# Phason
## electronic control systems

# OMNI-Weather

# User manual

# Limited warranty

**Software**

Phason Inc. (Phason) warrants for a period of 90 days from the date of purchase that the software product will execute its programming instructions when properly installed on the personal computer or workstation indicated on this package. Phason does not warrant that the operation of the software will be uninterrupted or error free. Should this software product fail to execute its programming instructions during the warranty period, the purchaser's remedy shall be to return the software CD (media) to Phason for replacement. Should Phason be unable to replace the media within a reasonable amount of time, the purchaser's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

**Media**

Phason warrants the media upon which this product is recorded to be free from defects in materials and workmanship under normal use for a period of 90 days from the date of purchase. Should the media prove to be defective during the warranty period, the purchaser's remedy shall be to return the media to Phason for replacement. Should Phason be unable to replace the media within a reasonable amount of time, the purchaser's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

**Notice of warranty claims**

The purchaser must notify Phason in writing of any warranty claim no later than 30 days after the warranty period expires.

**Limitation of warranty**

Phason makes no other express warranty, whether written or oral, with respect to this product. Any implied warranty of merchantability or fitness is limited to the 90 days of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives specific legal rights and you may have other rights, which vary from state to state, or province to province.

**Exclusive remedies**

The remedies provided above are the purchaser's sole and exclusive remedies. Phason shall not be liable for any direct, indirect, special, incidental, or consequential damages (including lost profit) whether based on warranty, contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

**Warranty service**

Warranty service may be obtained from the Phason office location indicated in the user manual or service booklet.

# Service and technical support

Phason will be happy to answer all technical questions that will help you use OMNI-Weather.

Before contacting Phason, check the following:

◆ Read this manual for information about the window with which you are having trouble.

◆ If you still have a problem with OMNI-Weather, collect the following information:

  ◆ Any messages displayed by the OMNI-Weather software

  ◆ A description of the problem

  ◆ A description of what you were doing before the problem occurred

**My dealer's name:**

**How to contact my dealer:**

| | |
|---|---|
| Street/PO Box | |
| City | |
| State/Province | |
| Zip/Postal | |
| | |
| Phone | |
| Fax | |
| E-mail | |
| Web site | |

**Phason**
electronic control systems

| 2 Terracon Place | Phone | 204-233-1400 |
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| R2J 4G7 | Web site | www.phason.ca |

# About this manual

This manual describes the features of OMNI-Weather and how to use them. In addition to reading this manual, you should be familiar with the following.

◆ **Microsoft Windows™** – how to perform basic Windows functions such as opening and closing windows, finding and opening files, saving and closing files, as well as using a mouse and keyboard.

◆ **OMNI-4000 software** – basic windows and procedures in the main OMNI-4000 software. For more information, refer to the **OMNI-4000 user manual**.

◆ **OMNI-4000 hardware and equipment** – common OMNI-4000 hardware devices such as the OMNI Weather Station and the equipment connected to it.

# Styles used in this manual

The following styles are used in the manual.

◆ All buttons and menu commands are bolded.
For example: Click **OK** to save the changes.

◆ All filenames and directories are in a monospace font.
For example: The default directory is `C:\OMNI4000`.

**Hint/tip**

This is a hint or tip. It contains helpful information that may make it easier for you to set up or use OMNI-Weather.
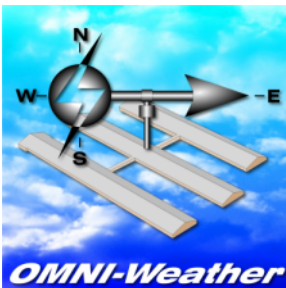
**Note**

NOTE

This is a note. It contains important information that may help you better understand OMNI-Weather.

A copy of the manual is also on the OMNI-4000 installation CD. The PDF (Adobe Acrobat™ Portable Document Format) file installs in `C:\OMNI4000\HelpDocs` during a normal installation. The file name starts with "220402". You can view the file by opening it using Adobe Acrobat Reader™, version 5 or higher, or by clicking any of the **Help** buttons in the software.

# Table of contents

# Chapter 1: Introducing OMNI-Weather

Chapter introduces you to OMNI-Weather and the layout of this manual. Read this chapter before reading the rest of the manual.

◆ Introducing OMNI-Weather

◆ About this manual

◆ OMNI-4000 windows

◆ Computer requirements

# Introducing OMNI-Weather

The OMNI-Weather Module works with the OMNI Weather Station hardware to collect environmental data at your site. This gives you accurate weather information instead of general conditions from a remote location such as an airport. OMNI-Weather is part of the OMNI-4000 Integrated Production Control System.



Monitoring conditions outside the barn can help you more efficiently control conditions inside the barn. The OMNI-Weather Module can collect and display data from multiple OMNI Weather Stations connected to a single computer.

The OMNI Weather station automatically monitors wind speed and direction, temperature, and humidity. An optional rain gauge is available for monitoring hourly and daily rainfall.

Easy-to-read displays show you current conditions. The charting and reporting tools allow you to review and print weather information for any previous period. As with all OMNI-4000 software modules, you can export information to third-party software such as databases, spreadsheet programs, or reporting packages.

## OMNI-Weather features

◆ 'Near-real-time' information collection and display of:

  ◆ Wind direction

  ◆ Wind speed

  ◆ Temperature

  ◆ Humidity

  ◆ Rainfall (optional)

◆ Current Conditions Viewer – updated every minute

◆ Adjustable alarm settings for high/low temperature, wind speed, and humidity

◆ Alarm notification and logging

◆ Customizable charting and reporting tools

◆ Adjustable sampling interval (10 minutes to 24 hours)

◆ Selectable sampling type (average or discrete)
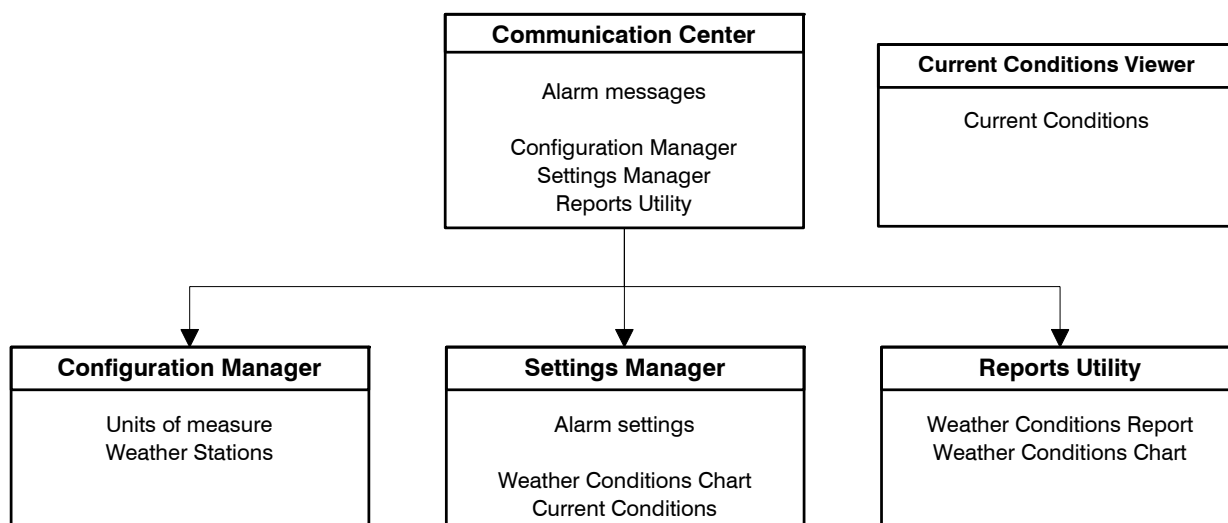
## Computer requirements

Customers who need to purchase a new computer to run OMNI-4000 must purchase one that meets certain requirements. For the latest computer and system requirements, contact Phason Customer Support at 204-233-1400 or **support@phason.ca**.

# OMNI-4000 windows

There are several windows in OMNI-4000 that you should be familiar with before you begin working with the program. The four main windows are:
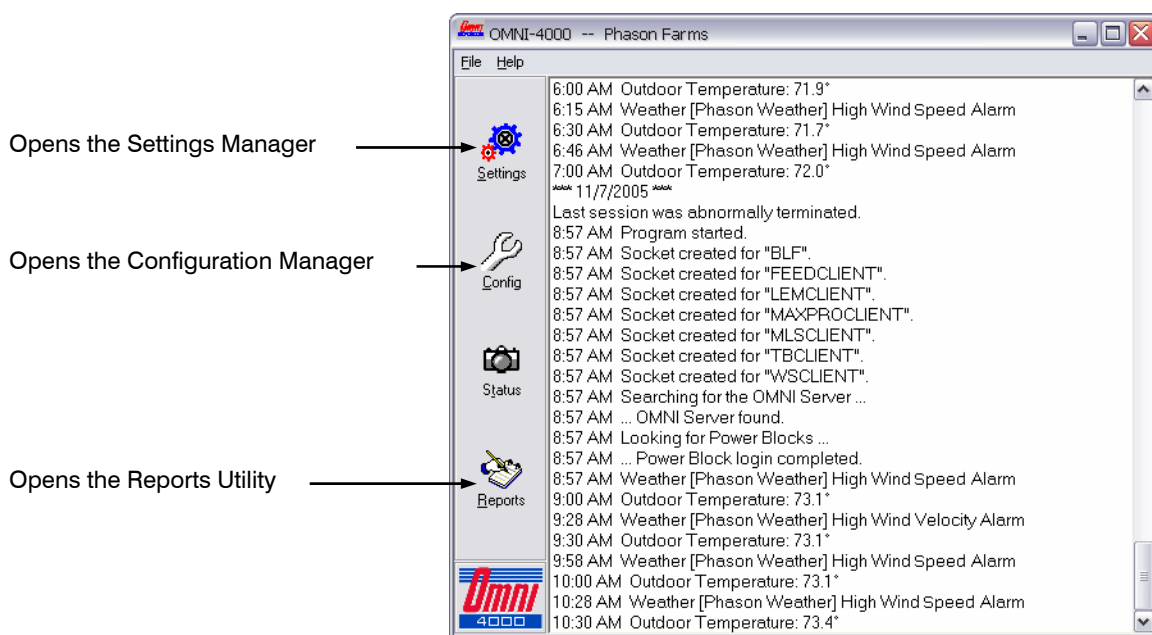
◆ Communication Center

◆ Configuration Manager

◆ Settings Manager

◆ Reports Utility

The diagram below shows the layout of the windows and some of the functions they have. There are detailed descriptions of each of the windows and functions later in this manual.

| Communication Center |
| --- |
| Alarm messages |
| |
| Configuration Manager |
| Settings Manager |
| Reports Utility |

| Current Conditions Viewer |
| --- |
| Current Conditions |

| Configuration Manager | Settings Manager | Reports Utility |
| --- | --- | --- |
| Units of measure | Alarm settings | Weather Conditions Report |
| Weather Stations | | Weather Conditions Chart |
| | Weather Conditions Chart | |
| | Current Conditions | |

## Communication Center

The Communication Center is the main window for all the OMNI-4000 modules. The Communication Center displays information about the system and the devices connected to it. The Communication Center also displays any alarm information generated by OMNI-4000.



Opens the Settings Manager

Opens the Configuration Manager

Opens the Reports Utility

From the Communication Center, you can get to all other windows. The buttons on the left side of the window open other windows of the program.

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NOTE

OMNI-4000 must always be running. OMNI-4000 collects, displays, and stores information only when it is running.

When OMNI-4000 is not running, equipment will function according to their last settings, but new settings cannot be sent.

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## Configuration Manager

The Configuration Manager is where you configure OMNI-Weather and site-wide options. From the Configuration Manager, you can:

◆ Select units of measure (on page 24)

◆ Configure Weather Stations (on page 27)
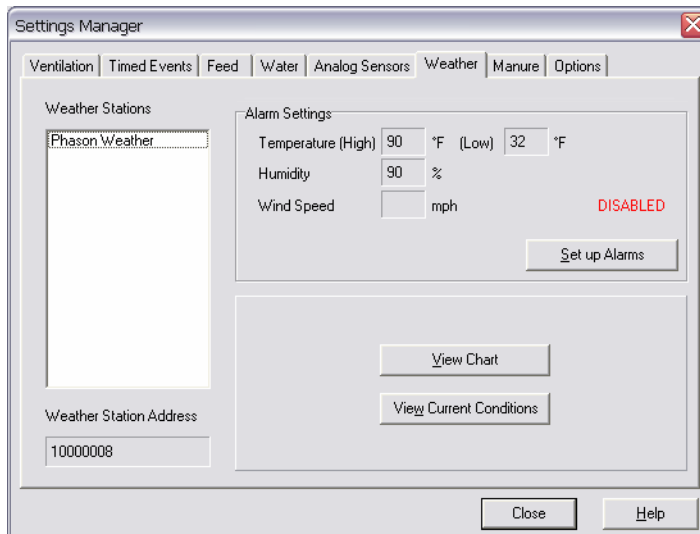
## Settings Manager

The Settings Manager is where you set up the alarms for each Weather Station. From the Settings Manager you can:

◆   Set up alarms (on page 30)

◆   View Current Conditions (on page 34)

◆   Create charts (on page 35)

# Reports Utility

The Reports Utility is where you create charts and reports. There are detailed descriptions of each later in the manual.

◆ Weather Conditions Chart (on page 35)

◆ Weather Conditions Report (on page 39)
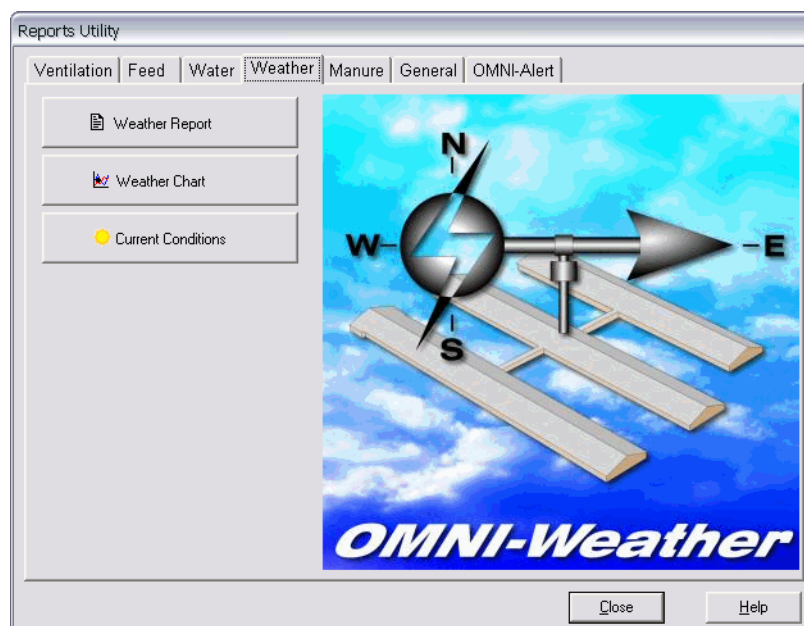


## Current Conditions Viewer

The Current Conditions Viewer allows you to monitor weather conditions at your site in 'near-real-time'. For more information, see **Monitoring current conditions** on page 34
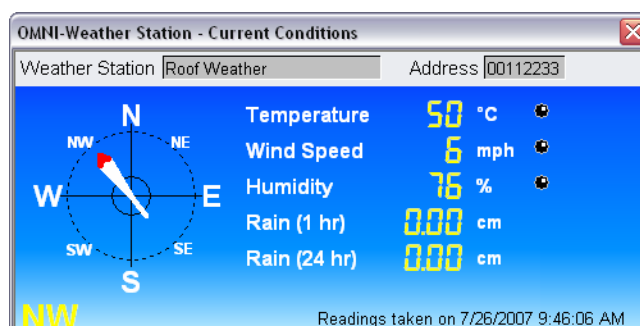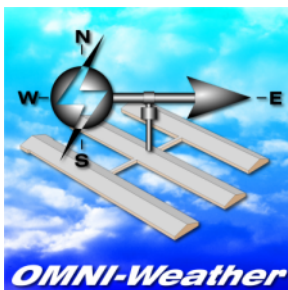
# Chapter 2: Installing hardware

Chapter 2 explains how to install your OMNI Weather Station hardware. Read this chapter and install all the hardware before installing and configuring the OMNI-Weather software.

◆ OMNI Weather Station installation

◆ Regulated Power Supply installation

# OMNI Weather Station installation

Read all the steps before installing the OMNI Weather Station and then follow them in the order they are listed.

## OWS electrical ratings

The required power supply is the Phason Regulated Power Supply (RPS). For more information, see the RPS installation guide or contact your dealer.

◆ 10 to 14 VDC

◆ 100 mA

## Parts included

The following parts are included with the OMNI Weather Station.

◆ Weather Station unit (OWS)

◆ Wind speed sensor

◆ Wind direction sensor

◆ Thirty-foot temperature probe

◆ Forty-foot wire harness

◆ Curved shaft

◆ Straight shaft

◆ Two-inch hose clamps (2)

◆ Strain relief assemblies (3)

◆ Strain relief nut

**Additional parts required**

◆ In addition to the parts included with the OMNI Weather Station, you need to provide the following items.

◆ Antenna mast – high enough to mount the sensors at least 10 feet above and 10 feet away from any obstacles

◆ Antenna base, such as a tripod or gable mount

◆ Power supply (10 to 14 VDC) – Phason Regulated Power Supply (RPS)

◆ Power cable (AWG 20, weather resistant) – enough to go from the incoming power to the power supply, and from the power supply to the OWS

◆ Unshielded twisted pair (UTP) or shielded twisted pair (STP) cable, category 3 (CAT3) or category 5 (CAT5).

> NOTE  If you are using STP cable, you must follow the specific instructions in **Service Bulletin 24 – Using shielded twisted pair (STP) cable to connect Phason networkable devices**. For more information, contact Phason Customer Support.

◆ Watertight strain reliefs or conduit connectors at all cable entry points

◆ Thread locking compound – LOCTITE 242 or equivalent

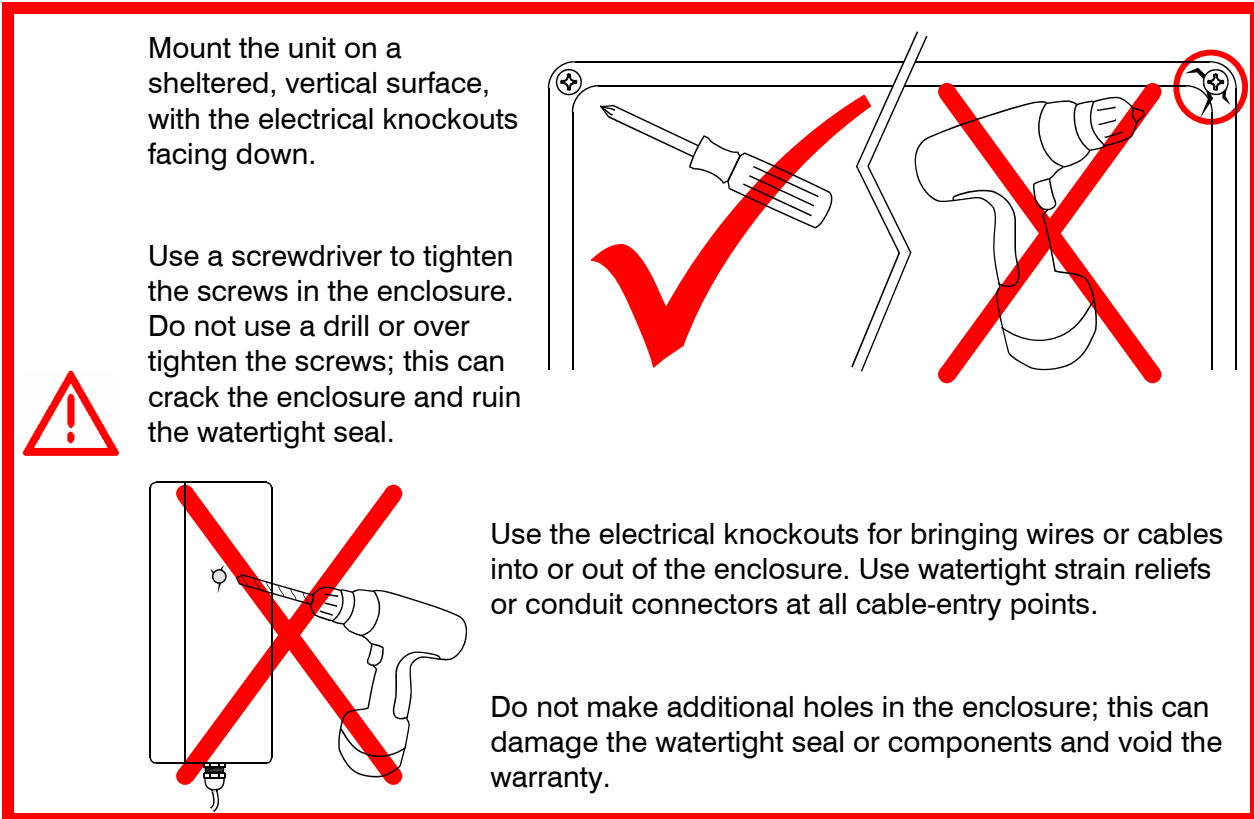◆ Cable ties – UV/weather proof

◆ Compass

# Precautions, guidelines, and warnings

> The OMNI Weather Station must be installed by a qualified electrician.
>
> Before installing or servicing the OMNI Weather Station, switch OFF the power supply at the source.
>
> Install the OMNI Weather Station and all equipment connected to it according to local electrical codes.

Mount the unit on a sheltered, vertical surface, with the electrical knockouts facing down.

Use a screwdriver to tighten the screws in the enclosure. Do not use a drill or over tighten the screws; this can crack the enclosure and ruin the watertight seal.

Use the electrical knockouts for bringing wires or cables into or out of the enclosure. Use watertight strain reliefs or conduit connectors at all cable-entry points.

Do not make additional holes in the enclosure; this can damage the watertight seal or components and void the warranty.

### Routing data wires

Routing data wires in the same conduit as, or beside AC power cables, can cause electrical interference, erratic readings, and/or improper control. Data wires include **all** of the following:

◆ Temperature probe and humidity sensor cables

◆ Actuator feedback (potentiometer) wires

◆ Data communication wires, including RS-232/RS-485

◆ Any cable or wire that does not provide AC power

### Guidelines for routing data wires

◆ Do not run the wires in the same conduit as AC power cables.

◆ Do not run the wires beside AC power cables or near electrical equipment.

◆ When crossing other cables or power lines, cross them at a 90-degree angle.

If in doubt, **do not run any wire or cable that is not an AC-power wire** inside the same conduit or beside other AC-power wires.

## OWS layout
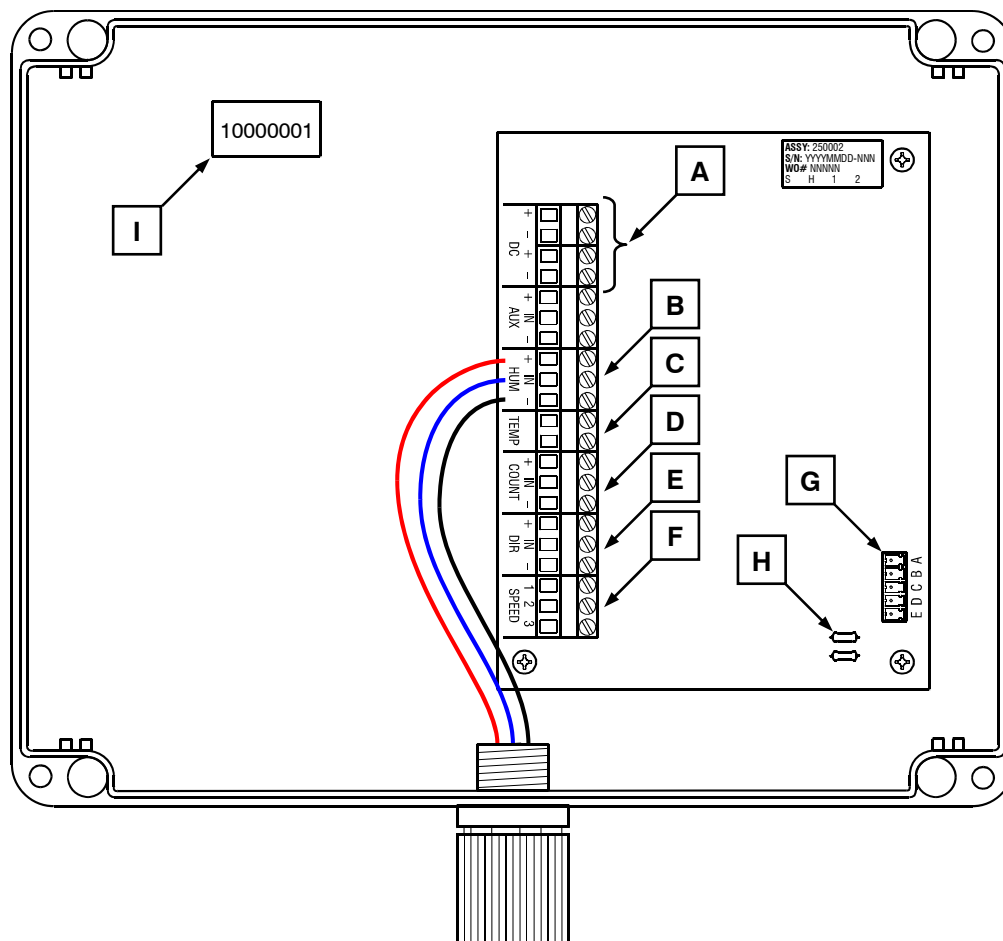


| A | Incoming power terminals – connect the incoming power (10 to 14 VDC) to one of these terminals. |
|---|---|
| B | Humidity sensor terminal – the Relative Humidity Sensor should already be connected to this terminal. |
| C | Temperature probe terminal – connect the temperature probe to this terminal. |
| D | Rain gauge terminal – if you purchased the optional Phason Rain Gauge, connect it to this terminal. |
| E | Wind direction terminal – connect the wind direction sensor to this terminal. |
| F | Wind speed terminal – connect the wind speed sensor to this terminal. |
| G | Communication socket – connect the communication wiring to this socket. |
| H | Termination resistors – If there are any devices on the communication channel after this one, then use wire cutters to remove only these two resistors. |
| I | Address label – this is the address of the OWS on the OMNI-4000 system. |

# Installing the OMNI Weather Station

## Select locations for the sensors and OWS

Before installing the OMNI Weather Station, you must select locations for the sensors and the OWS. The sensors mount on top of an antenna mast.

### Mast location guidelines

When selecting a location for the mast, keep the following guidelines in mind.

◆ The OMNI Weather Station comes with a 40-foot wire harness. Select a location that allows you to connect the sensors to the OWS without using additional wiring.

◆ Select an area where obstacles such as trees, feed bins, or buildings will not affect the sensors.

◆ The sensors must be at least 10 feet above and 10 feet away from the tallest obstacle in the immediate area.

### OWS location guidelines

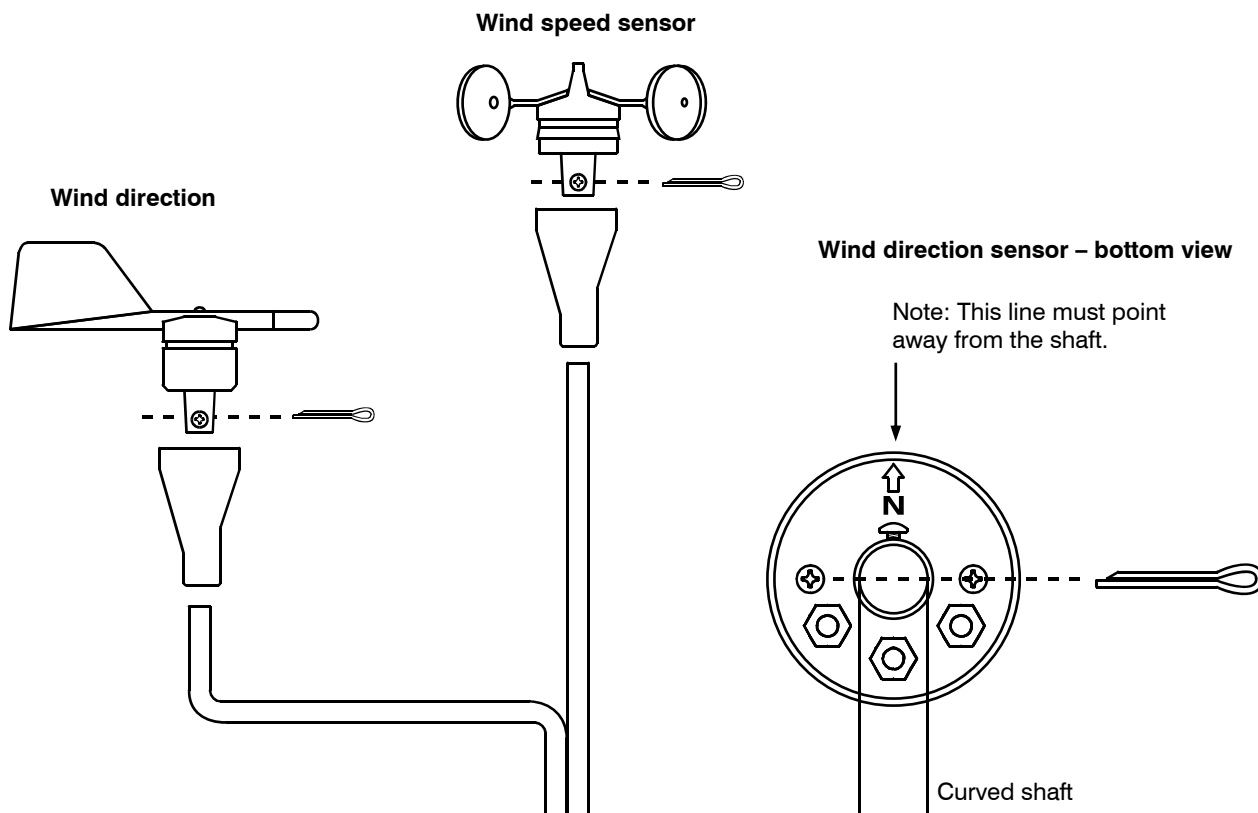When selecting a location for the OWS, keep in mind the following guidelines.

◆ The OMNI Weather Station has a temperature probe with a 30-foot cable. Select a location that allows you to mount the temperature probe where it will not be exposed to direct sunlight or other heat sources.

◆ You must mount the OWS on a sheltered, vertical surface.

◆ You must mount the OWS with the strain reliefs facing down.

## Mount the base

Follow the manufacturer's instructions to mount the tripod or other mounting device at the location you have selected.
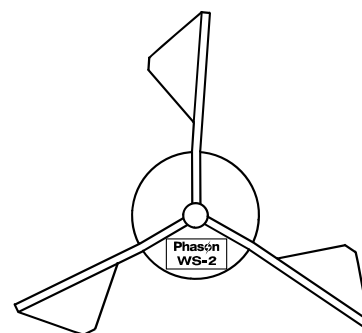
## Mount the sensors to the shafts

1. Mount the wind speed sensor to the straight shaft as shown below.

2. Mount the wind direction sensor to the curved shaft as shown below.

**Wind speed sensor**

**Wind direction**

**Wind direction sensor – bottom view**

Note: This line must point away from the shaft.

N

Curved shaft

### Wind speed sensor type

Most wind speed sensors have a label on the top that shows the sensor type. In the example on the right, the sensor type is WS-2.

If your sensor has no label, the sensor type is WS-1. Write down this number; you will need it when configuring the software.

Phason
WS-2

### Mount the sensor assemblies to the mast

Mount the sensor assemblies to the mast using the hose clamps.

## Connect the wire harness to the sensors

1.  Insert the wires through the small hole in the bottom of the sensor covers.

2.  Connect the ring terminals on the wire harness to the sensors as shown below.

3.  To prevent the nuts from loosening after you connect the wires, apply a couple drops of LOCTITE 242 (or a similar product) to each nut.

4.  Leave about three inches of slack wire at the sensor end and then attach the wire harness to the mast using cable ties.
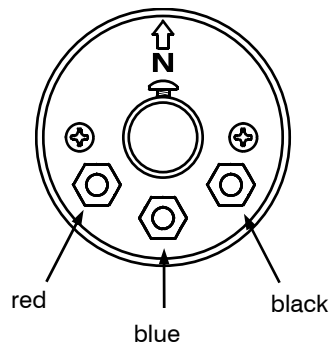
**Wind direction sensor – bottom**   **Wind speed sensor – bottom**

red          black          white          green

blue
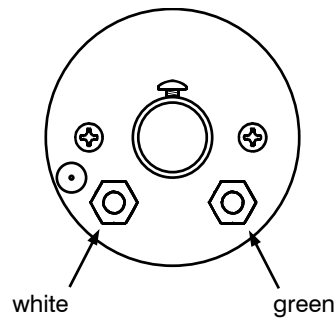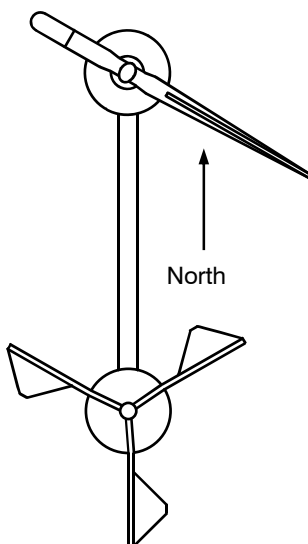
## Mount the mast to the base

1.  Place the mast in the base.

2.  Use a compass to align the sensors as shown below.

3.  When the sensors are properly aligned, fasten the mast to the base.

**Wind sensors–top view**

North

## Mount the OWS

Remove the cover from the enclosure.

Mount the OWS:

◆ On a sheltered (out of the rain – such as under an overhang), vertical surface

◆ With the strain reliefs facing *down*

◆ *Away* from sources of humidity or heat (such as exhaust fans)

> **NOTE**
>
> Do not enclose the OWS in an attic or box. This can cause temperature and humidity readings to be inaccurate.

## Connect the wire harness to the OWS

Connect the wire harness to the OWS terminal blocks according to the table below. See the drawing on page 13 for locations.

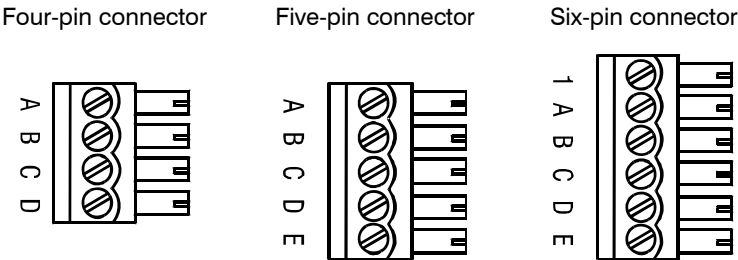| Wire color | OWS Connection |
|---|---|
| red | DIR + |
| blue | DIR IN |
| black | DIR – |
| green | Speed 1 |
| white | Speed 2 |
| brown | not used |

## Connect the temperature probe

Mount the temperature probe where it will *not* be exposed to direct sunlight or other heat sources. Connect the temperature probe to the OWS as shown below.
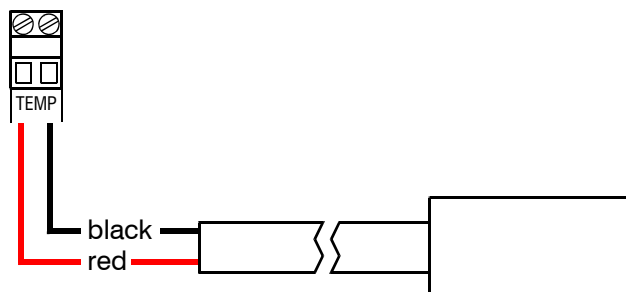
## Connecting the communication wiring

There are three possible connector types on Phason devices. The four-positions, **A B C D**, are common to all models. Some models have five positions and include **E** for common reference wiring. The six-position connectors that include position **1** are included on the RS-485A and OMNI Alarm Manager (OAM) only. The proper connector alignment is shown below.

Four-pin connector        Five-pin connector        Six-pin connector

Using consistent wiring helps eliminate communication connection errors and makes troubleshooting much easier. Positions **A**/**B** and **C**/**D** must be twisted pairs. Use the wire colors shown below when connecting all devices to the communication system.

| Wire function | RS-485A wire colors | First device | All remaining devices |
|---|---|---|---|
| **1** alarm signal① | **1** white/green | **1** white/green | **1** white/green |
| **A** communication | **A** blue | **A** blue | **A** blue |
| **B** communication | **B** white/blue | **B** white/blue | **B** white/blue |
| **C** communication | **C** orange | **C** orange | **C** orange |
| **D** communication | **D** white/orange | **D** white/orange | **D** white/orange |
| **E** common reference② | **E** green | **E** green | **E** green |
| ① For OMNI systems with an OMNI Alarm Manager only<br>② Not available on all models. IF there is no **E** position, connect the common reference to **DC –**. | | | |

## Using common reference wiring

Common reference wiring helps eliminate communication problems. The common reference wire normally connects to position E on the connector.

For controls having only four-position connectors, it is a good idea to leave the communication cable one foot longer than is needed for connecting to the terminals (A, B, C, and D).  You can then use the extra length of wire to connect to a reference point on the circuit board in place of the E terminal.

For information about which terminal to use in place of the E terminal, see the user manual for the specific device, or contact Phason Customer Support.
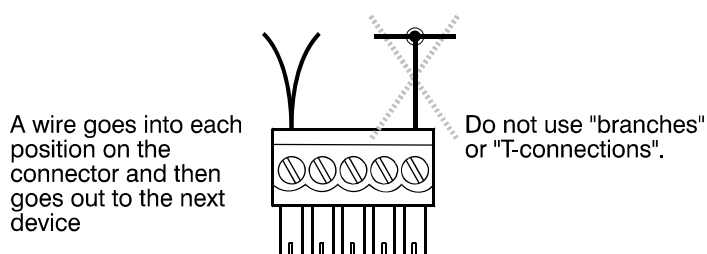
## Common mistakes in communication wiring

◆ *Not using the correct type of communication cable* – the communication cable must be twisted pair cable, category 3 (CAT3) or category 5 (CAT5). You can use either unshielded twisted pair (UTP) or shielded twisted pair (STP) cable. Phason does not recommend other types of wire.

> **NOTE** If you are using STP cable, you must follow the specific instructions in **Service Bulletin 24 – Using shielded twisted pair (STP) cable to connect Phason networkable devices**. For more information, contact Phason Customer Support.

◆ *Not continuing the communication wiring properly* – all the devices on the communication channel must be connected in series (in a daisy-chain) and the wire must be continued properly from one device to the next. When continuing the communication wiring from one device to the next, the wires must be connected as shown below.



A wire goes into each position on the connector and then goes out to the next device

Do not use "branches" or "T-connections".

◆ *Not terminating the last device on the communication channel* – on all systems, the last device on the communication channel must have the termination resistors in place or a termination module installed.

The termination resistors are located on the circuit board of all OMNI-4000 devices. You must remove the termination resistors from all devices, except the last one on the communication channel. For the location of the termination resistors on the OWS, see **OWS layout** on page 13. For more information about the location of termination resistors on other devices, see the installation guide for the specific product.

If you remove the termination resistors from the last device by mistake, you will have to install a Termination Module on that device. The Termination Module connects to the communication socket on the last device. For information about Termination Modules, contact your dealer or Phason Customer Support.

◆ *Running the communication cable in the same conduit as, or beside AC power cables* – routing communication cable in the same conduit as, or beside AC power cables, can cause electrical interference and communication failures. Follow the guidelines below when routing communication cable.

  ◆ Do not run the cable in the same conduit as AC power cables.

  ◆ Do not run the cable beside AC power cables or near electrical equipment.

  ◆ When crossing other cables or power lines, cross them at a 90-degree angle.

**To connect the communication wiring**

1. Connect all the devices in series. For example, 'A' on the RS-485A to 'A' on the first device, to 'A' on the second device, and so on.

2. Remove the termination resistors from each device, *except for the last one on the communication channel.* The last device must have the termination resistors in place. For the location of the termination resistors, see **OWS layout** on page 13.

## Connect the incoming power

The required power supply is the Phason Regulated Power Supply (RPS). For more information, see the RPS installation guide or contact your dealer.

Connect the OWS to the power supply as shown to the right.
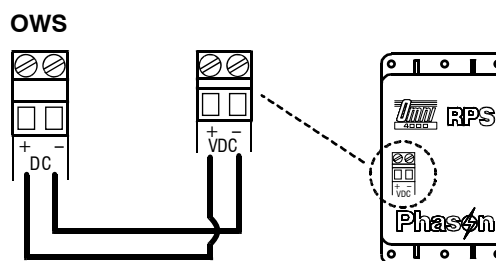


> **NOTE**
> The OWS has two DC power terminal blocks. If you have another device that requires the same DC power, you can connect it to the second terminal block.
>
> Do not exceed the ratings of the power supply.

## Fasten the cover to the OWS

1. Check to make sure you have connected all the wires to their proper locations.

2. Fasten the cover to the OWS.

> **NOTE**
> The cover has a gasket that seals the enclosure. You do not need to seal it with silicone or another sealant.
>
> If you choose to seal the enclosure, use a sealant that is labeled as 'non-corrosive', 'electronics grade', or 'neutral cure', such as GE Silicone RTV6780B, RTV 142, or RTV 162.
>
> Do not use a sealant that is labeled as 'acetic acid cure' or 'acetoxy cure'. These sealants release acetic acid while curing, which can damage the OMNI Weather Station and void the warranty.

# Regulated Power Supply installation

Phason's Regulated Power Supply (RPS) is a CSA-approved, Class-2 power supply. The RPS supplies 13.6 VDC and 24 VAC power.

The RPS has a battery-backup option. The battery backup supplies enough power to maintain or slowly charge a 12 V gel cell battery (not included). If the incoming AC power fails, the battery provides power to the devices connected to the DC output terminal. If you are using the battery-backup option, you must purchase the Phason battery cable assembly (part number 240012). For more information, contact your dealer.

## RPS electrical ratings

◆ Input:     115/230 VAC, 15 VA, 50/60 Hz

◆ Output:   24 VAC, 13.6 VDC, 15 W (maximum)

◆ Fuse:     1 A, 250 V fast-acting glass

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NOTE

The RPS supplies a maximum of 15 W of power. The combined power consumption of all devices you connect to the RPS cannot be more than 15 W.

Some devices have a power consumption rating in watts; others have a current draw in amperes. To convert an ampere rating to watts, use the following formula:

**W=V×A**          **W=watts, V=volts (24 VAC or 13.6 VDC), A=amperes**

The RPS has a resettable fuse that protects the unit against a severe overload. A severe overload of the AC output will trip the fuse. To reset the fuse:

1. Disconnect the incoming power or the AC load.
2. Fix the problem that caused the overload.
3. Reconnect the power or the AC load.

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### Calculating power consumption

Before connecting multiple devices to the RPS, you need to calculate the total power consumption of all the devices. For example, you have one OMNI Weather Station and seven Local Environment Monitors you want to connect to an RPS. Both the OMNI Weather Station and Local Environment Monitor draw 100 mA. What is the total power consumption for these devices?

Using the formula **W=V×A**, calculate the power consumption as follows:     **13.6 × .100 A=1.36** The devices each consume 1.36 W of power.

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Calculate the total power consumption as follows:  **8 × 1.36 W = 10.88 W**
The total power consumption of the devices is 10.88 W.

## RPS layout
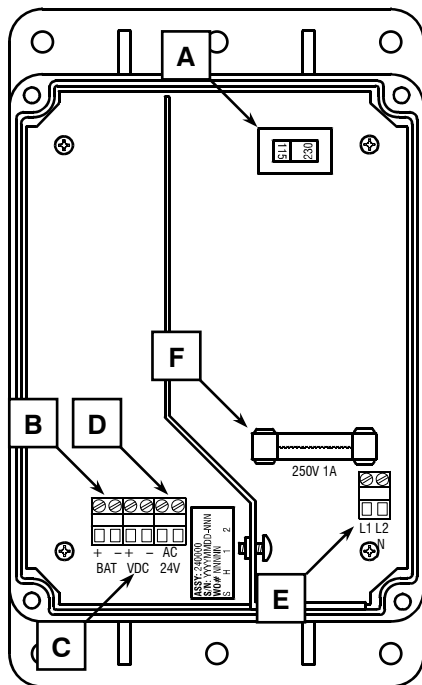
| | |
|---|---|
| **A** | Voltage selection switch – make sure you set this switch to the correct voltage before installing the RPS. |
| **B** | Backup-battery terminal – if you are using the battery-backup option, connect the battery to this terminal. If you are not using the battery-backup option, you can use the terminal as another 13.6 VDC output. |
| **C** | 13.6 VDC output terminal – connect devices that require DC power to this terminal. |
| **D** | 24 VAC output terminal – connect devices that require AC power to this terminal. |
| **E** | Incoming power terminal – connect the incoming power (115/230 VAC) to this terminal. |
| **F** | Incoming power fuse – 1 A, 250 VAC non-time-delay glass fuse. |

## Installing the Regulated Power Supply

⚠ Use the electrical knockouts to bring wires into the enclosure. DO NOT drill any other holes in the enclosure; this could damage the device and void the warranty.

Use watertight strain reliefs or conduit connectors at all cable entry points.

Connecting the output terminals together will destroy the power supply and void the warranty.

1. Mount the RPS on a vertical surface with the electrical knockouts facing *down*.

2. Set the voltage selector switch to the correct incoming power (115 or 230 VAC).

3. Connect the incoming power wires to the incoming power terminal.

4. Connect the devices to the output terminals.
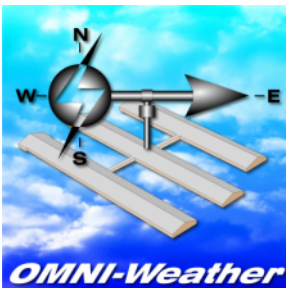
# *Chapter 3: Installing and configuring OMNI-Weather*

Chapter 3 explains how to install and configure OMNI-Weather.

◆ Installing OMNI-Weather

◆ Selecting the units of measure

◆ Configuring Weather Stations

◆ Setting weather alarms

After installing the OMNI Weather Station, you need to install and configure OMNI-Weather. Installing and configuring OMNI-Weather involves several tasks:

◆  Installing OMNI-Weather (below)

◆  Selecting the units of measure (below)

◆  Adding and removing Weather Stations (on page 26)

◆  Configuring Weather Stations (on page 27)

◆  Setting weather alarms (on page 30)

# Installing OMNI-Weather

OMNI-4000 has an installation wizard that guides you through the installation. Make sure you have OMNI Weather Station installed before installing OMNI-Weather.

### To install OMNI-Weather

1. Insert the OMNI CD into your computer's CD-ROM drive.
   The Installation Wizard should start automatically. If it does not start automatically, find and start the file `Inst_OMNI32.EXE` on the CD-ROM.

2. Follow the instructions on the screen.

# Selecting the units of measure

OMNI-Weather uses three units of measure: temperature, speed, and distance (for the optional rain gauge only). The units of measure you select affect other OMNI-4000 modules you might have installed. For example, if you change the unit of measure for temperature, it also affects OMNI-Ventilation and OMNI-Site Watcher.

The Configuration Manager is where you select the unit of measure. The Options tab is shown below.
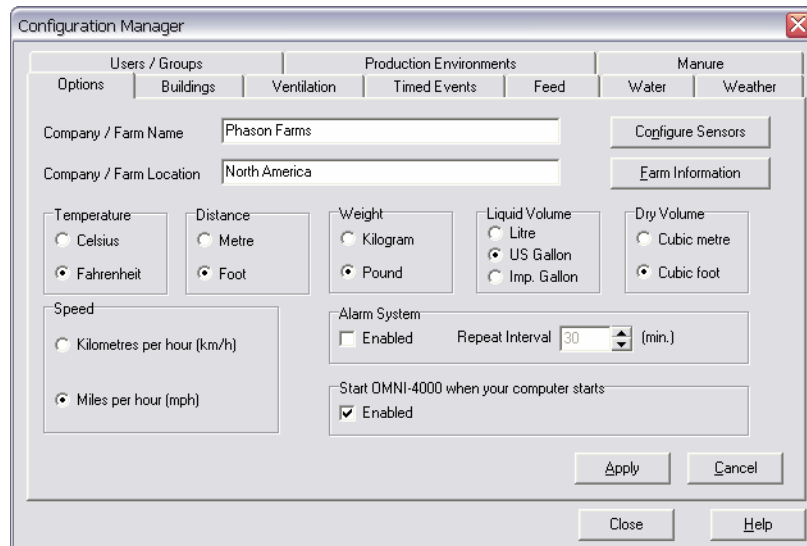


**To select the unit of measure**

1. Open the Configuration Manager and then select the Options tab.
2. Select the units of measure you want to use.
3. Click **Apply** to save the changes.
4. Click **Close** to return to the Communication Center.

# Adding and removing Weather Stations

Before you can configure a Weather Station, you need to add it to the OMNI-4000 software. When you add a Weather Station, you need to know its address. A Weather Station's address is an eight-digit combination of numbers and letters.

> If you do not know where to find the address, see the OWS layout diagram on page 13.

> NOTE
> If the address in the software is incorrect, or you replaced the Weather Station with a new one that has a different address, follow the instructions for removing a Weather Station and then add it again using the correct address.

**To add a Weather Station**

1. Open the Configuration Manager and then click the **Buildings** tab.

2. Click **Add Device**.
   The Add Device window displays.



3. Beside Address, type the address of the Weather Station. You must type the address exactly as it displays on the device.

4. Under Device Type, select *Weather Station (OWS)*.

5. Click **OK** to return to the Configuration Manager.

6. Click **Close** to return to the Communication Center

**To remove a Weather Station**

1. Open the Configuration Manager and then click the **Buildings** tab.

2. Under Available, select the Weather Station you want to remove.

3. Press DELETE.
   A confirmation window displays.

4. To remove the Weather Station, click **Yes**. To cancel and return to the Configuration Manager, click **No**.

5. Click **OK** to return to the Configuration Manager.

6. Click **Close** to return to the Communication Center.

# Configuring Weather Stations

There are three configuration items for each Weather Station.

◆ Description – a descriptive name for the Weather Station.

◆ Direction adjustment – the amount of adjustment in degrees (0 to 180°) for the wind direction sensor. For more information, see **Alignment** on page 28.

◆ Sensor type – the type of wind speed sensor. Selecting the wrong type will cause wind speed readings to be wrong. For more information, see **Wind speed sensor type** on page 15.

If you have a Phason Rain Gauge installed, there are two additional configuration items.

◆ Enabled – if you have a rain gauge installed, select Enabled. The default is not selected (disabled)

◆ Rainfall per pulse – the amount of rainfall per pulse. Leave this value at the default.

# Alignment

Direction adjustment, or alignment, is an adjustment you can make in the software to compensate for mounting the wind direction sensor facing the wrong direction.

**Clockwise=add          Counterclockwise=subtract**

◆ If you mounted the wind direction sensor facing northeast (NE) instead of north (N), then you would set the direction adjustment to –45° (since north is counterclockwise from northeast, you subtract).

◆ If you mounted the wind direction sensor facing northwest (NW) instead of north, then you would set the direction adjustment to 45° (since north is clockwise from northwest, you add).

◆ If you mounted the wind direction sensor backwards (facing south instead of north), then you would set the direction to 180° or –180° (since south is halfway around the circle from north, it doesn't matter if you go clockwise or counterclockwise).
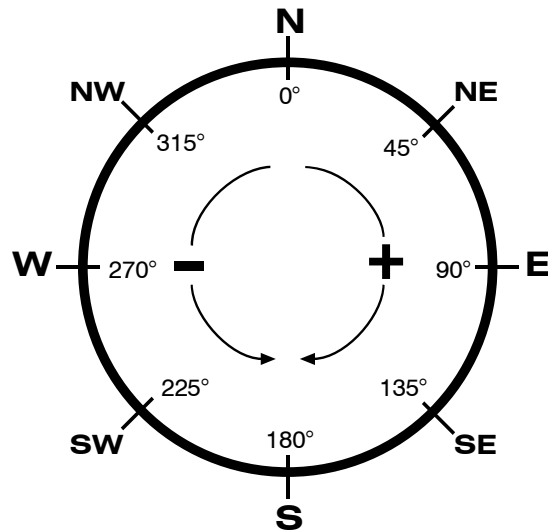
The Configuration Manager allows you to edit the description and direction adjustment for a Weather Station. The Weather tab is shown below.
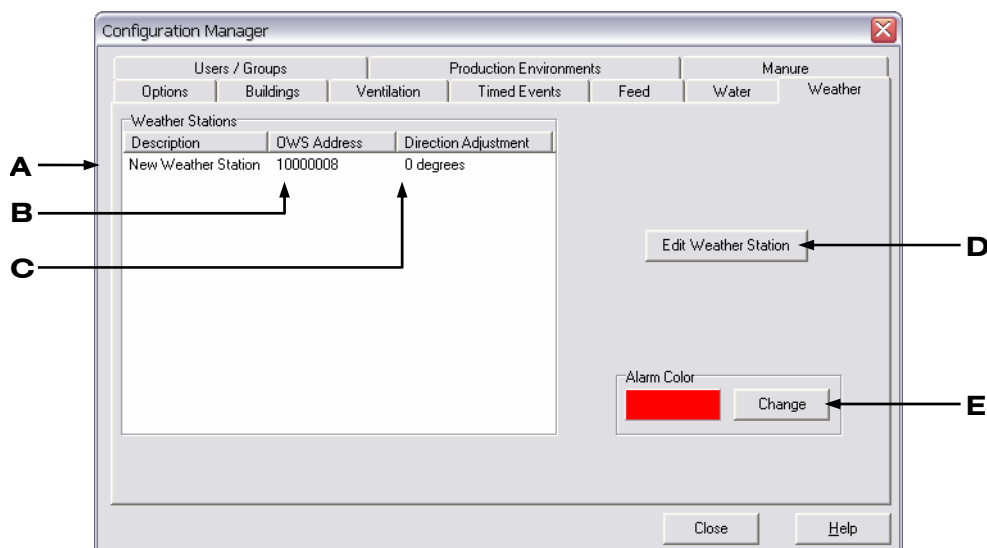
**A**   This is the name of the Weather Station. OMNI-Weather uses this name to represent the Weather Station.

**B**   This is the address of the Weather Station. The OMNI Server uses this address when it requests data from the Weather Station.

**C**   This is the direction adjustment (alignment) of the Weather Station. For more information, see **Alignment** on page 28.

**D**   This button opens the Weather Station Configuration window, which is where you configure the Weather Station.

**E**   This button opens the Color window, which is where you select the alarm color used in the Current Conditions Viewer and the Weather tab in the Settings Manager. The color is the same for all Weather Stations. For more information, see **Setting weather alarms** on page 30 and **Monitoring current conditions** on page 34.

**To configure Weather Stations**

1.   Open the Configuration Manager and then select the Weather tab.

2.   Under Weather Stations, select the Weather Station you want to configure and then click **Edit**. The Weather Station Configuration window displays
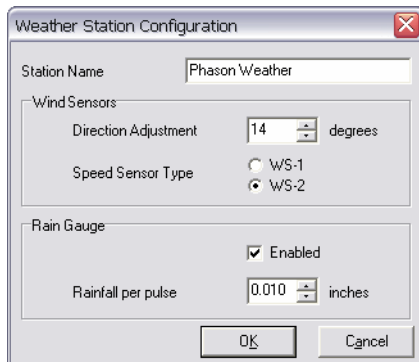


3.   Beside Station Name, type a name for the Weather Station

4.   To change the alignment of the wind direction sensor, enter a value or click the **Up** or **Down** button beside Direction Adjustment. For more information, see **Alignment** on page 28.

5.   Beside Speed Sensor Type, select the type of sensor you have.

6.   To enable or disable a rain gauge, select or deselect Enabled. If there is a check mark in the box, the rain gauge is enabled. Set the Rainfall per pulse value to 0.010 inches or 0.025 centimetres.

7.   Click **OK** to save the changes and return to the Configuration Manager

8.   Click **Close** to return to the Communication Center.

**To change the alarm color**

1. Open the Configuration Manager and then select the Weather tab.

2. Under Alarm Color, click **Change**.
   The Color window displays

3. Select the color you want to use and then click **OK** to save the change and return to the Configuration Manager.

4. Click **Close** to return to the Communication Center.

> The alarm color is used for the alarm indicators in the Current Conditions Viewer and the Weather tab in the Settings Manager.

# Setting weather alarms

There are four weather condition alarms you can set: high and low temperature, humidity, and wind speed. OMNI-Weather displays these alarms in the Current Conditions Viewer, on the Weather tab in the Settings Manager, and in the Communication Center.

**High or low temperature alarm**

The temperature alarm displays when the temperature falls below the low temperature alarm setting, or rises above the high temperature alarm setting.
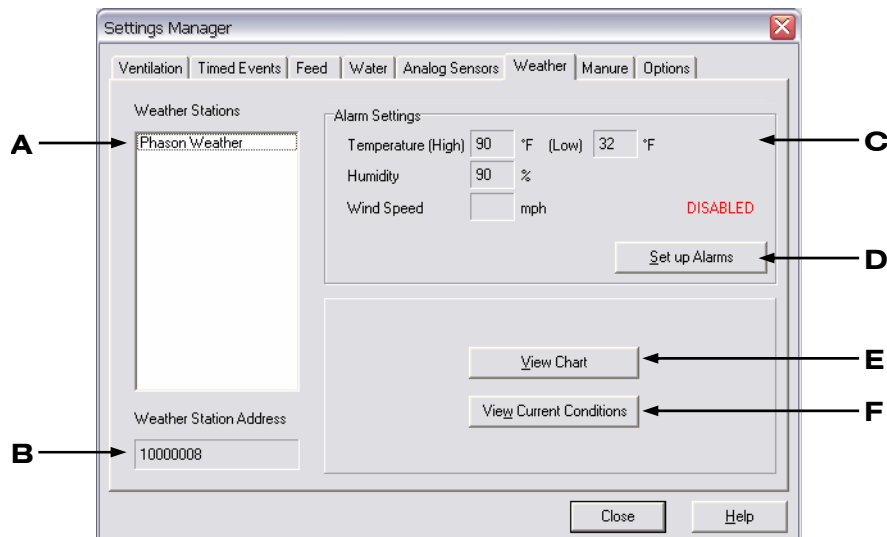
**Humidity alarm**

The humidity alarm displays when the humidity rises above the humidity alarm setting.

**Wind speed alarm**

The wind speed alarm displays when the wind speed rises above the wind speed alarm setting.

The Settings Manager is where you view and configure the alarm settings. The Weather tab is shown below.



**A** This is a list of Weather Stations at your site.

**B** This is the address of the selected Weather Station.

**C** These are the alarm settings for the selected Weather Station.

**D** This button opens the Weather Alarm Settings window, which is where you set the weather alarms.

**E** This button opens the Weather Condition Chart window, which is where you can customize and view weather charts. For information, see **Creating weather charts** on page 35.

**F** This button opens the Current Conditions Viewer. For information, see **Monitoring current conditions** on page 34.

**To configure weather alarms**

1. Open the Settings Manager and then select the Weather tab.

2. Under Weather Stations, select the Weather Station you want to configure and then click **Set up Alarms**.
   The Weather Station Settings window displays.
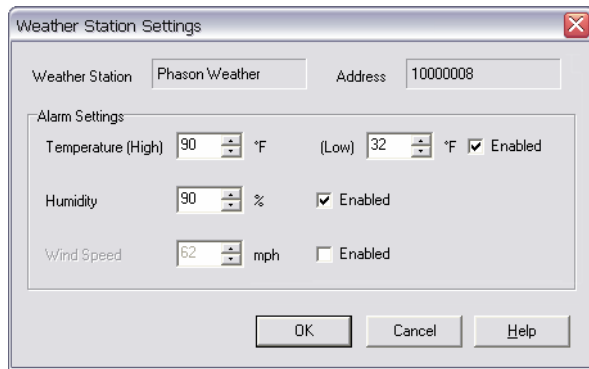
3. To change an alarm setting, enter a new value or click the **Up** or **Down** button beside the setting you want to change.

4. Click **OK** to save the changes and return to the Settings Manager.

5. Click **Close** to return to the Communication Center.
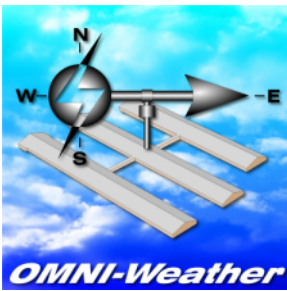
# *Chapter 4: Viewing weather data*

Chapter 4 explains how to monitor and analyze the data OMNI-Weather collects.

◆ Monitoring current conditions

◆ Creating weather charts

◆ Creating weather reports

◆ Interpreting data

OMNI-Weather collects environmental (weather) data at your site. This gives you accurate, local weather information instead of general conditions from an off-site location such as an airport.

With OMNI-Weather, you can view current conditions, or create charts or reports of historical conditions. The easy-to-read display on the Current Conditions Viewer shows you up-to-date conditions at your site. The charting and reporting tools allow you to review and print weather information for any previous period or export the information to a third-party software package.

Monitoring conditions outside the barn can help you more efficiently control conditions inside the barn and can help you make informed decisions about manure pumping and spreading or crop burning. Historical weather charts and reports provide proof of past conditions and can help settle manure spreading or odor disputes.

> **NOTE**
> The OMNI-4000 software must always be running. OMNI-4000 collects, displays, and stores information only when it is running.

# Monitoring current conditions

OMNI-Weather's Current Conditions Viewer allows you to monitor current conditions at your site. The viewer displays wind direction, wind speed, temperature, and humidity, and alarm conditions. If you have a Phason Rain Gauge installed, the viewer displays hourly and daily rainfall.

In addition, the viewer displays wind chill if the condition exists. Wind chill is the cooling effect of the wind when it is combined with low temperatures. OMNI-Weather displays a value for wind chill if:

◆ The temperature is colder than 41°F (5°C)
   *and*

◆ The wind speed is more than 3 mph (5 km/h)
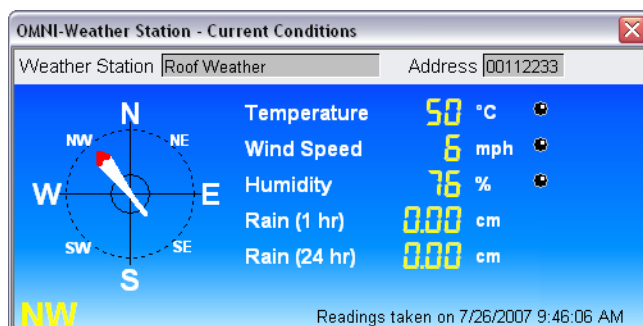
NOTE
The wind sensors need a minimum wind speed of about 5 mph or 8 km/h to provide accurate readings. As the wind speed increases, the accuracy of the readings increases.

**To view current conditions**

1.  Open the Reports Utility and then select the Weather tab.

2.  Click **Current Conditions**.
    The Current Conditions Viewer displays.

You can also open the Current Conditions Viewer from the Settings Manager and the system tray.

Settings Manager – Select the Weather tab and then click **View Current Conditions**.

Weather Station icon

System tray – Right-click the Weather Station icon and then click **Current Conditions**.

# Creating weather charts

The Weather Conditions Chart allows you to create, view, and print charts. The charts can display wind direction, wind speed, temperature, humidity, and daily rainfall (with an optional Phason Rain Gauge installed).
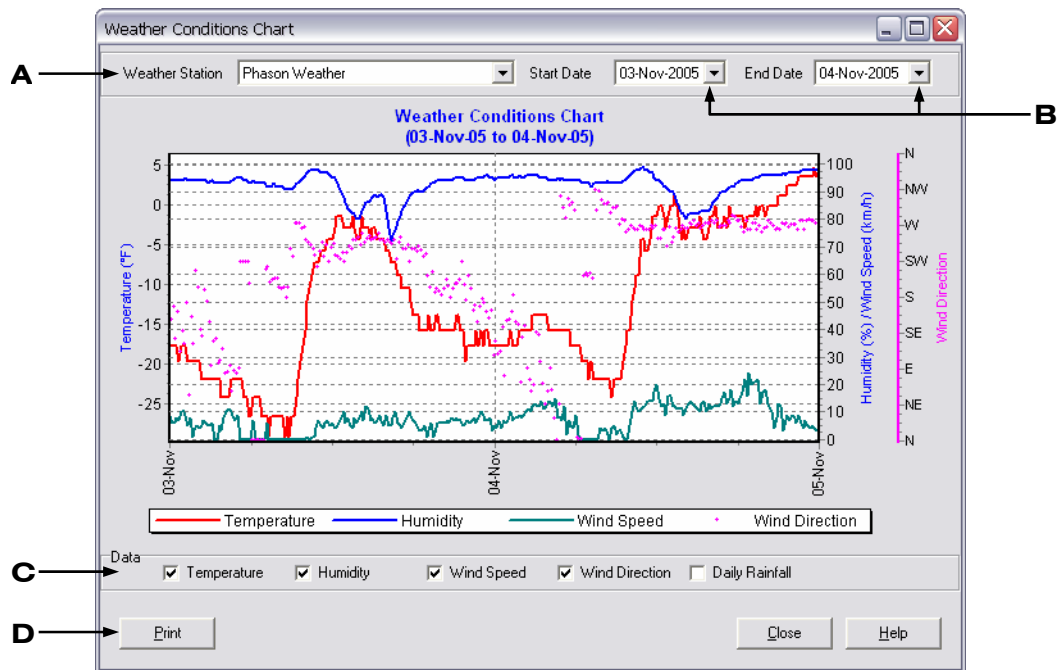
**A** If you have more than one Weather Station, this is where you select which one you want to use in the chart.

**B** These drop-down boxes are where you to select the date range.

**C** These check boxes are where you to select the types of data to display.

**D** This button prints the chart.

**To create weather conditions charts**

1. Open the Reports Utility and then select the Weather tab.

2. Click **Weather Chart**.
   The Weather Conditions Chart window displays.

3. Beside Weather Station, select a station.

4. Under Data, select which types of data you want in the chart.

5. Select a date range for the chart. For more information, see **Selecting dates** on page 38.

6. Click **Close** to return to the Reports Utility.

7. Click **Close** to return to the Communication Center.

> In the Settings Manager, you can automatically create a weather conditions chart containing the last seven days of weather data.
>
> 1. Open the Settings Manager and then select the Weather tab.
>
> 2. Under Weather Stations, select a station.
>
> 3. Click View Chart.
>
> 4. The Weather Conditions Chart displays a chart containing the last seven days of weather data.

## Zooming and panning charts

You can zoom in on (magnify) or pan (scroll along) a chart. This is useful if you have a chart that covers a large date range and you want to zoom in on a specific day or smaller section of data.

### To zoom in on a chart

1. Click and drag to select the area you want to magnify.

2. Release the mouse button.
   The chart magnifies the area you selected.
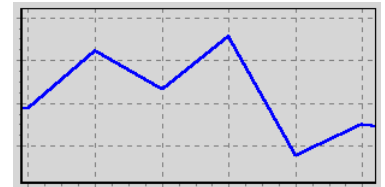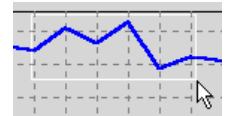
### To zoom out from the chart

Click on the chart and drag to the top-left and then release the mouse button.
The chart returns to normal magnification.

### To pan a chart

Right-click the chart and drag the mouse in the direction you want the chart to move.

# Selecting dates

Weather charts and reports have an easy way to select date ranges for the weather data you want to display. A date range consists of a start date and an end date. The end date cannot be before the start date.

### To select date ranges

1. Below (or beside on some windows) Start Date, click ⌄.
   The calendar displays.
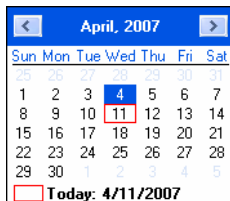
   

2. Select a start date:

   ◆ To move forward and backward through the months, click ‹ or ›.

   ◆ To select a specific month, click the month on the calendar and then select the month you want to go to.

   ◆ To move forward and backward through the years, click the year on the calendar and then click ⌃ or ⌄.

3. Repeat steps 1 and 2 for the end date.

# Creating weather reports

Weather Conditions Reports give you detailed information over the data range you choose.



**Weather Conditions Report**
**Phason Farms**

| | |
|---|---|
| Weather Station: | Phason Weather |
| Address: | 50533221 |
| Sampling Interval: | 02:00 (hh:mm) |
| Sampling Type: | Average |
| Report Date: | 03-Nov-2005 to 04-Nov-2005 |
| Report Created: | 04-Nov-2005 14:08:21 |

Information about the report

**03-Nov-2005**

| Time | Wind Direction | Wind Speed (mph) | Temperature (°F) | Humidity (%) | Rainfall (in) |
|---|---|---|---|---|---|
| 00:00 | NNE | 22 | 44 | 56 | 1.41 |
| 02:00 | NNE | 29 | 42 | 56 | 1.38 |
| 04:00 | N | 27 | 40 | 56 | 1.42 |
| 06:00 | NE | 23 | 40 | 56 | 0 |
| 08:00 | NE | 24 | 44 | 55 | 0 |
| 10:00 | N | 20 | 53 | 53 | 0 |
| 12:00 | NNE | 16 | 60 | 53 | 0 |
| 14:00 | NE | 12 | 64 | 52 | 0 |
| 16:00 | E | 15 | 66 | 52 | 0 |
| 18:00 | NE | 15 | 64 | 54 | 0 |
| 20:00 | ENE | 11 | 52 | 53 | 0 |
| 22:00 | NNE | 8 | 50 | 54 | 0 |

Average or discrete weather data at the intervals selected

| Daily Summary | Average | Minimum | Maximum | Total |
|---|---|---|---|---|
| Temperature (°F) | 54.1 | 40.0 | 66.1 | — |
| Humidity (%) | 54 | 51 | 56 | — |
| Wind Speed (mph) | 28.9 | 8.2 | 29.2 | — |
| Wind Direction | NNE | — | — | — |
| Rainfall (in) | — | — | — | 4.21 |

A daily summer of the weather data

Weather Conditions Reports can be created in either HTML or comma separated value (CSV) format.

### HTML reports

Choose HTML (Hypertext Markup Language) if you want a report you can view and print. You can view and print HTML reports using your web browser.

### Comma separated value file

Choose comma separated value (CSV) if you want to export the weather data to another program such as a spreadsheet program or reporting package. If you only want to view or print a report, choose HTML.

A CSV file is a file that consists of data fields separated by commas. CSV files allow different databases to communicate ('talk') to each other. For information about CSV files, see the user manual for the program you want to import the CSV file into.

In addition to the output type, you can choose the sampling interval and sampling type.

**Sampling interval**

The sampling interval, or rate, is how often you read (sample) the data. You can choose a sampling interval of anywhere from 10 minutes to 24 hours.

For example if you choose a sampling interval of 01:00 (one hour), OMNI-Weather will report one reading for each hour.

**Sampling type**

The sampling type, or method, is the way OMNI-Weather reports the data. OMNI-Weather has two sampling types: discrete and average.

**Discrete** sampling shows the exact value at each interval. For example, if you set the interval to hourly and the type to discreet, the report will show one reading taken each hour.

**Average** sampling shows the average value for a specific period. For example, if you set the interval to hourly and the type to average for a temperature series, the report will show the average reading during each hour.

The Weather Conditions Report window allows you to create, view, and print reports. You can also create CSV files that you can export to third-party software.
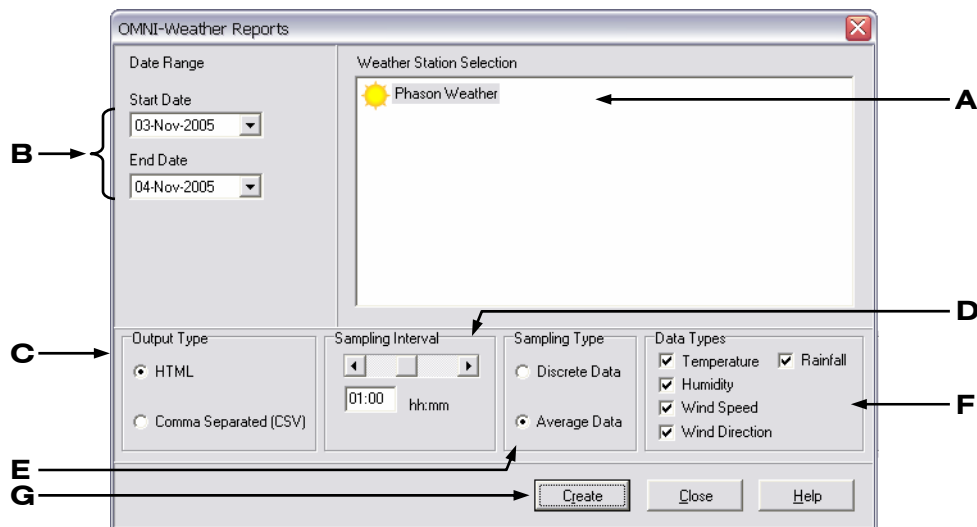


**A**   This is a list of weather stations at your site.

**B**   These drop-down boxes open the date selector, which is where you select the date range.

**C**   This is where you select the type of output.

**D**  This is where you select the sampling interval, which can be from 10 minutes to 24 hours.

**E**  This is where you select the sampling type.

**F**  These check boxes are where you to select the variables (types of data) you want in the report.

**G**  This button creates the report.

### To create reports

1.  Open the Reports Utility and then select the Weather tab.

2.  Click **Weather Report**.
    The Weather Reports Utility displays.

3.  Under Weather Stations, select a station.

4.  Select a date range for the report. For more information, see **Selecting dates** on page 38.

5.  Under Output type, select the type of report.

6.  Under Sampling Interval, select how often you want data displayed. To increase or decrease the sampling interval, click the **Right** or **Left** buttons.

7.  Under Sampling Type, select whether you want average or discrete data displayed.

8.  Under Data Types, select which types of data you want in the chart.

9.  Click **Create**.
    The Save… window displays.

10. Beside File Name, type a name for the file and then click **Save**.

    OMNI-Weather displays your report.

> NOTE
>
> The default directory for reports is `C:\omni4000\Reports\`. OMNI-Weather will save your report in this directory unless you specify a different one.
>
> HTML files open in your web browser. CSV files open in a text editor, spreadsheet, or similar program.

# Interpreting data

Occasionally, you may notice irregular or odd patterns of data in an OMNI-Weather chart, report, or other display. Some of these can be explained by knowing some information about the sensors.

**Wind speed**

The wind speed sensor needs a minimum wind speed of about 5 mph or 8 km/h to provide accurate readings. At wind speeds of less that 5 mph, the wind speed sensor may not turn fast enough to provide and accurate reading.

**Wind direction**

The wind direction sensor needs a minimum wind speed (about 5 mph or 8 km/h) to provide accurate readings. As the wind speed increases, the accuracy of the readings increases.

OMNI-Weather can also help you determine if you have a communication or hardware problem. For example, In the Current Conditions Viewer, if the display shows a reading of ⁻ for a value, it is not receiving any information from that sensor.

If "Readings taken on…" *is not* in the bottom right-hand corner of the display, then OMNI-Weather is not receiving any information from the Weather Station. There could be a hardware or communication problem.
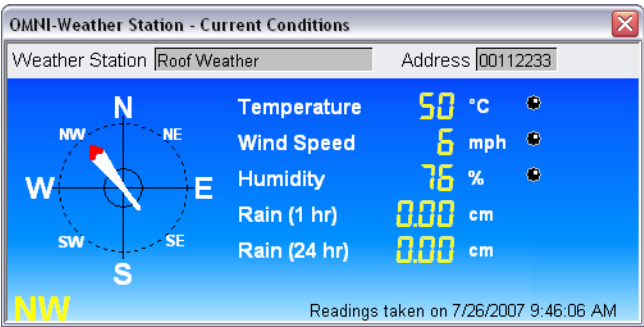


In a report, if you have a row that contains '--' instead of a value, then there might have been a communication problem during that time. See the image below. A '--' is not the same as a '0'. A '0' means there was a reading of zero (for example, zero degrees Fahrenheit). A '--' means there is no information available.

```
10:00          NNE          29          64          53          1.50
11:00          NNE          29          64          53          1.52
12:00          NNE          29          64          53          1.41
13:00           —            —           —           —            —
14:00          NNE          29          64          52          1.42
```

For more information about hardware or communication problems, see **Connecting the communication wiring** on page 18.

## Maintaining your data

OMNI-Weather writes its information (data) to your computer's hard disk. To make sure you do not lose any data if you have computer problems, you need to regularly back up your data.

The OMNI-4000 Backup and Restore Utility backs up all configuration and settings, as well as seven days of historical data. If the computer crashes, or your database becomes corrupt, you can restore the configuration, settings, and data using the utility.

> If you are backing up your complete hard drive on a regular basis, you may not need to run this utility. A complete hard drive backup preserves not only settings and configuration information, but historical records as well.
>
> Back up your system settings and configuration information at least once per week. Store your backups off-site in a safe place where you can easily access them.
>
> For more information about backing up and restoring data, see the OMNI-4000 user manual.
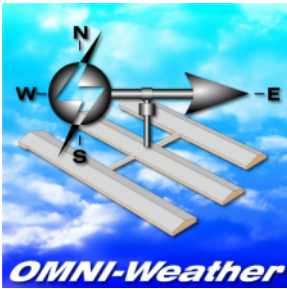
# *Appendix: Troubleshooting*

# Troubleshooting

If you are having problems using OMNI-Weather, look up the problem in the table below and then follow the instructions to resolve the problem. If you have a problem that is not listed here, try to determine what might be causing the problem. If you cannot resolve the problem, call your dealer or Phason's Customer Support (see **Service and technical support**.)

| Problem/message | Possible cause | Resolution |
| --- | --- | --- |
| Information is displaying as " – " in reports and/or the Current Conditions Viewer. | Communication problem | Check the communication between the computer and the device. For more information, see **Connecting the communication wiring** on page 18. |
| | No power to the Weather Station | Check the incoming power to the Weather Station. For more information, see **Connect the incoming power** on page 20. |
| The wind speed either very high or very low. | Wrong sensor type | Change the wind speed sensor type. For more information, see **Configuring Weather Stations** on page 27. |
| The wind direction is incorrect | Sensor not aligned correctly. | Adjust the sensor alignment. For more information, see **Alignment** on page 28. |
| Rainfall information is not displaying | Rain gauge not enabled | Enable the rain gauge. For more information, see **Configuring Weather Stations** on page 27. |

# Index