

Installation & Operating Instructions

Maverick IP Sensor Appliance

Model IP-PC-101-44-VDC



CE

FC

RoHS

 **MAMAC SYSTEMS®**

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SECTION 1 - Conformance & Testing

1.0.0 FCC Testing -

- Rule Part 15, Subpart B - Unintentional Radiators Class B Limits 15.107 & 15.109.

1.0.1 EMC/EMI Testing -

- BS EN 55022:1998, CISPR 22:1997 Amendments 1 & 2.
- BS EN 55024:1998 CISPR 24:1997 Amendments 1 & 2.
- EN 61000-3-3: Limitations of voltage fluctuations and flicker in low-voltage supply systems <16A.
- EN 61000-4-2: Electrostatic Discharge (ESD).
- EN 61000-4-3: Radiated, radio frequency, Electromagnetic field immunity test.
- EN 61000-4-4: Electrical Fast Transient/burst immunity test (EFT).
- EN 61000-4-5: Surge Immunity Test (Mains).
- EN 61000-4-6: Immunity to conducted disturbances induced by radio frequency fields.
- EN 61000-4-11: Voltage dips, short interruptions and voltage variations immunity test.

1.0.2 RoHS Compliant -

MAMAC Systems, Inc. products designated “RoHS Compliant” comply with the European Union’s Directive on the Restriction of the Use of Hazardous Substances 2002/95/EC (“RoHS”). These products do not contain Joint Industry Guide (JIG) - 101 Level A substances above threshold limits, except lead in RoHS exempt applications 5, 7a and 7c. These products do not contain perfluorooctane sulfonates (PFOS).

- **Cadmium (Cd)** < 100 ppm
- **Mercury (Hg)** < 100 ppm
- **Lead (Pb)** < 1000 ppm
- **Polybrominated Biphenyls (PBB)** < 1000 ppm
- **Polybrominated Diphenyl Ethers (PBDE)** < 1000 ppm
- **Hexavalent Chromium (CrVI)** < 1000 ppm

SECTION 1 - Specifications

- 1.1.0 **Anyone who can surf the web now can do sensor monitoring, control, data logging, and email alerts without any training or custom software. All you need is a web browser running on any laptop, PDA, or cell phone anywhere in the world.**

The *Maverick* IP Sensor Appliance incorporates a web server, analog/digital inputs and relay outputs. Power the appliance with any 24VAC transformer, plug it into a hub/router, launch any web browser, punch in the default IP and connect. No custom software to load, no discovery routines, no custom cables, or training.

The IP Sensor Appliance serves up static web pages with dynamic data updates every second or two. Most users can set up and utilize the appliance without any training or support in less than 5 minutes due to the innovative and familiar web browser based configuration.

The *Maverick* is an ideal low cost solution for light commercial, residential and remote monitoring applications. The appliance can also be used to enhance existing HVAC control systems by adding email alerts and data logging to critical points.

SPECIFICATIONS:

Supply Voltage: 24 VAC/VDC

Supply Current: 250 mA (6 VA)

Input Impedance: 125K ohms (VDC or
Digital) 250 ohms (4-20 mA)

Digital Input: 10.00 VDC maximum

Output Relay Rating: 250 VAC @ 5.0 Amps
UL Listed

Ethernet: 10-Base T

IP Assignment: Static or DHCP

Email: SMTP to two email addresses

Data Logging: 2048 samples each input

Logging Interval: 1.0 second to 99.99 hours

Environmental: 10-90%RH non-condensing

Operating Temp: -40°F-125°F (-40°C-52°C)

Storage Temp: -40°F-150°F (-40°C-66°C)

Enclosure: UL 94V-5-O Polycarbonate plastic

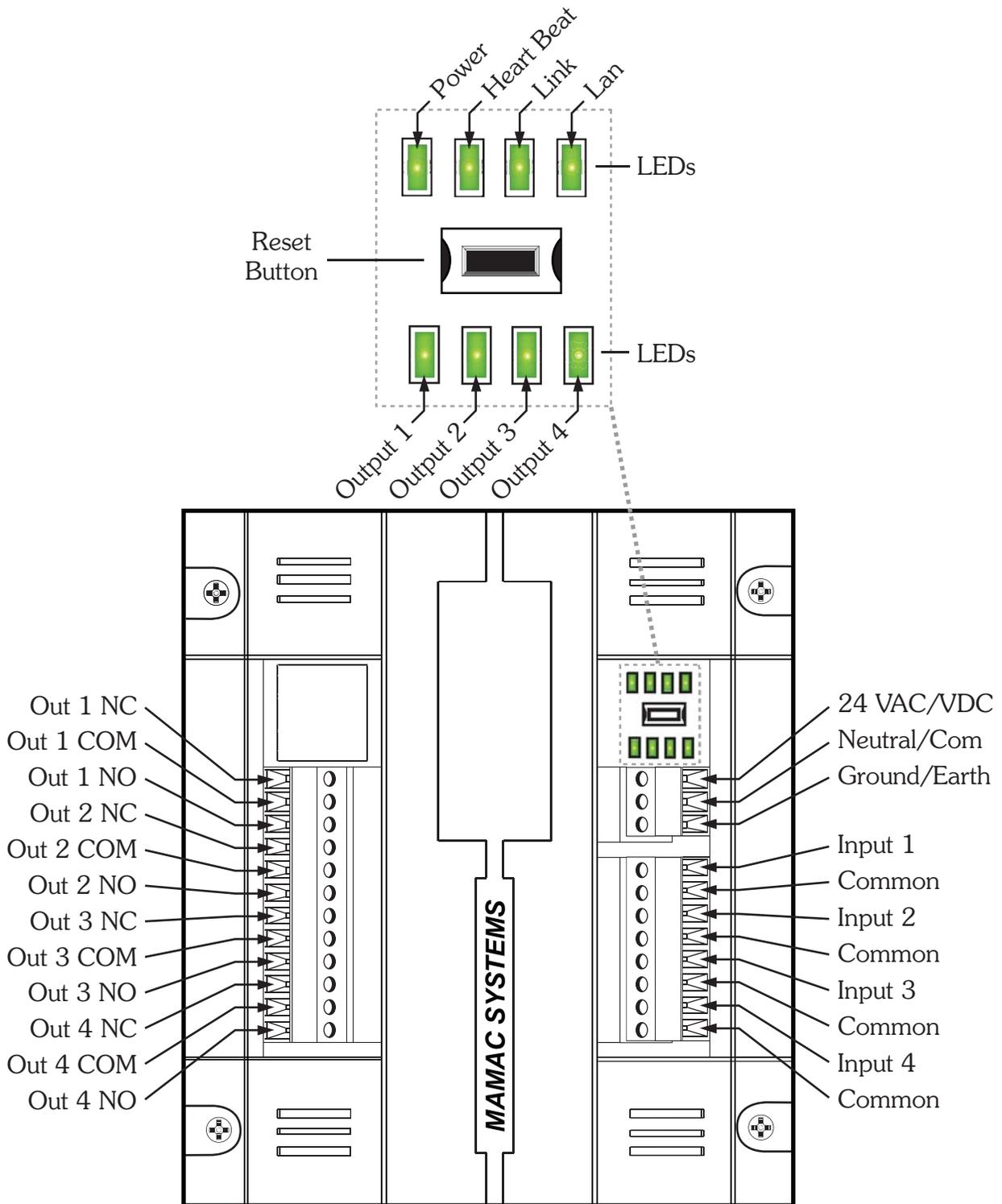
Termination: Removable terminal blocks 16
Ga max, RJ-45 Ethernet jack

Weight: 0.5 lbs. (.25 kg)

SECTION 1 - Appliance Overview

1.2.0

Figure 1



SECTION 1 - Installation

1.3.0 INSPECTION:

Inspect the package for damage. If damaged, notify the appropriate carrier immediately.

1.3.1 REQUIREMENTS:

- Tools (not provided)
 - Digital Volt-ohm Meter (DVM).
 - Appropriate screwdriver for mounting screws.
 - Appropriate drill and drill bit for mounting screws.
- Four #6 sheet metal screws.
- Training: Installer must be a qualified, experienced technician.

⚠ Warning:

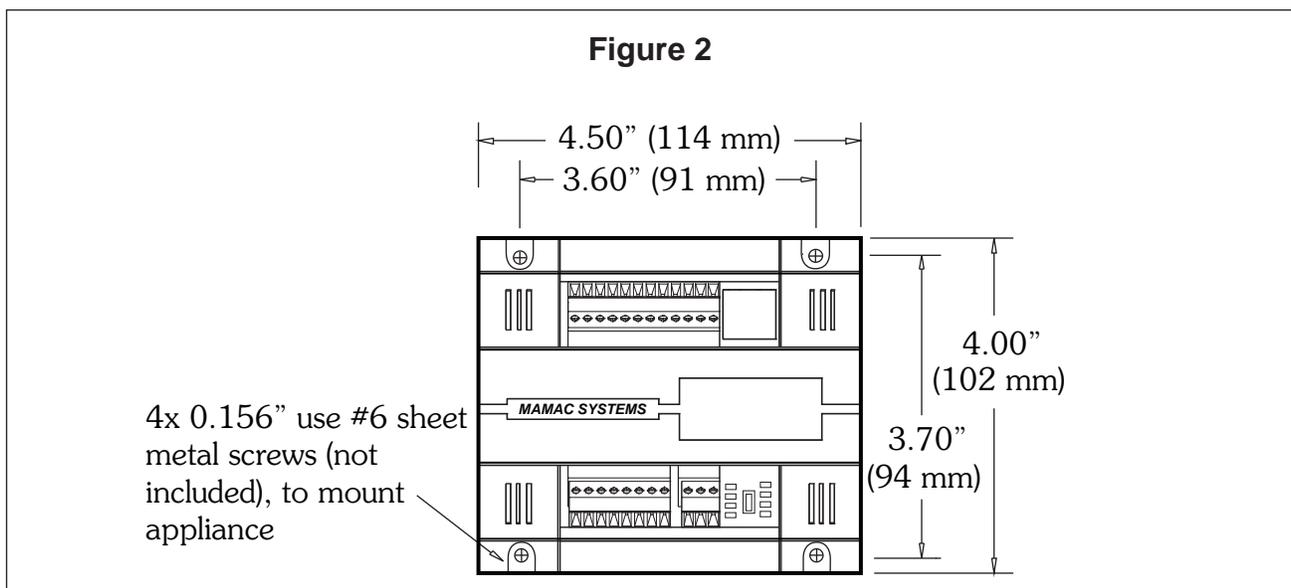
- Disconnect power supply before installation to prevent electrical shock and equipment damage.
- Make all connections in accordance with national and local electrical codes. Use copper conductors only.

⚠ Caution:

- Use electrostatic discharge precautions (e.g., use of wrist straps) during installation and wiring to prevent equipment damage.
 - Avoid locations where severe shock or vibration, excessive moisture or corrosive fumes are present.
 - Do not exceed ratings of the device.
-

1.3.2 MOUNTING:

The Maverick IP Sensor Appliance must be mounted on a flat surface with four #6 sheet metal screws (not provided) as shown in fig. 2.



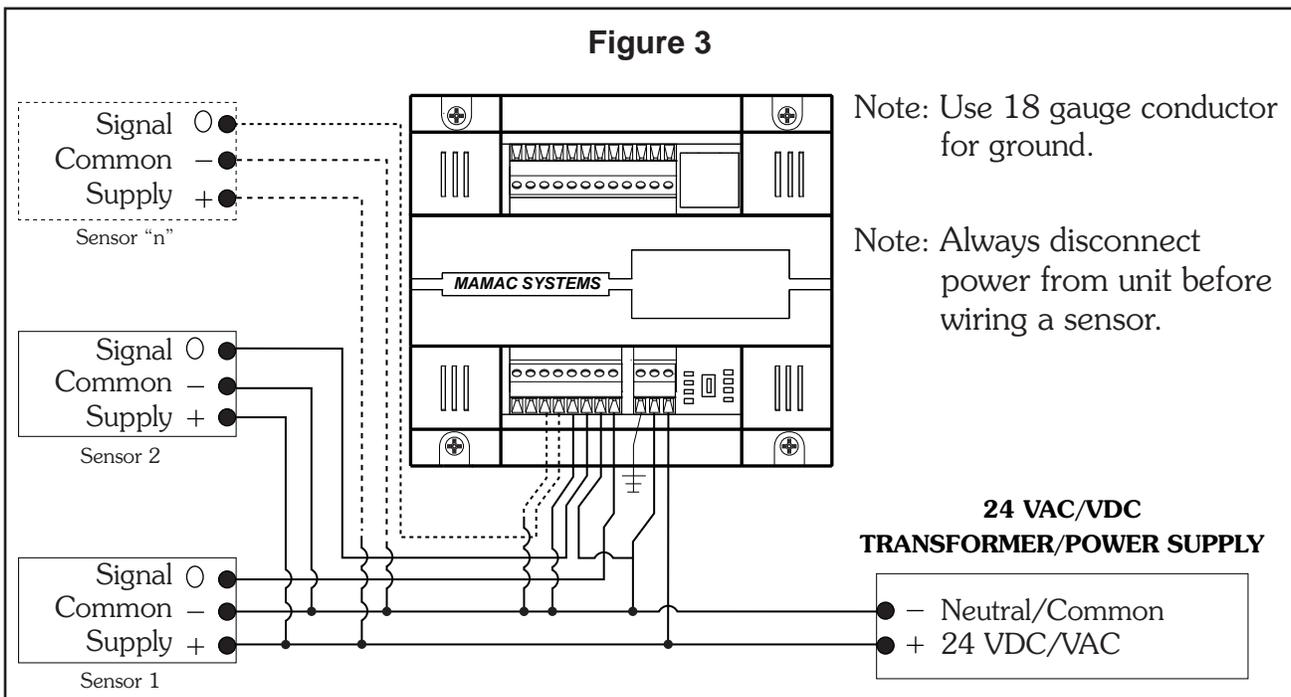
SECTION 1 - Wiring

1.4.0 Terminate the IP Sensor Appliance as shown in fig. 3.

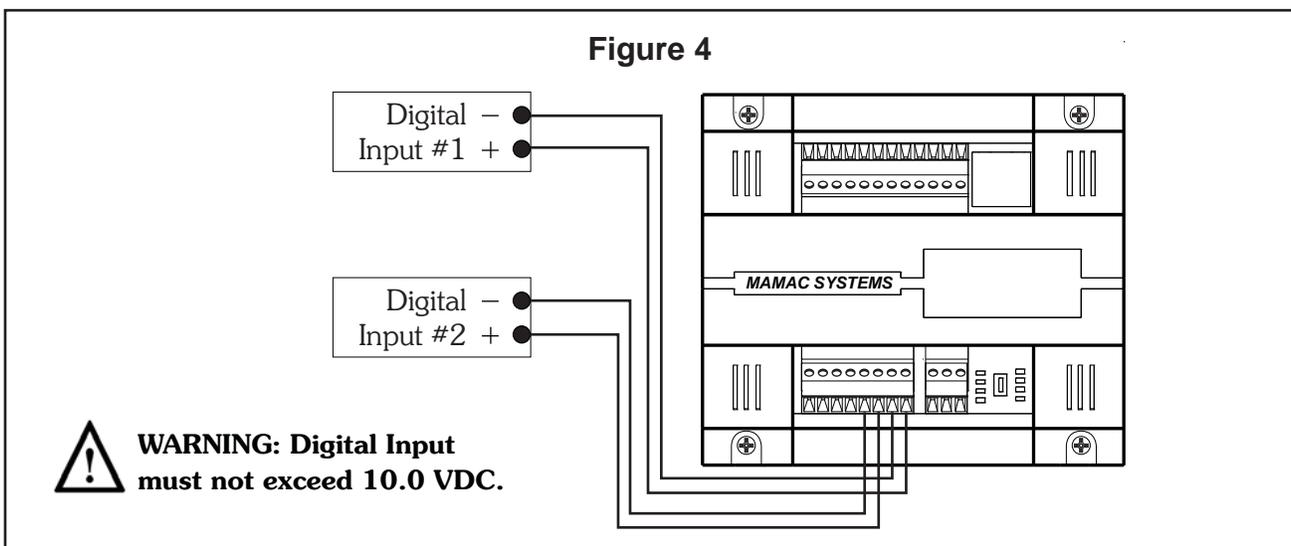
1.4.1 Use a UL rated 24VAC class-2 transformer or a UL rated 24VDC power supply with transformer isolation.

⚠ WARNING:
Maximum supply voltage **MUST NOT EXCEED 35VAC/35VDC.**

⚠ CAUTION:
The appliance and all sensors connected must be wired with all neutral/common connections with the same polarity. All sensors and the appliance neutral/common must terminate at the transformer/power supply neutral/common.



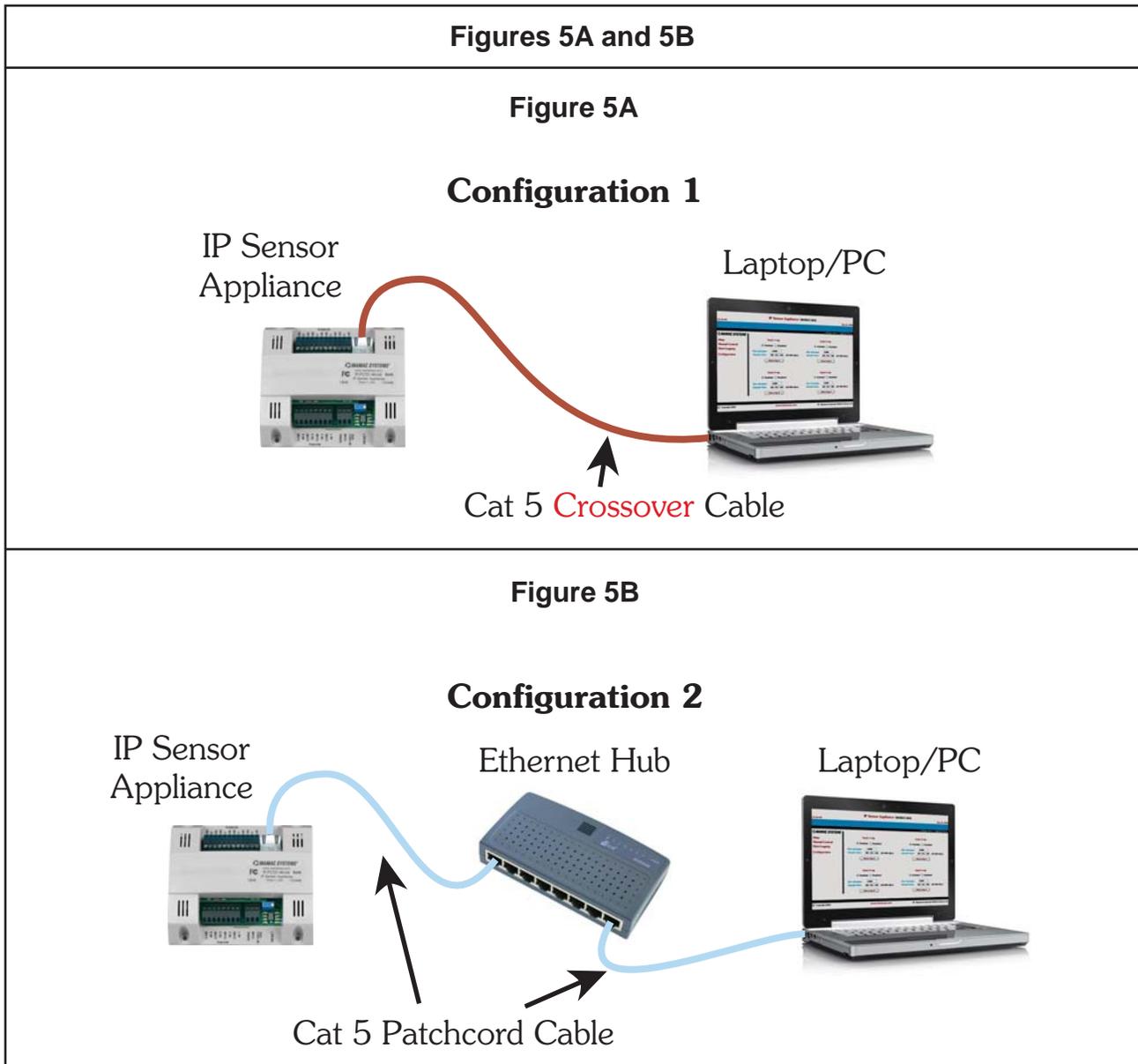
1.4.2 Digital inputs are terminated as shown in fig. 4.



SECTION 2 - Initial Configuration

2.0.0 For first time start-up, a laptop/PC and a crossover cable is required. If a crossover cable is not available, a hub can also be used as shown in fig. 5B. Terminate the appliance as shown in fig. 3. Unplug the input and output terminal blocks and leave only the power terminal block plugged in. Attach the crossover cable to the appliance and the other end to the laptop ethernet jack as shown in fig. 5A. If using a hub, attach a CAT 5 patchcord between the appliance and the hub and another CAT 5 patchcord between the hub and laptop as shown in fig. 5B.

Turn the power on. The power LED will come on. After 10 seconds the heartbeat LED will start blinking at one pulse per second rate. The link LED should light up if the appliance is correctly connected to the laptop/PC.

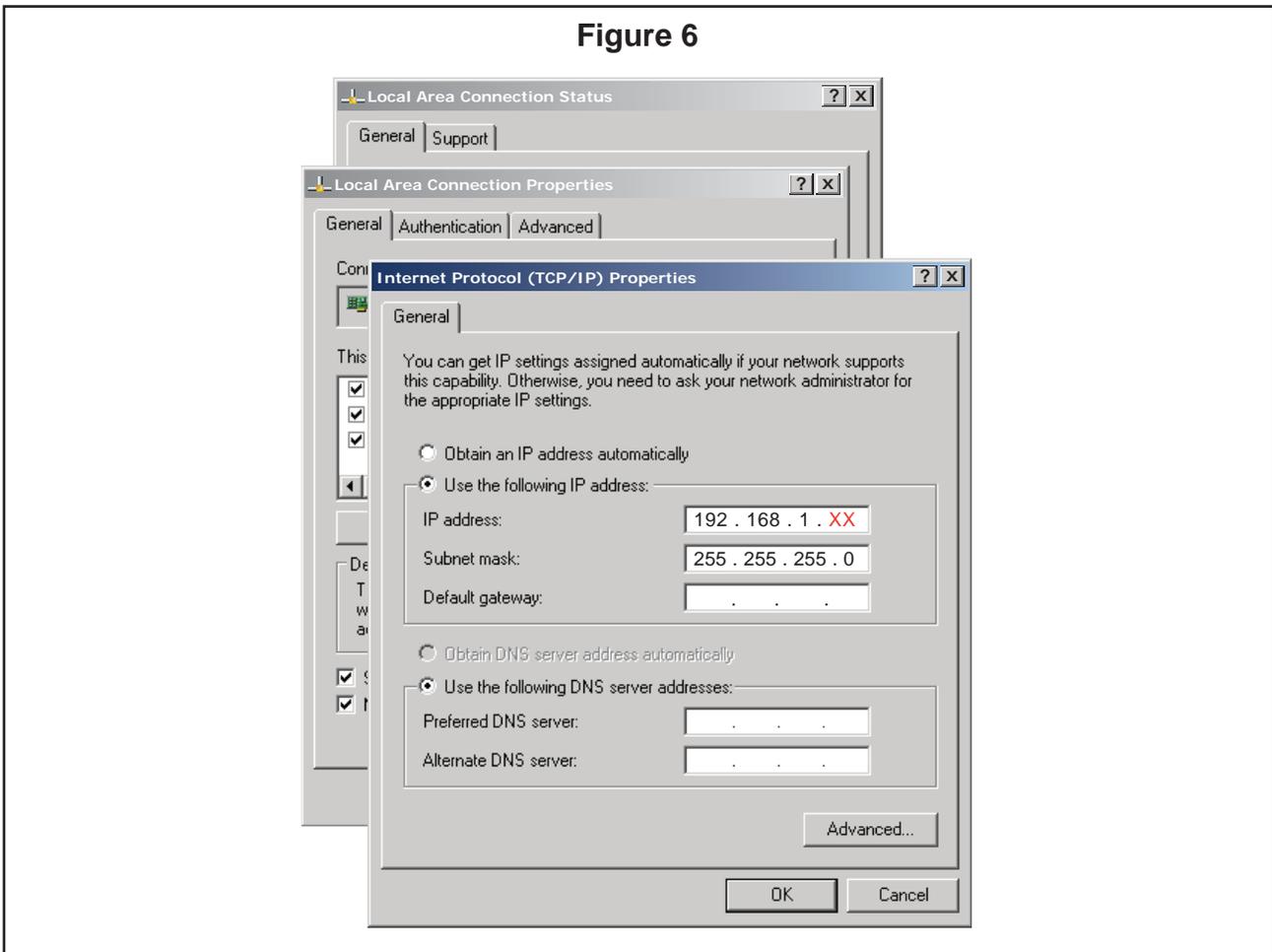


SECTION 2 - Internet Protocol

2.1.0 Insure that the laptop/PC network settings are set up correctly. From the *Start* menu, go to *Settings*, click *Network Connections*. Double click the *Local Area Connection* icon. Local Area Connection Status screen will open. Click on the *Properties* tab. Local Area Connection properties page will open. Scroll down to *Internet Protocol (TCP/IP)* and click/highlight. Now click on the *Properties* tab on the same screen. Internet Protocol (TCP/IP) Properties page will open. Click the *Use the following IP address:* radio button. Now punch in a static IP address with the same subnet as the appliance as shown in fig. 6. Example: 192.168.1.XX. The XX can be any number except 10 because the Maverick default IP is 192.168.1.10. We recommend using 192.168.1.11. Now click on the second line *Subnet mask*. It should automatically fill in with 255.255.255.0. If it does not please input the subnet as shown below. Default Gateway and DNS setup is not required for initial setup. Fields can be left blank. Click *OK* . Now *OK* or *Close* out of the *Network Connections*.

If Windows wants to restart the laptop/PC after the network configuration, please do so. Laptop/PC is configured to do initial configuration of the appliance. Launch the Internet Explorer or Firefox web browser. Delete everything in the address box and punch in the default IP 192.168.1.10. Press enter. The Maverick will connect and the *Password/Clock* page will be served up by the appliance to force the user to change the password.

Figure 6



SECTION 2 - Network & Email Configuration

2.2.0 Static IP Network Configuration

The Maverick appliance can be configured with a Static IP or DHCP. From the Main page select *Configuration* and highlight *Network/Email* and the appliance will serve up a new page. The default configuration is *Static IP* (DHCP disabled). Fill in the *Device IP Address*, *Subnet Mask*, *Default Gateway* and *DNS Server* in the appropriate fields. The static IP set up is exactly the same as any laptop/PC network configuration.

Enter up to two email addresses in the appropriate fields for the Maverick email alerts. Since the Maverick sends a SMTP email directly without an ISP account, the *Email From* field must have a valid email address, or some email servers/ISP may reject the email. For the *Email Server* based on preference click the *DNS* or *SMTP IP* button. In most cases if not all, DNS (default) is used and a DNS (Domain Name System) server is available on the network to resolve the host name to an IP address. If a power cycle email is desired, click the *Enabled* button. For static IP configuration, leave the *DHCP IP Change Email Disabled* (default). Click *Save*.

(Default *Email From* *appliance@mamacsys.com*.)

2.3.0 DHCP Network Configuration

Dynamic Host Communication Protocol is used if a static IP is not available. To configure the appliance as DHCP click the *DHCP Enabled* radio button. Please insure that at least one valid email is set up in the Email #1 or #2 field. Click *DHCP IP Change Email* radio button to *Enabled*. The email section is configured the same as above. Click *Save*. **WARNING: In DHCP configuration insure that there is a valid email address in one of the fields and DHCP IP Change Email is Enabled.** This is required for the Maverick to send an email and inform the user of it's DHCP server assigned IP address.

IP Sensor Appliance: MAMAC UNO May 9, 2008

13.34:59

Configuration | Password/Clock

MAMAC SYSTEMS®

NETWORK

DHCP: Enabled Disabled

Device IP Address: 192 . 168 . 1 . 10

Subnet Mask: 255 . 255 . 255 . 0

Gateway IP Address: 192 . 168 . 1 . 1

DNS Server IP Address: 192 . 168 . 1 . 1

EMAIL

Email #1:

Email #2:

Email From:

Email Server: DNS SMTP IP

SMTP Server IP: . . .

DHCP IP Change Email: Enabled Disabled

Power Recycle Email: Enabled Disabled

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SECTION 2 - Password/Clock Configuration

- 2.4.0** When connecting to the IP Sensor Appliance the first time, the Password/Clock page will be served up by the Maverick to force the user to change the default password and username. Current time, date, firmware version and MAC address is displayed on the Password/Clock page for reference purposes.
- 2.4.1 Node I.D.:** Please fill in the name of the appliance in this field. Maximum 20 alpha and/or numeric characters (upper or lower case).
- 2.4.2 Main Page Refresh Rate:** The Maverick appliance uses AJAX and XML to automatically refresh the Main page. The default refresh rate is *1.0 second*. If the user desires to slow down the refresh rate, click on the down arrow and pick the desired refresh rate.
- 2.4.3 Username:** Default username is *admin* (Lower Case). Please enter a username up to 20 alpha and/or numeric characters. **Caution: Username field is case sensitive.**
- 2.4.4 Password:** The default password is *password* (Lower Case). Please enter a new password up to 24 alpha and/or numeric characters. **Caution: Password field is case sensitive.**
- 2.4.5 Time & Date:** The current time & date is displayed on the top of the page. Update time, date and day as needed.

Click *Save*. All fields will update on the page.

IP Sensor Appliance: MAMAC UNO

13.34:59 May 9, 2008

Configuration | Password/Clock

MAMAC SYSTEMS

GENERAL

Current Time & Date: 13:38:02, Friday, May 9, 2008

Firmware Version: 1.11

MAC Address: 00-50-C2-1D-54-39

Node I.D.: MAMAC UNO

Main Page Refresh Rate: 1 Sec

LOGIN

Username:

Password:

Re-Enter Password:

TIME & DATE

Time: 13 : 38 : 02 Hr:Min:Sec (24Hr)

Date: May 9 20 08

Day: Sun Mon Tues Wed
 Thur Fri Sat

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SECTION 2 - Sensor Inputs, Email Alert & Setpoint Control Configuration

- 2.5.0** From the navigation bar, click/highlight *Configuration* and pick *Inputs*. The appliance will serve up the input configuration page. Based on the sensors selected, click the appropriate radio button (*0-5VDC*, *0-10VDC* or *Digital*). Next click *Save*. All inputs will be automatically configured to accept the specified sensor input. (*Default is 0-10 VDC input*). Next double click *Input 1* and a new page will open up to configure input number 1.
- 2.5.1 Name:** Type in an appropriate name for the input e.g: Room Temp or Humidity. Sensor name can be any alpha and/or numeric characters up to 18 characters.
- 2.5.2 Min Value:** Enter the minimum value of the sensor range in this field. For example if the sensor output is 0-10VDC for 0 - 100°F temperature range, enter *0* as min value. Similarly, if the sensor range is -30 to + 130°F, the min value would be *-30*. Default value is *0*.
- 2.5.3 Max Value:** Enter the maximum value for the sensor range in this field. For the above examples, the maximum value for 0 to 100°F would be *100* and for -30 to +130°F would be *130*. Default value is *0*.
- 2.5.4 Units:** Enter the desired units for the sensor input up to 6 alpha characters only.
WARNING: Do not use numeric characters in the *Units* field.

The screenshot displays the configuration interface for 'Input 1' on a MAMAC UNO IP Sensor Appliance. The page title is 'IP Sensor Appliance: MAMAC UNO' and the date is 'May 9, 2008'. The time is '13:34:59'. The navigation bar includes 'Configuration' and 'Password/Clock'. The MAMAC SYSTEMS logo is in the top left. A sidebar on the left lists navigation options: 'Main', 'Manual Control', 'Data Logging', and 'Configuration'. The main content area is titled 'Input 1' and contains the following sections:

- Name:** A text input field containing 'Lab Temp'.
- Real Value Limits and Units:** Three input fields: 'Min Value' (0.0), 'Max Value' (100.0), and 'Units' (F).
- Email Alert Configuration:** Includes an 'Alert Enabled' section with 'On' selected, 'Lower Value' (69.0), 'Upper Value' (70.0), 'Alert Wait' (1 Sec), and 'Attach Log' with 'On' selected. There are also dropdown menus for 'Alert Disabled' and 'Alert Enabled'.
- Relay Control Settings:** Includes 'Output Control' (1), 'Lesser than or equal to' (67.0) with a 'Relay off' dropdown, and 'Greater than or equal to' (69.0) with a 'Relay on' dropdown.

A 'Save' button is located at the bottom right of the configuration area. The footer contains copyright information: '© Copyright 2008', 'www.mamacsys.com', and 'Registered trademark MAMAC Systems, Inc.'

SECTION 2 - Sensor Inputs, Email Alert & Setpoint Control Configuration

2.5.5 Email Alerts: If an email alert is desired on input # 1, please enable by clicking the radio button. Enter the desired lower and upper values for the alert and click on the down arrow to enable or disable the alert. For example, if you would like an email alert if the temperature goes above 76°F and back to *Normal* if it goes below 74°F; enter 74°F in the lower field and click *Alert Disabled*, and enter 76°F in the upper field and click *Alert Enabled*. In order to filter out false alarms, the input has to be in the alert state for more than one second (default) before the Maverick sends out an alert email. If this filter time needs to be increased, click the down arrow and pick the desired filter interval. If logging is enabled on this input and if the user desires the Maverick to attach the log to the email, please click the *On* radio button for *Attach Log* field. Default is *Off*.

Email alert is now configured and if the sensor variable goes above the upper value in the above example, an email alert will be transmitted to the email address(es) specified on the *Email Configuration* page after the programmed filter interval has lapsed. A CSV log will also be attached if the user has specified. Similarly, if the user desires the Maverick to send an email if the sensor value goes below 74°F in the above example and returns to normal if above 76°F (heating alert), just switch *Alert Disabled* in the *Lower Value* to *Alert Enabled* and switch *Alert Enabled* in the *Upper Value* to *Alert Disabled*.

2.5.6 Output Control: Any input can also do setpoint control on any output. To enable *Output Control* click the down arrow to the desired output number. *Default is 0*, no control. In the above example, if the user would like relay/output 1 (heat) to come on if the sensor value goes below 74°F, enter *74.0* in the *Lesser than or equal to* field and click the down arrow and pick *Relay On*. Next enter *76.0* in the *Greater than or equal to* field and click the down arrow and pick *Relay Off*. Control is programmed. If the sensor variable goes below 74°F, output 1 will switch on and when the sensor value heats up to 76°F, the relay will switch off. In this way, the user can define the deadband or hysteresis for each input independently.

On the other hand, if the user would like the above to cool if the sensor input goes above 76°F and shut down cooling if the input goes below 74°F; just switch the *Relay On* to *Relay Off* in the *Lower Field* and *Relay Off* to *Relay On* in the *Greater Than* field.

Click *Save*. Configure each sensor input. If no sensor is connected to an input, please leave the values in all fields for that sensor at default.

SECTION 2 - Output Configuration

2.6.0 To configure the outputs, click on the *Configuration* icon in the navigation bar and select *Outputs*. The four outputs can be controlled by the inputs or can be programmed to switch on and off based on a time schedule. Outputs can also have both sensor input based setpoint control AND time control concurrently. If an output has both setpoint control AND time control programmed, the appliance will ignore setpoint control during *On* time and the output will remain *On* based on time schedule. However, if the output is scheduled *Off* based on time schedule, setpoint control can switch it on.

Double click *Output 1* icon and a new page will be served up to configure the output. In the *Name* field please enter a unique identifier for the output up to 20 alpha and/or numeric characters. If the output is only controlled by a sensor input, no additional configuration is required.

If time based control is desired on an output, please click *Enabled* (default is *Disabled*). Click the radio button *On* for each day time control is desired and fill in the start and stop time in 24 hour format. Click *Save*. Output is configured.

The screenshot displays the web interface for an IP Sensor Appliance (MAMAC UNO) on May 9, 2008. The interface is titled "OUTPUT CONFIGURATION" and "TIME CONTROL".

OUTPUT CONFIGURATION

| | |
|---------------------------------|---------------------------------|
| Output 1 : Fan | Output 3 : XXXX |
| Output 2 : Pump | Output 4 : XXXX |

TIME CONTROL

Output 1

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|--------|---------|-----------|----------|--------|----------|
| Start: | 10:00 | 05:00 | 05:00 | 05:00 | 05:00 | 05:00 | 10:00 |
| Stop: | 15:30 | 17:30 | 17:30 | 17:30 | 17:30 | 17:30 | 15:30 |

Output 2

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|--------|---------|-----------|----------|--------|----------|
| Start: | 09:00 | 06:00 | 06:00 | 06:00 | 06:00 | 06:00 | 09:00 |
| Stop: | 17:00 | 19:00 | 19:00 | 19:00 | 19:00 | 19:00 | 17:00 |

Output 3

The interface also includes a navigation menu on the left with options: Main, Manual Control, Data Logging, and Configuration. The footer contains copyright information for MAMAC SYSTEMS, Inc. (2008) and the website www.mamacsys.com.

SECTION 2 - Data Logging

2.7.0 The Maverick logs each sensor input data in a comma separated (CSV) file. Up to 2048 samples can be logged for each input. The logging interval can be from 1 second to 99.99.99 hours for each sample. The appliance can also attach the log to an email alert if configured.

From the navigation bar, highlight *Configuration* and select *Logging Setup* and a new page will open up. To enable logging for input 1, click the *Enabled* (default is *Disabled*) and enter the number of samples to be logged up to a maximum of 2048 (default is 1000). Now enter the logging interval from 00:00:01 (1.0 second) to 99:99:99 (99 hours, 99 minutes, 99 seconds). Click *Save Log 1*. **WARNING: If any changes are made to the logging set up, previous data is lost. CAUTION: For accurate data please make sure clock/time is configured correctly before initiating logging.**

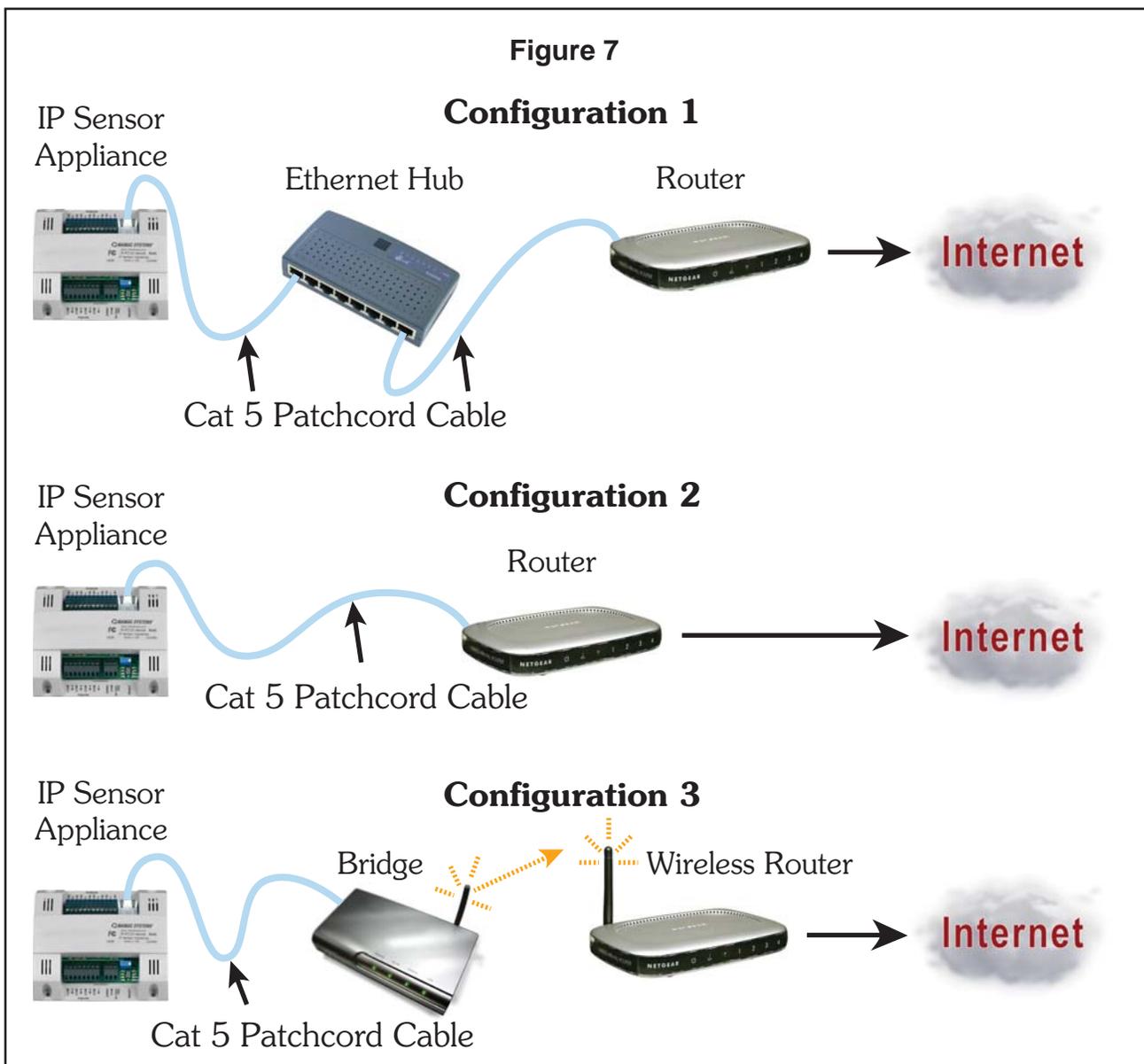
Enable and configure logging for each input desired. Digital inputs can be logged also if the appliance is configured to accept digital inputs.

The screenshot displays the 'Logging Setup' configuration page for the MAMAC UNO IP Sensor Appliance. The page is titled 'IP Sensor Appliance: MAMAC UNO' and shows the date 'May 9, 2008' and time '13:34:59'. The navigation menu on the left includes 'Main', 'Manual Control', 'Data Logging', and 'Configuration', with 'Configuration' being the active page. The main content area is divided into four sections, one for each input (Input 1 Log, Input 2 Log, Input 3 Log, and Input 4 Log). Each section contains an 'Enabled' radio button (selected), a 'Max Samples' field (set to 1000), and a 'Sample Rate' field (set to 00:01:00 Hr:Min:Sec). Below each section is a 'Save Log' button. The footer contains the copyright information: '© Copyright 2008', 'www.mamacsys.com', and '® Registered trademark MAMAC Systems, Inc.'

SECTION 3 - Network Configuration Options

3.0.0 Static IP Address: After the initial configuration, power down the appliance by unplugging the power terminal block and disconnect the crossover cable. **CAUTION: Each time the static IP is changed, power cycle the appliance to load up the new static IP.** Connect the Maverick to the ethernet as shown in fig. 7. Three options are available-- 1) Use a CAT 5 patchcord and plug it into a hub or switch and connect the hub/switch to a router on the web. 2) Use a CAT 5 cable to connect directly to the router. 3) Configure an Ethernet Bridge and router and connect the appliance to the Bridge with a CAT 5 cable. For more information on wireless 802.11 B/G configuration, please refer to TI IP802.11.

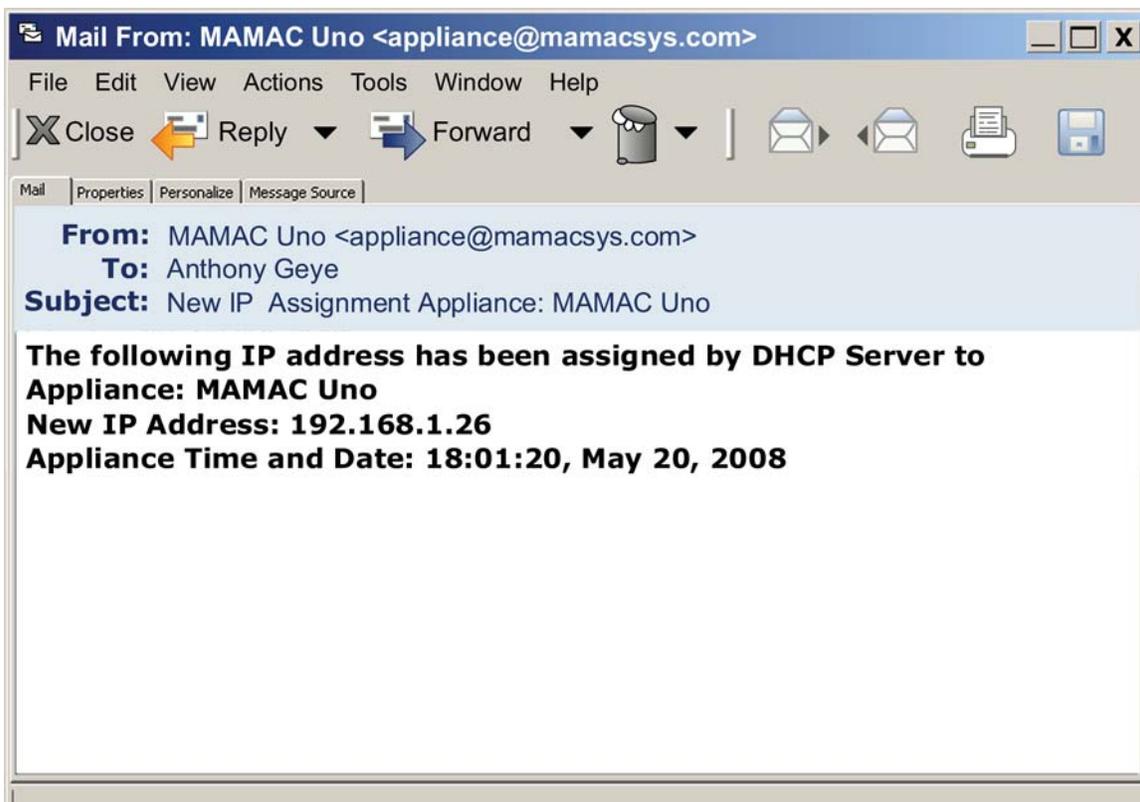
Terminate the sensors and outputs as shown in fig. 3 (Section 1.4.1). Power up the appliance. To connect to the appliance, launch a web browser (Internet Explorer or Firefox) on a laptop/PC, PDA or web enabled mobile/cell phone. Delete all text in the browser address bar and punch in the static IP address and hit enter. The Maverick will connect and the Main page will launch. Have fun!



SECTION 3 - Network Configuration Options

3.0.1 DHCP IP Assignment: If during initial configuration *DHCP* was enabled, power down the appliance and disconnect the crossover cable. Connect the Maverick to the ethernet as shown in fig. 7. Three options are available-- 1) Use a CAT 5 patchcord and plug it into a hub or switch and connect the hub/switch to a router on the web. 2) Use a CAT 5 cable to connect directly to the router. 3) Configure an Ethernet Bridge and router and connect the appliance to the Bridge with a CAT 5 cable. For more information on wireless 802.11 B/G configuration, please refer to AN IP802.11.

Terminate the sensors and outputs as shown in fig. 3 (Section 1.4.1). Power up the appliance. As soon as the Maverick comes on line, it will search for a DHCP server and lease a new IP assignment. As soon as it gets a new DHCP IP, it will send an email to one or both email addresses with the new DHCP IP. Once you receive the email, connect a laptop/PC, PDA or web enabled mobile/cell phone to the same network and launch the web browser. Enter the appliance internal IP address and connect. Each time the DHCP server assigns a new IP to the appliance, an email will be generated to keep the user abreast of the latest DHCP assigned internal IP of the Maverick.



SECTION 3 - Main Page

3.1.0 After the initial configuration, any web browser running on a laptop/PC, PDA or a web enabled mobile/cell phone can connect to the appliance. The Maverick will serve up the Main page showing the status of all 4 inputs and outputs. The Main page also displays email alerts and the auto or manual status of the outputs. The appliance uses AJAX and XML to update the values of all fields on the Main page without refreshing the whole page. As a result one second updates are possible. If any input is in a alert state, the appropriate field will change from *Normal* to *Alert* in red color. Similarly, if an output is in manual mode, the field will change from *Automatic* to *Manual* in red color.

The screenshot shows the main page of the MAMAC UNO IP Sensor Appliance. The page title is "IP Sensor Appliance: MAMAC UNO". The current time is 13:34:59 and the date is May 9, 2008. The page is divided into several sections:

- Navigation Menu:** Main, Manual Control, Data Logging, Configuration.
- INPUT VALUES:**
 - Sensor 1: Lab Temp : 70.3 F
 - Sensor 2: Lab Humidity: : 19.0 % RH
 - Sensor 3: Duct Pressure : 2.4 "wc
 - Sensor 4: Fan Current : 25.0 Amps
- OUTPUT VALUES:**
 - Output 1: Supply Fan : On
 - Output 2: DX Cooling : On
 - Output 3: Humidifier : Off
 - Output 4: Exhaust Fan : On
- EMAIL ALERT STATUS:**
 - Sensor 1: Alert
 - Sensor 2: Alert
 - Sensor 3: Normal
 - Sensor 4: Normal
- MANUAL CONTROL STATUS:**
 - Output 1: Automatic
 - Output 2: Automatic
 - Output 3: Automatic
 - Output 4: Manual

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SECTION 3 - Manual Control

3.1.1 Manual Control: Any output can be controlled manually from the web browser by clicking on the *Manual Control* icon on the navigation bar. A new page will be served up showing the current output control status and state. Suppose the user desires to turn output #1 on manually. Click the *Manual* radio button for *Output #1* and click *Save*. The status will change from *Automatic* to *Manual*. Now click the *On* radio button for *Output #1* and hit *Save*. The Output #1 state will change from *Off* to *On*. Now navigate to the *Main* page and the output will be *On* and the *Manual Control Status* will show output #1 in manual state.

To turn the output back to automatic, click *Manual Control* on the navigation bar, change the state to *Off* and click *Save*. Again click the *Automatic* radio button and hit *Save*. Output is back under automatic control. **CAUTION: In case of power failure, all outputs under manual control will revert back to automatic control when power is restored.**

The screenshot shows the 'MANUAL CONTROL' page for the MAMAC UNO IP Sensor Appliance. The page includes a navigation menu on the left with options: Main, Manual Control (selected), Data Logging, and Configuration. The main content area is titled 'MANUAL CONTROL' and contains a table for configuring four outputs. Each output row has columns for 'Output Status' (Auto, Manual, Automatic) and 'Current Status' (Off, On, Off). Output 1 is currently set to Automatic and Off. Output 2 is set to Manual and On. Output 3 is set to Automatic and Off. Output 4 is set to Automatic and Off. Below the table are 'Directions' and a 'Save' button.

| | Output Status | | | Current Status | | |
|----|----------------------------|---|-----------|---------------------------|-------------------------------------|-----|
| 1. | <input type="radio"/> Auto | <input type="radio"/> Manual | Automatic | <input type="radio"/> Off | <input type="radio"/> On | Off |
| 2. | <input type="radio"/> Auto | <input checked="" type="radio"/> Manual | Manual | <input type="radio"/> Off | <input checked="" type="radio"/> On | On |
| 3. | <input type="radio"/> Auto | <input type="radio"/> Manual | Automatic | <input type="radio"/> Off | <input type="radio"/> On | Off |
| 4. | <input type="radio"/> Auto | <input type="radio"/> Manual | Automatic | <input type="radio"/> Off | <input type="radio"/> On | Off |

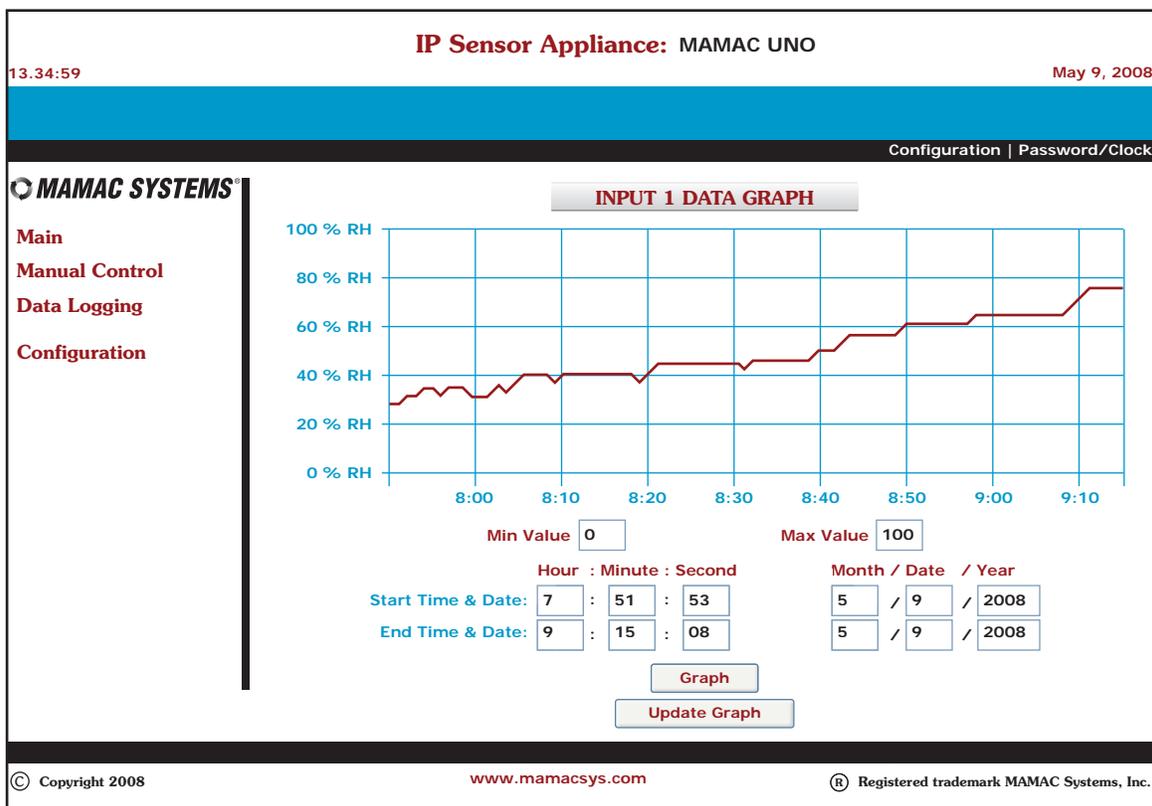
Directions:

1. Change the 'Output Status' to 'Manual', click 'Save'..
2. Set the 'Control' to the desired setting (On or Off), click 'Save'.
3. The 'Current Status' will switch to desired state.
4. Follow steps 1 and 2 to change back to 'Automatic'.

SECTION 3 - Data Logging

3.1.2 Data Logging: The Maverick logs data in a CSV (Comma Separated Values) file which can be imported into NotePad, WordPad, Word or Excel. To view a CSV file of the logged data, navigate to the *Data Logging* icon on the navigation bar and highlight *CSV*. Click the desired *Input* and the appliance will serve up the data. To *Save* or to *Import* the CSV file, click *File* on the browser navigation bar and highlight *Save As*. Enter a file name and save the data on the laptop/PC or PDA. Once saved, the file can be imported into any application which accepts CSV file format or emailed.

To view the logged data as a graph, again highlight *Data Logging* in the navigation bar, select *Graphs* and click the desired *Input*. The Maverick will initialize a JAVA script and graph the data. To refresh the graph, click *Update Graph*. If the user would like to narrow the *X* scale (*sensor value*) to enhance the resolution, enter the *Min* and *Max* values and click *Graph*. The appliance will refresh the graph with the new *X* scale. Similarly, the time *Y* scale can also be narrowed by changing the start and/or end times and clicking *Graph*.



SECTION 3 - Reset Button & XML

3.2.0 Reset Button: If the user misplaces the appliance *IP address* or forgets the *password*, the *Reset* is designed as a *Back Door*. If any of the above happens, press and hold the reset button for more than *20 seconds* until the heartbeat light stops pulsing; release the switch. The Maverick IP Address, User Name, Password, Input, Output and Logging configuration will revert back to Factory Defaults.

3.3.0 XML: The appliance has XML embedded with formatted input and output data. Each data field has an XML tag defined. To view all XML tags, connect to the Maverick with any browser and then in the address bar of the browser enter the following: *Appliance_IP/mav.xml*. As an example, if the appliance is set up with the default IP to review XML tag page enter *192.168.1.10/mav.xml* in the browser address bar and the Maverick will serve up the XML TAG page as seen in fig. 8. For additional information on XML, please review TI IP XML.

Figure 8

```
<?xml version="1.0" encoding="ASCII" ?>
- <Maverick xmlns="http://mamacsys.com/mav">
  <NodeID>MAMAC3</NodeID>
  <CurrentTime>13:31:25</CurrentTime>
  <CurrentDate>September 26, 2008</CurrentDate>
- <Sensor Channel="1">
  <SensorName>Boiler Temp</SensorName>
  <SensorValue>100.0</SensorValue>
  <SensorUnits>Deg F</SensorUnits>
  <SensorAlert>Normal</SensorAlert>
</Sensor>
- <Sensor Channel="2">
  <SensorName>Humidity</SensorName>
  <SensorValue>26.3</SensorValue>
  <SensorUnits>%rh</SensorUnits>
  <SensorAlert>Normal</SensorAlert>
</Sensor>
- <Sensor Channel="3">
  <SensorName>Heat</SensorName>
  <SensorValue>83.8</SensorValue>
  <SensorUnits>Deg F</SensorUnits>
  <SensorAlert>Normal</SensorAlert>
</Sensor>
- <Sensor Channel="4">
  <SensorName>Heat - Unoccupied</SensorName>
  <SensorValue>83.7</SensorValue>
  <SensorUnits>Deg F</SensorUnits>
  <SensorAlert>Normal</SensorAlert>
</Sensor>
- <Output Channel="5">
  <OutputName>Occupied Control</OutputName>
  <OutputValue>Off</OutputValue>
  <OutputControl>Automatic</OutputControl>
</Output>
- <Output Channel="6">
  <OutputName>None</OutputName>
  <OutputValue>Off</OutputValue>
  <OutputControl>Automatic</OutputControl>
</Output>
- <Output Channel="7">
  <OutputName>Heat</OutputName>
  <OutputValue>Off</OutputValue>
  <OutputControl>Manual</OutputControl>
</Output>
- <Output Channel="8">
  <OutputName>Heat - Unoccupied</OutputName>
  <OutputValue>Off</OutputValue>
  <OutputControl>Manual</OutputControl>
</Output>
</Maverick>
```