

# **Room Alert**<sup>TM</sup>NET

## Computer Room Environment Monitoring

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*"Trouble is easily stopped before it commences"*

*Lao-Tse 500 B.C.*

### **NOTE**

THIS DOCUMENT APPLIES ONLY TO ROOM ALERT NETWORKED DEVICES SUPPLIED AFTER 1<sup>ST</sup> SEPTEMBER 2006. AT THAT DATE WE STARTED USING THE NEW X-PORT DEVICES WHICH HAVE DIFFERENT FIRMWARE AND SUPPORTING DEVICE INSTALLER SOFTWARE.

NOTE: The new boxes only work with LANTRONIX DEVICE INSTALLER v 4.1  
Available from [www.monitorwindows.com](http://www.monitorwindows.com)

**This document applies to Room Alert 2 (product code RA2NET).  
All Room Alert products work in tandem with NightWatch server monitoring software.**

## **Introduction**

**Room Alert** is a complete software/hardware package for Microsoft Windows XP/2003/2008/VISTA which monitors the environmental conditions, such as temperature, humidity, power, flood etc in the computer room. When there is a problem or a potential problem, alerts are sent out as email or text. Room Alert can often give early warnings well before an actual problem arises.

**Room Alert** comprises a hardware interface (the Sensor Unit) which connects directly to the ip network, various sensors and a software application "NightWatch" to do the alerting.

**Room Alert** is designed to be user installable with the assistance of a qualified electrician to wire up and mount the sensors. Room Alert uses two types of sensors: its own built-in sensors and various types of external sensors.

## Environment Monitoring



The computer room “Environment” means the physical conditions which may cause problems if they exceed certain thresholds, for example:-

- Temperature (eg Aircon problems)
- Humidity (eg Aircon problems)
- Flooding (eg cold water supply to Aircon leaking)
- Smoke (eg electronic component burning)
- Mains Power and UPS problems (eg power cut)
- Doors Opening (intruder)
- Panic (user presses the ‘Panic Button’)

In our experience, the most common causes of environmental problems in the computer room are:-

### **(1) Air Conditioning failure**

### **(2) Power Supply failure**

The most common type of problem we encounter is when the air conditioning fails. Switch off the air conditioning and observe what happens to the computer room temperature! This can lead to high temperature, high or low humidity and (if the water inlet pipe leaks, which is not uncommon) water flooding.

## The Room Alert Sensor Unit – “SU”

The Room Alert Sensor Unit (SU) hardware has its own built in controller for connecting directly to the ip network. This network interface device built into the SU is called a Lantronix “X-port” device which presents itself as a standard RJ45 network connector on the SU. Internally to the SU (between the Xport and our microprocessor) the baud rate is 9600 baud, 8 data bits, no parity, one stopbit.

## Standard Installation – PLUG ‘N PLAY

The standard installation procedure is to plug the SU into the network and it will auto-allocate itself an ip address. If you have a DHCP server it should be able to allocate an ip address for you. The Xport interface on the hardware is set up for DHCP/BOOTP/Auto-ip when it leaves the factory, which means it will “plug-n-play” whatever network you have:

- 1) plug it in the network. If you have a DHCP server and can look up the ip address which it has allocated, note the address and go to (5) below. Otherwise,
- 2) install and run Lantronix Device Installer 4

The download zip file from [www.nwsupport.co.uk](http://www.nwsupport.co.uk) contains the following,  
Microsoft .NET

Device Installer 3 (for any pre-2007 Room Alert boxes you may have)

Device Installer 4 in a separate zip file within the main download

Device Installer 4 requires Microsoft .NET to be installed first, so if you don't have .NET on the PC start the installation for Device Installer 3 which will install .NET first and then halt the install before Device Installer 3 is installed and switch to the install of the Device Installer 4 zip.

- 3) in Device Installer 4 click SEARCH - this should show up the box and its MAC address which must be checked against the MAC address printed on the back of the Room Alert box.

- 4) note the ip address

- 5) set up the RA2 MO(s) in NightWatch using the ip address

### **Testing with NightWatch**

Run NightWatch. In main menu click OPTIONS, then Add Object.

Double-click Room Alert 2 Monitored Object (MO)

Enter a name at the top, in 'Identifier' eg Test

In 'IP Addr or name' enter the ip address of the Room Alert box above

In the 'Built in sensors' section put 15C in the Temperature box.

Click OK, click Accept.

Click the "Scan" button (3<sup>rd</sup> from the left). This will scan all MO's once.

The Room Alert scan will alert if the room temperature is above 15C

After the scan, click STATUS then double-click the Room Alert 2 MO

Scroll down to the bottom to see "Last Temperature".

This is the current room temperature reading (uncalibrated).

If it is below 15C then the alarm will not occur and you will have to go back and set the Temperature box in the MO setup to a value below 15C to trigger an alarm.

Note that there is no Alarm Object yet so the alarm will not trigger an alert.

HINT: in NightWatch setup hit 'F1' for the relevant online help page.

### **Testing the network connection with Hyperterminal**

The box connectivity can also be tested with Windows Hyperterminal in "Winsock" mode, using the ip address and port 10001. Once connected, hitting 'cr' should get a double string of digits from the box.

Run START/Programs/Accessories/Communications/Hyperterminal

Give is a session name, eg RA

Choose Connect using: TCP/IP (Winsock)

Give it the ip address and port 10001

Go to File/Properties/Settings and go into ASCII Setup

Under ASCII Receiving check the following:

"Append line feeds to incoming line ends"

"Force incoming data to 7-bit ASCII"

Click OK, OK

Then hit Return and you should see two rows of numbers, which means its working OK.

The 2<sup>nd</sup> row should contain a version number followed by a release date.

## **Sensor Inputs**

Discrete solid state Temperature and Humidity sensors are built into the Sensor Unit. They provide actual temperature (C or F) and humidity (%) values to the software on the PC. Electronic circuitry is also on board for flood monitoring and power monitoring.

**WARNING: do NOT touch, cover or breath on the built-in temperature and humidity sensor. It is also sensitive to dirt and dust which is why we recommend the SU be mounted vertically on a wall using the mounting holes provided.**

Two low voltage inputs are provided for power. One is the power to the Sensor Unit itself. The other is for monitoring mains power in the room.

The Flood Sensor input is on channel one of the four 'external' sensor inputs. The flood sensor input is wired to one or more "Flood Sensor Extenders" which can be daisy chained together around the room. This is to allow water detection in several places without having to duplicate the expensive flood sensor electronics.

To summarise the sensor options in Room Alert :-

Temperature values in C or F +/- 0.1

Humidity values in % RH (Relative Humidity)

1 X Power sensor input socket

1 X Flood sensor electronics (built-in)

1 x Flood sensor input channel for the flood sensor extenders

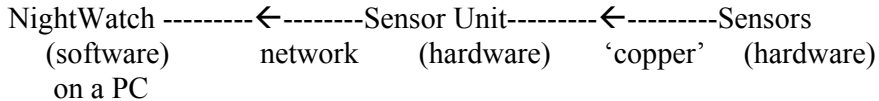
Three additional spare input channels for any kind of generic sensor.

Temperature and Humidity values can be logged to a file and graphed using XL. See "Log Samples" checkbox in Room Alert MO.

The spare channels can be used for wall mounted additional Temperature or Humidity sensors with a fixed ON/OFF setting rather than providing values. Alternatively they can be used for Smoke, Intruder or Panic sensors. They will connect to any volt-free contacts providing maximum flexibility for the user. For example, a relay contact can be provided from the UPS panel or a generator or any other building management systems already in place.

If the flood input is not required, it will also double-up as a conventional sensor channel but the response time is slower (about 60 seconds) due to the slower reaction time on the flood sensor electronics.

### **“Chain of Command”:**



### **Minimum PC Specifications**

Windows XP, 2003/2008 Server or Vista PC.

Internet Explorer 6 or greater

Minimum PC processor speed is 1 GHz.

Minimum PC RAM memory requirement is 64MB.

50 MB free disc space available.

A com port should be available for the exclusive use of a modem for dialup pager or SMS text alerts Recommended external modems are 3-Com V90 EXTERNAL or Hayes Accura V90 EXTERNAL.

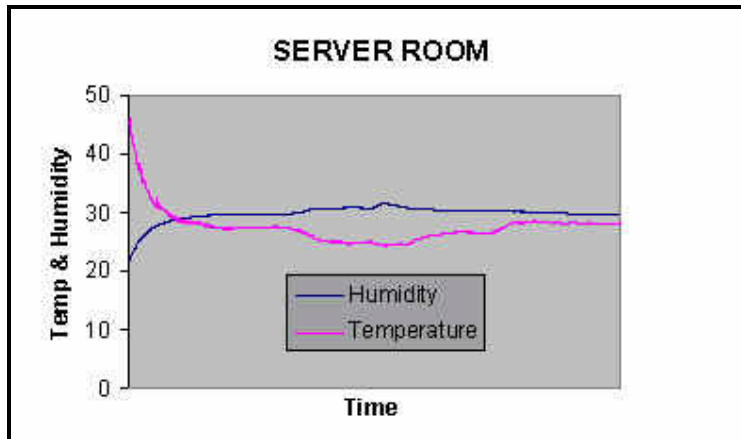
TCP/ip Network connection point near to the Room Alert SU box location.

### **The Room Alert2™ Software in ‘NightWatch’**

If using NightWatch software to alert, the software interfaces to the Sensor Unit via a “Monitored Object” (MO) called Room Alert 2 (in NightWatch click OPTIONS/Add Object ).

The Room Alert 2 MO can monitor the Room Alert Sensor Unit and generate alarms when abnormal environmental conditions are detected.

In addition values can be logged and charted with XL:



See below and also in NightWatch help for more details of the Room Alert 2 MO.

### **Configurations**

A typical computer room configuration setup would be as shown below:



Type “Computer Room Environment Monitor” or similar here.

### **Enabled**

Enables/disables the object for monitoring.  
Used to temporarily exclude an object from monitoring.

### **Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object. If set to 0 it means default to value in Globals (normally 60).

### **Severity**

This is the Severity indicator label for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition. Recommend 0 normally.

### **Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval. Recommend 0 normally.

### **Com Port**

If using a serial SU, select the COM port that the Sensor Unit is attached to, otherwise see below.

### **IP Addr or Name**

Enter the IP address or name assigned to the Room Alert 2 device you wish to use. This defaults to port 10001. NOTE: If an address is entered in this box, the Com Port selection is ignored.

### **Sensor Number**

Each Sensor Unit supports 3 user sensors in addition to the flood sensor channel. Select the sensor channel (number) that is to be monitored. Selecting zero (0) means that none of the three channels will be scanned.

### **Normal Signal**

Set the signal level (LO or HI) that is returned by the attached sensor for NORMAL conditions. **This is normally LO.**

## **Sensor Type**

Select or type a descriptive label that identifies the attached EXTERNAL sensor, eg SMOKE.

## **Simulate Alarm**

Activates the Alert Simulation mode. This is for testing the software or evaluating prior to purchase. Check this box to test the MO without a Sensor Unit attached to the system. Alarms are simulated and cleared on alternating scans of this MO.

## **Flood**

Check this box to enable monitoring of the built-in flood sensor. Flood sensor extenders must be wired to the BLUE Flood sensor contacts on the Sensor Unit. Extenders can be daisy chained to monitor several points in the room.

## **Power**

Check this box to enable monitoring of the mains power supply. Typically, the Power sensor monitors the power input to the UPS. This way if there is loss of power to the UPS, you can be alerted that the UPS is active and you have x minutes of power left.

This requires a 2<sup>nd</sup> Power Adaptor to be connected to the SU in addition to its own mains power adaptor.

## **Dead Box**

Check this box to monitor for loss of Main Power to the Sensor Unit, or for physical disconnection of Sensor Unit from the PC or a faulty SU.

## **Temperature**

Enter the temperature value at which the alert will be tripped, followed by C or F eg 23C, 72F etc. Default is F. Use > to alert when temperature falls below the threshold eg 32>.

## **Humidity**

Enter the RH (Relative Humidity) % value at which the alert will be tripped, eg 50, 62 etc. Use > to alert when humidity falls below the threshold eg 20>.

## **Correction**

You may set a correction value + or - to be applied to the temperature or humidity values read from the RA2 box to allow calibration once in situ. This enables the temperatures displayed to reflect the actual temperature inside the room. There will be a difference because of the heating effect of the electronics inside the box.

## **Log Samples**

Check this box to log each data sample read from the Room Alert 2 device to a disk file. This file will be in the install directory and named RA2nn.log where nn is the internal object number of the Monitored Object. This number is always the same for each MO instance.

You can use a separate MO just for logging which has less frequent scanning (“Interval” is set to 3600 seconds for example).

## **Camera IP**

Optional IP address or DNS name of Axis video camera to associate with this RA2 box. If present, live video from the camera will be displayed on the Web Status page for this monitored object.

## **Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

## **Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. The substitution keywords appear as *[keyword]* in the message text. When the message is sent, whatever value the software currently holds for the keyword is substituted for the keyword in square brackets. For example, [SENSORTYPE] might expand to “TEMPERATURE”. The keywords you can use for this object are:

### **Keyword**

### **Description**

[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[SENSORTYPE]	expands to the sensor type label.
[SENSORNUMBER]	expands to the sensor number.
[NORMALSIGNAL]	expands to LO or HI, the normal signal value.
[COMPORT]	expands to the com port for the Room Alert device.
[TEMPTHRESHOLD]	expands to the temperature alarm threshold value.
[TEMPERATURE]	expands to the last reported actual temperature value.
[HUMIDTYTHRESHOLD]	expands to the % Humidity alarm threshold value.
[HUMIDITY]	expands to the last reported actual % humidity value.

[ALARMID] expands to the unique numeric identifier for the monitored object's current alarm event.  
[TIME] expands to the current time.  
[DATE] expands to the current date.  
[AGENT] expands to the the application name of "NightWatch".  
[SYSTEM] expands to the name of this system.

**See Environment Alarm (EnvAlarm) software documentation for instructions on setting up Room Alert with EnvAlarm.**

## **AXIS 210 CAMERA (WebCam) setup**



The only supported camera is the AXIS 210. The setup of the camera IP and so on are carried out using the software supplied with the camera on CD rom.

Once the camera has an IP address you can login in to it with your web browser. Once there you will be prompted to setup a root username and password.

Before setting up the camera in NightWatch, make sure that you browse onto the camera using Internet Explorer from the PC on which NightWatch is installed, and that you can see the live feed from the camera.

You should then be able to see the camera feed in the window of the Axis Camera MO setup screen (click OPTIONS, then Add Object then click Axis Camera MO icon), once the ip address/username/password have been entered.

### **Setting up Motion Detection alerts**

More details are in the Axis documentation. The following is a brief overview.

The Camera MO (monitored object) listens for Motion Detection messages sent by Axis Video Cameras on the network. The Video camera must be configured to send such messages to the system hosting NightWatch on the port number set on this MO. If an IP address or DNS name is entered, then the MO will only process messages from the camera with that address or name.

If the IP address box is left blank, then the MO becomes the default camera MO and will process messages from any camera that is not handled by an MO with a specific address or name.

For motion detection to be monitored, you must configure the camera to have a TCP Event Server record that points to the system where NightWatch is hosted using the same Port number entered on this MO. Use the same port number for all cameras and all MOs. Then configure the Motion Detection feature in the camera and select the TCP Event Server you created for NightWatch. The motion detection message text configured in the camera is the alarm message text reported by NightWatch in the [MSG] substitution variable.

In the Axis software click the Setup button on the right and then click the Event Configuration button on the left. Click Motion Detection and ensure that the default window covers the area you want to monitor by dragging the pane to the required area.

Click Event Server then the Add TCP button. Enter a new name 'NightWatch' and enter the IP address of the PC where NightWatch is installed followed by an available TCP port number on that system, eg 1089.

Click Event Type then click 'Add Triggered'. Select the alert options you need plus 'triggered by motion detection' and choose TCP alert at the bottom and enter the event server 'NightWatch'.

The camera http port is the port on which you want to connect with the web browser to configure the camera. This should normally be 80.

When you set up the Event Server for motion detection, you specify the ip address of the NightWatch PC and whatever port you want to use, like 1089. Then in NightWatch, the camera MO must use the same port, 1089.

The port in the camera Event Server config ( eg 1089) should be the same port used in the camera MO in NightWatch. This port number MUST be used on ALL cameras and ALL camera MOs.

If 1089 works then use that. The only criteria in that the port number chosen must be available on the PC running NightWatch, and not used by any other application.

The Event Server test button in the camera setup does not really do anything other than see if the NightWatch PC is listening.

You then set up MO and confirm that you can get the camera video in the box on the MO screen.

Then you run NightWatch to scan ('START') and then get in front of camera and you should get an event.

Note that the event text string is expected to have the format detailed in our help.

NightWatch MUST be scanning for alarms to be processed. In the triggered event type setup you have to select 'send tcp notification' and the message should be Motion Detection.

## Capturing the image when motion is detected

When motion detection messages are received, you may capture the current image on the camera to the directory entered. If you capture an image, and the Alarm Object you have selected sends SMTP email notification, that image will be attached to the email notification.

Images are stored in the specified directory and have the file name format:

AxisImage\_Source\_yyyymmddhhmmss.jpg

Source will be the camera DNS name (if available) or the camera IP address.

If you wish to have the MO capture an image from the camera on a regular basis, you must enter the IP address or DNS name of the camera and check the appropriate box. Then, on each scan, subject to any defined Schedule, the current image will be captured from the camera and stored in the specified directory.

If cameras require a login, then you must specify the user name and password to be used in order for any images to be captured. If you want to use logins on cameras, it is suggested that you create a standard login user name and password for use by NightWatch and put that in all cameras.

In order for the camera DNS name to appear in alarm reporting or in the captured image file name, you must have a reverse DNS lookup record that maps the camera IP address to its name configured in your DNS server. This is in addition to the normal DNS record that maps the name to the IP address.

## **Axis Camera MO Settings**

### **Description**

This is an optional description of the monitored object.

### **Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### **Address/Name**

This is the IP address or DNS name of the Axis Video Camera. See below for information about how to use this field.

### **Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### **User Name**

This is the user name used to login to the camera if required.

### **Password**

This is the password used to login to the camera if required.

### **Port Number**

Normally this MO listens on the network for messages from the camera. The camera must be configured with the IP address of the system where NightWatch is located and a port number must be selected for communication between the camera and NightWatch. This port number **MUST BE THE SAME** for all Axis Camera MOs.

### **View Button**

Click this button to view live video from the camera. Only works if the IP address/Name of the camera is supplied. If there is any problem accessing the camera, the picture of the Axis 210 will be displayed instead of the live image.

### **Save Image on Alarm**

When checked, if a Motion Detection message is received from the camera, the current image on the camera is retrieved and stored in the directory entered below. If the camera requires login, the user name and password must be supplied above.

### **Save Image on scan**

When checked, on each scan (subject to the schedule, if any) the current image on the camera is retrieved and stored in the directory entered below. If the camera requires login, the user name and password must be supplied above.

### **Save Path**

This is the directory path where camera images will be saved. The directory must exist.

### **Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### **Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by NightWatch. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as [keyword] in the message text. The keywords you can use for this object are:

<b><u>Keyword</u></b>	<b><u>Description</u></b>
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[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[IDX]	expands to the monitored object's unique identification string with the Data Source Name appended.
[DESC]	expands to the monitored object's long description.
[SOURCEIP]	expands to the IP address of the camera that sent the last motion detection message.
[SOURCENAME]	expands to the DNS name (if available) of the camera that sent the last motion detection message.
[SOURCE]	expands to the DNS name if available and if not, the IP address of camera that sent the last motion detection message.
[MSG]	expands to the actual content of the last motion detection message.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "NightWatch".
[SYSTEM]	expands to the name of this system.

## **Putting it all together**

The standard **Room Alert** package consists of

NightWatch software licence on PC  
one Room Alert SENSOR UNIT,  
various EXTERNAL sensors (if required)

The Sensor Unit (SU) has its own internal sensors for temperature, humidity and power with provision for external sensors for flood, smoke, intruder etc. In addition to that there are external sensors available for temperature and humidity which have a dial setting. Customers own building management systems, generator units or UPS systems can be interfaced using a relay output provided by the supplier.

WARNING: do NOT touch, cover or breath on the built-in temperature and humidity sensor. It is also sensitive to dirt and dust which is why we recommend the SU be mounted vertically on a wall using the mounting holes provided.

### **Tools required**

Multi meter or continuity tester  
Flat blade screwdriver  
Crosshead screwdriver  
Wire strippers/cutters

A software engineer (or software support technician) and an electrician are needed to properly install Room Alert.

**WARNING: NEVER CONNECT MAINS POWER TO  
THE SENSORS, SENSOR UNIT OR SENSOR CABLES.**

The recommended order of installation for Room Alert is:

- (1) Choose the location of the Room Alert SU box and the external sensors  
- the SU box is mounted vertically on a wall in the computer room using the two mounting slots. Two mains power sockets should be nearby (< 1m), one (from the UPS) to supply the SU and another feed from the “raw” mains to be monitored.
- (2) Connect the SU network interface to the ip network using a network cable
- (3) Mount the external sensors and run the sensor cables back to the SU box.
- (4) Connect up the external sensor cables at each end - set all the sensors such that they are all “open circuit”. Use a continuity meter to check that they are not short circuited at the Sensor Unit. One by one turn each sensor into alarm state and check that the circuit goes “short circuit” at the Sensor Interface. Then turn each one back to “open circuit” (NORMAL condition).
- (5) Setup the ip address and configuration of the SU using the Device Installer software from Lantronix supplied on CD ROM or downloaded from the web.
- (6) Install and run the NightWatch software
- (7) Setup the Room Alert 2 Monitored Object(s) and Alarm Objects

- (8) Test the alerting in “simulation” mode
- (9) Check the sensor readings by viewing on the Room Alert web browser interface provided by NightWatch (normally on port 1088).
- (10) Install and setup the Axis 210 WebCam if required.

Note that a “live” check of each sensor should be carried out as part of the IT routine procedures, at least once per month. Temperature and Humidity sensors should be calibrated if necessary (see below).

## **Sensor Cable**

Sensor cable can be any type of copper low voltage cable, such as bell wire (eg Twin Figure 8), speaker cable, data cable eg CAT5 or telephone cable. The maximum recommended cable run is approximately 100m but it depends on the electrical environment. Longer runs may require higher quality screened data cable.

### NOTE

The **minimum** current carrying capacity is 1 Amp.

The **minimum** insulation between conductors is 50 Volts.

The sensor cable is connected to the pair of sensor connectors at one end and to the appropriate pair of screw connectors on the SU box.

In addition to power for the SU box itself, the power sensor will require a mains power socket in which to plug the 12V adaptor for the sensor electronics. Power is normally monitored on the INPUT circuit to the UPS and a 13A (UK) fused socket may have to be provided by an electrician.

The modem will also require power on a 13 A socket, preferably on a UPS with the PC so that it can still dial out in the event of a power cut..

When the installation is complete, check it by turning the temperature dial fully anti-clockwise and then fully clockwise. As the dial moves from one position to the other, the status of “Temperature” should change between Normal and Abnormal.

## **CALIBRATION**

After the RA hardware has been fitted and switched on continuously for a minimum of 2 (two) hours, the temperature and humidity can be calibrated. The reason for this is to allow the readings to reflect the actual values in the room. Obviously, our sensors are inside the RA unit which has a small amount of heat generated from its components. In addition, the actual location of the box will determine how much heat gain or heat loss is experienced.

So far as alarms are concerned the fact that there is a discrepancy is not important as the alarm level can be set accordingly. However, for convenience you may wish to have actual values.

To do the calibration, view the RA monitored object in the web browser interface to get the value we are reading, lets say for example it is 20C. Using a mercury thermometer take the room temperature about a foot away from the RA box, lets say this is 18C. In the RA MO setup screen, you can now enter a correction value of -2.

The same can be done for the humidity if required using an accurate instrument.

The calibration should be checked from time to time, at least once every 6 months.

## **Troubleshooting external sensors**

Use the multimeter or continuity tester to check that all the external sensors (if any) are functioning correctly. They are 2-STATE devices, OPEN-CIRCUIT and CLOSED-CIRCUIT. With a normal setup all the inputs to the SU box are OPEN-CIRCUIT when the room conditions are normal and the temperature sensor is turned UP. Therefore check the inputs to the SU box to make sure none of the pairs of sensor cable has a short on it. The dial on the temperature sensor should be turned DOWN in order to simulate an ALARM condition. This will put a short circuit on the sensor cable pair feeding to the SU box sensor input.

If the sensors are OK then the functioning of the SU box can be tested by disconnecting the sensor cable and putting a direct short between the pairs of sensor inputs, using a piece of copper wire or a paper clip. This should trigger an ALARM in the NightWatch software.

## **General troubleshooting**

To check if the Room Alert SU box is functioning correctly, run Hyperterminal and “talk” to it via the keyboard.

Use the status request “carriage return”. This should reply with 2 rows of numbers (make sure Auto Linefeed is on otherwise the 2<sup>nd</sup> row of numbers will overwrite the first). The last 6 digits on the first row represent the Temperature and Humidity values respectively.

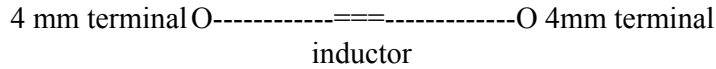
Once the hardware has been tested out and the Room Alert Monitored Object setup in NightWatch, then if there are still problems run NightWatch in TRACE mode (Start/Programs/NightWatch with trace) and send the zipped trace file (NightWatch.tra) to your supplier as an email attachment.

After powering the SU down, give it plenty of time to connect to the network after re-powering, say five or ten minutes.

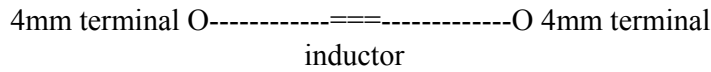
If you cannot see it on the network, try plugging it directly into a PC or laptop using a crossover network cable. Run Lantronix Device Installer and see if that picks it up with the “Search” button. The see if it works with Hyperterminal and finally with NightWatch. That means the box is OK and the network connection must be in error.

## The **Room Alert** EXTERNAL Flood Sensor

The external flood sensor consist of a square, clear plastic square with 2mm terminals at each corner. A special inductor component is wired between each pair of terminals to prevent RF transmissions caused by the water monitoring signals, and to damp any induced EMF signals from nearby equipment.

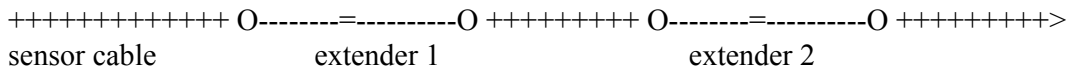


### FLOOD SENSOR EXTENDER

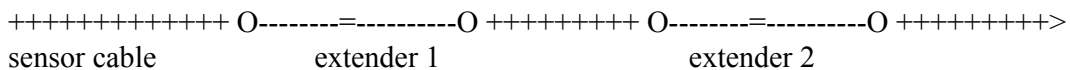


Each extender sits on the floor where any water pooling is likely to occur. Most often, this is under each air conditioner because air conditioners have cold water pipes which can leak.

The extenders are wired together in a daisy chain fashion using sensor cable, thus :-

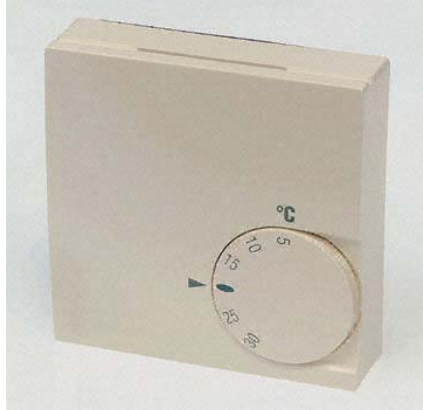


to sensor interface >



NOTE: THE WIRING MUST BE IN-LINE WITH THE INDUCTORS.

## The **Room Alert** EXTERNAL Temperature Sensor



### **IMPORTANT SAFETY NOTICE**

**THE SCREW CONNECTORS ON THE SENSORS AND THE ROOM ALERT INTERFACE (ID) BOX ARE VOLT-FREE CONTACTS ONLY. DO NOT CONNECT THESE TERMINALS TO ANY LIVE CIRCUIT. A QUALIFIED ELECTRICIAN MUST TEST ANY WIRES YOU CONNECT TO THE ROOM ALERT INTERFACE BOX FOR THE PRESENCE OF ELECTRICAL VOLTAGES AND IF ANY ARE DETECTED THEY MUST NOT BE WIRED TO THE INTERFACE BOX. THE INTERFACE BOX MAY BECOME DANGEROUS IF YOU CONNECT IT TO A LIVE CIRCUIT. DISCONNECT THE SENSOR INTERFACE FROM THE PC BEFORE WIRING ANY SENSORS TO IT. NEVER CONNECT MAINS POWER TO ANY OF THE ROOM ALERT SENSORS.**

The standard Room Alert EXTERNAL temperature sensor is calibrated in degrees C (which stands equally for either Celsius or Centigrade) which is the standard international scale for the scientific measurement of temperature.

The average “room temperature” is approximately 20 degrees C (70F). Since computer rooms are typically air conditioned to a point below normal room temperature, then a convenient setting for the sensor at many sites is 20C, since reaching that point means that the air conditioning is probably not working correctly.

The Room Alert temperature sensor has a dial setting to fix the trip point. When turned through the temperature range, you will hear a click as the sensor trips in at the current room temperature. Therefore, an alternative setting method is to adjust the dial to just above the point where it clicks.

The sensor is normally mounted on a wall, at about head height or above (to stop tampering). The wall should have “neutral” temperature characteristics, for example it is not near a door which is frequently opened and closed.

Installing the sensor requires the face plate to be removed. To remove the face plate, use a flat bladed screwdriver to GENTLY prise off the circular temperature dial. This reveals a crosshead screw which may be unscrewed to allow the face plate to be removed.

Removing the faceplate also reveals the electrical screw connectors. There are THREE of these copper-coloured crosshead screws because the device allows for a changeover contact where appropriate.

Normal we will wire to the two OUTSIDE screws only, leaving the middle one unconnected. The wire can be run out of the back of the unit and (for a professional job) into “mini-trunking” to eventually return to the Sensor Sensor Interface.

Low cost ‘bell wire’, speaker cable, telephone cable or data cable can be used to make the connections provided the distance is not too great (under 20 m). For longer runs use screened data cable. There is no definite upper limit as it depends on the surrounding electrical environment, but a reasonable estimate would be 100m. There is NO VOLTAGE polarity associated with the connections.

On the rear of the unit are two fixing holes to allow the unit to be screwed to the wall.

Some computer equipment can be damaged in both high and low temperature situations, ie temp too high and temp too low. It is easy to set up RomAlert with two Temperature sensors, one set to trip on TEMP high, and the other to trip on TEMP low.

To trip on LOW temperature the bottom and middle terminals must be used.

## The **Room Alert** EXTERNAL Humidity Sensor



### **IMPORTANT SAFETY NOTICE**

**THE SCREW CONNECTORS ON THE SENSORS AND THE ROOM ALERT INTERFACE (ID) BOX ARE VOLT-FREE CONTACTS ONLY. DO NOT CONNECT THESE TERMINALS TO ANY LIVE CIRCUIT. A QUALIFIED ELECTRICIAN MUST TEST ANY WIRES YOU CONNECT TO THE ROOM ALERT INTERFACE BOX FOR THE PRESENCE OF ELECTRICAL VOLTAGES AND IF ANY ARE DETECTED THEY MUST NOT BE WIRED TO THE INTERFACE BOX. THE INTERFACE BOX MAY BECOME DANGEROUS IF YOU CONNECT IT TO A LIVE CIRCUIT. DISCONNECT THE SENSOR INTERFACE FROM THE PC BEFORE WIRING ANY SENSORS TO IT. NEVER CONNECT MAINS POWER TO ANY OF THE ROOM ALERT SENSORS.**

The Room Alert EXTERNAL humidity sensor has a dial setting to fix the trip point. The sensor is normally mounted on the wall, which requires the face plate to be removed.

To remove the face plate, use a flat bladed screwdriver to GENTLY prise off the circular humidity dial. This reveals a crosshead screw which may be unscrewed to allow the face plate to be removed. On the rear of the unit are two fixing holes to allow the unit to be screwed to the wall.

Removing the faceplate also reveals the electrical screw connectors. There are THREE of these crosshead screws because the device allows for a changeover contact where appropriate.

Normal we will wire to the two OUTSIDE screws only, leaving the middle one unconnected. The wire can be run out of the back of the unit and (for a professional job) into “mini-trunking” to eventually return to the Sensor Sensor Interface.

Low cost ‘bell wire’, speaker cable, telephone cable or data cable can be used to make the connections provided the distance is not too great (under 20 m). For longer runs use screened data cable. There is no definite upper limit as it depends on the surrounding electrical environment, but a reasonable estimate would be 100m (approx 500 feet). There is NO VOLTAGE POLARITY associated with the connections.

The normal RH setting can be found by looking for the trip point as the dial is turned down (a click), while the room is in its normal condition. Then set the dial 10% above or below that to detect high or low RH (Relative Humidity).

Some computer equipment can be damaged in both situations, ie RH too high and RH too low. It is easy to set up RomAlert with two Humidity sensors, one set to trip on RH

high, and the other to trip on RH low. To trip on LOW humidity the bottom and middle terminals must be used. Other sensor types can vary from country to country, therefore a separate instruction sheet is supplied with the sensor.

# **Room Alert External Smoke Sensor**

(000904)



The Room Alert Smoke Sensor is a smoke detector with specially designed additional electronics which allows it to interface to the Room Alert hardware. It is powered by two PP3 9v batteries which should be **changed once per year**. Test the smoke sensor initially by pressing its test button. The red LED should come on.

The connector for the sensor wire is located under the smoke sensor's lid which snaps open. Look for a white terminal block of four screw connectors held on with a tie-wrap. Two wires are already connected to the terminal block from the output relay of the smoke sensor. Connect your sensor cable to **other** two connectors on the connector block. There is no polarity as they are volt-free contacts.

## **INSTALLATION MUST BE CARRIED OUT BY A SUITABLY QUALIFIED AND EXPERIENCED PERSON.**

Carefully fit the smoke sensor to the ceiling at a suitable position in the room using the two screw-fixing holes in the base of the unit. It must be located at least 18 inches from the corners of any walls and ceilings to avoid smoke deadspots.

Then connect the sensor cable to the white connector block as described above. Run the sensor cable back to the Room Alert Sensor Unit (SU) box. The sensor cable would normally run inside the false ceiling, down the wall in mini-trunking and then under the false floor to the Room Alert SU box. At the SU box it connects to one of the four input channels via screw connectors.

Sensor cable can be any low voltage cable such as "Twin Figure 8". This can also be bell wire, speaker cable, data cable or telephone cable. Minimum voltage insulation 50v, minimum current carrying capacity 1A. Maximum length is approximately 100m depending on the environment.

## **TESTING THE SMOKE SENSOR AFTER INSTALLATION**

There is a test button on the sensor which may be held in to test the alerting. A red LED will come on inside the smoke detector which shows the alert condition. NOTE: no sound is generated when the alarm is triggered.

At the same time as the smoke alarm is triggered the alerting software in the Room Alert PC should detect it and send out its alerts, depending on how it has been set up.

**THE SMOKE DETECTOR SHOULD BE TESTED MANUALLY WITH THE TEST BUTTON AT LEAST ONCE PER MONTH. BOTH PP3 BATTERIES SHOULD BE CHANGED FOR NEW ONES (ALKALINE TYPE) ONCE PER YEAR**

If the Room Alert software does not trigger, check that when the test button is pressed the relay output from the smoke detector (which connects to the sensor cable) is actually creating a short circuit. This can be done by disconnecting the sensor cables at the smoke detector and checking the output with a multi-meter or continuity tester. If that is OK, reconnect the cable and check it at the Room Alert Sensor SU box. To check the software, an alert condition can be simulated at the SU box by short circuiting the two sensor input channel screw connectors on the top of the SU box.

### **Room Alert™ Intruder Sensor**



#### **NOTE**

**INSTALLATION SHOULD BE CARRIED OUT ONLY BY SUITABLY QUALIFIED AND EXPERIENCED PERSONS.**

The intruder sensor consists of a magnetically activated proximity switch and a magnetic operator.

The proximity switch has a flying lead which is wired via terminal block to the Room Alert ID box using sensor cable. There is NO POLARITY associated with the sensor cables, which are VOLT-FREE circuits.

Sensor cable can be any low voltage cable such as “twin figure 8”. This can be bell wire, speaker cable, data cable or telephone cable. Minimum voltage insulation 50v, minimum current carrying capacity 1A. Maximum length is approximately 20m.

The Proximity Switch is attached to the door which you wish to monitor using two fixing screws. Locate it a a point on the edge of

the door such that the Magnetic Operator can be fixed close up to it when the door is closed.

The Magnetic Operator is then attached to the door jamb and butted up to the Proximity switch.

When the door is closed the two components are almost touching. In this position the Proximity Switch is operated and the circuit closed. When the door is opened the two components separate and the switch closes providing a short circuit alert to the Room Alert SU box.

The switches are CHANGEOVER type which means they have three wires and they can be wired either as NORMALL CLOSED or as NORMALLY OPEN. They should be wired for NORMALLY OPEN operation.

White = COMMON

Green = N/O

Brown = N/C

So we would normally use the White and Green connections.

Before connecting to the ID box, check that the switch is opening and closing properly using a multi-meter or continuity tester.

The Room Alert Monitored Object can be scheduled to only scan at certain times. This means you can setup the Intruder alarm so that it will only alert if the intrusion occurs between certain hours, say between 6PM and 6AM and at weekends. To do this you would use a separate scheduled Room Alert 2 Monitored Object just for the intruder sensor.

You may need to use the “Transientsensor.exe” software in conjunction with the intruder sensor.

## **Room Alert™ PANIC Alarm**

### **NOTE**

**INSTALLATION SHOULD BE CARRIED OUT ONLY BY  
SUITABLY QUALIFIED AND EXPERIENCED PERSONS.**



The Room Alert PANIC Alarm is a large red button switch which can be easily located in an emergency.

It is useful in situations where someone is working alone for example and may need help in a hurry but is not able to spend time contacting people on the phone.

Staff should be trained for the exact circumstances under which the PANIC Alarm is to be used. We recommend that its use be restricted to a specific set of circumstances so that the recipients of the alarm messages have a clear idea of what has gone wrong.

The persons who are designated to receive the alerts from the PANIC Alarm should be trained as to the exact procedure which you wish them to carry out.

It is attached to the wall at head height or it can also be fixed to the floor and used as a hidden foot-operated panic alarm.

The two NORMALLY OPEN connectors in the alarm switch are wired to the Room Alert ID box using sensor cable.

Sensor cable can be any low voltage cable such as “twin figure 8”. This can be bell wire, speaker cable, data cable or telephone cable. Minimum voltage insulation 50v, minimum current carrying capacity 1A. Maximum length is approximately 20m.

When pressed the button stays in until manually released.

In the active position, the PANIC Alarm sends a short circuit signal to the Room Alert ID box, which then raises the alert via the Room Alert PC software.

The alarm message and the pagers or phones it is transmitted to can be customised by the user in the software.