Remote Environmental Monitoring and Control for IT equipment.

Product Description
NVIROMON is a hardware and software solution that allows easy remote monitoring of the environmental conditions in an IT server room, wire center or other facility from anywhere on the network around the world.
The computer room or data center ‘Environment’ means the physical conditions that may cause problems if they exceed certain preset thresholds. The primary environment conditions monitored typically include:

- Temperature - air conditioning fan or ventilation problems
- Humidity - air conditioning, water or ventilation problems
- Power - main or UPS power loss or start, inline power consumption
- Flood - air conditioning, plumbing or roof leak
- Smoke / Fire - electronics burning, short circuit or room fire
- Motion - movement or unauthorized entry within a specific area
- Air Flow - air conditioner or cabinet fans stop moving air
- Room Entry - unauthorized door, window or cabinet open/closed
- Panic Button - user or staff press panic button
- Dry Contacts - connect to non-voltage contacts on air conditioner, generator, security panel, gas sensors, etc.

Environmental monitoring is very important because computer and network equipment is only designed to operate effectively within a specified range of environmental conditions.

The most common environmental problem encountered in the computer room is air conditioning failure. This can lead to high temperatures, high or low humidity, and water flooding (e.g. if the water inlet/outlet pipe leaks).

If conditions get out of bounds, then:

- Unpredictable and potentially catastrophic results start to occur, like disk failures and CPU errors, which can cause extreme software and backup failures that can be costly and difficult to recover from.

- System, application, website or network access can become reduced, delayed or simply unavailable should servers or network components fail or stop working.

- Manufacturers of equipment and maintenance/software support organizations will often not accept responsibility for problems caused by equipment that has been exposed to extreme levels of temperature, humidity, power outage, flooding and other various environmental conditions.

When environmental conditions exceed preset thresholds, NVIROMON senses the problem and delivers an alert notification to the appropriate event manager's mobile phone. The remote management information system alerts and indicates any of these environmental problems to trigger immediate action for prevention or recovery of failures.
The NVIROMON is REMOTELY configured, controlled and monitored by the Netshield SNMP based management information system.

The NVIROMON can connect to three different types of probes namely the Temp & Water probe, Power Meter probe, and Gas probe.

The factory default consists of:
- twelve optically isolated inputs
- four dry contact outputs
- two temperature & water probes and four flood sensors.

The Input/Output ports can be externally expanded up to sixty ports.

The internal RS485 expansion bus is capable of handling up to thirty external probes/sensors.

Internal GSM module for SMS/GPRS monitoring and control.
  - Escalating warning system.

Internal 10/100BaseT module with integrated SNMP stack.

OPTIONAL functions available:
- Power management and control
- Biometric access control
- Air conditioner monitoring and control.
- Security
- Surge protection
- Fire protection

External Probes / Sensors available on RS485 bus:
- Electronic automatic power failover switch probe/sensor.
- Relative humidity probe/sensor.
- Temperature probe/sensor.
- Moisture probe/sensor.
- Barometer/pressure probe/sensor.
- Gas probes – NO Nitric Oxide, NOx Nitrogen Dioxide, CO Carbon Monoxide, CO2 Carbon Dioxide, VOCs, Benzene, Toluene, Xylene, Styrene, Ethyl benzenes.
Features

1 Netshield SNMP Management software

Monitor One

- The NVIROMON is remotely configured, controlled and monitored by the Netshield SNMP based management information system (Monitor One).
- This software uses the SNMP protocol over a LAN connection to communicate with all the NVIROMON units connected to the network.
- There are over 800 configurable settings to control the NVIROMON unit. These settings range from Site name through to environmental limit settings.
- Other management control software should also be able to interface with the NVIROMON unit with the SNMP protocol.

1.1 Installation and setup of Netshield SNMP Management Software (Monitor One)

1.1.1 Install the software on any personal computer that has access to the local network or the internet. The software is available for download on the netshieldsa.com website.
PROBES CONNECTING TO THE NVIROMON

- The NVIROMON can connect to three different types of probes namely the Temp & Water probe, Power Meter probe, and Gas probe. These probes enable the NVIROMON to sense and control the environmental conditions.
- The NVIROMON utilizes a power meter probe enabling it to control, measure and indicate fault conditions on 240V appliances ranging from servers to air conditioners.
- The NVIROMON comes standard with four temperature & water probes and four flood sensors.

GAS SENSORS
A series of 5 different sensors are available for measuring levels of gas concentrations for the following gasses: NO Nitric Oxide, NOx Nitrogen Dioxide, CO Carbon Monoxide, CO2 Carbon Dioxide, VOCs, Benzene, Toluene, Xylene, Styrene, Ethyl benzenes
THE INPUT / OUTPUT CONNECTIONS

INPUTS

- The NVIROMON has twelve inputs that can work with any unit that supplies dry contact output.

The following diagram shows some of the units that may be connected to the unit.

- The NVIROMON is used to control and monitor the access granted to the room. When a valid fingerprint is identified by the MA100 unit the corresponding Wiegand code is sent to the NVIROMON. On receiving this code the NVIROMON will grant access to the room by releasing the MAG lock. The Wiegand ID will then be sent to the SNMP Manager that will log this entry into the database.
- The MA100 unit can be used in conjunction with a push button switch to open the door from the inside and a door switch to monitor the door’s open/closed status.
- A Netshield network camera can be used to monitor access to the room.
OUTPUTS

- The NVIROMON has four dry contact outputs. These outputs can be used to control equipment around it. Please note that these outputs are not intended for 240V switching.

The following diagram shows some of the units that can be connected to the NVIROMON outputs.

The outputs can be configured as a normally open (NO) or normally closed (NC) contact.

Alarm structure of the NVIROMON

- The NVIROMON works on the concept that for all of the inputs and the limit values there is an alarm slot allocated to each.
- This alarm slot can be used to control the outputs on the NVIROMON or/and the 240V mains of the Power Meter probes or/and to trigger the GSM alarm slots.
- An escalating warning system with sms’s.

GSM (SMS) Functionality

- The NVIROMON has a built in GSM modem with an external antenna. The GSM modem enables the unit to send and receive SMS messages. A prepaid or contract SIM card can be used with the NVIROMON unit.
- The NVIROMON has forty GSM Alarm slots available to send SMS alarm conditions. The SMS messages are user definable.

The NVIROMON is a 1U rack mountable unit housing an internal battery backup that supplies power to the unit and all the externally connected probes and sensors.
Automatic Power Failover Switch

- In the event of a power failure the Automatic Power Failover Switch (APSF) will automatically switch power to a secondary source such as generators or solar panels.

Surge Protection System (16A)

- The Surge Protection System (SPS) offers the user a mains surge protecting solution and optional data protecting modules for external telecoms data lines for example, x.21, Ethernet, ADSL and E1, in the telecoms industry.
- The main function of the SPS is the 2U mountable unit that typically supplies the power to a 19” cabinet, thus protecting the user’s servers, switches, routers etc. from lightning and surges.
- The unit also has the ability to measure the power information like: Voltage (V), Current (A), Power (W), Accumulated Power (kWh) and Temperature (°C)

Benefits

- Remote monitoring and control of environmental conditions.
- Optional monitoring and control functions are available to add:
  - Power management and control
  - Access control
  - Air conditioner monitoring and control
  - Security
  - Surge protection
  - Fire protection
- Assist preventative maintenance.
- Protection of equipment and assets.
Specifications:

Power Feed:
- AC: 110~265V/50Hz
- DC: 6.4V 7AH

Power consumption: ≤ 35W
Surge protection: @275V

Operating conditions:
- Temperature: 0~50 °C
- Humidity: ≤ 85% Non-condensing

Inputs:
- Connector type: RJ45
- Quantity: 12 (Upgradeable)
- Isolation: Optically Isolated
- Input can be driven by dry contact connections: Open Contact -> Logical High
  Closed Contact -> Logical Low

Outputs:
- Connector type: RJ45
- Quantity: 4 (Upgradeable)
- Dry contact output:
  - Common (COM)
  - Normally Closed (NC)
  - Normally Open (NO)
- Current rating: 1A Max.
- Voltage rating: 24V Max.

Sensor/Probe interface Bus (RS-485):
- Connector type: RJ-45
- Count: 8 ports
- (Each port can have two probes/sensors daisy-chained)
- Voltage supplied for Sensor: 3.3V (800mA Limited)
  6V (800mA Limited)
- Interface protocol: NSP (Netshield Sensor Protocol)

Management Interface:
- Connector type: RJ-45
- Compliancy: IEEE 802.3 standard
- Speed: 10/100M Adaptive
- Protocol: SNMP 1

GSM interface:
- Antenna Connector type: RF MMCX
- SIM Card: 1.8V /3.0V, STK 3.1
- Quad band: 850/900/1800/1900 MHz
- TX Power: 850/ 900 MHz - Class 4 (2 Watt)
  1800/1900 MHz - Class 1 (1 Watt)
- Typical RX sensitivity: -106dBm

Console Port
- Connector type: RJ45
- Protocol: RS-232 Asynchronous (HyperTerminal)

Dimensions
- Width x Height x Depth: 480 x 90 x 130mm
- Weight: 4.1 Kg