

**SmartSlot Card** 

**Quick Start Manual** 



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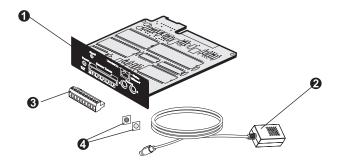
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### Introduction

#### Overview

The Environmental Monitoring Card is an American Power Conversion (APC) SmartSlot accessory that performs temperature and humidity sensing, as well as contact monitoring. The card supports up to four zones of contact monitoring, and each zone supports both normally open and normally closed contacts. The card will report temperatures from 0 to 60 °C (32 to 140 °F) and relative humidity from 10 to 90%.

# Product inventory



- The Environmental Monitoring Card
- Temperature and humidity probe (AP9512TH)
- 3 Screw terminal block for contact monitoring
- 4 Hook and loop probe fasteners

### **Introduction** continued

#### Safety notice

The Environmental Monitoring Card is intended solely for use in the supplementary surveillance of equipment. APC does not recommend this product for protection of life or property. APC will not knowingly sell the card for use in such applications. APC disclaims all liability arising out of improper use of the card as described herein.

#### Your inspection and warranty responsibilities

Inspect the card immediately, and notify the carrier and the seller if there is any shipping damage. Fill out and return the enclosed warranty card before you begin using the unit.

# Hardware requirements

The card requires an APC device with an available accessory slot. This device can be a UPS equipped with an accessory slot or a SmartSlot Expansion Chassis with a supporting UPS.

#### Data reporting

The card also requires some means of reporting its data. The following APC products can report data for the card:

- Web/SNMP Management Card (AP9606)
- Out-of-Band Management Card (AP9608)
- PowerChute<sup>®</sup> plus UPS power management and diagnostic software
  - Ambient temperature and humidity thresholds for the first probe.
  - Contact closure settings for only one sensor for each
    of the four contact sensor zones. The first sensor is
    recognized if you mix normally open and normally
    closed settings for the same zone.
- PowerNet Adapter
- Other APC products that support Web or SNMP management.

### Installation

#### How to install the card

First install your UPS, and then install the Environmental Monitoring Card in a slot, as follows:

1. Shut down protected equipment and turn off the UPS.

Warning: Failure to turn off the device could result in damage to your Environmental Monitoring

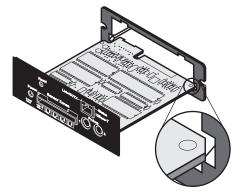
2. Use a #2 Phillips screwdriver to remove the two screws holding the plate that covers the card slot. Save the screws and the plate.

**Caution:** Handle the card by the end plate only. Do not touch the exposed printed circuit board.

3. Slide the card into the slot as shown in the following figure. The panel of the card should be flush with the front of the card slot.



**Warning:** Inserting the card upside down can damage the card. The sides of the printed circuit board must align with the card guides in the sides of the slot.



4. Secure the card with the screws removed in step 2 and proceed to "How to connect the card" on page 4.

#### **Installation** continued

#### How to connect the card

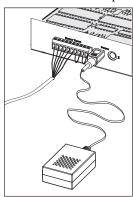
1. Connect the supplied probe to probe connector 1 on the card. Place the probe using the supplied hook and loop fasteners, if needed.

**Note:** The probe is designed for use on a flat surface in a protected area with adequate air flow and minimal dust. Do not operate the unit where temperature and humidity are outside the limits specified on page 11.

#### Warning:



- Do not cover the ventilation holes on the probe.
- Do not immerse the probe or place it where dew can form.
- Do not use the probe in an environment with chlorine gas or insecticides.
- If you want to use contact monitoring, connect contact sensors to the removable screw terminal block. (See "Sensor Zone Connections" beginning on page 6). The contact monitoring connection is a two-piece design. Strip the wire insulation 0.25" (6 mm). The connector accepts wire sizes from 14 AWG (1.6 mm²) to 26 AWG (0.4 mm²).
- 3. Connect the screw terminal block to the sensor zones connector of the card. The figure below shows Zones 1 and 2 in use and Zones 3 and 4 open.



4. Turn on the UPS and the protected equipment.

### **Installation** continued

# How to test the card

- 1. Use your data reporting system to confirm that the card is working. (See page 2.)
- Check that the probe is connected to probe connector 1.The card should transmit temperature and humidity values to the reporting system.
- 3. Activate each sensor according to the sensor manufacturer's recommendation. Use the data reporting system to verify that each sensor operates.

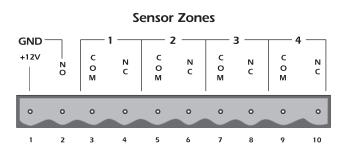
#### Periodic maintenance

The Environmental Monitoring Card requires the following periodic maintenance:

- Confirm contact sensing using the sensor manufacturer's recommended intervals and methods.
- Use the data reporting system to verify that each sensor operates.
- Clean the probe whenever there is a visible buildup of dust. Gently brush or vacuum off the dust. Do not blow any type of compressed gas into the probe.

### **Sensor Zone Connections**

Sensor zones and pin location



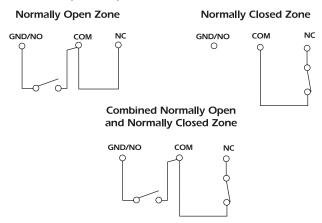
Pin	Function
1	power supply, +12 VDC nominal, 60mA max
2	power supply ground and normally open connection for all zones
3	zone 1 common
4	zone 1 normally closed
5	zone 2 common
6	zone 2 normally closed
7	zone 3 common
8	zone 3 normally closed
9	zone 4 common
10	zone 4 normally closed

### Sensor Zone Connections continued

## Connection information

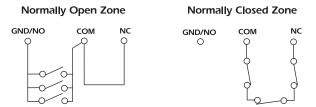
The Environmental Monitoring Card supports normally open and normally closed loop systems, and allows mixing of normally open and normally closed sensors on any zone. See the figures below for more information on using multiple sensors in one zone and for system hookup.

**Note:** Do not cross-connect the card's sensors with sensors from any other system.



Multiple sensors in a zone

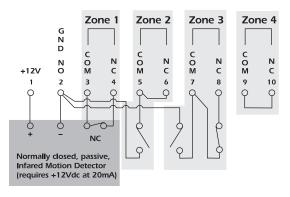
To avoid receiving alarm indications on unused zones, install a jumper wire between the COM and NC connectors for each unused zone. To use more than one sensor on a zone, follow the diagram below. Connect normally open sensors in parallel and normally closed sensors in series.



### Sensor Zone Connections continued

# Example hookup

See the figure below for a typical hookup. Note that in this example system Zone 1 is a normally closed motion zone with power for the passive infrared detector supplied by the card. Zone 2 is a normally open zone, Zone 3 is a combination of a normally open and normally closed zone, and Zone 4 is not used.



### Sensor Selection

## Dry contact sensors

The Environmental Monitoring Card may be used with any dry contact closure type sensors. The card's sensor inputs are designed to monitor circuits that have no voltage potential of their own. Connecting the card's sensor inputs to any circuit other than a dry closure type will void the warranty and may result in damage to the card.

# Normally open and normally closed sensors

In general, any normally open (NO) or normally closed (NC) dry contact sensor may be used with the card. Such sensors include:

- magnetic contact switches
- · window foil
- · hamper switches
- · heat detectors
- · water sensors
- · pressure sensors

# Detectors that need power

Additionally, the card provides a source of power for those detectors that need power. These include:

- passive infrared (body heat) detectors
- · smoke sensors
- photo relay detectors

The card provides 12 VDC at up to 60 mA at pins 1 and 2 of the sensor zones connector for sensors that require power.

# For more information

For a list of supported sensors, go to the APC Web site at <a href="http://www.apc.com/support">http://www.apc.com/support</a>. Follow the link to Knowledge Base and enter sensors in the search box at the bottom of the page. You may also call APC Customer Support at a number on the back cover for more information.

### **Obtaining Service**

#### If problems persist

- 1. Note the serial number and date of purchase of the card. Contact Customer Support at a phone number or address on the back cover of this manual.
- 2. Be prepared to provide a description of the problem. A technician will help solve the problem over the phone, if possible, or will give you a return material authorization (RMA) number.
- 3. If the card is under warranty, repairs or replacement are free of charge. If the warranty has expired, there will be a charge for repair or replacement.
- 4. Pack the card carefully to avoid damage in transit.

  Damage sustained in transit is not covered under the warranty. Enclose a letter in the package with your name, address, RMA number, a copy of the sales receipt, daytime phone number, and check (if applicable.)
- Mark the RMA number clearly on the outside of the shipping carton. The factory will not accept any materials without this marking.
- Return the card by insured, prepaid carrier to the address provided by the Customer Support technician.

## **Specifications**

# Product specifications

Item	Specification		
Electrical			
Operating voltage	16-27 VDC		
Operating current draw	30 mADC (exclusive of any attached sensors)		
Temperature Accuracy	±2° C (±3.6° F) from 0 to 40° C (32 to 104° F)		
Humidity Accuracy	±8% RH, 10 to 90% RH at 25° C (77° F)		
Trumidity Accuracy	±8% RH, 30 to 80% RH from 15 to 30° C (from 59 to 95° F)		
Physical	Physical		
Size $(h \times w \times d)$	10.2 × 10.2 × 3.8 cm (4 × 4 × 1.5 in)		
Weight	140 g (0.3 lb)		
Shipping weight:	320 g (0.7 lb)		
Environmental			
Elevation: Operating: Storage:	0 to 3000 m (0 to 10,000 ft) 0 to 15 000 m (0 to 50,000 ft)		
Temperature: Operating: Storage:	0 to 40° C (32 to 104° F) -25 to 65° C (-13 to 149° F)		
Probe operating temperature	0 to 60° C (32 to 140° F)		
Approvals			
EMC verification	FCC Class A, DOC Class A, EN55022 Class A		
Electromagnetic immunity	EN55024 verified		

### Warranty Information

# Limited warranty

American Power Conversion (APC) warrants the Environmental Monitoring SmartSlot Card to be free from defects in materials and workmanship for a period of two years from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser.

#### Warranty limitations

Except as provided herein, American Power Conversion makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

Some jurisdictions do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

Except as provided above, in no event will APC be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of this product, even if advised of the possibility of such damage.

Specifically, APC is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise. This warranty gives you specific legal rights and you may also have other rights, which vary according to jurisdiction.

### **Life-Support Policy**

#### **General policy**

As a general policy, American Power Conversion (APC) does not recommend the use of any of its products in the following situations:

- life-support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the *life-support device* or to significantly affect its safety or effectiveness.
- · direct patient care.

APC will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to APC that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) the liability of American Power Conversion is adequately protected under the circumstances.

# Examples of life-support devices

The term *life-support device* includes but is not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators (for adults or infants), anesthesia ventilators, infusion pumps, and any other devices designated as "critical" by the U.S. FDA. Hospital-grade wiring devices and leakage current protection may be ordered as options on many APC UPS systems. APC does not claim that units with this modifications are certified or listed as hospital-grade by APC or any other organization. Therefore these units do not meet the requirements for use in direct patient care.



### **APC Worldwide Customer Support**

Customer support for this or any other APC product is available at no charge in any of the following ways:

- Visit the APC Web site to find answers to frequently asked questions (FAQs), to access documents in the APC knowledge base, and to submit customer support requests.
  - http://www.apc.com (Corporate Headquarters)
     Connect by links to APC Web pages for specific countries and regions, each of which provides customer support information.
  - http://www.apc.com/support/
     Submit customer support requests.
- Contact an APC Customer Support center by telephone or e-mail.
  - Regional centers:

APC Headquarters (U.S. and Canada)	(1) (800) 800-4272 (toll free)
Latin America	(1) (401) 789-5735 (United States) apctchla@apc.com
Europe, Middle East, Africa	(353) (91) 702020 (Ireland) apceurtech@apc.com
Japan	(03) 5434-2021 jsupport@apc.com

- Local, country-specific centers: go to <a href="http://www.apc.com/support/contact">http://www.apc.com/support/contact</a> for contact information.
- Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support.

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