does not work or both antennas have high noise levels, you may be able to reduce the impact with the configurator. Note which pedestals are seeing high noise and go to the next step.
3. Balance the noise seen by the top and bottom coils.
 - a. On the Setup screen, select Figure 8 for the Receiver Phasing for the antennas that are seeing high noise averages. Note: putting the receivers in Figure 8 mode will reduce the detection performance for one orientation of the tags.
 - b. Using a very small screwdriver or tweaker, adjust the balance pot (R59) on the Receiver

board until the noise averages are reduced to a minimum. Note: if you turn the balance pot too far you will effectively disable either the upper or lower coil.

- c. Check the detection of the antennas now. Make sure you test detection at both the upper and lower coils of the antenna. If the detection is still not satisfactory, go to the next step.
4. Reduce the receiver gain by using the radio buttons in the Amplitude section labeled Rx Gain.

False Alarms

1. Check to see if another system is causing the false alarms.
 - If it is, you will need to identify the interfering system and align the two systems. This requires a phasing tool and a service person trained in its use.
 - If it is not, go to the next step.
2. Click on the Receiver tab to bring up the Receiver screen. The bar charts that are displayed show how much noise the system sees from the top and bottom coils and how strong a signal the system sees from tags. If you have a second pedestal, click on the Pedestal Two button and view the noise averages for it also.
 - If the noise averages are higher much higher on one antenna than the other, the noise source may be close to the antenna with the high noise source. Move or turn off any potential noise sources and see what affect it has on the noise averages.
 - If moving or turning off noise sources does not work or both antennas have high noise levels, you may be able to reduce the impact by desensitizing the antennas. Note which pedestals are seeing high noise and go to the next step.
3. Experiment with increasing the Desensitization Factor, Hits-for-a-detect, and Minimum Noise Average in different combinations to see if you can eliminate the false alarms. If you cannot, go to the next step.
4. Go to the Diagnostics menu and select the All Tests option. If no problems are found, go to the next step.
5. Go to the File menu and select Reset Defaults. If the system still false alarms, you will need to call for repair personnel with advanced knowledge of the APS-1002 system.

Specifications

Electrical

Primary input	100-120/220-240Vac, 2.0/1.0A@50-60Hz
Primary power fuse.....	1.25A, 250V, slo-blow
Current draw	1.1A _{rms} max.
Input power	Less than 100W

Transmitter

Operating frequency	58kHz (±200 Hz)
Transmit burst duration.....	1.6ms
Transmit current.....	12A peak
Burst repetition rate (50 Hz).....	37.5Hz (normal), 75Hz (validation)
Burst repetition rate (60 Hz).....	45Hz (normal), 90Hz (validation)
Pedestal alarm:	
Lamp duration.....	4 sec.
Audio duration	2 sec.
Audio decibel level.....	80dB @ 1 meter

Receiver

Center frequency	58kHz
------------------------	-------

Environmental

Operating temperature:.....	0 to 35°C (32°–95°F)
Relative humidity:	0 to 90% non-condensing

Mechanical

Pedestal

Height	135cm (53in)
Width	35cm (13.8in)
Depth	12.3cm (4.75in)
Weight (Primary).....	11.3kg (25 lbs)
Weight (Secondary)	9.0kg (20 lbs)

Declarations

Regulatory Compliance

Type: APS-1000	
Emissions.....	47 CFR, Part 15 EN300330 EN301489 RSS210
Safety.....	UL 60950-1 CSA-C22.2.60950-1 EN60950-1

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 LLC, the party responsible for FCC compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

INDUSTRY CANADA COMPLIANCE: The term "IC" before the radio certification number on the product label only signifies that Industry Canada technical specifications were met.

Other Declarations

WARRANTY DISCLAIMER: Sensormatic Electronics Corporation makes no representation or warranty with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Further, Sensormatic Electronics LLC reserves the right to revise this publication and make changes from time to time in the content hereof without obligation of Sensormatic Electronics Corporation to notify any person of such revision or changes.

LIMITED RIGHTS NOTICE: For units of the Department of Defense, all documentation and manuals were developed at private expense and no part of it was developed using Government Funds. The restrictions governing the use and disclosure of technical data marked with this legend are set forth in the definition of "limited rights" in paragraph (a) (15) of the clause of DFARS 252.227.7013. Unpublished - rights reserved under the Copyright Laws of the United States.

TRADEMARK NOTICE: *Sensormatic* and the *Sensormatic logo* are service marks, trademarks or registered trademarks of Sensormatic Electronics LLC, a division of Tyco International Fire and Security Services. Other product names mentioned herein may be trademarks or registered trademarks of Sensormatic or other companies.

No part of this guide may be reproduced in any form without written permission from Sensormatic Electronics LLC.

RWH/csd 01/2010