BLACK BOX
NETWORK SERVICES

Power View

Environmental Monitor

- PS572

Installation and Operations Manual

Instructions

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Dangerous Voltage

This symbol is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Protective Grounding Terminal

This symbol indicates a terminal that must be connected to earth ground prior to making any other connections to the equipment.

Life-Support Policy

As a general policy, Black Box does not recommend the use of any of its products in the following situations:

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

Black Box will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Black Box that:

- the risks of injury or damage have been minimized,
- the customer assumes all such risks, and
- the liability of Black Box is adequately protected under the circumstances.

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), auto-transfusion 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.

Compliance

USA Notification

Warning: Changes or modifications to these units not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment under FCC rules.

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 is 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.

Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Japanese Notification

　　この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Table of Contents

Introduction

The BLACK BOX® Environmental Monitor extends the ability of the Power View Enhanced PDU to include the monitoring of environmental conditions within the equipment cabinet.

Features and Benefits

Integrated Add-on Solution

The Environmental Monitor integrates seamlessly with the Enhanced PDU. The Environmental Monitor does not require an external power source, additional software or dedicated IP address.

Environmental Monitoring

The Environmental Monitor supports up to two temperature/humidity probes, a water detection probe and an additional user-definable analog connection for use with 3rd party solutions for air flow, illumination etc. This allows complete monitoring of the equipment cabinet's physical environment.

Intrusion Detection

The Environmental Monitor also supports up to four contact closure sensors for monitoring access to the equipment cabinet or other secure areas.

Technical Support

Black Box understands that there are often questions when installing and/or using a new product. FREE Technical Support is provided 24 hours a day, 7 days a week.

Black Box Corporation
1000 Park Drive   Tel: 724.746.5500   Web: www.blackbox.com
Lawrence, PA 15055 USA   Fax: 724.746.0746   Email: info@blackbox.com

Quick Start Guide

The following instructions will help you quickly install and configure your Environmental Monitor for use in your data center equipment cabinet. For detailed information on each step, go to the page number listed to the right.

Installation

Before installing your Environmental Monitor, refer to the following lists to ensure that you have all the items shipped with the unit as well as all other items required for proper installation.

Standard Accessories

- Mounting hardware: two mounting flanges with four screws
- One RJ12 to RJ12 crossover cables
- One Temperature/Humidity sensor

Optional Accessories

- Second Temperature/Humidity sensor
- Water Detection sensor
- 3rd party Contact Closure sensors
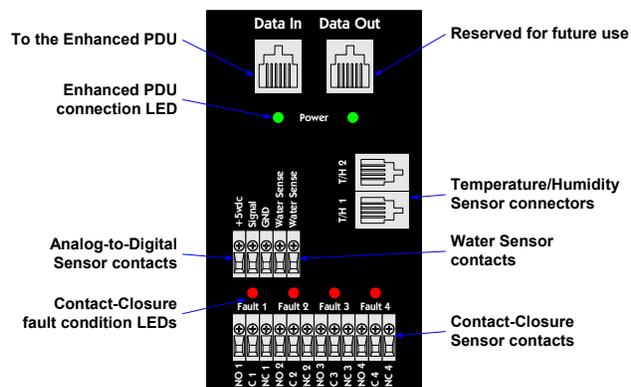- 3rd party analog sensor

Additional Required Items

- Flathead and Phillip screwdrivers
- Screws, washers and nuts to attach the Environmental Monitor to your rack

Equipment Overview

Each connector on the Environmental Monitor is clearly labeled for easy identification. Each Environmental Monitor is equipped with the following connectors:

- RJ12 connector for data and power for control by the Power View Enhanced PDU
- Two mini RJ11 connectors for Temperature/Humidity sensors (one sensor provided)
- Two terminals for the optional Water sensor
- Three terminals for a third-party analog sensor
- Three sets of three terminals for third-party Contact-Closure sensors

The Environmental Monitor is also equipped with LEDs to indicate the connection status to the Enhanced PDU as well as Contact-Closure sensor fault conditions.

Safety Precautions

The Equipment Cabinet Environmental Monitor (Environmental Monitor) is designed for use only with the BLACK BOX® Power View Enhanced PDU. Use of the Environmental Monitor other outside it's intended purpose and instructions may lead to damage of the Environmental Monitor or 3rd party devices and will void all warranty coverage.

Mounting the Environmental Monitor

1. Attach the mounting flanges to the back of the Environmental Monitor using the provided hardware.
2. Install the Environmental Monitor into the cabinet using the available mounting holes on the flanges.

Connecting the Sensors

Temperature/Humidity sensors

The Environmental Monitor is equipped with two mini RJ11 T/H ports for attachment of the included Temperature/Humidity sensor. Attach the mini RJ11 plug of the sensor(s) to the appropriate T/H port.

Water Detection sensor

The Environmental Monitor is equipped with one set of terminal contacts for attachment of the Water Detection sensor. Insert and secure the two leads from the sensor into the terminals.

NOTE: The Water Detection sensor leads are not polarity sensitive.

Contact Closures sensors

The Environmental Monitor is equipped with four sets of terminals for attachment of 3rd party Contact Closures. The Environmental Monitor is equipped to accept signaling from 'normally closed' and 'normally open' contact closure circuits.

Insert the 'common' lead into the appropriate 'C' terminal and insert the 'normally closed' lead into the appropriate 'NC' terminal or insert the 'normally open' lead into the appropriate 'NO' terminal. Insure that all leads are secure.

NOTE: Use of 'normally closed' contact closures additionally requires a short between the 'NO' and 'C' terminals.

Analog sensor

The Environmental Monitor is equipped with a single set of terminals for attachment of a 3rd party analog sensor. The Environmental Monitor converts the sensor's 0V to +5V DC signal to an 8-bit value between 0 and 255.

Sensor limitations:

- Sensor inputs must be between 0V to +5V DC.
- Sensors powered by the Environmental Monitor must be powered by +5V DC.
- Sensors powered by the Environmental Monitor must draw a maximum current of 50mA.
- Sensors independently powered must have the ground reference tied to the Environmental Monitors ground reference.

Three terminals are present for attachment of a 3rd party analog device; +5 VDC, Signal and Ground. Insert and secure the 3rd party sensors leads into the Environmental Monitor terminals as prescribed by the sensor manufacturer's intended use and secure.

NOTE:
1. Proper polarity of the sensor Ground and +5V DC **MUST** be maintained or damage to the Environmental Monitor will occur!
2. **DO NOT** short +5V DC to Ground; this will damage the Environmental Monitor and/or Enhanced PDU!

Connecting the Environmental Monitor

The Environmental Monitor is connected inline to a Power View Enhanced PDU using the supplied RJ12 crossover cable. Connect the cable from the Enhanced PDU's Aux port to the Data In port on the Environmental Monitor.

Operations

Interfaces

The Environmental Monitor is configured and monitored directly through the command line or HTML interface of Power View Enhanced PDU. For information on accessing the Enhanced PDU interfaces and use of the command line, please refer to the Enhanced PDU Installation and Operations manual.

HTML Interface

The following section describes the Environmental Monitor interface sections/pages and their use.

Environmental Monitoring

Sensors

The Sensors page displays:

- Temperature/humidity and Water sensor's absolute and descriptive names
- Temperature/humidity sensor readings in degrees Celsius and percent relative humidity
- Water sensor state

Contacts

The Contacts page displays the Contact Closure sensor's absolute and descriptive names, and states.

ADC

The ADC page displays the Analog-To-Digital converter's absolute and descriptive names, and digital count.

Configuration

System

The System page is used for assignment and/or editing of descriptive names for the Environmental Monitor and attached sensors.

Descriptive names may be up to 24 alphanumeric and other typeable characters (ACSII 33 to 126 decimal – spaces are not allowed).

Creating a descriptive Environmental Monitor name:

Click on the **Environmental Monitor Names** link.

On the subsequent page, enter the Environmental Monitor name in the appropriate field and press **Apply**.

Creating descriptive sensor names:

Click on the **Sensor Names** link.

On the subsequent page, enter the sensor name in the appropriate field and press **Apply**.

Creating descriptive contact closure names:

Click on the **Contact Closure Names** link.

On the subsequent page, enter the contact closure name in the appropriate field and press **Apply**.

Creating a descriptive analog-to-digital convertor name:

Click on the **Analog-to-Digital Converter Names** link.

On the subsequent page, enter the analog-to-digital converter name in the appropriate field and press **Apply**.

Command Line Interface

Administrative Command Summary

Set Envmon Name	Specifies a descriptive field for the Environmental Monitor
Set Envmon WS Name	Specifies a descriptive field for the water sensor
Set Envmon ADC Name	Specifies a descriptive field for the analog-to-digital converter input
Set Envmon THS Name	Specifies a descriptive field for a temperature-humidity sensor
Set Envmon CC Name	Specifies a descriptive field for a contact closure
Set User Envmon	Grants or removes user privileges to view environmental monitoring status

Administration Commands

Creating a descriptive Environmental Monitor name

The Set Envmon Name command assigns a descriptive name to an Environmental Monitor. This descriptive name is displayed when the Evnmon command is issued.

To create an Environmental Monitor name:

At the Power View Enhanced PDU: prompt, type **set envmon name**, followed by the absolute Environmental Monitor name, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed). Press **Enter**.

Example

The following command adds the descriptive name Florida_HQ_1to the Environmental Monitor:

```
Power View Enhanced PDU: set envmon name .a Florida_HQ_1<Enter>
```

Creating a descriptive water sensor name

The Set Envmon WS Name command assigns a descriptive name to the water sensor. This descriptive name is displayed when the Evnmon command is issued.

To create an water sensor name:

At the Power View Enhanced PDU: prompt, type **set envmon ws name**, followed by the absolute name of the water sensor, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed). Press **Enter**.

Example

The following command adds the descriptive name Water_Florida_HQ_1 to the water sensor:

```
Power View Enhanced PDU: set envmon ws name .a Water_Florida_HQ_1<Enter>
```

Creating a descriptive temperature/humidity sensor name

The Set Envmon THS Name command assigns a descriptive name to a temperature/humidity sensor. This descriptive name is displayed when the Evnmon command is issued.

To create an temperature/humidity sensor name:

At the Power View Enhanced PDU: prompt, type **set envmon ths name**, followed by the absolute name of the temperature/humidity sensor, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed). Press **Enter**.

Example

The following command adds the descriptive name T/H2_Florida_HQ_1 to the second temperature/humidity sensor:

```
Power View Enhanced PDU: set envmon ths name .a2 T/H2_Florida_HQ_1<Enter>
```

Creating a descriptive contact closure name

The Set Envmon CC Name command assigns a descriptive name to a contact closure. This descriptive name is displayed when the Evnmon command is issued.

To create an contact closure name:

At the Power View Enhanced PDU: prompt, type **set envmon cc name**, followed by the absolute name of the contact closure, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed). Press **Enter**.

Example

The following command adds the descriptive name RackFront _Florida_HQ_1 to the fourth contact closure sensor:

```
Power View Enhanced PDU: set envmon cc name .a4 RackFront_Florida_HQ_1<Enter>
```

Creating a descriptive analog-to-digital converter name

The Set Envmon ADC Name command assigns a descriptive name to an analog-to-digital converter. This descriptive name is displayed when the Evnmon command is issued.

To create an analog-to-digital converter name:

At the Power View Enhanced PDU: prompt, type **set envmon adc name**, followed by the absolute name of the analog-to-digital converter, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed). Press **Enter**.

Example

The following command adds the descriptive name Airflow _Florida_HQ_1 to the analog-to-digital converter:

```
Power View Enhanced PDU: set envmon adc name .a Airflow_Florida_HQ_1<Enter>
```

Granting and removing Environmental Monitor status viewing privileges

The Set User Envmon command grants or removes Environmental Monitor status viewing privileges to/from a user.

To grant or remove environmental monitor viewing privileges for a user:

At the Power View Enhanced PDU: prompt, type **set user envmon** followed by **on** or **off**, optionally followed by a username and press **Enter**.

Example

The following command grants environmental monitoring privileges to the user JohnDoe:

```
Power View Enhanced PDU: set user envmon on johndoe<Enter>
```

Product Registration and Support

Technical Support

Black Box understands that there are often questions when installing and/or using a new product. FREE Technical Support is provided 24 hours a day, 7 days a week.

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Troubleshooting

Calling BLACK BOX

If you determine that your Environmental Monitor is malfunctioning, ***do not attempt to alter or repair the unit***. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- The model and serial number of the problem unit.
- The nature and duration of the problem.
- When the problem occurs.
- Any particular application that, when used, appears to create the problem or make it worse.

Shipping and Packaging

If you need to transport or ship your Environmental Monitor:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Materials Authorization (RMA) number.

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