

## Frequently Asked Questions

All the sensors are connected to a common serial bus, so if one sensor goes down they may all go down if the bad sensor "jams" the bus or refuses to release it so other devices can talk. Another thing which can make sensors appear to go offline is EM interference with the 1-wire signals; check to see if the sensor cables are routed close to something that creates a lot of EM interference such as a generator, a large motor, or a large backup-battery charger, or if the sensor wiring runs parallel to the main power cables for any equipment that draws a lot of current such as an arc-welder, air compressor, or an HVAC unit. If this is the case, try moving the sensor wiring away from these EM-interference sources, and this should fix your problem.

**My sensors are showing up as unplugged. What does this mean?**

If this is not the case, check the environment the sensors are in to see if it is pushing them past their built-in limits. Temperatures below freezing can cause ice or condensation to form, creating shorts across the sensor terminals, which will make the sensor appear dead; also, if the temperature exceeds the range of the sensor it may show up as unplugged.

If neither of these is the case, then one of the sensors could be dead. Try disconnecting all sensors from the unit, then reconnecting them one at a time until you find the one that causes the problem. Once you have isolated the faulty sensor, disconnect it, and the other sensors should work normally.

**Your units support 16 external sensors, but none of them have this many RJ-12 ports, how can I connect 16 of them?**

You can use a RJ-12 splitter with six conductors per jack to expand the number of ports. You can order one from us. Note that RTAF and RTAFH sensors will require an RJ-12 splitter with all six conductors per jack. Make sure it's a straight-through splitter and not a crossover type, otherwise the signals will not be passed through correctly and the devices will not appear on the bus.

**Five types of remote sensors:**

Temperature

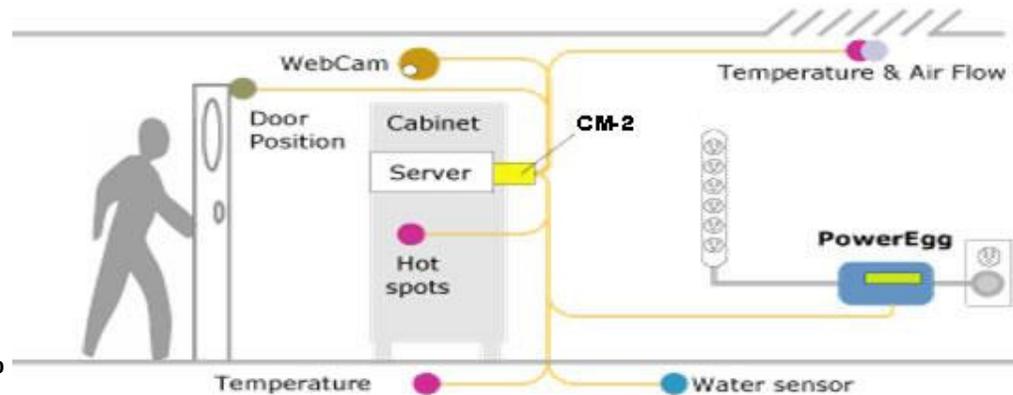
Air Flow & Temperature

Water Presence

Door Position

Power Egg: (v, a, w, kWh, peak v, low v)

Current Transformer (30 to 300 amps)



**Two Types of Busses**

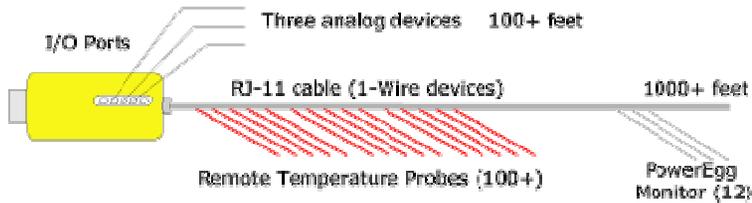
The CM-2 has two ways to communicate to external devices. The first is the three-port analog sensor, called I/O ports, IO1, IO2, IO3.

The second is a self-powered serial bus which uses microprocessor-based sensors.

This bus can have dozens of sensors run over a cable length of 1000 ft. (300m). Each Serial Bus sensor has a unique 64-bit address.

Devices on this bus are wired in parallel. See wiring diagram below.

Two External Busses: Analog and Serial



**Analog Sensors:**

- Door Sensors
- Water Presence
- Occupancy Sensor
- Current Transformer

**Serial Bus Sensors:**

- Temperature
- Air Flow & Temperature
- Power Egg

**How is a web page created with the CM-2?**

The supplied software creates Java server pages which are normally accessed through Port 8080. Each time you access the web page, the JSP program queries the CM-2 for the latest data and builds the HTML code you see in a web browser.

**Where are the data kept?**

In the CM-2 data are recorded at a user-set time interval and recorded to RAM on the built-in server. The server sends this data to a DataFlash memory chip each time 1Kb of data has been recorded.

**What kind of a load does the CM-2 software place on my PC?**

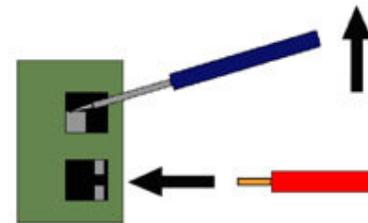
The supplied software uses 30 megabytes of memory and runs as an NT service. We test on a 700MHz PC and when a web page request comes in, CPU usage shows about 2%. Every 60 seconds the software writes to an Excel file and that briefly shows approx. 2% CPU usage as well.

**What can I attach to the Analog I/O ports?**

CM-2 has three analog inputs.

These are 0 to 5 volts DC analog inputs with built-in loop current (provided through a 100K ohm pull-up resistor). Typical applications are magnetic door sensors, occupancy sensors, liquid sensors (conductance), or any other sensor using a dry-contact switch (no power supplied by switch). The 0-5V input voltages are scaled to a reading of 0 - 100 in the CM-2.

For analog signal sensing, a *relatively* low-impedance (<10K ohm) source is needed to overcome the pull-up resistor.



**What do the "C 1 2 3 C" I/O ports on your products do, and how do I connect to them?**

These are general-purpose analog signal-input ports. The most common use is door-position sensing with magnetic door sensors. Other devices which are commonly used with these ports include water sensors, smoke alarms, and current transducers. The ports have an input voltage range of 0 - 5VDC; in addition, a weak pull-up is provided on each input, allowing the ports to measure passive devices such as dry-contact switches.

On the CM-2 units, the terminals are of a spring-loaded type; insert a small flat-blade into the top part of the port to be opened, pry upwards to push the spring-loaded terminal open, then insert the wire. When you remove the screwdriver, the spring-loaded terminal will automatically grip the wire.

**Three I/O Ports**

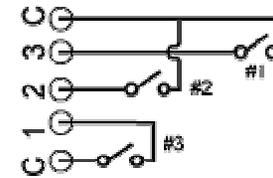


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**Door Position Magnetic Switch Wiring- One per Door**

Each door switch goes to an individual I/O port. When a door position is changed, you can tell which door has been opened by viewing the alarm source, IO1, IO2, or IO3. Either Normally Open (NO) or Normally Closed Magnetic Switches can be used, since you are looking for a state change and either type will deliver that; we do, however, recommend that you use only one type of switch so you can more easily keep track of which is closed or open. Note that there are three ports and only two Common (C) ports; you can use either "C" port as a Common to the I/O ports, and polarity is disregarded in passive devices, so you can connect two door sensors to the same (C) port. Wires up to 200 feet can be run. We recommend 22 gauge solid conductor, two wire cable.

**Door Switch Wiring - One Per Door**

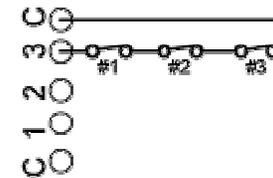


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**Door Position Magnetic Switch Wiring- Multiple Door Switches per Door**

When you need more than three door sensors or you need to put all of your door sensors on one port they may be wired in series. The disadvantage of this is that you will know a door opened, but not which one. In this drawing, three magnetic switches are wired in series. You must use Normally Closed (NC) magnetic switches for this configuration. Note that an alarm will only indicate which *group* of door sensors has been opened, but you will not be able to determine which individual door within the group was opened.

**Door Switch Wiring - Multiple per Door**

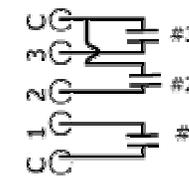


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**Water Sensor - One Sensor per Port**

The water sensor measures conductivity. No current flows when the sensor is dry, which gives a reading of "99". When water is present, some current flows (the exact amount will depend on the water's mineral content), which will cause the reading on the I/O port to fall as the resistance across the water-sensor contacts decreases.

**Water Sensor Wiring**



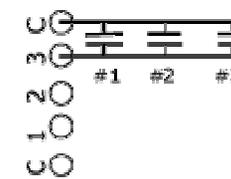
110-01000001-01

**Water Sensor - Multiple Sensors per Port**

If you need more than three liquid sensors, you can wire them in parallel in the same manner as door-position switches.

Note that again, an alarm will only indicate which *group* of water sensors has become wet, but it will not indicate which individual sensor within the group is wet.

**Multiple Water Sensors**



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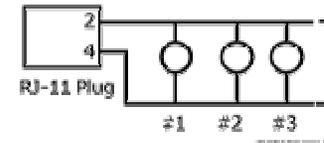
**My smoke detector is reading differently from what the instructions say it should read, why is this?**

The smoke detector's operation was inadvertently described in reverse in some early versions of the instruction sheet. A smoke detector should read high when there is no smoke, and low when the smoke alarm is tripped.

**What about the phone jacks on your devices?**

These jacks are actually RJ-12 ports. The RJ-12 has six conductors while phone jacks will have either two or four. All of the sensors, except the RTAF and RTAFH, can operate with a four-conductor RJ-11 connector. (The RTAF/RTAFH devices require additional power to operate, which is delivered via the extra two conductors on the full 6-wire RJ-12 jack.) The devices attached to these jacks use the Dallas Semiconductors 1-wire serial protocol. Each sensor has a built-in 64 bit unique address. The devices, which are wired in parallel, can have an aggregate cable length of up to 1000 ft. (300m). The CM-2 has 5 jacks and can have up to 16 devices on the 1-wire bus via the use of appropriate splitters.

Serial Bus (RJ-11) Wiring



**Why do the RJ-12 ports use Cat 3 wiring?**

We found that most people working in IT positions have a Cat 3 crimper and a box of RJ-11 connectors. Also most people are familiar with the operation of such a connector.

**Serial Bus Wiring - Using the RJ-12 Port**

The digital sensors are wired in parallel using four-conductor wire or six wires in remote airflows (RTAF RTAFH), typically using telephone splitter blocks or hub connection blocks.

**How accurate is my temperature sensor?**

It is accurate to 0.5° C of the temperature.

It is more likely that the temperature is what they are seeing but not what they are expecting, or that they have not been careful to position the sensor in a way that minimizes errors.

Temperature sensors have a finite thermal mass, and must be connected to a measurement circuit in a way that permits some thermal conduction between the circuit and the sensor. In addition, most sensors have self-heating which is the heating of the sensor due to the electrical power that the sensor itself dissipates. The temperature rise seen on the CM-2 is not due to self-heating, it is due to the thermal conduction from the measurement system (in particular from the Digicube).

The effect of thermal mass is to delay the response of the sensor to a change in temperature and to filter out any rapid changes in temperature. This is often specified as a thermal time constant which is a measure of the time it takes the sensor to respond fully to a step change in the temperature. The DS18B20 does not specify a thermal time constant but I expect it to be on the order of a minute or more. Attaching the sensor to a circuit board or cable will increase the thermal time constant. The thermal time constant is also a function of the humidity and air speed.

**My temperature sensor is reading high, why is this?**

To get meaningful temperature measurements, the temp-sensor/measurement system must be accurate, the temp sensor must be located where the temperature needs to be measured, and the temp sensor must be mounted or attached in such a way as to minimize stray thermal conduction.

For remote temperature probes, we rely on the manufacturer of the DS18B20 for the accuracy of the sensor (+/-0.5° C over -10-85° C). Because it has a digital output no accuracy is lost in the measurement system (the CM-2). By its design, the customer can locate the sensor where they want to measure the temperature. However, there are a few problems that can arise when locating the sensor. First, the cable must be routed to the location of the sensor and because the cable is thermally coupled to the sensor it can act as a heat sink or source for the sensor. This means that if the cable is routed through a hot or cold area, or against hot or cold surfaces, it can affect the temperature readings.

Secondly, the method of attaching the sensor can be critical. If it is attached to a surface or object, the temperature measurements may be more related to the temperature of the surface or object than the surrounding air. In addition, hot-spots (and occasionally cold-spots) can develop, especially inside cabinets. It is best to mount the sensor by clamping the

cable some distance from the sensor and using the stiffness of the wire cable to hold the sensor in place. Hanging the sensor has the same effect. Unless the customer specifically wants to measure for hot-spots the sensor should be placed in moving air, preferably air that is being forced to move with a fan.

The internal temp sensor on the CM-2 and other products suffers from all of the effects mentioned above, but still can be useful for detecting temperature related problems if accuracy and location are not critical aspects of the measurement. Ensuring good air flow across the front of the unit will improve the quality of the internal temperature measurement.

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When the airflow is reading higher than 20 or so in still air you may need to recalibrating it. This can be done by:

1. Airflow is best detected when the AF sensor's open end is pointed towards the object of interest. Keeping this in mind, place the AF sensor in a "still air" environment. The AF sensor should be plugged into the powered-on CM-2 unit. Let the AF sensor sit in the "still air" environment for at least 10 minutes while it collects data. "Still air" is an environment where airflow should be low to nonexistent. This level will then correspond roughly to a reading of 20 on the AF sensor.

2. Telnet into the CM-2 device. Check the firmware on your CM-2. The firmware is located on the top right corner of the web page. If the firmware is version 2.30 or earlier, use

**How can I calibrate my Airflow sensors?**

login: admin  
password: mallard

to login to telnet. If your firmware is later than version 2.30 then you must create an administrator account and use that to login to telnet. You can create an administrator account through the 'config' tab located on the top menu on the web page.

3. Once you are logged in telnet type in the command 'afcal' and hit enter. A few messages should come up regarding 'devices found.' At this point the AF sensor is calibrated, and you may exit the telnet session. The unit now needs to be rebooted for the new calibration to take affect.

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**How many climate monitors can I monitor at once with Watchdog Console?**

It should be able to monitor 100 CM-2 units.

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**Wow, that's a lot, what kind of load would monitoring this many CM-2 units put on my network?**

The load is minimal.

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**Does console run as a windows service?**

Yes.

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**What can we expect CM-2 to do when the alarms are tripped?**

The CM-2 will send 1 email when the value of the sensor exceeds the norm then 1 more email when/if the reading goes back into the norm. Example, you set the max. temperature trip to 30° C and the temperature rises to 31° C CM-2 will send an alarm, then if it falls to 29° C you will get an additional message saying it is happy again. If the alarm is set to 30° C and the temperature is oscillating between 29-31° C this can result in large numbers of emails being sent. To correct this set the alarm higher or lower but not where the temperature will normally fluctuation

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**Can I use any Web Cam with**

We have tested the one we sell. Other Web Cams may work, but are not supported.

you CM-2?

**Can I change the graphs on the Sensors page on the CM-2?** No, this page cannot be modified by an end user.

**Why can't I telnet into my device?** To telnet into our products you need to be running a machine with a Windows OS, or if using unix press control + enter.

**I just noticed that the firmware on the Web page and the firmware on the CM-2 LCD are different.** This is not a problem, the web firmware is for the web server in the CM-2, but the firmware on the LCD is the firmware on the processor so they should be different.

**Why does it sometimes take a while for my CM-2 to cycle between tabs on the CM-2 web page.** If there is higher traffic on the site, or if you try to change between tabs rapidly it will slow down while it processes the requests.

The following is a guideline for using the graph CGI query:

timerange

A negative value of -1 means all data points available. A positive values means the last N seconds of data. Values under 100 are too small to be effective and ignored by the unit.

width

This argument refers to width of the image rendered. The maximum value is 416. Values less than 1 or greater than 416 are undefined and result in undefined behavior.

height

This argument refers to the height of the image rendered. The maximum value is 300. Values less than 1 or greater than 300 are undefined and result in undefined behavior.

device

This argument includes ALL sensors from a given device into the graph. The device value must be a valid 16 character ID.

**How can I pull graphs off my CM-2 with an HTTP request?**

sensor-

Notice the dash after the sensor label. This argument includes a sensor from a device into the graph. The sensor- value must be a valid 16 character device ID followed by the 0-based index of the sensor of interest. Sensor offsets to non-existent sensors result in undefined behavior.

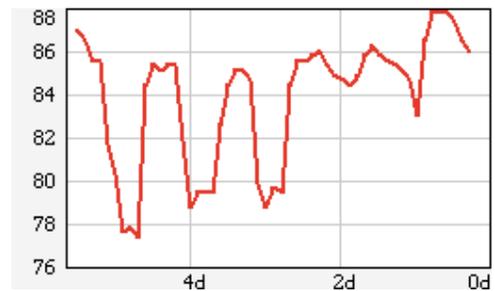
Notes: Mixing device and sensor- arguments in the same graph CGI query may produce undefined results.

Examples:

Query all data points for all sensors in main device  
<http://www.weathergoose.com/graph.bmp?width=256&height=150&timerange=-1&device=010307640B00006A>

Query last 15 minutes of data points for light level sensor in main device  
<http://www.weathergoose.com/graph.bmp?width=256&height=150&timerange=900&sensor-=010307640B00006A3>

Query all data points for relative humidity and sound level sensors in main device  
<http://www.weathergoose.com/graph.bmp?width=256&height=150&timerange=-1&sensor->



=010307640B00006A1&sensor-=010307640B00006A4

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<b>We lost the password to our CM-2 how can we recover it?</b>	Email us and we will send you a new password so you can access the CM-2 the change the password.
<b>How fast will a city power monitor inform me of a power outage?</b>	The IO graph on a CPM will slowly fall should there be a loss in power, it may take a few seconds to drop below the normal operating range.
<b>Can I have my CM-2 turn on/off the outlets on a Power Egg II if an alarm is tripped?</b>	You can use 3rd party software like IP Sentry or you could write a script to provide the glue logic that parses the CM-2's XML and then sends the correct HTTP POST transaction to the CM-2 to turn on or off the controllable relay based on parsed sensor values.
<b>What's the purpose of the Power Egg?</b>	There's no easy way to know how much current a power strip is consuming. The Power Egg plugs in between the power source (wall) and the existing power strip.
<b>What does it measure?</b>	Peak volts, low volts, amps, watts, power factor and kilowatt-hours consumed. Volts can range from 100 to 280 VAC (volts AC). Amperage can go as high as 30 amps but the cables available are only rated for 20 amps.
<b>Does the unit operate only from 120 volts?</b>	No, the device will operate from 100 to 280 VAC.
<b>What kind of connectors does come it with?</b>	5-15 is standard. L5-15, L5-20, and 5-20 connectors are optional.
<b>Does it operate as a stand-alone unit?</b>	Yes, a built-in LCD display with backlighting constantly cycles through the data.
<b>Why monitor power usage with a current transformer in a power strip?</b>	If your power load is approaching the limit, the breaker could trip and bring down the entire cabinet full of equipment. The CT can spare IT managers midnight or weekend trips to the office to reset breakers by letting them know if they are operating near the limit.
<b>Don't the equipment placards tell you how much current each device consumes?</b>	Not reliably. The current consumed varies widely depending on how many accessories are installed and is generally the maximum the unit is rated for.
<b>Other than buying your product, how can I tell how much current a power strip is using?</b>	An electrician powers the equipment down, inserts a break-out box and reads the current using a clamp-on ammeter. This costs and causes about 30 minutes of down time.
<b>What does a current transducer (CT) do?</b>	The CT is an alternating current measurement device. The unit has swing-open jaws that clamp around one wire. The unit is switch selectable for 30,60,120 amps. The output is a DC signal from 0-5V proportional to the current. This device is connected to the analog I/O ports of IT Watchdogs climate monitors. The climate monitor will display a value from 0-99 proportional to both the input voltage and the current measured.
<b>What is power factor?</b>	In AC circuits, loads that are not purely resistive can cause voltage and current to be out of phase. This causes the apparent power (which you are billed for) to be greater than the actual power used. This can be corrected by adding reactance to a system to make it purely resistive. Such measures, however, are generally reserved for large scale operations.
<b>What does RMS mean?</b>	The acronym means Root-Mean-Squared. This means the DC voltage which would generate the same heat in a resistor as the AC voltage you have. The usefulness is that you know the

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actual power being consumed and not an estimate as in peak-to-peak calculations. RMS takes much more computing power but is more useful.

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**How can I log the data?** Attach the Power Egg to CM-2 climate monitoring hardware with RJ-12 port and you can view graphs or download data as an Excel spreadsheet.

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**So if I use your power strip, I get an alarm if I get close to the circuit breaker trip value?** Yes, the unit e-mails or pages you if you set up the alarms properly. Some units have audible alarms.

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**What else should I know about power?** Watch the graphs. One user had chronic server shutdowns in the early morning hours. The graphs showed a morning power sag caused brownout conditions and server shutdown.

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**What about peak voltage?** Peaks are troublesome because they trip surge protectors and you come to work with power-down servers and wonder why. The graphs will show peaks coming and going as a trend.

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**What about 3 phase power?** You will see the voltage and current of each phase. You can easily balance the phases when you know what each power strip is using.

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**What's the difference between Apparent Power and Real Power?** Apparent power is the calculation of watts times amps which is mathematically equivalent to current squared times impedance. Real power current squared times the resistive component of your load's impedance.

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**Why are the graphs so important?** Power changes. Voltage sags and peaks. The graphs tell the story. Taking occasional readings doesn't show trends.

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**Once I have an electrician measure the power, why should it change?** Power usage changes substantially as equipment is added and removed. One additional piece of equipment could put the breaker right up against the trip point.

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**How accurate is the current transducer?** 2%

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**Does it matter what the voltage is on the power line?** No, typical voltages are 120 to 480 vac.

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**What's a typical application of a current transformer?** Three phase load balancing. Three current transformers and a CM-2 provide a low-cost method of balancing the phases. You can also snap current transformers around the wires in a breaker box and measure the current flowing through each breaker. This allows an IT manager to know if any breaker is close to its limit.

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**How many CT's can a CM-2 monitor?** Three without additional hardware. However, with a product called the CCAT, more can be added as serial devices, i.e. through the RJ-12 ports.

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**How do I connect the CT? How long can the wire run be?** We recommend 22 or 24 AWG solid conductor wire, but any wire close to that should work. Hundreds of feet on a wire run is typical.

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**Are other current ratings available?** You can special-order any range up to 300 amps, AC.

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**What does the LCD on my CM-2 display?** The LCD will display anything that the logs page is set to display.

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**How do I setup my CM-2?** We recommend that you set up your CM-2 by directly connecting it to a computer using the

following steps:

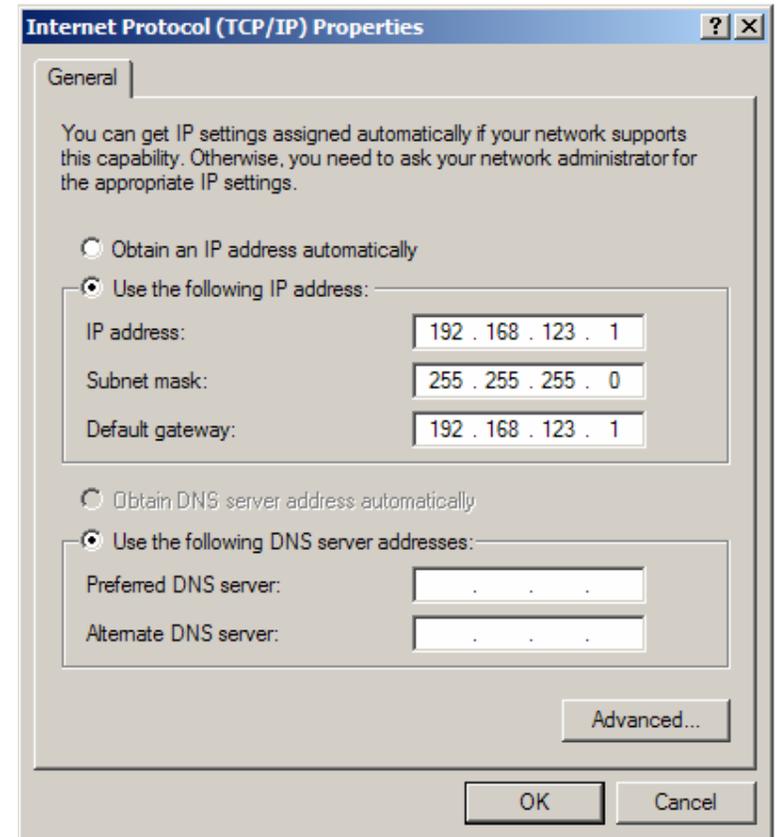
1. Power the unit using the supplied power supply.
2. Ensure that the green power indicator is on. Soon after powering on, the green Ethernet status indicator will blink three times.
3. Connect the unit to a local system using a cross-over cable.
4. The orange Link indicator will turn on if a good link has been established. If the indicator does not light, then check the connections and/or try a new cross-over cable.
5. The unit has now been connected to a local system, it is time to setup the network card, so that the system can communicate with the unit.

**How do I configure my computer to connect to the CM-2?**

1. Click on the Start button.
2. Select the Control Panel. If the control panel is not an option you may need to choose Settings -> Control Panel.
3. Click on the Network Connections icon.
4. You should now see one of more icons that represent network cards installed on your system. Choose the network card you connected the CM-2 to and right click it and select Properties.
5. Find and double-click Internet Protocol (TCP/IP).
6. This opens a window that shows your current network card settings. It should like similar to the window shown in Figure 2. Make a note of the current settings, so that they can be restored later.
7. Ensure that "Use the following IP address" is selected and enter the following settings in the appropriate fields.

IP Address: 192.168.123.100  
Subnet Mask: 255.255.255.0  
Gateway: 192.168.123.1

8. You can leave the DNS fields blank. Click the OK button on the TCP/IP window to save the changes. Then click OK on the Local Area Connection window to finalize the process.



**What are the various tabs on a CM-2?**

Sensors: This page shows the current value of the sensors and a graph of all the stored

sensor data on a CM-2, this is also where it shows the webcams.

Logs: On this page you can graph your choice of sensors over your choice of a time period, this is also where you download the log data as well as clear the log data.

Display: This page allows you to set the names of your remote sensors, and choose the unit the temperatures are measured in.

Alarms: Here you can set and test your alarms for the sensors, there is an event log at the bottom of the screen that shows you the history of the alarms.

Control: This tab allows to control anything linked to the CM-2. Currently the only thing that is controllable from a CM-2 is a Power Egg II.

Configuration: This tab allows you to setup many of the features of the CM-2 including SNMP, email, user account, and IP camera.

**How often does the sensors page refresh?**

Every 60 seconds, for faster refreshes please hit the refresh tab. Cameras on the page refresh every 20 seconds.

**How are sensors grouped on this page?**

By device, so all the sensors in a Power Egg will show up on one graph, and the one sensor in a remote temperature will show up in one graph.

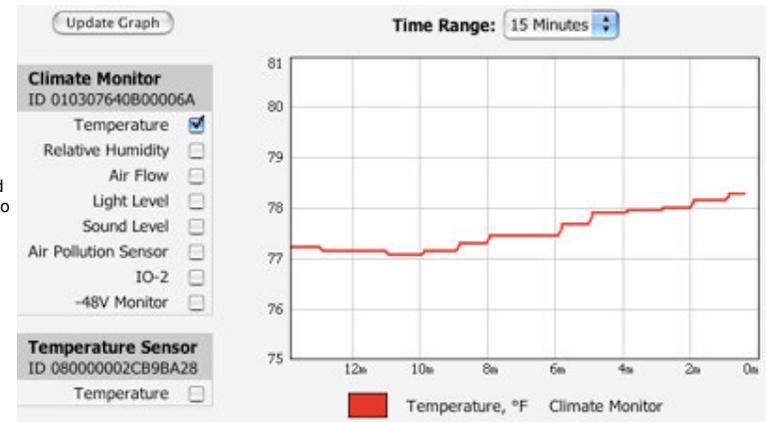
**What other formats on the page are supported?**

PDA: A small version of the Sensors page, used on PDA's and cell phones.  
WAP: A special version of the Sensors page, used by WAP-enabled cell phones.  
XML: The current data, along with device information, displayed in XML.  
MIB: Check on this link to download the MIB for the CM-2. Used in SNMP.

Alternate Formats:  
[PDA](#) | [WAP](#) | [XML](#) | [MIB](#)

**How does the graph on the Logs page work?**

On the Logs Tab is a set of controls for the Logs graph. You can select sensors and the time span to use for the graph. The Y-axis shows the sensor values and the time is shown on the X-axis. The legend at the bottom of the graph, provides the sensor name for each color used on the graph. On the left side of the screen is a series of checkboxes, one for each sensor. To graph the sensor, make sure its box is checked. Use the Time range drop-down above the graph to adjust the time range for the graph. Click on an Update Graph button to get a new graph, when a change is made. On a unit with a LCD display the checkboxes also control which sensors will be displayed on the LCD.

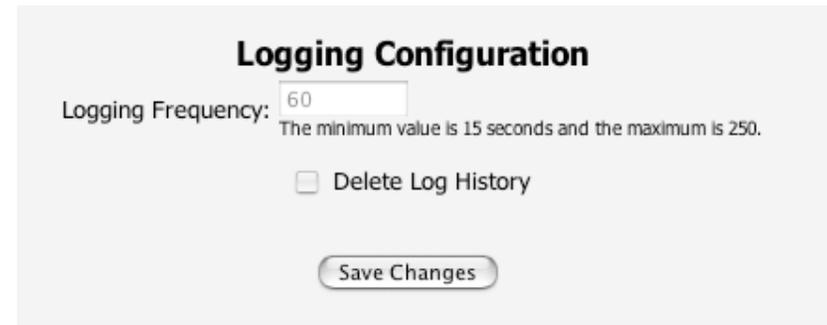


**How do I download Logs**

To download the log history, select the "Click here to download raw log data" link. The log file is in CSV format and will be called "log.csv". This download can take quite a while, if the unit has been running for some time.

**What is the logging frequency, and what does it mean?**

The CM-2 saves log data on a set interval, determined by the logging frequency. To change the frequency, edit the value in the Logging Frequency input field and click Save Changes. The acceptable range is 15 to 250 seconds. A lower frequency saves data more often, but at a cost of fewer days of saved data. The text under the graph, gives the number days that can be logged at the current logging frequency. The data log is a circular buffer. Once it fills up, old data is overwritten by the newer data.



**How do I clear the log history?**

To clear the log data, check the Delete Log History checkbox and click on the Save Changes button. In a few seconds the graphs should clear and graphing will resume in a few minutes, depending on the logging frequency.

**What is a friendly name?**

It is a more descriptive name for the device, generally the location of a remote temperature sensor, or the type and location of an IO sensor. To change a friendly name edit the text and select save changes.

**Why does the CM-2 save unplugged devices?**

The list of friendly names includes all devices that are attached to the unit as well as those that were. This way if a device is unplugged and reattached later, the settings for the device are restored. However, these unplugged sensors count toward the 16 external sensors limit. If you need to remove these to make room for other sensors, then check the "Remove all unplugged devices" checkbox and click Save Changes

**How do I change the unit of temperature?**

Use the Temperature drop-down box to change the unit of measurement for temperature. Then select Save Changes to finalize the change.



**How do the alarms work?**

From the Alarms tab you can setup the unit to notify you if a sensor's value goes outside of an acceptable range. For each sensor there is a Low Trip, High trip and Alarm State. Use the low and high trips to set the acceptable range for the sensor. If the current value of the sensor goes below the Low Trip or higher than the High Trip, or the device is unplugged the alarm is considered tripped. When the value goes back into the acceptable range or the device is reattached, the alarm is cleared. To control how you will be notified of alarm trips and clears use the Alarm State drop-down. The choices are Email, SNMP trap, Buzzer, or a combination of these. One notification is sent when the alarm is tripped and another notification is sent when the alarm clears. Set the alarm state to Disabled if you do not want to set an alarm for a sensor. Make sure to click Save Changes after adjusting the alarm settings.

The Test Alarms section is used to send test alarm trip and clear notifications. The following instructions describe how to use this feature.

**How do I test the alarms?**

1. Select a sensor to test from the Sensors drop-down.
2. Choose the method of notification from the Alarm State drop-down.
3. Use the Trap Type drop-down to pick between trip or clear.
4. Click the Test button to send the notification.

The screenshot shows the 'Test Alarms' configuration panel. It features three dropdown menus: 'Sensor' set to 'Climate Monitor:Temperature', 'Alarm State' set to 'Disabled', and 'Trap Type' set to 'Trip'. A 'Test' button is located below these fields.

**What is the event log?**

The Event log is a chronological list of events that have taken place on the unit. This is where errors, and warnings are listed as well as alarm notifications. The Event Log is also useful for debugging email and SNMP issues. The default logging level is Verbose. To change this use the drop-down box to select the logging level and then click Set Mode.

**What can I do under the control tab?**

From this tab you are able to manipulate any control devices that might be attached to the system. For instance, a Power Egg 2 would have the status of receptacles and buttons to turn them on and off. An example of this is shown in figure 8.

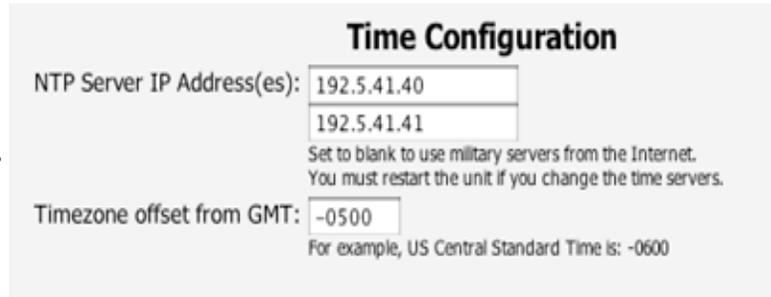
The screenshot shows the 'Network Configuration' panel. It includes a 'DHCP/BOOTP' checkbox which is unchecked. Below it are input fields for 'Static IP Address' (67.79.205.67), 'Static Net Mask' (255.255.255.224), and 'Static Gateway' (67.79.205.65). There are three service status dropdowns: 'Telnet Service' (Enabled), 'SNMP Service' (Enabled), and 'HTTP Services' (HTTP and HTTPS). At the bottom, there are input fields for 'HTTP Server Port' (80) and 'HTTPS Server Port' (443). A 'Save Changes' button is at the bottom right.

**How do Configure the network settings?**

The main network settings for the unit can be set in configuration. To assign the unit a static IP address, fill in the Static IP address field, Static Net Mask, and Static Gateway fields. Make sure the DHCP checkbox is unchecked if using a static IP address. The next two drop-downs let you enable/disable Telnet and SNMP. The HTTP Services drop-down lets you choose if you want to allow HTTP, HTTPS, or both. The last two input fields let you set the HTTP and HTTPS ports. The default port for HTTP is 80, and 443 for HTTPS.

**How do I Configure the NTP settings?**

For the unit to know the date, it needs to be able to connect to an NTP server. The IP address for two servers can be entered. If these fields are left blank the unit will use the default addresses of 192.5.41.40 and 192.5.41.41. To adjust the time retrieved from the NTP server for time zone and/or Daylight Savings, use the "Time zone offset from GMT" field.



**Time Configuration**

NTP Server IP Address(es): 192.5.41.40  
192.5.41.41  
Set to blank to use military servers from the Internet. You must restart the unit if you change the time servers.

Timezone offset from GMT: -0500  
For example, US Central Standard Time is: -0600

**How do I setup the email?**

Under configuration go to email. Enter the IP address of the Email server in the SMTP Server IP Address field. This needs to be in the numeric form. A named version will not work. You can ping the name of the email server to get this number. The unit needs a From address to send email. The unit can send email to up to 5 addresses. Enter these in the To fields. Using commas or semicolons to concatenate email address is not supported, so make sure to only enter one address per line. Some email servers require a POP3 connection to be made before it will accept an email via SMTP. The last three fields are used for this purpose. You can leave these blank, if this is not required by your email server. Normally, the POP3 IP address will be the same as the SMTP Server IP address.



**E-Mail Configuration**

SMTP Server IP Address: 216.131.192.5

"From" E-Mail Address: unit68@itwatchdogs.com

"To" E-Mail Address(es): support@itwatchdogs.com

One address per line, no commas or semicolons

POP3 Server IP Address: 216.131.192.5

POP3 Username: pedro@itwatchdogs.com

POP3 Password: \*\*\*\*\*

Save Changes

**How do I setup the SNMP?**

Under configuration go to SNMP. The community string for traps can be set using the SNMP Trap Community String field. This only sets the community string for traps. Currently the unit only supports the "public" community string for SNMP requests. The unit can send SNMP traps to up to 4 addresses. Enter these in the SNMP Trap IP address fields.

**How do I setup the user accounts?**

Use the Name and Password section to control access to the unit. There are three levels of access. The highest is admin, which allows full access to the unit. The second level of access is Control. This allows access to the Sensors, Logs and Control tab. Control access also lets the user change the logging frequency and delete the logs from the Logs tab. The lowest access level is Read-only. The user can view the Sensors and Logs tab. At the Read-only level, the user can not change the logging frequency nor delete log history on the Logs tab.

**Name and Password Configuration**

View-Only Account Name:   
If blank, the read-only portions of the web site will not be password-protected.

View-Only Account Password:   
 (again, to verify)  
**WARNING:** Record your password. Loss of password may require 48 hours to recover.

Control Access Account Name:   
If blank, the read-only portions of the web site will not be password-protected.

Control Access Account Password:   
 (again, to verify)  
**WARNING:** Record your password. Loss of password may require 48 hours to recover.

Administrator Account Name:  admin  
If blank, the administrator portions of the web site will not be password-protected.

Administrator Account Password:   
 (again, to verify)  
**WARNING:** Record your password. Loss of password may require 48 hours to recover.

**How do I setup the cameras?**

1. Make sure the Camera has an IP address that the CM-2 can reach.
2. Use a browser to connect to the CM-2.
3. Click on the Configuration tab.
4. Scroll down to the bottom of the page to find the Camera Configuration.
5. Enter the IP address of the camera in the Camera IP Address field.
6. Select the camera model using the drop-down list.
7. Click on Save Changes to save the camera configuration

**What is the device field for?**

Information from the fields in this section is displayed in the footer of each web page. Normally, this is information helps identify the CM-2 and the person responsible for its maintenance.

**How do I update firmware?**

NEVER UPDATE THE CM-2 FIRMWARE YOURSELF !!! YOUR UNIT WILL BE DAMAGED !!! EUROPEAN 220V FIRMWARE IS ONLY AVAILABLE FROM E-SYSTEMS.

**What should I do if I cannot get my CM-2 to display a web page?**

1. If DHCP is enabled, the IP address for the unit may have changed. Check with the DHCP server to find out the current IP address for the unit.
2. If the IP address of the unit was changed by DHCP or by the Configuration tab, make sure to use the new IP address to connect to the unit. Even if the IP address was changed, the unit can still be reached at 192.168.123.123.
3. Check the connections to the unit and the network. The power and link indicators should both be on and stable. The activity light should blink periodically. If the power light is not on, check the connection on both ends. If the link light is out then check the network cable connections. A cross-over cable should be used for connecting directly to a computer and a straight-through should be used for connecting to a network.
4. Ensure the network card settings are appropriate for the IP address of the unit. The recommended network settings for a unit

at the default IP address are:

IP Address: 192.168.123.100  
Subnet Mask: 255.255.255.0  
Gateway: 192.168.123.1

5. Try to contact the unit using ping, telnet or ftp. For instance at the default IP address these commands would look like the following:

```
ping 192.168.123.123
telnet 192.168.123.123
ftp 192.168.123.123
```

6. If the unit is not at the default IP then the correct IP address would need to be substituted for the 192.168.123.123.
7. If the unit is still unreachable, it may be on a different subnet, could be blocked by a firewall, or a proxy could be preventing access. These are networking issues beyond the scope of this document.

---

**I can't get emails from my CM-2, what should I do?**

1. Check the Event Log for email errors. This may help diagnose the problem.
2. Make sure a numeric IP address is used for the SMTP Server IP address (and POP3 IP address if used).
3. The unit needs a From address to send an email.
4. There should only be one email address in each To field.
5. Some email servers require the POP3 fields to be filled in. If POP3 isn't required these fields should be left blank.
6. If an Exchange server is being used, then it needs to be configured to allow 3rd party emails. There is a checkbox for this purpose in the Exchange server configuration.

---

**What does SNMP mean?**

SNMP is the Simple Network Management Protocol. It provides a way for network devices to communicate. In the protocol there is a manager device that uses SNMP to find out the status of devices on the network. These devices are called agents. Normally, the manager makes a request to an agent, and the agent responds to this request. For example the manager asks the CM-2 for its temperature, the unit reads the temperature and sends this back to the manager. The exception to this is SNMP traps. A trap is an alert sent by an agent to the manager about some abnormal condition. For instance, if the temperature on the unit leaves an acceptable range, the CM-2 can send an SNMP trap to the manager.

---

**How do I get the MIB for the unit?**

The MIB for the unit can be found in two places. In the header of the unit web page, under Alternate Formats, is a link to the MIB. A copy of the MIB is also included in the firmware zip file of version 2.53 and higher.

---

**I need the OID's for the unit.**

In the zip file for firmware versions 2.53 or higher there is a CSV file that contains the list of OID's for the unit.

---

**I have not been able to get a**

A SNMP manager must be configured to receive traps from the unit. Most SNMP programs

**SNMP trap from the unit.**

have a database of traps, they are monitoring for. The possible traps that can be sent by the unit must be added to this database. Some programs can take the unit MIB and extract the trap information. With other programs the trap data has to be entered manually. A CSV file is included in the firmware zipfile of version 2.53 and higher. The CSV includes the OID's for the unit as well as the information for each trap. Below is a list of issues that might stop you from getting traps from the unit.

1. See if there are errors in the Event Log.
2. Not all SNMP software is able to receive traps. Check if the software can receive version 1 traps.
3. Make sure the IP address configured on the unit, matches the IP address of the SNMP manager.
4. Ensure that the Trap Community String on the unit, corresponds to the community string expected by the manager.
5. On some SNMP software, you have to enable trap monitoring and SNMP requests.

---

The Test Alarms feature can be used to turn the buzzer off remotely. The following step will lead you through this process.

**Is there a way to turn the buzzer off remotely?**

1. Go to the Alarms tab.
2. Scroll down to the Test Alarms section.
3. Pick one of the internal sensors from the Sensors drop-down.
4. From the Alarm State drop-down, choose Buzzer.
5. Select Clear from the Trap Type drop-down.
6. Click on the Test button.
7. The buzzer should turn off in a few seconds.

---

An account level of Control or Admin Access is required to change the logging frequency or delete the log data. It will grayed out if the current access level is not high enough. To change this, do the following:

**I want to change the logging frequency but it is grayed out?**

1. To change to Control access click on the Control tab. For Admin click on Configuration.
2. Enter the appropriate username/password for the appropriate account.
3. Click on the Logs tab and the Logging Frequency and Delete Log History checkbox should not longer be grayed out.

**What are the requirements to run your supported webcams?**

- CM-2 unit running firmware version 2.51 or higher
- Computer with Internet Explorer 6.x or higher with Active enabled
- Windows XP/2000/Me

**How do I connect the camera?**

1. Connect the camera to a local system with the supplied Ethernet cable.
2. Power the camera with the power supply that came with the

- camera.
3. Make sure both the Power and Link lights are on.

---

**How do I set the cameras IP address?**

1. Run the SetupWizard. It may take a minute to load.
2. Click on Wizard to start configuring the camera.
3. Enter the username and password. The default is admin for both fields.
4. Select Next to bring up the Set IP Address screen.
5. Enter the IP address for the camera in the fields.
6. Click Next when finished.
7. Select Restart to save changes and wait for the camera to reboot.
8. In a few minutes the first screen of the setup should show up. Make sure the camera appears in the window on the right and has the correct IP address.
9. If it doesn't show up select Search.
10. If the IP address shown is incorrect then start over at step 2 and try setting the IP again.

---

Internet Explorer 6.x or higher with ActiveX enabled is required to login to the camera. Refer to Enabling ActiveX, the last section of this document, for more information.

**How do I login to the camera?**

1. Type the IP address of the camera into Internet Explorer.
2. On the login screen, see if there is a warning at the top, about refusing to download an ActiveX program. Click on this and download it.
3. Enter the username and password. The default is admin for both.
4. Click Apply to login.

---

The first step is to configure the motion detection settings. The following steps cover the basic setup. Consult the camera manual for additional information.

**How do I set up my camera to email me when it detects motion?**

1. Login to the camera.
2. Click on the Setup button.
3. Select the Tools Tab.
4. Pick Motion Detection on the left of the screen.
5. Check the Motion checkbox.
6. Click on the Zone1-3 buttons to view the motion detection region boxes.
7. Use the sliders to set the sensitivity and percentage for each region.
8. Select OpenMSD to preview the motion detected in each region.
9. Save the settings when done.
10. Click on Tools to go back to the previous menu.

1. Select Trigger on the left side of the screen.
2. Check the By Email checkbox.
3. If a username and password is needed, fill in these fields and check the checkbox next to them.
4. Fill in the remaining input fields.
5. You can select Test to test the configuration, but it still may work even if the test fails.
6. Click on Apply to save the changes.

Now that the motion detection is configured, the email settings can be entered. Below are the steps needed to setup email.

If the camera detects enough motion to trigger an alarm it will send an email to the set email address. Then the camera waits for a certain period of time before it can detect and send another email. This wait period is controlled by the Motion Detection Skip Set Time input field. To test the configuration, wave something in front of the camera to set off the motion detection. Wait a few moments and check the appropriate email address for an alert email from the camera

**I see the Login page, and enter the correct username and password, but when I select Apply nothing helps.**

An ActiveX application is required to access the camera and will only work with Internet Explorer 6.x and higher. Make sure the IE is not blocking this program from being installed. Allow the camera to install the program if asked by the browser.+

**The SetupWizard shows that the IP address of the camera was set, but I can't access it with my browser.**

Make sure the network card setting are correct for the camera IP address you are trying to reach.

**I can access the camera with Internet Explorer, but the CM-2 doesn't get a picture from the camera.**

Check the Camera IP address and camera model in the CM-2 Configuration.

To setup the camera, ActiveX must be enabled. Depending on the Internet Security settings, ActiveX is normally enabled. However, some consider ActiveX to be too much of a security risk and disable it. A way around this is create a list of trusted sites and enable ActiveX for those sites only. Below are instructions for both enabling ActiveX for all sites and just for the Trusted sites. Consider the security risks before changing the security settings.

Security Settings to Medium

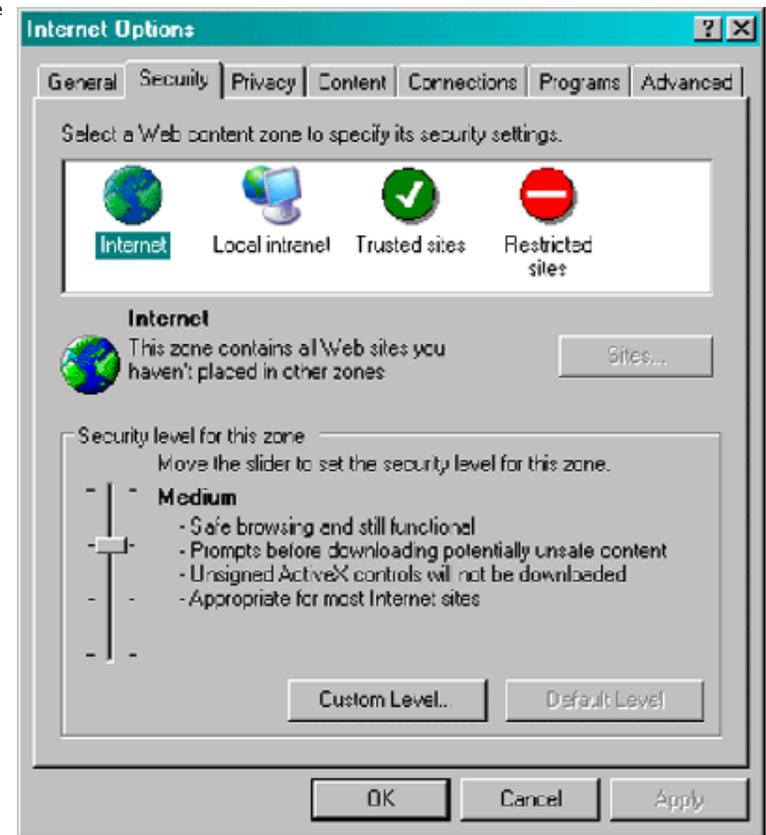
**Enabling ActiveX for Trusted sites:**

1. Open Internet Explorer.
2. Click on Tools in the menu bar.
3. Select Internet Options.
4. Select the Security Tab.
5. Make sure that the Internet icon is selected.
6. If the security is set to Medium, then ActiveX is enabled and the camera should work. If the setting is something else, then click Default and you should see the level change to Medium. Refer to figure 1.
7. Click the OK button at the bottom of the screen to save the changes.

**How can I enable ActiveX only for the CM-2?**

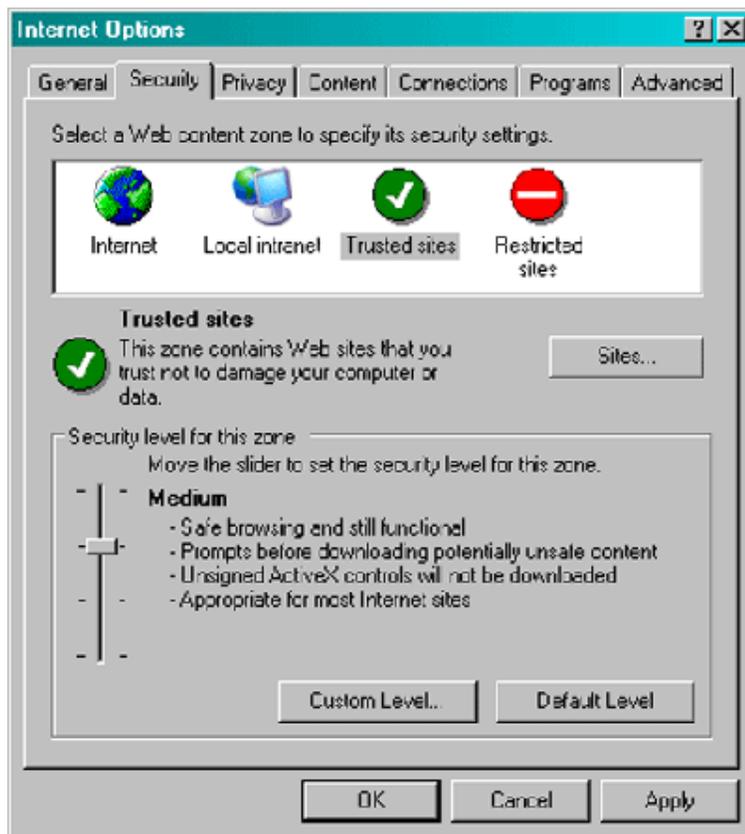
**Enabling ActiveX for all sites:**

1. Open Internet Explorer.
2. Choose Tools from the menu.
3. Select Internet Options.
4. Select the Security Tab.
5. Click on the Trusted Sites icon.
6. Move the security slider to the left to Medium. If there is no slider then click on Default Level to get one. This can be seen in Figure 2.
7. In the middle of this window and to the right is the button Sites. Select it.
8. Uncheck "Require server verification (https:) for all sites in this zone".
9. Enter the IP address of the DLink in the first input field.
10. Click Add to put the camera IP in the list of Trusted sites. Refer to Figure 3.



11. Select OK to close this window.
12. Click OK at the bottom of the Security page to save the settings.

Changing Settings for Trusted Sites



Adding camera IP to trusted sites list

