

# Computer Cabinet Environment Monitor



## Individual or Multiple Cabinet Monitoring

A simple, low-cost device for monitoring cabinets and racks, the WxGoos-1 contains five built-in environment sensors, door sensors and a serial bus port to for a variety of external sensors.

### Internal Sensors

Temperature  
Humidity  
Air flow  
Light level  
Sound level

### External Sensors

Temperature  
Air Flow  
Water  
Door Position  
Power  
Humidity

The unit can be used stand-alone on a per-cabinet basis or easily expanded to monitor room conditions or the conditions in nearby cabinets.

### General features:

- Five internal sensors
- Multiple remote sensors
- Built-in receptacles for remote sensors
- Ethernet port, Internet accessed.
- Multiple mounting methods
- No hub or Master controller needed
- Price: \$399, single unit quantity

External sensors can be added while the unit is in operation. No switches or hardware adjustments are necessary.

This architecture permits one WxGoos-1 to monitor multiple cabinets through remote sensors.

All the sensors are internal (external magnetic-type door sensors are required to sense door position).

### Self-contained Operation

Each WxGoos-1 is self-contained and does not require a master controller or "mothership." The internal computer collects the data and compiles the information into a web page and other protocols. The user needs only an Internet browser.

Administration of the unit is through a Web browser or Telnet session. Access is user name and password protected. SSL security can be implemented.

The WxGoos-1 uses a small, UL listed wall transformer for power.

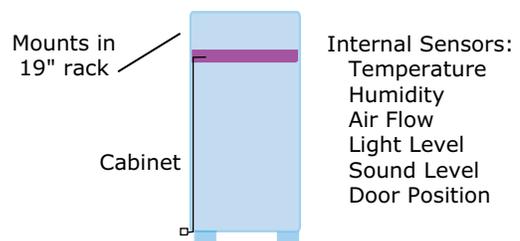
A variety of software is supplied so the data can be presented through a Web page, Excel™ spreadsheets, Telnet, and Simple Network Monitoring Protocol (SNMP). When viewed through the Web format, a variety of graphs can be viewed.

## Rack Mounting



The compact unit installs in a 1U rack space or inside the cabinet. The unit can also be secured with self-tapping screws through the small tabs.

## In-Cabinet Mounting



The device typically mounts in the top portion of the cabinet. It can be mounted vertically or horizontally. The top position exposes the device to the air exiting the cabinet.

Alarming functions via SMTP e-mail and paging are available and thresholds easily set. Multiple addresses and alarm threshold levels can be set.

### Stand-alone or Console Monitored

The built-in Ethernet port makes the WxGoos effective both in single cabinet monitoring or in multiple cabinet installations for three reasons:

First, the user needs only an Internet connection to access the data from anywhere.

Second, The unit can be part of a local sub-net operating behind a firewall which utilizes existing security infrastructure. VPN's or private networks can be used.

Third, the availability of SNMP based data allows dozens of Network Monitoring programs such as HP OpenView, IP Sentry, MRTG, or What's Up Gold (Ipswitch) to easily add the WxGoos to the list of monitored devices.

The SNMP MIB supplied automatically expands as remote devices are added making integration straightforward.

### Remote Sensors

The remote sensor serial bus was designed to make the cost of adding remote sensors or other remote devices minimal.

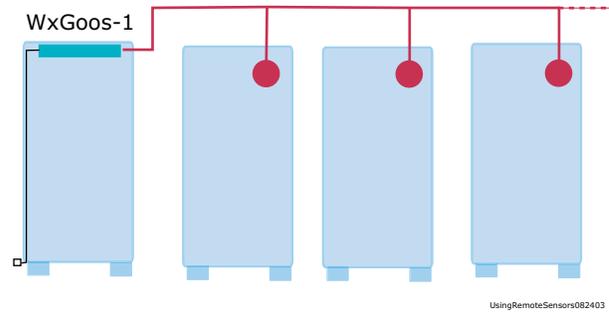
The Dallas Semiconductor 1-Wire protocol uses telephone wire or Cat3 cable. RJ-11 connectors are used. Lengths of up to 1,000' can be achieved in straight runs. Star topology reduces the aggregate length of the serial cable by runs of hundreds of feet are common. All remote sensor devices are parasitically powered and no remote device power supplies are required. Remote devices can be added or deleted without reconfiguration.

### Simple Installation

The narrow flanged sheet metal housing gives the installer the most flexibility in attaching the unit. In existing cabinets the unit can be simply tie-wrapped or secured with self-tapping screws to the cabinet's top grill or internal rail.

In new installations, a bracket secures the device to an vacant

## Using Remote Sensors



In this drawing, one WxGoos-1 monitors the temperature and airflow in three adjacent cabinets. Each sensor plugs directly into the unit. The sensors do not require power. Dozens of remote sensors can be added hundreds of feet away.

location. Upon start-up, the installer uses an automatic discovery program that assigns the desired IP address. If a subnet is operational, the WxGoos' internal DHCP software will automatically lease an address from the server.

### Specifications:

#### Internal Sensors

Temperature: -67F to 175F, +/- 0.5°C

Humidity: 0 - 100% +/- 5%,

Air Flow: 0 - 150cfm, +/- 25%

Sound Level: 0 - 200dbm, +/- 10%

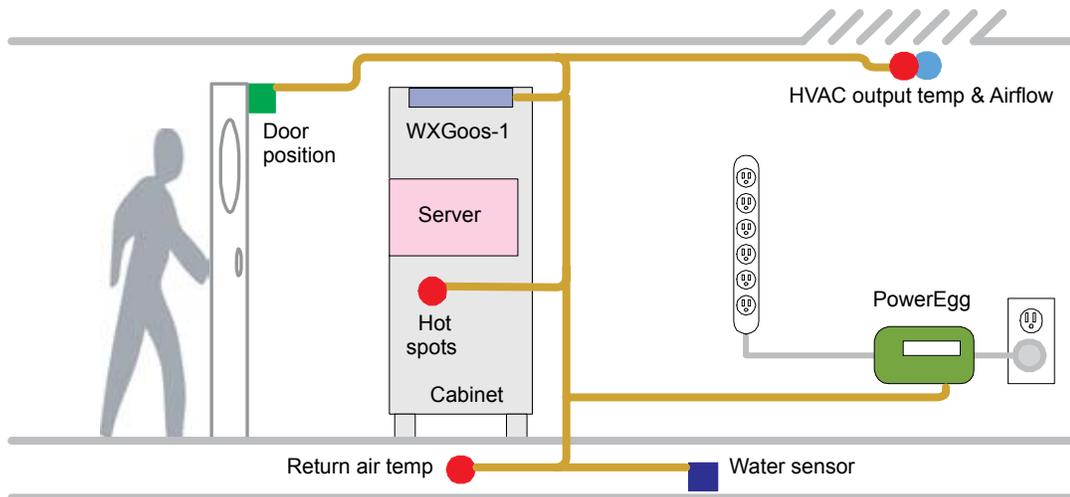
Light Level: 0 - 100 Lux, +/- 5%

I/O Ports: Three, 0 - 5 vdc analog sense (or output) with controllable loop current

Remote Serial Bus: 1-Wire protocol, self-powered. Typical distances of 600' aggregate length.

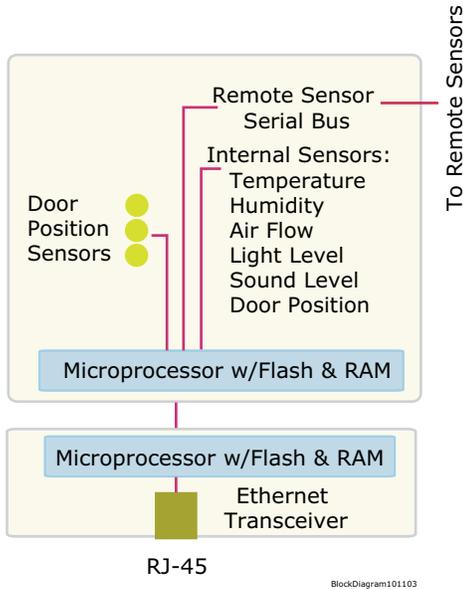
Remote Sensors.

## Using External Sensors



This server room uses a WxGoos-1 to monitor the cabinet environment plus five external sensors to monitor the air conditioning output, cabinet hot spots, return air temperature, power, and door position.

## Block Diagram



One microprocessor controls the data acquisition and conversion tasks. Another is devoted to Ethernet communication and signalling protocols. Firmware to either processor can be downloaded in the field.

- Receptacles: RJ-11, eight provided.
- Temperature: -67F to 175F, +/-0.5°C
- Air Flow: 0 - 150cfm, +/- 25%
- Water Detect: 0 - 100, +/-30%
- Door Position: magnetic switch
- Current Transformers: 30, 60, 120, 300 amperes, ac, switch selectable.
- Power Condition (PowerEgg):
  - Volts: 80 - 280 vac, auto sensing
  - Amps: 1 - 30
  - Watts: 1 - 8,400
  - Power Factor: 0 - 99%
  - Peak volts, low volts
  - Volt amps (instantaneous)
  - Accumulated kWh. 0 - 64,000 kWh.
- Power: 9vdc, 300ma.
- Connector. RJ-45 female connector.
- Ethernet: 10/100bps, auto select.
- Memory: 8MB RAM, 2MB Flash.
- Mounting: Four 1/4" mounting tabs.
- Housing: 18 ga. aluminum, powder coated, medium gray.
- Size: 2.3" W x 8.5"H x 1.2"
- Indicator Lamps: Power, link, and data.

### User Software

In the most basic application, the cabinet end-user is presented with an IP address on a paper sticker or tag. The user connects a laptop to the cabinet's Ethernet jack, types in the IP address and a Web page is displayed.

If the user desires to change the IP address, a Configuration tab is displayed.

### Data and Communication Protocols

The data created by the WxGoos can be presented to the user in a number of ways:

HTML    XML

Telnet    Excel  
CSV (SysLog)

The most common presentation is Web page creation, but the other protocols offer the OEM or custom software developer a number of tools to offer flexibility. Web pages are updated every five seconds or when the user requests a page refresh.

The following communication and data protocols are supported:

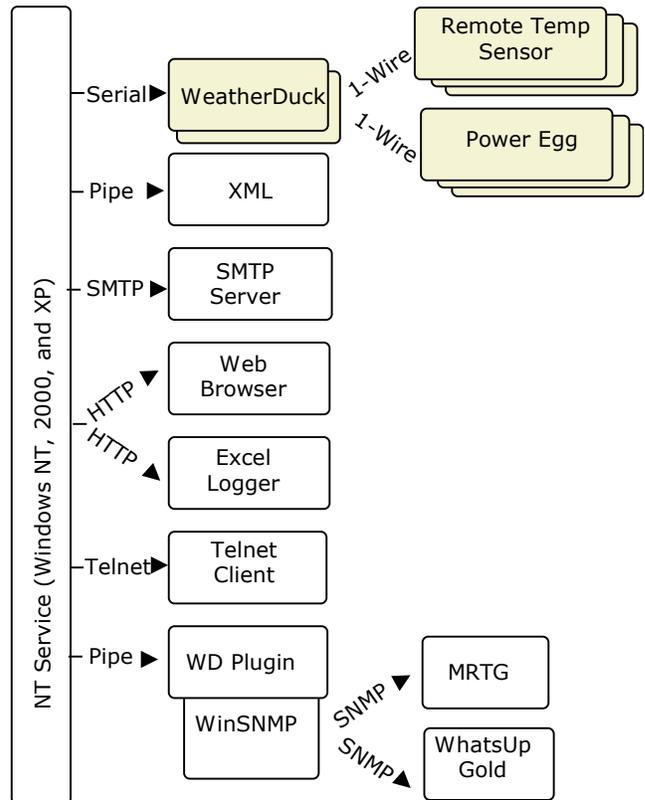
TCP/IP    DHCP    UDP    SNMP  
SSL/TLS    HTTP    HTTPS    Static IP

Firmware, both in the data acquisition microprocessor and the communications processor, is field-upgradable. Bug fixes and upgrades can be downloaded from the end-user's central office or from IT Watchdogs' facility.

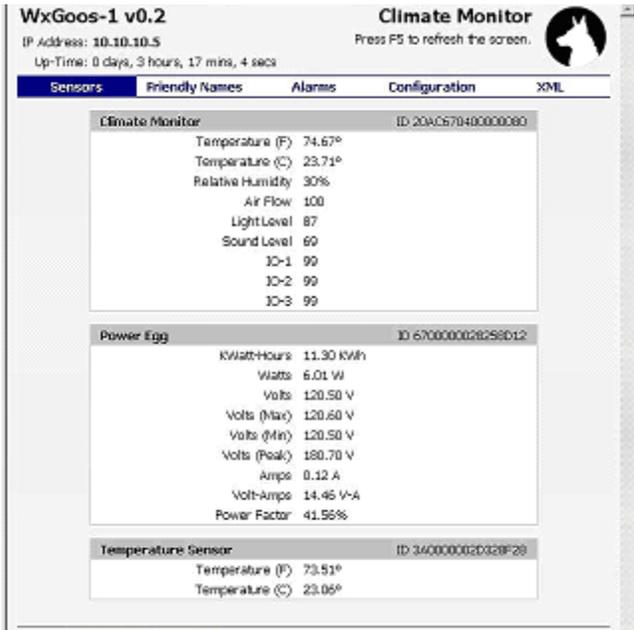
### Console Software

The Console application allows monitoring of hundreds of WxGoos units. Real-time data and graphs is displayed plus version and release number of both the hardware and software.

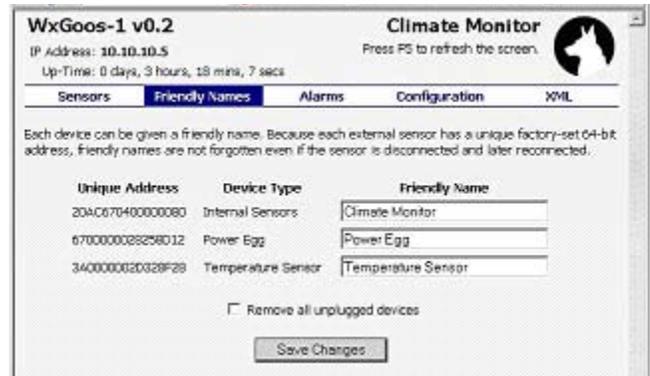
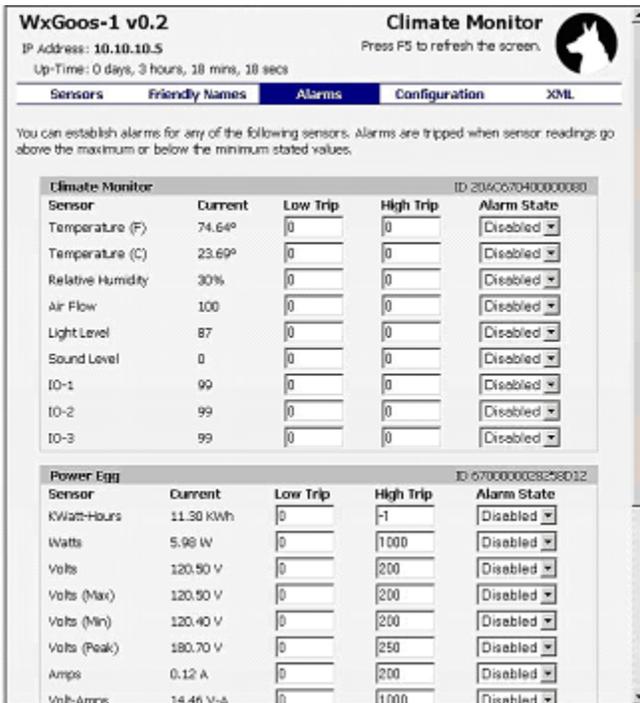
### Software Components



From the user's perspective, the data is presented in a number of popular standards. The casual user browses to check cabinet condition while the system developer has a number of tools to speed integration.



The picture shows a typical web presentation of a cabinet. Both real-time data and a history (in this case six days) can be seen. When new remote sensors are detected, they are added automatically to the web page display.

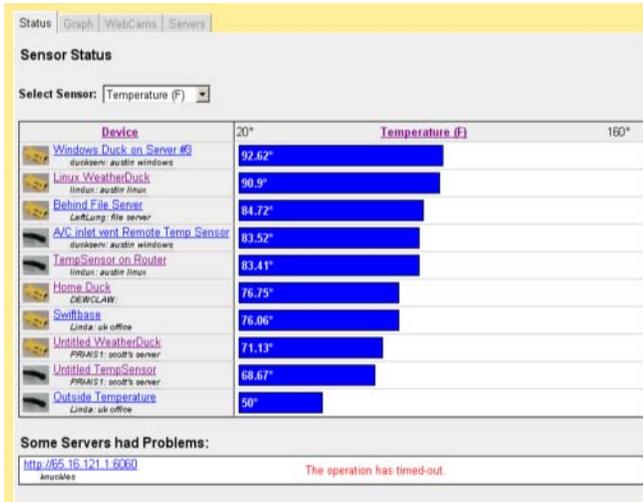


Whether on a subnet or an open network IP address, the user can access hundreds of WxGoos units. The IP addresses can be leased from a DHCP server or assigned as permanent static IP addresses. Reconfiguration and field software upgrading can be done remotely.

The basic unit consists of a rectangular sheet metal box with mounting tabs. The external connections are an Ethernet cable and the 6vdc wall transformer power supply.

## Product Numbers

WxGoos-1: Ethernet unit with software- \$399



The Console program runs under Windows 98, NT, and 2000 and monitors hundreds of WxGoos units and their remote sensors. Graphs are easily selected.

