Dell™ Environmental Monitoring Probe

User's Guide

Dell™ Environmental Monitoring Probe

User's Guide

Notes and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

DANGER: A DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: A WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage incidents.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Table of Contents

Introduction

The Dell™ Environmental Monitoring Probe (EMP) is an optional connectivity device that lets you remotely monitor the temperature, humidity, and status of two contact devices through a standard Web browser, providing greater power management control and flexible monitoring.

Use the EMP with any Dell UPS equipped with a Dell Network Management Card (firmware v01.10.xxxx or later).

NOTE: Download firmware updates for the Network Management Card from www.dellups.com.
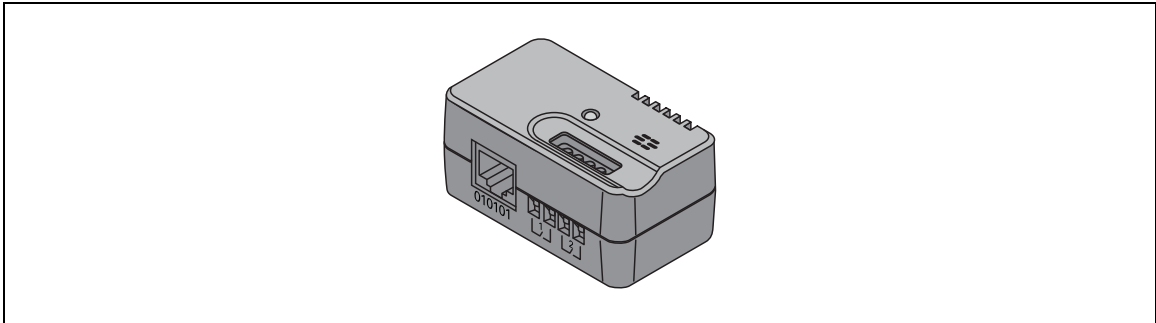
Figure 1. The EMP

Features

The EMP has the following features:

- Hot-swappable feature simplifies installation by letting you install the probe safely without powering down the card or critical UPS load.
- Monitors temperature and humidity information of any desired environment to protect your critical equipment.
- Measures temperatures between 0 and 70°C with an accuracy of ±2°C.
- Measures relative humidity between 0 and 100% RH with an accuracy of ±5%.
- Can be located away from the card with Ethernet cable up to 10m (33 ft) long.
- Monitors the status of two user-provided contact devices.
- Temperature, humidity, and contact closure status can be displayed through a Web browser, an Internet-ready cell phone or PDA, or SNMP management software.
- User-selectable alarm thresholds let you to define acceptable temperature or humidity limits.
- E-mail notification through SMTP (simple mail transport protocol) using e-mail client software when acceptable alarm limits are exceeded or contacts status changes.
- Changes in contact closure status are logged in the card's Event History log.

- When temperature and humidity values exceed user-selectable limits, the event is logged in the card's Event History log.
- Compatible with any Dell Network Management Card (firmware v01.10.xxxx or later).
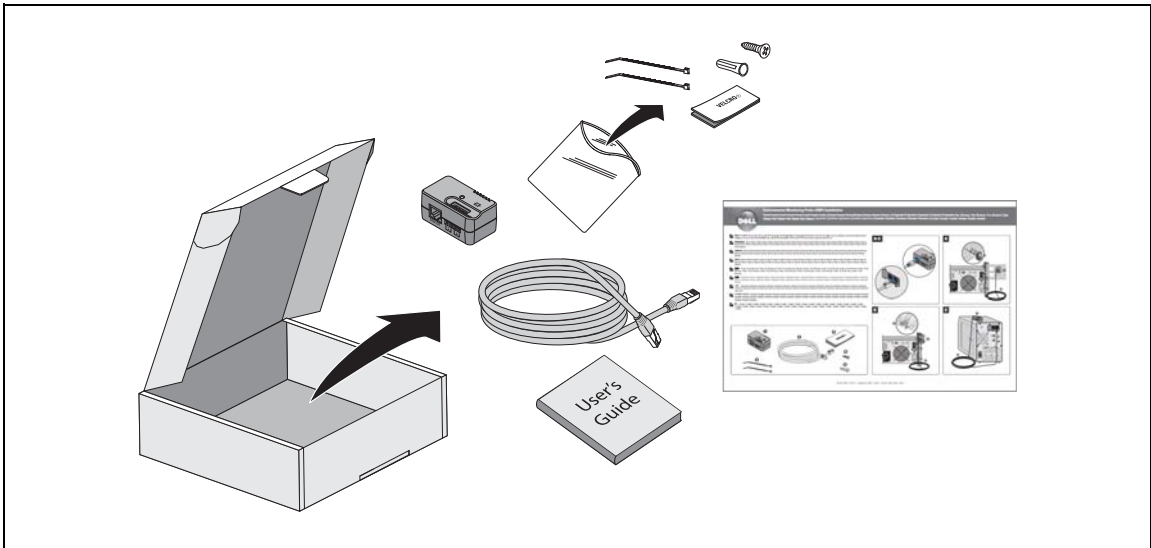
Installation

This section explains unpacking and installing the EMP.

Unpacking the EMP

Verify the package contents (see Figure 2):

- Dell Environmental Monitoring Probe
- Ethernet cable
- Installation accessories
- Installation instructions
- User's guide (this document)

Figure 2. Dell Environmental Monitoring Probe Package Contents

Installing the EMP

To install the EMP:

1   If you plan to monitor one or two external contact devices, connect external contact closure inputs to the screw terminals on the EMP (see Figure 3 and Table 1).

   ✍ **NOTE:** Contact closure devices can be normally open or normally closed.
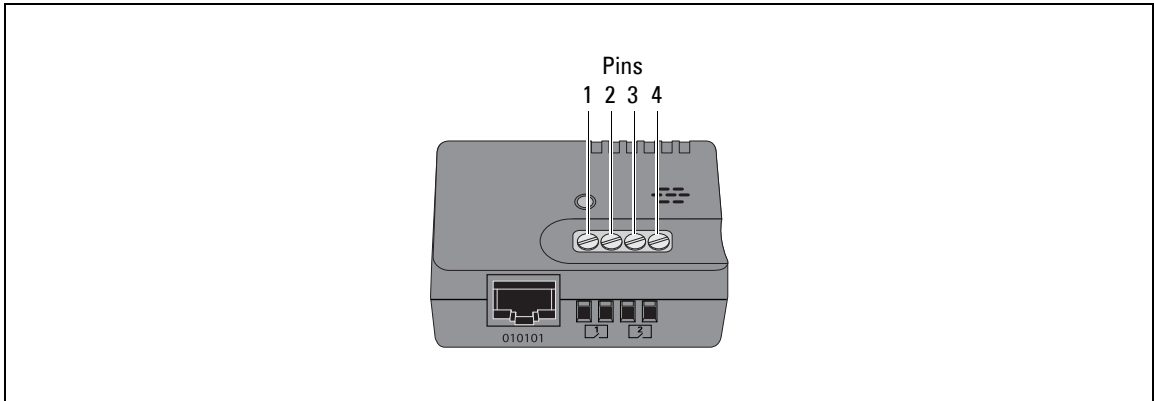

Figure 3. Connecting External Contact Devices

Table 1.   EMP Screw Terminal Pin Assignment

Device	Pin Number	Contact Wiring	Default Configuration
Device 1 Connection	1	Contact 1 returns	Normally open
	2	Contact 1 signal inputs	
Device 2 Connection	3	Contact 2 returns	Normally open
	4	Contact 2 signal input	

2 Locate the Ethernet cable (supplied). Connect one end of the cable to the RJ-45 port on the EMP, then connect the other end to the Settings port on the Network Management Card (see Figure 4).

EMP	Network Management Card
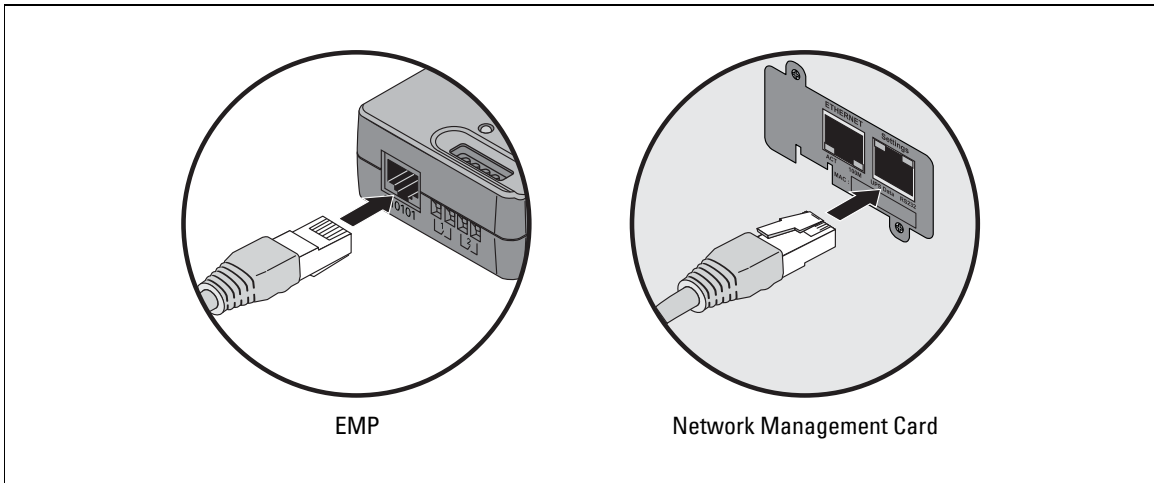
Figure 4. Connecting the Cable

> **NOTE:** If the configuration cable is still attached to the Network Management Card, remove and store it for future use.

> **NOTE:** If the supplied cable is not long enough for your installation, you can use another Ethernet cable up to a length of 10m (33 ft).

3 The EMP can be mounted to the wall or the rack post, or placed on the UPS.

- The EMP has a universal slot on the rear for easy mounting on a screw in any direction. Use the supplied screw and anchor to mount the EMP.

- To mount the EMP to the rack post, attached one VELCRO® fastener to the rail and the other VELCRO fastener to the EMP. Press the two VELCRO strips together to secure the EMP to the rail post.

4 Use the supplied tie wraps to secure the Ethernet cable out of the way as needed.

5 Verify that the Network Management Card has a network connection, is installed in a UPS, and the UPS is plugged in and turned on. The EMP is automatically recognized by the Network Management Card.

> **NOTE:** If the Environment menu does not display on the menu bar, click your Web browser's Refresh button to update the page.

Configuring the EMP

This section explains how to:

- Display temperature, humidity, and status of two contact devices through a standard Web browser
- Change environment settings
- View environment log data and save the data in a CSV format file

Viewing Environment Status

1 Open your Web browser and connect to the Network Management Card's IP address.

   The home page of the Network Management Card displays.

2 Select **Status** from the Environment menu to display the temperature and humidity status (see Figure 5).

   📝 **NOTE:** If the Environment menu does not display on the menu bar, click your Web browser's Refresh button to update the page.
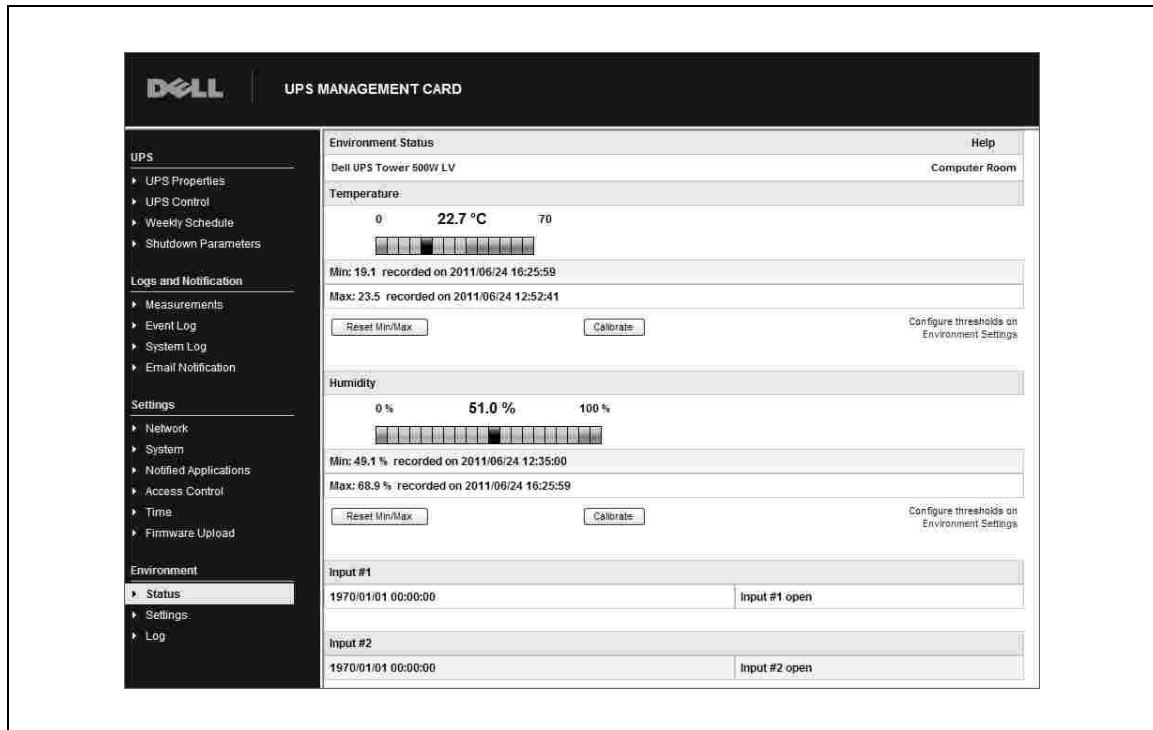

Figure 5. Sample Network Management Card Environment Status Page

Temperature and humidity measurements are displayed in a graduated bar (see Figure 6). The red zones to the left and right of the bar represent the low and high thresholds. If notification is turned on, an alarm is generated when the measured value enters one of these zones. The cursor indicates the current reading.
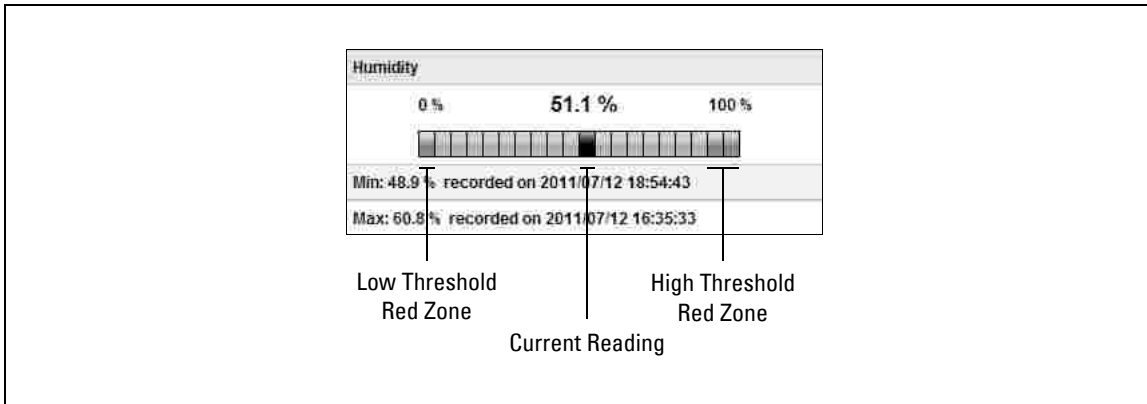
Figure 6. Graduated Bar (Humidity Bar Shown)

3 Click **Reset Min/Max** to display the time-stamped minimum and maximum since the previous reset for temperature or humidity.

NOTE: The EMP is factory-calibrated, but you can apply an offset to adjust the measurement.

4 Click **Calibrate** for temperature or humidity to open the Offset page.

5 Enter the Offset value and click **Apply** or **Save**.

NOTE: Input #1 and Input #2 display the status of the two contacts acquired by the EMP. The last status change of each contact is time stamped.

Before the status of the contact closures display, you must configure and enable this feature on the Environment Settings page.

Changing Environment Settings

On the Environment Settings page you can:

- Set the temperature and humidity thresholds that trigger a notification (and a graceful shutdown of the protected systems).

- Configure and enable both contacts, as well as set upper and lower ranges of temperature and humidity that will generate SNMP Traps, and e-mail notification (if the card is configured to do so).

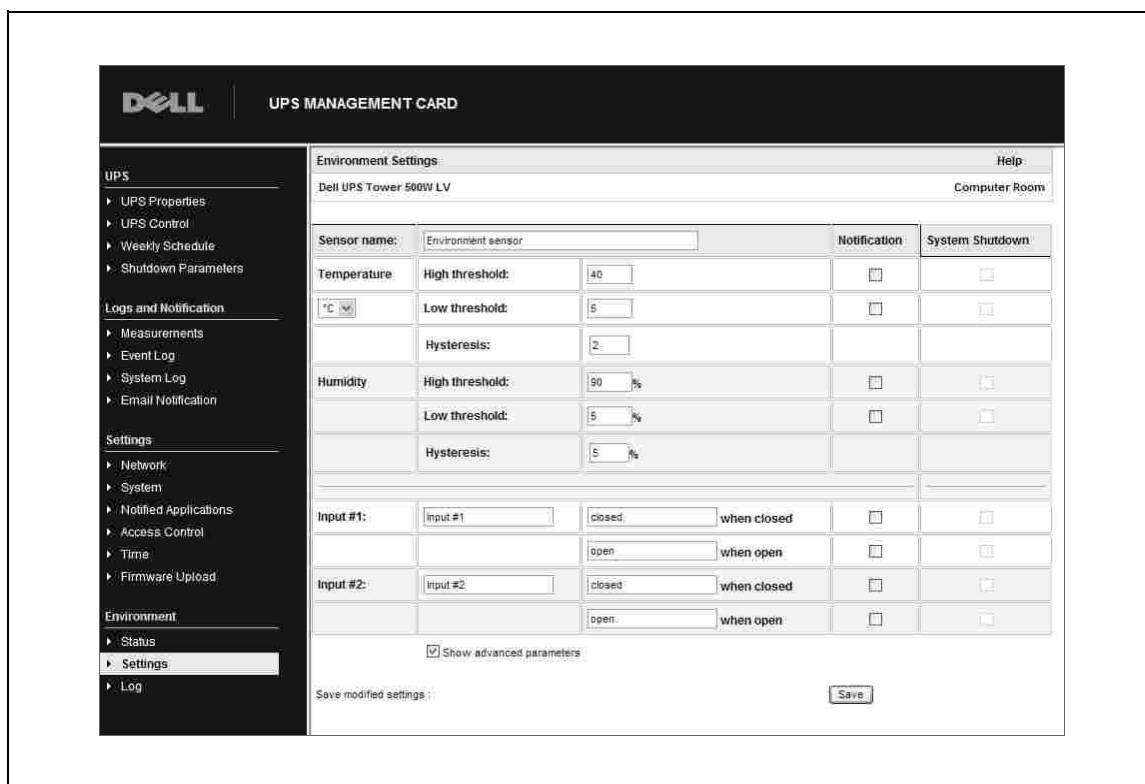1 Select **Settings** from the Environment menu to display the Environment Settings page (see Figure 7).

Figure 7. Environment Settings Page (Advanced Parameters Shown)

2 Enter changes. Configurable environment settings are:

Parameter	Description
Sensor name	The name given to the EMP. Dell recommends using a name that identifies the location of the EMP.
Temperature	Choice of the temperature unit (°C or °F) from the list.
High threshold (temperature)	If the temperature exceeds the set threshold, a notification is triggered if enabled. The default value is 40°C / 104°F.
Low threshold (temperature)	If the temperature falls below the set threshold, a notification is triggered if enabled. The default value is 5°C / 41°F.
Hysteresis (temperature)	Hysteresis must be set to prevent multiple notifications if temperature fluctuates around a threshold. The default value is 2°C / -3.6°F. The high alarm disappears when the value drops below the high threshold minus hysteresis value. The low alarm disappears when the value returns above the low threshold plus the hysteresis value.
High threshold (humidity)	If the humidity exceeds the set threshold, a notification is triggered if enabled. The default value is 90%.
Low threshold (humidity)	If the humidity falls below the set threshold, a notification is triggered if enabled. The default value is 5%.
Hysteresis (humidity)	Hysteresis must be set to prevent multiple notifications if humidity fluctuates around a threshold. The default value is 5%. The high alarm disappears when the value drops below the high threshold minus the hysteresis value. The low alarm disappears when the value returns above the low threshold plus the hysteresis value.
Input #1 and Input #2	An identifier corresponding to the acquired contact (for example: rack door, air conditioning, or generator unit). The maximum length is 28 characters.
when closed and when open	The names associated with the two contact positions (for example "open" and "closed" for a door, "on" and "off" for a generator).

Parameter	Description
Notification	Notification of each status change if enabled. When the Notification box is selected, the following functions are activated for each event selected: • Display in the list of current alarms • Consideration in the UPS log • SNMP trap generation • Notification by e-mail. The Environment Log check box must be selected on the Email Notification page. **NOTE:** Refer to the Network Management Card user's guide for more information on e-mail notification and for a list of alarm messages.
System Shutdown	Selection triggers a system shutdown for each selected notification. This option is available only for parameters that have Notification selected.
Show advanced parameters	Selection displays the Hysteresis parameters and system shutdown options.

**3** Click **Save** to save your changes.

Viewing and Saving Environment Log Data

> ✎ **NOTE:** Temperature and humidity measurements are recorded at an interval defined on the environment log interval on the System Settings page (refer to the Network Management Card user's guide for information on system settings). By default, this period is 300 seconds.

Each measurement is dated and stored in the log of the UPS's communication card. The size of log files is limited by a time indexing system.

1 Select **Log** from the Environment menu to display the Environment Log Data page. The Environment Log Data page displays the recorded date, time, temperature, and humidity measurements (see Figure 8).
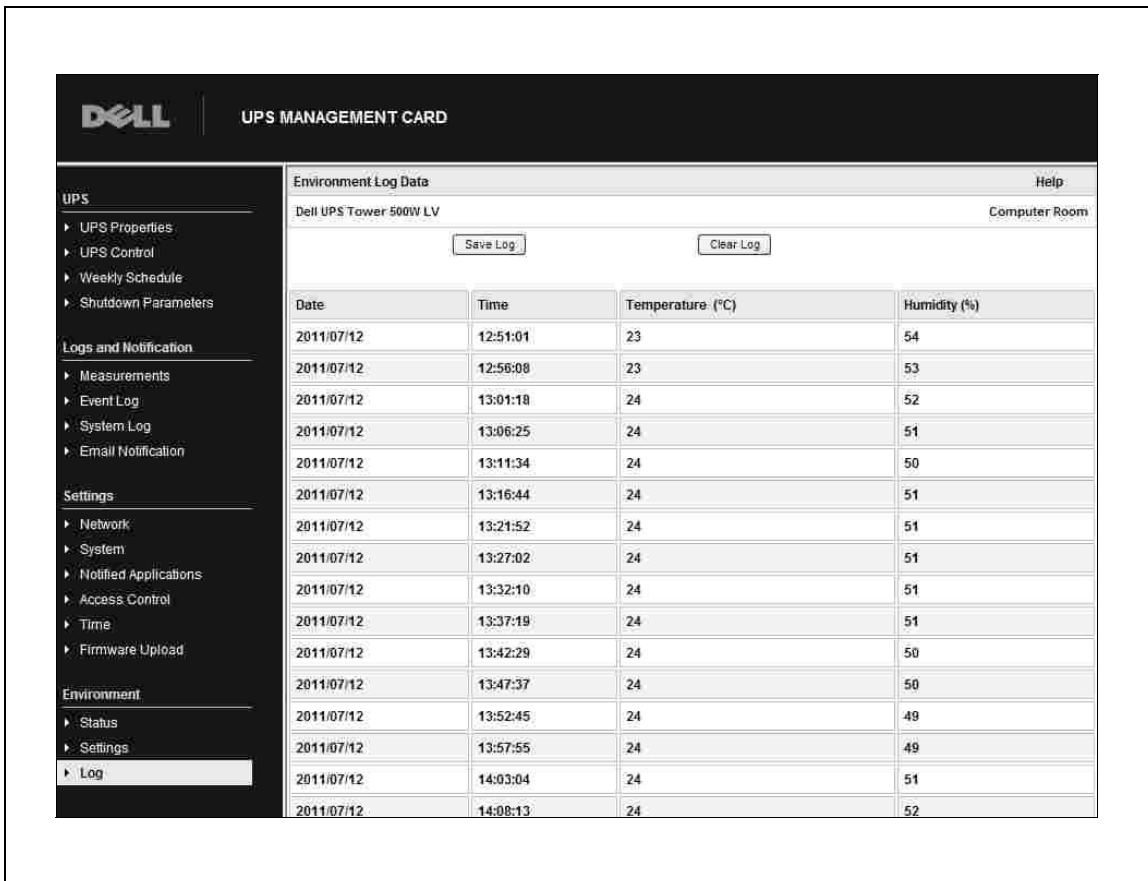
Figure 8. Environment Log Data page

2 Click **Save Log** to save the log in a CSV format file to your computer.

3 Click **Clear Log** to clear the files contained in the card and to reset the log.