March 2000

OMA-D570

Remote Monitoring System

USER'S GUIDE

*It's never been
so easy, fast, or
inexpensive to
monitor remote sites*

Congratulations on your acquisition of the OMA-D570 Remote Monitoring System.

Installation and operation of the OMA-D570 system have been designed so that you can easily, effortlessly realize the remote possibilities placed at your fingertips by this state-of-the-art telemetry unit.

This User's Guide outlines the handful of easy, straightforward steps you need to take to prepare the OMA-D570 system for its monitoring, alarm, control, and other assignments.

We are committed to helping you "realize the remote possibilities." If there is a question that cannot be answered quickly and completely in our documentation please call our Technical Support Hotline.

Thank you for selecting the OMA-D570 system and welcome to the Omega family of products.

Table of Contents

Installation

This section describes the procedure for installing the OMA-D570 system. It includes details on how to mount the unit in a suitable location, connect it to a phone line and power source; and attach sensors or instrumentation to it to meet your specific monitoring, alarm, and control needs.
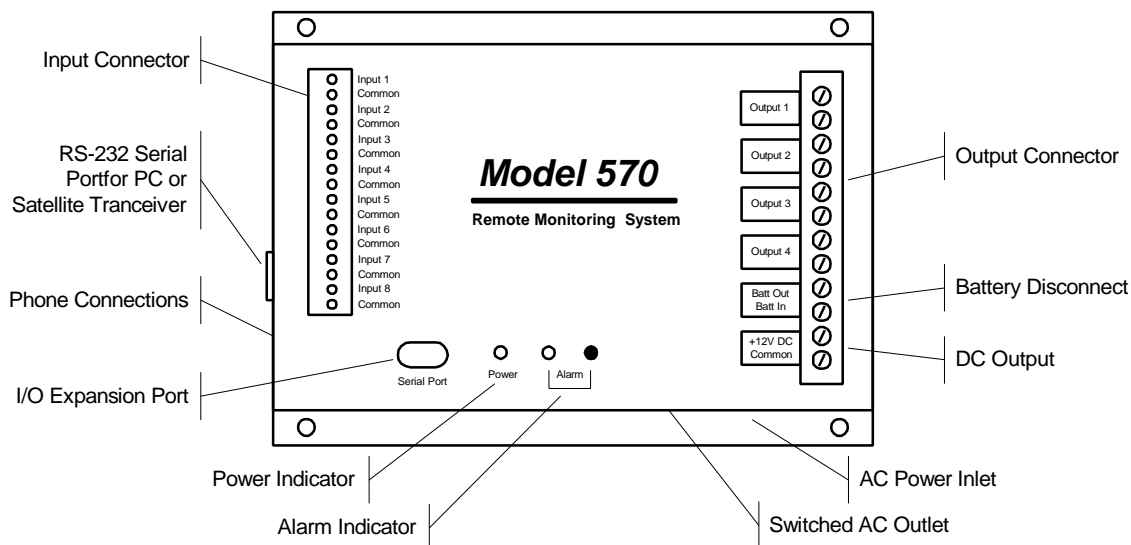
A "home" for your OMA-D570

Your new OMA-D570 should be located in a convenient location close to the conditions being monitored - in a warehouse, basement, utility closet or other work area, mounted on a wall, or mounted inside an equipment cabinet.

When mounted in an optional NEMA-4X weatherproof enclosure, the OMA-D570 can be used in damp or dusty environments or placed outdoors.

If the outputs of the OMA-D570 are used to switch voltages in excess of 30 volts, the unit must be mounted in an approved electrical equipment enclosure.

Connecting a Phone Line

The OMA-D570 is designed to work on most public phone systems found throughout the world. It will also work on most office PBX phone systems. With optional equipment, it will also work on cellular phone systems and with low-orbiting satellites.

- **Standard Phone Lines**

  For your convenience, the OMA-D570 has a dual phone jack. Plug a telephone line into one of the OMA-D570's phone jacks. You can attach a standard telephone into the other jack. It is recommended that you use this standard telephone to check the phone line for dial tone and the ability to make incoming and outgoing phone calls.

- **Cellular Phones**

  The OMA-D570 will also work with North American analog cellular phones equipped with a dial-tone adapter. Support for GSM and PCS cellular phones is planned for the future. Contact technical support for details.

- **Low-Orbiting Satellites**

  The OMA-D570 works with an optional satellite transceiver capable of providing cost-effective communication from virtually any location on Earth. Contact technical support for details.

Connecting a Power Source

The OMA-D570 is factory configured to operate on 110 VAC 50/60 Hz <u>OR</u> 220 VAC 50/60 Hz. It can also operate from 12 VDC.

- **AC Operation**

  Plug the OMA-D570's power cord into a properly grounded (three-wire) electrical outlet. The power required by the OMA-D570 is 20 watts plus the wattage of the load (if any) attached to the "AC Switched Output" connector.

- **DC Operation**

  Connect the positive lead of a 9 to 15 VDC source to the "DC IN" terminal and connect the negative lead to the "Common" terminal.

  IMPORTANT: When using DC power, the OMA-D570's AC power cord MUST be disconnected AND its backup battery MUST be disabled by removing the jumper from between the "BATT OUT" and "DC IN" terminals.

- **Solar Operation**

  The OMA-D570 can be powered by a properly sized solar panel. Contact technical support for details.

Backup Battery

The OMA-D570 system has an internal rechargeable battery that maintains full operation in the event of a power outage. This battery must be enabled when the unit is put into service and disabled when taken out of service. All information programmed into the OMA-D570 system will be retained whether or not the battery is connected to the system.

NOTE: An auxiliary DC power output on the OMA-D570 system can be used to power external sensors and accessories. It provides 12 volts DC (nominal) at up to 200 mA. This power is taken from the OMA-D570 system's backup battery and will provide uninterruptible power, even during a power outage.

■ **Enabling the Backup Battery**

Attach the shorting clip (included with the unit) between the "BATT OUT" and "DC IN" terminals. If the shorting clip is lost, a short length of wire can be used. Once enabled, the battery will require up to 24 hours to fully charge.

■ **Disabling the Backup Battery**

To disable the backup battery, remove the shorting clip from between the "BATT OUT" and "DC IN" terminals.

■ **Testing the Backup Battery**

When operating from AC power, the power light on the front panel of the OMA-D570 system is green. When operating from battery, the power light is red.

Test the battery at least once per year by removing the OMA-D570's AC power source for 10 to 15 minutes and verifying that the power light changes to red and that the unit responds to an incoming phone call.

Attaching the Inputs

The OMA-D570 system supports eight universal inputs that can accept a variety of input types. Input expansion modules are available to increase the monitoring capability of the OMA-D570 to 32 inputs (see Input Expansion Modules).

Inputs 1 through 4 are factory pre-configured to accept 4-20 mA signals while inputs 5 through 8 are factory pre-configured to accept dry-contact signals. It is easy to re-configure an input to accept 4-20 mA, 0-5 VDC, thermistor, logic-level, dry-contact or other signal types in any combination.

■ **DIP Switch Settings**

Removing the input connector reveals two banks of DIP switches as illustrated in the figure below. Each bank has eight switches labeled 1 through 8 corresponding to inputs 1 through 8. The upper bank controls 200-ohm shunt resistors (required for current monitoring applications) while the bottom bank controls pull-up resistors (required for temperature monitoring and dry-contact applications.
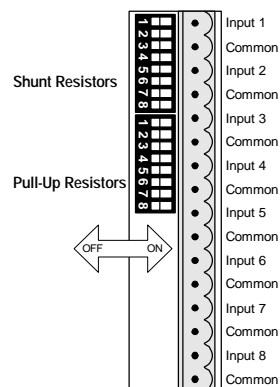
■ **Input Wiring**

Inputs should be wired with 14 to 20 gauge wire. Twisted pair cable is recommended for runs in excess of 20 feet. Input devices requiring 12 VDC can be powered from the OMA-D570's 12 VDC auxiliary output terminal.

When wiring the inputs, keep in mind that they share a common ground and that the input signals must not exceed 5 VDC or 25 mA.
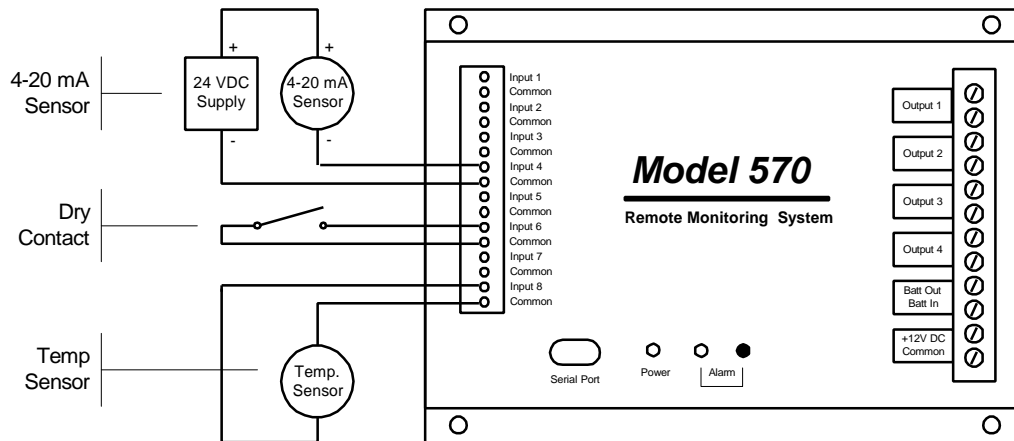
Temperature Sensor

Flip to OFF the shunt resistor DIP switch for the input you want to modify and flip to ON the pull-up resistor DIP switch.

Attach the temperature sensor to the input screw terminals (contact technical support for a list of compatible thermistor temperature sensors). Use the INP S command to set the scaling and alarm parameters (refer to the Command Reference section).

0-5 VDC Sensor

Flip to OFF the shunt resistor DIP switch for the input you want to modify and flip to OFF the pull-up resistor DIP switch.

Attach the 0-5 VDC sensor to the input screw terminals. Use the INP S command to set the scaling and alarm parameters (refer to the Command Reference section).

4-20 mA Sensor

Flip to ON the shunt resistor DIP switch for the input you want to modify and flip to OFF the pull-up resistor DIP switch.

Attach your 4-20 mA sensor to the input screw terminals. Keep in mind that the OMA-D570's internal shunt resistor is referenced to common and that no other device in the loop can be referenced to ground. If it is impossible to isolate the other devices in the loop, you can use a signal isolator or an input expansion module.

Use the INP S command to set the scaling and alarm parameters (refer to the Command Reference section).

Dry Contact Switch

Flip to OFF the shunt resistor DIP switch for the input you want to modify and flip to ON the pull-up resistor DIP switch.

Attach your dry contact sensor to the input screw terminals. Use the INP S command to configure the input for a dry-contact sensor (refer to the Command Reference section).

TTL Logic

Flip to OFF the shunt resistor DIP switch for the input you want to modify and flip to OFF the pull-up resistor DIP switch.

Attach the TTL sensor to the input screw terminals. Use the INP S command to configure the input for a dry-contact sensor (refer to the Command Reference section).

Open Collector

Flip to OFF the shunt resistor DIP switch for the input you want to modify and flip to ON the pull-up resistor DIP switch.

Attach the open-collector sensor to the input screw terminals. Use the INP S command to configure the input for a dry-contact sensor (refer to the Command Reference section).

110/220 VAC

Caution: An interposing relay MUST be used to monitor 110/220 VAC signals.

Flip to OFF the shunt resistor DIP switch for the input you want to modify and flip to ON the pull-up resistor DIP switch.

Wire the 110/220 VAC signal to the coil of a suitably rated relay. Wire the relay contacts to the input screw terminals. Use the INP S command to configure the input for a dry-contact sensor (refer to the Command Reference section).

Other

To connect a thermocouple, millivolt or other type sensor to the OMA-D570, use an appropriate signal conditioner. Contact technical support for assistance.

Input Expansion Modules

Optional input expansion modules are available to expand the OMA-D570's input monitoring capability to 32 inputs.

Each input expansion module accepts up to eight inputs and connects to the OMA-D570 via twisted pair cable. Each module can be located up to 500 feet away from the OMA-D570.

Contact technical support for additional information.

Connecting the Outputs

The OMA-D570 has four outputs that can be controlled remotely or automatically in response to alarm conditions or input parameters. The control capabilities of these outputs are described in the "Control" section of this manual.

■ **Output Relays**

Each of the four outputs is capable of switching 5 amp loads. Note: When switching voltages in excess of 30 volts, the OMA-D570 must be placed in an approved enclosure.

■ **Switched AC Outlet**

You can also plug equipment (seven amp maximum load) into the "Switched AC" power outlet located on the side of the unit (110 VAC units only). This switched outlet works in unison with the output 1 relay on the front panel.

Communications

This section describes the procedure for establishing communication with the OMA-D570 system. It includes details on how to use the RS-232 port for local or satellite communication, a phone line for data, voice, pager and fax communication, and how to put data into the web.

Using a Phone Line

Data, voice, pager or fax? It's your decision!

The OMA-D570 system can communicate over a standard phone line with a computer, pager, or facsimile machine. It also offers a powerful, easy-to-use voice mode for ready-access to information from your equipment anytime, from any standard telephone.

The data mode will allow you to review inputs, set up and reconfigure any OMA-D570 system from a remote location, retrieve stored information, and perform diagnostics from your PC.

The voice mode offers the convenience of inquiry into condition status from any standard telephone, and provides a high-quality, clear, consistent voice without the need for set up, programming, or recording.

The OMA-D570 can also be programmed to call a facsimile machine at predetermined times and deliver a concise status report.

IMPORTANT
☏

Information intended exclusively for voice-mode users is highlighted in this guide by a telephone icon and use of this different type face

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■ **Voice Mode**

☏

The OMA-D570 will respond to your call by generating a "bong" sound, followed by a few seconds of silence. If you press the # key on your touch-tone phone during the time of silence, the system will immediately switch to voice mode. Otherwise, the system will begin to generate a carrier tone - indicating that the system is attempting to communicate with a data terminal. The tone will eventually stop after a few seconds and the OMA-D570 will again switch to voice mode and speak in a synthesized voice:

"Hello, this is telephone number five, five, five, one, two, one, two. Enter security code."

Enter your eight-digit security code on the touch-tone keypad (initially set at the factory to "1, 1, 1, 1, 1, 1, 1, 1). You do not have to press # after the eight digits are entered. The OMA-D570 system will respond "OK."

The voice mode of the OMA-D570 system utilizes a built-in voice enunciator that responds to commands entered from any standard push-button tone-dialing telephone. You enter command codes from the telephone keypad and response messages are spoken in English.

*Voice Mode commands consist of a three-letter code followed by either the # or * key. The following commands are available in the Voice Mode:*

        ALM#   = Alarm acknowledge
        BYE#   = Terminate on-line session
        INP#   = Input report
        OUT# = Output report
        TIM#   = System time report
        VOX#   = Custom Voice Phrase Report

For example, typing INP# initiates an INPut report:

    I   N   P
    ⇓   ⇓   ⇓
GHI 4   **MNO 6**   **PQR 7**   **#**
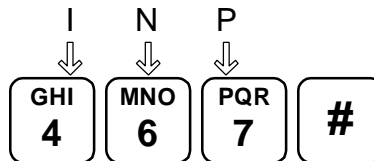
To end a voice mode session, simply type BYE#.

■ Modem Mode

You can communicate with the OMA-D570 system using a PC with a modem and any popular communications program having terminal emulation capability. One such communications program is "Hyperterminal", a program that is included free with the Microsoft Windows 95, 98, 2000 & NT operating systems.

Since HyperTerminal is used throughout this manual to illustrate data mode operation, detailed instructions on its use are included in this section.

Defining a HyperTerminal Connection

To use HyperTerminal, you must first define a few parameters including the phone number of the OMA-D570. To start HyperTerminal, click **Start**, and then click **Programs**, **Accessories** and **Hyperterminal**. Look for an icon labeled **HyperTerminal** or **Hypertrm.exe** and click on it.

In the **Connect Description** box, type a name for the connection, choose an icon, then click **OK**.

In the **Connect To** box, enter the country/region, area code and phone number of the unit to be called and choose your computer's modem from the **Connect Using** list (Note: if your modem is not listed in the **Connect Using** list, it may not be installed properly). Click **OK**.

Click the **Dialing Properties** button to view information about the location of your computer. You may not have to make any changes to this box, but make sure the information is correct. If your modem is attached to an office phone system, you may need to enter a code (such as "9") to access an outside line. Verify that the **Number to be dialed** in the lower left corner of the box appears *exactly* as it would if you were to dial the OMA-D570 from your telephone. It *must not* include any extraneous numbers. Click **OK**.

In the **Connect** box, click **Cancel**. It is now time to save your settings and exit the program. On the HyperTerminal menu bar, select **File**, **Save** and then **File**, **Exit**.

Establishing Communication

Once you've defined a connection to your OMA-D570, establishing communications with it is as simple as clicking on an icon.

Start HyperTerminal by clicking **Start**, **Programs**, **Accessories** and **Hyperterminal**. Look for the OMA-D570 connection that you've created and click on it.

When HyperTerminal starts, you will see the connection information in the **Connect** box. Click **Dial**. You may hear dialing tones or pulses followed by a "ring" sound, followed by modem tones.

When the OMA-D570 answers, it will prompt you to enter a security code. You must enter a valid security code within 30 seconds or the OMA-D570 will terminate the connection. If you don't know the security code, try the factory default security code, "11111111" (eight ones) followed by **Enter**.

Once you have gained access, you can enter commands and the OMA-D570 will respond. If you press **Enter** at the command prompt, you'll get a complete listing of commands. The most common commands are INP R (input status report), ALM R (alarm report) and SEC R (security report).

If HyperTerminal fails to connect, re-check your settings (especially **Dialing Properties** settings) and try again.
Once a connection is established, the **Connect** box will close and the main HyperTerminal screen will become active.

In the following sections of this manual are step-by-step procedures that will help you prepare the OMA-D570 system to work for you - describing how to designate individuals you want to receive alarm messages, set low and high alarm set-points, etc.

The commands to access the system are simple three-letter codes (e.g. INP = input, ALM = alarm, PHO = telephone), generally followed by a fourth letter (e.g. R = report, S = set). The system will automatically insert a blank space between the third and fourth characters.

If an incorrect command is entered, you will receive an "Invalid Command" message.

You may enter a command whenever the "COMMAND>" prompt is displayed.

■ **Fax Mode**

The OMA-D570 system can send alarm reports directly to a fax machine. Input status reports can also be sent to a fax machine on a scheduled basis.

Internet Access

An optional internet service is available that will generate detailed daily reports based on information collected by your OMA-D570 and post those reports to a website. Contact customer service for additional information.

Using the RS-232 Port

Attach a "straight-through" serial cable from your PC's serial port to the RS-232 port on the side panel of the OMA-D570 system (next to the phone connector).

Follow the procedure outlined in "Modem Mode" (above) to define a HyperTerminal connection, substituting the appropriate COM port for the modem in the Connect Using list then click Configure and enter the following settings:

Bits per second: 38400
Parity: none

Stop bits: 1
Flow control: Hardware.

Commissioning Checklist

The commissioning process tailors the OMA-D570 system to your unique remote monitoring application. This section outlines the <u>minimal</u> commissioning tasks required for many applications. Complete details relating to the commands mentioned in this section are discussed in further detail in the COMMAND REFERENCE section later in this manual.

IMPORTANT: The OMA-D570 remote monitoring system has many time and money-saving capabilities that can only be realized after having a thorough working knowledge of all of the commands described in the COMMAND REFERENCE section in this manual.

℞ Identify the System

The OMA-D570 has several programmable fields to help identify it in both voice and data modes. These fields include "site name" and "code number" (for data mode identification) and "unit phone number" (for voice mode identification).

The information that you enter in these fields will not affect the operation of the unit but will help you manage information from your remote sites.

Use the **SEC S** command to enter system identification information.

℞ Configure the Inputs

The OMA-D570 accepts a variety of different input types.

Use the **INP S** command to instruct the OMA-D570 as to how to interpret and report this input data.

℞ Configure the Data Logger

The OMA-D570's data logger can be configured to take periodic "snapshots" of designated inputs and/or record system events and alarm conditions.

Use the **INP S** command to designate the inputs to be recorded and the **LOG S** command to set logging parameters.

ℝ Configuring the Alarm Dialer

The OMA-D570 system continually monitors all inputs for alarm set-points that have been violated. If a set-point has been exceeded for a designated period of response time, the OMA-D570 system recognizes this as the existence of an alarm condition.

It will send the message to up to eight designated telephone numbers anywhere on or off site and at any time. If the calls are unanswered, the OMA-D570 system will wait a pre-set length of time and perform the complete dial-out sequence again.

The alarm dial-out sequence will continue – even if the alarm condition has cleared – until the alarm has been externally acknowledged.

To fully configure the alarm dialer, use the **INP S** command to set the alarm set-points and the **PHO O** command to program the dialing directory.

Operation

Reports

The OMA-D570 generates a variety of concise text reports. Each report is updated just prior to generation and is time-stamped. An auto-report feature, when enabled, produces an input report at the beginning of each communications session without the need to enter a pass code. Reports can be accessed by any security level.

■ Input Report

To get a real-time report of the present condition of the eight inputs, including any that may have exceeded an alarm set-point, type INP R at the command prompt.

Analog inputs will provide LO, HI, and OK status; discrete will provide AL and OK indicators.

```
COMMAND >INP R

INPUT STATUS REPORT
===== ====== ======
Outside Air  OK       -82 F
Input #2     OK       -66 F
Input #3     OK       -83 F
Input #4     OK       -85 F
Input #5     OK       -85 F
Input #6     OK       -85 F
Input #7     OK       -85 F
Input #8     OK       -85 F

Time:  08/03/96 11:12:36
```

■ Output Report

To get a report of the present condition of the four outputs, type OUT R at the command prompt.

```
COMMAND>OUT R

OUTPUT STATUS REPORT
====== ====== ======
Heater       Manual OFF
Output #2    Manual ON
Output #3    Manual ON
Output #4    Manual ON

Time:  08/03/96 11:13:11

COMMAND>
```

■ **Alarm Report**

To get a report of all alarms, including those that have not yet been acknowledged, type ALM R at the command prompt.

```
COMMAND>ALM R

ACTIVE ACKNOWLEDGED ALARMS
====== ============ ======
None


UNACKNOWLEDGED ALARMS
============= ======
None
```

Alarm report. The OMA-D570 system will report all alarms and give you the option to acknowledge any unacknowledged alarms.

■ **Phone Directory Report**

To get a report of the designated dial-out phone names and numbers, type PHO R at the command prompt.

```
COMMAND>PHO R

PHONE NUMBER REPORT
===== ====== ======
1 - Phone #1 No Number
2 - Phone #2 No Number
3 - Phone #3 No Number
4 - Phone #4 No Number
5 - Phone #5 No Number
6 - Phone #6 No Number
7 - Phone #7 No Number
8 - Phone #8 No Number
```

■ **Security Report**

To get a report of various system counters and timers, type SEC R at the command prompt.

Note: These counters and timers are non-volatile and will be retained even if all power is removed from the OMA-D570 system.

```
COMMAND>SEC R

SECURITY REPORT
======== ======
Total Alarms:         0
Access Denials:       2
On-line Sessions:    11
Service Outages:     14
System Hours:        8.8
```

Alarm Handling

The OMA-D570 system constantly monitors all inputs to determine if alarm set-points have been violated. If a set-point has been violated for a specified amount of response time, an alarm condition exists.

This alarm condition will continue until the input has returned to normal and has been externally acknowledged.

When an alarm occurs and the response time has expired, the OMA-D570 system will begin its dial-out sequence. The OMA-D570 system can deliver an alarm in voice, fax or data mode.

The OMA-D570 system will dial each number in succession. If the alarm is not acknowledged, the OMA-D570 system will wait a specified alarm dial-out interval and then start another dial-out sequence with the same alarm message.

Alarms can be acknowledged in either data or voice mode.

There are two classes of alarms -

Active acknowledged alarms: The input continues to violate an alarm set-point but an operator has acknowledged the condition. The OMA-D570 system continues to recognize the alarm condition but will not attempt to make an outgoing phone call.

Unacknowledged alarms: Any alarms, which have not been acknowledged. An unacknowledged alarm initiates an alarm dial-out sequence.

■ **Alarm Dial-Out Reminder**

An optional feature of the OMA-D570 system will enable the dial-out sequence even after an alarm has been acknowledged.

When an alarm occurs, the OMA-D570 system will dial out to all phone numbers in its phone number list once or until it is acknowledged. It will then wait the dial-out interval, as specified in the ALM S menu.

If the re-dial after acknowledgment (in ALM S) is enabled, the OMA-D570 system will dial out again if there are any unacknowledged or acknowledged alarms present.

If disabled, it will re-dial only if there are unacknowledged alarms. When re-dialing, the system will dial every number in the phone number list or until it is acknowledged.

■ **Responding to an Alarm Message - Voice Mode**

❢   *The OMA-D570 system will call the preprogrammed numbers when an alarm condition is recognized. When the phone is answered, the OMA-D570 system will repeat the alarm message up to six times:*

"Hello, this is telephone number one two three four five six seven. Alert condition exists."

Recipients of such calls should press and hold any keypad button for one to two seconds. The OMA-D570 system will respond with the following message:

"OK. Enter security code."

When a correct security code has been entered, the OMA-D570 System will acknowledge it, saying, "Yes." You can now enter INP R to learn the cause of the input alarm condition and enter ALM# to acknowledge receipt of the alarm message.

The alarm can be acknowledged in either data or voice mode.

❗

To acknowledge an alarm and prevent the OMA-D570 system from dialing out again until new alarm conditions exist, type ALM#.

■ **Responding to an Alarm Message - Data Mode (local)**

For local response, an indicator on the front panel of the OMA-D570 system will flash if there are any unacknowledged alarms. An ALARM CANCEL switch enables alarms to be canceled from the front panel.

The indicator will remain on continuously if there are acknowledged alarms.

Control

The OMA-D570 includes a straightforward output controller that enables you to activate or reset equipment remotely on demand or automatically in response to input set-points or alarm conditions.

Output Control Modes

The output controller has several modes of operation that can be grouped into three categories: Manual, Automatic and Alarm. In manual mode, an output is controlled by commands issued by the user. In automatic mode, an output is controlled by "on" and "off" set-points on a designated input channel. In alarm mode, an output is controlled by the alarm status of the OMA-D570. You can mix or match control mode settings among the four output channels.

The output control mode settings can be found in the OUT S menu.

```
AVAILABLE CHOICES
-----------------
1 = Manual
2 = Automatic
3 = Automatic Day
4 = Automatic Night
5 = Close on Present Alarms
6 = Open on Present Alarms
7 = Close on Unacknowledged Alarms
```

■ **Manual**

Manual control permits an operator to remotely control the on/off state of the four output relays.

Use the OUT O command and select the channel you want to control then use the spacebar to manually toggle the output "on" or "off".

❢
The on/off state of the output is controlled by the operator with the On1# and On0# commands. Entering On1# turns output "n" ON and On0# turns output "n" OFF, where "n" is the desired output number (1-4).

EXAMPLE: To turn output three OFF, press "0", "3", "0", "#" on the phone keypad. To turn output three ON, press "0", "3", "1", "#" on the phone keypad.

Output   Output
⇩   ⇩

| MNO 6 | DEF 3 | OPER 0 | # | MNO 6 | DEF 3 | 1 | # |

⇧   ⇧   ⇧   ⇧

#3 Off   #3 On
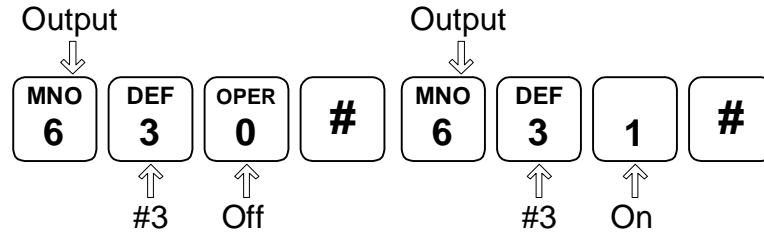
■ Automatic

There are three automatic modes of operation, differing only with respect to the time-of-day in which the automatic control is active.

Automatic

The output will automatically turn ON or OFF as determined by the Output OFF and Output ON set-points on its corresponding input. Use the INP S command to set or change the control set-points.

Automatic Day

Identical to AUTOMATIC, except that control only occurs during daytime hours. The output is off during nighttime hours.

Use the INP S command to set or change the control set-points and the DAY S to set or change START OF DAY and END OF DAY.

Automatic Night

Identical to AUTOMATIC, except that the output will be OFF during daytime hours.

■ Alarm

When using one of the alarm tracking modes to control an output, you must enter an alarm mask for that output. The alarm mask indicates which input's alarm conditions should be used to control the output. The alarm mask is a two character hexadecimal number representing an eight bit binary mask. The least significant bit of the mask correlates to input #1, the most significant bit of the mask correlates to input #8. If a bit in the mask is set to 0, alarms on the correlating input will **not** control the output. Conversely, if a bit is set to 1, an alarm on the correlating input will control the output.

As an example, if you want output #1 to be controlled by alarms on input channels 1 through 4, but ignore alarms on channels 5 through 8, you would use **0F** (equivalent to binary 00001111) as the alarm mask.

Close on Present Alarms

The output will go on (close) when an alarm condition presently exists on any of the inputs designated by the alarm mask. A present alarm is considered to be active when an input alarm set point is exceeded for longer than the input's response time.

Open on Present Alarms

The output will go off (open) when an alarm condition presently exists on any of the inputs designated by the alarm mask. A present alarm is considered to be active when an input alarm set point is exceeded for longer than the input's response time.

Close on Unacknowledged Alarms

The output will go on (close) when an alarm condition exists on any of the inputs designated by the alarm mask, and stay on even if the alarm condition goes away. It will turn off (open) when the alarm condition is acknowledged.

Data Logging/Trending

It is often desirable to track conditions (such as tank level or ambient air temperature) over extended periods of time. The OMA-D570 system provides this ability by recording and maintaining a history of input and output conditions - information that provides valuable insight into the operation of a process, equipment, or facility. This information can be readily accessed through the RS-232 port or via telephone.

The information can be recorded at regular time intervals or in response to an alarm condition, or both.

Set-up and Operation

■ **Log Set-Up (LOG S).**

To enable or disable logging functions and to set up log time, type LOG S.

```
COMMAND>LOG S

DATA LOG SETUP
==== === =====
1 = Periodic Log Enable Disabled
2 = Periodic Log Rate   00:01:00.0 (hh:mm:ss)
3 = High Resolution Log Enabled
4 = Clear Periodic Log
0 = Previous Menu

Choose a Number>
```

Periodic Recording

To enable or disable the periodic recording of all input and output conditions, type LOG S and choose #1. When turned on, the OMA-D570 system will automatically log all input and output conditions at regular intervals of time.

Log Time

To set the data-logging interval, type LOG S and choose #2 when periodic recording is on (see above). Intervals can be set to any time, 00:00:05 to 99:59:59.

<u>High Resolution Log</u>

When the high-resolution log is enabled then two bytes will be stored for each input selected for logging. When the high-resolution log is disabled, only one byte per selected input is logged.

■ **Log Operations (LOG O)**

Whenever a system or log event occurs, the OMA-D570 system will write to memory a time-stamped record of parameters. System events such as system resets, alarm detection, alarm acknowledgments, alarm dial outs, etc. are automatically logged. Log events are logged at the periodic log rate if periodic logging is enabled. (See LOG S.) When the data log becomes full, the overload data will wrap around and erase previous data without any alarm or warning. It is up to the operator to set the log-time interval so that it will be possible to download the logged data before the data logger becomes full.

■ **Data Extraction and Analysis**

Data from the OMA-D570 system can be downloaded in a readable format or in a file format compatible with most spreadsheet and data analysis programs. Select the desired format with the **LOG O** command.

```
COMMAND>LOG O

DATALOG OPERATIONS
======= ==========
1 = Display uncompressed periodic log in ASCII.
2 = Download uncompressed periodic log using X-modem.
3 = Download compressed periodic log using X-modem.
5 = Display data log configuration.
0 = Previous Menu

Choose a Number>
```

<u>Uncompressed Log Format</u>

All uncompressed records contain comma-delimited ASCII fields. The following format is used for all uncompressed records received from the data logger.

REC,MM/DD/YY hh:mm:ss.s, Reserved, XIN, A1, A2, A3, A4, A5, A6, A7, A8, O1, O2, O3, O4 [,O5, O6, O7, O8]*

REC	Record type.
MM/DD/YY	Month / Date / Year
hh:mm:ss.s	Hour: Minute: Second
Reserved	Reserved (Old Ack ID field.)
XIN	Extended Inputs (a decimal representation)
A1-A8	Analog input 1 through 8. Each input value is in engineering units. Un-logged inputs are represented by comma-separated null fields.
O1-O8	Digital outputs 1 through *N*.
	* Only the outputs that are physically present on a unit will be in the log.

Record Type is a three-character field that describes the nature of the log entry:

ACK	Acknowledged alarm
ALM	An alarm condition occurred
DOF	An alarm dial-out has failed
DOS	An alarm dial-out has succeeded
HKR	(Hacker) Too many bad passwords entered
LOG	A time-initiated recording
MFL	The modem has failed power-up diagnostics

NRM	An alarm condition returned to normal
OFF	The end of an on-line session
ON	The beginning of an on-line session
POW	A power failure alarm has occurred
RST	Hardware reset
TFL	A real-time clock failure has occurred

X-modem Downloads

The most reliable way to transfer large amounts of data from the OMA-D570 system to a personal computer is with the XMODEM file transfer protocol. Many communications programs (such as ProComm) support the XMODEM protocol.

If a data error occurs during a file transfer (due to line noise, for example), XMODEM will detect the error and correct it.

Once you initiate an XMODEM data transfer, you have 30 seconds to tell your communications program to start the XMODEM transfer.

Compressed logs

Downloading a compressed log file is also possible. The data compression scheme used in the OMA-D570 system strips out all commas and other punctuation, and converts the data from ASCII decimal to binary. The result is a data file, which is at least one-fourth its original size and transfers in one-fourth the time of the original data file. To decompress the data to its original comma-delimited form, use the DOS decompression utility "D-COMP," which is included on the companion disk. The program will request the name of the input file and output file. When the conversion is complete, you will be able to view the data with any text editor or load the data into a spreadsheet program such as Lotus 1-2-3 or Excel.

Voice Recorder

The OMA-D570's voice enunciator uses a combined lexicon of high-quality pre-recorded phrases and phrases that you record. The recording process utilizes the multimedia capabilities of your computer – phrases are recorded on your PC, then uploaded to the OMA-D570. This process produces superior results and facilitates the commissioning of multiple units.

Voice Mode Reporting

When generating an input or an output report in voice mode the OMA-D570 system will compare each point's label name with a list of phrase names that make up the unit's vocabulary. If an exact match is found, then the unit will play the voice file associated with that phrase name. Each unit is preprogrammed with a list of permanent phrases and voice files. In addition to these permanent phrases, the user has the ability to upload custom phrases and voice files.

Custom Voice Phrases

It is possible for the user to upload 17 different custom voice phases into the OMA-D570 system. Sixteen of these phrases can be up to 1.11 seconds long each and are used to create custom input and output reports in voice mode. The 17th voice file can be up to 8.88 seconds long and is used as the sign-on greeting at the beginning of a voice mode session. Creating these voice files and uploading them is a three-step process.

1) **RECORD**: Each voice phrase is recorded as an individual .WAV file on your PC. The .WAV must be in **a PCM format at 22,050 Hz with 16-bit mono** samples. Once you have recorded your phrases, you need to make sure that they are not longer than the maximum time period allowed. (8.88 seconds for the greeting and 1.11 seconds for all other phrases.)

2) **COMPRESS**: After you have your phrases recorded, you need to compress them. Contact Technical Support if you need the voice compression utility.
    a) Create a directory that contains only your .WAV files.
    b) Copy all of the voice utility files into this directory. (COMPALL.BAT, WS22.BAT, and DBMAINBM.EXE)
    c) Run COMPALL.BAT. This will convert each of the .WAV files into compressed .BIN files. A file named VOXLIST.TXT that contains a list of all of your converted files and their sizes will be created.

3) **UPLOAD**: Go online with the OMA-D570 system in data mode (either direct connect or via modem.) and issue the VOX S command. You will be prompted for:
    a) A phrase name. When generating a report in voice mode the OMA-D570 system will compare the label names in the report to the voice phrase names. Any time a match occurs, the voice file associated with that phrase will be vocalized.
    b) A file size. This is the size of the .BIN file.
    c) An X-modem upload of the compressed voice file itself. (The .BIN file).

d) Repeat. Each phrase and file should be uploaded.
e) To play back your uploaded messages, call the unit in voice mode. After entering your security code, enter the VOX # command. This will cause the OMA-D570 to vocalize the entire custom voice list.

Once you have completed steps 1 and 2, you can perform step 3 on as many units as desired.   If you wish to add or change a voice file, only that file needs to be uploaded. All of the custom phrases and voice files are stored in non-volatile memory and are not affected by a power outage. They are, however, erased when performing a flash code update.

Custom Greeting

The 17th phrase is a custom greeting that is played at the beginning of a voice mode session. This message replaces the "Hello, this is telephone number ..." that is played as the default greeting.   If the 17th phrase name is "Empty," then the default greeting is given. Otherwise, the custom message will be played. This message can be up to 8.88 seconds long.

Command Reference

*To OMA-D570 remote monitoring system contains many features and functions
that can save you both time and money. An understanding of the commands
described in this section will help you maximize the return on your remote
monitoring investment.*

The commands in this reference are listed in alphabetical order.

ALM (Alarm Commands)

These commands configure the OMA-D570 system to continually monitors all inputs for alarm conditions. If a set-point has been exceeded for a designated period of response time, the OMA-D570 system recognizes this as the existence of an alarm condition.

■ **Help with the ALM command**

Type ALM at the command prompt and the OMA-D570 system will return a list of valid alarm commands and related instructions.

```
COMMAND>ALM

ALARM FUNCTIONS
===== =========
ALM R Alarm Report
ALM S Set/Check Alarm Settings
```

■ **Alarm Reports**

Type ALM R at the command prompt and the OMA-D570 system will generate an alarm status report.

```
COMMAND>ALM R

ACTIVE ACKNOWLEDGED ALARMS
====== ============ ======
None

UNACKNOWLEDGED ALARMS
============== ======
None
```

■ **Alarm Set-up**

Type ALM S at the command prompt and the OMA-D570 system will display a sub-menu of alarm related parameters that you can alter.

```
COMMAND>ALM S

ALARM SETUP
===== =====
1 = Local Alarm Siren      Enabled
2 = Dial-out Interval      60 min.
3 = Inter Dial Delay       0 min.
4 = Snooze Timer Delay     160 hours
5 = Alarm Dialout Trigger Individual Alarms
0 = Previous Menu

Choose a Number>
```

Local Alarm Siren

When enabled, the OMA-D570 system's internal beeper will sound whenever an unacknowledged alarm exists. When disabled, the beeper will never sound.

```
COMMAND>ALM S

ALARM SETUP
===== =====
1 = Local Alarm Siren      Enabled
2 = Dial-out Interval      60 min.
3 = Dial-out Delay         1 min.
0 = Previous Menu

Choose a Number>1

Local Alarm Siren Enabled
Change Present State? [y/n]> No
```

Dial-out Interval

This parameter specifies the amount of time the OMA-D570 system will wait after attempting to dial every phone number before it will attempt to dial again.

```
COMMAND>ALM S

ALARM SETUP
===== =====
1 = Local Alarm Siren      Enabled
2 = Dial-out Interval      60 min.
3 = Dial-out Delay         1 min.
0 = Previous Menu

Choose a Number>2
Enter New Dial-out Interval>60
```

Inter dial Delay

Snooze Timer Delay

Alarm Dial-out Trigger

BYE (End Session)

Type BYE at the command prompt and the OMA-D570 system will terminate the current session.

```
COMMAND>BYE
```

COM (Communications Gateway)

The OMA-D570 system provides a data path between its phone line modem and its local RS-232 port, allowing you to talk "through" the OMA-D570 system to an external computer or system.

■ **Help with the COM command**

Type COM at the command prompt and the OMA-D570 system will return a list of valid communications commands and related instructions.

```
COMMAND>COM

COMMUNICATION FUNCTIONS
============= =========
COM S Set/Check Communication Settings
COM R Enter Gateway Mode (Modem Only)
```

■ **Open Communications Gateway**

Type COM R at the command prompt and the OMA-D570 system will open a communications path between the modem and its serial port. This path can be used to establish communications with a secondary OMA-D570 system or almost any other device that has an RS-232 port.

When using the communications gateway, make sure that the RS-232 cable connecting the OMA-D570 system and secondary device supports full hardware (RTS/CTS) handshaking. If the secondary device does not support hardware handshaking, you must make sure that neither device transmits more data than the receiver can handle.

For example: If you have the OMA-D570 system operating its modem at 33.6 kbps and its RS-232 at 115 kbps you must make sure that the device attached to the RS-232 port does not transmit data at a sustained rate of 115kbps. Because the OMA-D570 system would be receiving data 3.5 times faster than it can send it, the receive buffer will fill up quickly. The OMA-D570 can buffer up to 256 incoming and outgoing bytes but any data received after a buffer has filled up will be lost.

*Note: If you attach a device that continuously generates data to the OMA-D570 RS-232 port, you must enable the smart gateway option. (See COM S).

```
COMMAND>COM R


COMMUNICATIONS GATEWAY
============== =======
1 = RS-232 Port
2 = RS-485 Port
0 = Previous Menu

Choose a Number>1

GATEWAY MODE
======= ====
Connecting modem to RS-232 port.
A Control-D after 2 seconds of silence
will close gateway.
```

■ **Communications Gateway Set-up**

Type COM S at the command prompt and the OMA-D570 system will display a sub-menu of related parameters that you can alter.

```
COMMAND>COM S

COMMUNICATIONS SETUP
============== =====
1 = Local RS-232 Baud Rate: 38.4k
2 = Smart Gateway Mode: Disabled
3 = Gateway Echo: Disabled
0 = Previous Menu
```

Local RS-232 Baud Rate

The baud rate can range from 4.8 to 115.6 kbps.

```
COMMAND>COM S

COMMUNICATIONS SETUP
============== =====
1 = Local RS-232 Baud Rate: 38.4k
2 = Smart Gateway Mode: Disabled
3 = Gateway Echo: Disabled
0 = Previous Menu

Choose a Number>1

Set/Check Baud Rate
========= ==== ====
1 = 4800
2 = 9600
3 = 19.2K
4 = 38.4k
5 = 57.6k
6 = 115.6k
0 = Previous Menu

Choose a Number>
```

Smart Gateway Mode

When "Smart Gateway Mode" is enabled, the OMA-D570 system's serial port will remain inactive until it sees a "CONTROL A."

```
COMMAND>COM S

COMMUNICATIONS SETUP
============== =====
1 = Local RS-232 Baud Rate: 38.4k
2 = Smart Gateway Mode: Enabled
3 = Gateway Echo: Disabled
0 = Previous Menu

Choose a Number>2
Smart Gateway Mode: Enabled
Change Present State? [y/n]> Yes
```

Gateway Echo

When enabled, characters that are received from the modem will be echoed back to the modem as well as being sent to the serial port.

```
COMMAND>COM S

COMMUNICATIONS SETUP
============== =====
1 = Local RS-232 Baud Rate: 38.4k
2 = Smart Gateway Mode: Disabled
3 = Gateway Echo: Disabled
0 = Previous Menu

Choose a Number>3
Gateway Echo: Disabled
Change Present State? [y/n]> Yes
```

CNT (Pulse Counter)

The OMA-D570 system allows pulse counting on all eight analog inputs. It uses two commands in data mode, CNT R, to display all eight counters, and CNT O, to clear individual counters.

The maximum transition rate is 100 state transitions/second (50 Hz signal = 50 counts/second) with no two transitions occurring within less than 10ms of each other. The signal can be a square, saw-tooth, or sine wave, with a transition being a change from above three volts and below two volts, and vice versa. Total counts are displayed as decimals.

■ **Help with the CNT command**

Type CNT at the command prompt and the OMA-D570 system will return a list of valid counter commands and related instructions.

```
COMMAND>CNT

INPUT COUNTER FUNCTIONS
===== ======= =========
CNT R Input Counter Report
CNT O Input Counter Operations
```

■ **Counter Report**

Type CNT R at the command prompt to view the count totals for all of the inputs.

```
COMMAND>CNT R

INPUT COUNTER REPORT
===== ======= ======
Outside Air  1
Input #2     1204
Input #3     1
Input #4     1
Input #5     1
Input #6     1
Input #7     1
Input #8     1
```

■ **Clear Counters**

Type CNT O at the command prompt to reset any or all of the counts.

```
COMMAND>CNT O

INPUT COUNTER OPERATIONS
===== ======= ==========
1 = Clear Outside Air  1
2 = Clear Input #2     1204
3 = Clear Input #3     1
4 = Clear Input #4     1
5 = Clear Input #5     1
6 = Clear Input #6     1
7 = Clear Input #7     1
8 = Clear Input #8     1
9 = Clear all input counters
0 = Previous Menu

Choose a Number>
```

CRT S - Critical Condition Setup Menu

```
COMMAND> CRT S

SET/CHECK CRITICAL INPUT SETTINGS
========= ======== ===== ========
1 = Set/Check Critical Input Channels
2 = Set/Check Critical Condition Threshold
3 = Set/Check Critical Condition Actions
0 = Previous Menu

Choose a Number>1

SET/CHECK CRITICAL INPUT CHANNELS
========= ======== ===== ========
01 = Input #01       Critical         17 = Input #17   Non-critical
02 = Input #02       Critical         18 = Input #18   Non-critical
03 = Input #03       Critical         19 = Input #19   Non-critical
04 = Input #04       Critical         20 = Input #20   Non-critical
05 = Input #05       Non-critical     21 = Input #21   Non-critical
06 = Input #06       Non-critical     22 = Input #22   Non-critical
07 = Input #07       Non-critical     23 = Input #23   Non-critical
08 = Input #08       Non-critical     24 = Input #24   Non-critical
09 = Input #09       Critical         25 = Input #25   Non-critical
10 = Input #10       Critical         26 = Input #26   Non-critical
11 = Input #11       Critical         27 = Input #27   Non-critical
12 = Input #12       Critical         28 = Input #28   Non-critical
13 = Input #13       Non-critical     29 = Input #29   Non-critical
14 = Input #14       Non-critical     30 = Input #30   Non-critical
15 = Input #15       Non-critical     31 = Input #31   Non-critical
16 = Input #16       Non-critical     32 = Input #32   Non-critical
00 = Previous Menu

Choose a Number>1

Input #1 is currently a critical input.
Change present state? [y/n]>n


COMMAND> CRT S

SET/CHECK CRITICAL INPUT SETTINGS
```

```
========= ======== ===== ========
1 = Set/Check Critical Input Channels
2 = Set/Check Critical Condition Threshold
3 = Set/Check Critical Condition Actions
0 = Previous Menu

Choose a Number>2

SET/CHECK CRITICAL CONDITION THRESHOLD
========= ======== ========= =========
The critical condition threshold is used to indicate when
a critical condition exists.  When the number of critical
input channels, in the alarm state, meets or exceeds the
critical condition threshold, a critical condition event
is triggered.

Current Value: 4
Change present state? [y/n]>y
Enter new value (1 - n) > 4


COMMAND> CRT S

SET/CHECK CRITICAL INPUT SETTINGS
========= ======== ===== ========
1 = Set/Check Critical Input Channels
2 = Set/Check Critical Condition Threshold
3 = Set/Check Critical Condition Actions
0 = Previous Menu

Choose a Number>3

SET/CHECK CRITICAL CONDITION ACTIONS
========= ======== ========= =======
1 = Freeze Secondary Logger      Disabled
0 = Previous Menu
```

■ CRT R - Critical Condition Report

```
COMMAND> CRT R

CRITICAL CONDITION REPORT
======== ========= ======
Critical Condition Status:
No critical condition exists.
[An active critical condition exists.]
[An inactive critical condition exists.]


Critical channels in an active alarm state:  12
Critical condition threshold:                5


Critical Condition Actions Status
Periodic Log:      Logging Pre-trigger Data [Post-
   trigger data][Frozen]
Diagnostics log:   Logging Pre-trigger Data [Post-
   trigger data][Frozen]
```

■ CRT O - Critical Condition Operations

The Critical Condition Operations menu varies based upon the system's current condition. Any one of three conditions may exist.

An active critical condition exist: This state is entered when the number of critical input channels that are simultaneously in the active alarm state meets or exceeds the critical condition threshold.

An inactive critical condition exists: This state is entered from the active critical condition state after the number of critical input channels that are currently in the active alarm state does not meet or exceed the critical condition threshold.

No critical condition exists: This state is entered only after a user manually resets the critical condition logic using the CRT O command.

```
COMMAND> CRT O

CRITICAL CONDITION OPERATIONS
======== ========= ==========
No critical condition exists.

There are n critical input channels currently in the
   active alarm
state which does not meet or exceed the critical
   condition threshold
of n channels.


COMMAND> CRT O

CRITICAL CONDITION OPERATIONS
======== ========= ==========
An inactive critical condition exists.

Resetting the critical condition logic will terminate
   all active
critical condition actions.
Do you wish reset the critical condition logic?
   (y/n)>Yes
OK.
```

```
COMMAND> CRT O

CRITICAL CONDITION OPERATIONS
======== ========= ==========
An active critical condition exists.
```

There are n critical input channels currently in the active alarm

state, meeting or exceeding the critical condition threshold of n

channels. The critical condition logic cannot be reset until the

number of critical input channels in the active alarm state is

reduced or the critical condition threshold is raised.

DIP

■ Help with the DIP command

Type DIP at the command prompt and the OMA-D570 system will return a list of valid alarm commands and related instructions.

```
COMMAND>DIP

DIP SWITCH SETTING
===== =========
DIP R DIP Switch Report
```

■ DIP Switch Report

Type DIP R at the command prompt and the OMA-D570 system will generate a report indicating the required DIP switch settings for the unit's current input setup. **Note: This report does not indicate the current DIP switch settings. It only reports how the DIP switches should be set.**

```
COMMAND>DIP R

TOP DIP SWITCH
=== === ======
0 = OFF
1 = OFF
2 = OFF
3 = OFF
4 = ON
5 = ON
6 = ON
7 = ON

BOTTOM DIP SWITCH
====== === ======
0 = ON
1 = ON
2 = ON
3 = ON
4 = OFF
5 = OFF
6 = OFF
7 = OFF
```

The example above shows what a report would look like if you had inputs 1-4 defined as 4-20 mA sensor types and input 5-8 as dry contact sensor types.

HLP

■ **Help**

Type HLP at the command prompt and the OMA-D570 system will return instructions for entering commands.

```
COMMAND>HLP

COMMAND FORMAT
======= ======
3 letter command followed by operand.
Example: INP R  (INPut Report)

SPECIAL KEYS
======= ====
^Z or ESC interrupts report.
```

INI S

```
COMMAND>INI S

Initialization Menu
============== ====
1 = Model Name:              ****************
2 = Enhanced Output Menu    Disabled
3 = Reset Counters
0 = Previous Menu

Choose a Number>
```

INP (Input Commands)

Input commands permit you to check the condition of any monitored input and configure the inputs for a variety of applications. Custom or non-standard sensors can also be accommodated by means of "Look-Up" tables.

Each input has separate alarm and control set points. The control set points can be used to automatically control output devices (see OUT S).

■ **Help with the INP command**

Type INP at the command prompt and the OMA-D570 system will return a list of valid input commands and related instructions.

```
COMMAND>INP

INPUT FUNCTIONS
===== =========
INP R Input Status Report
INP S Set/Check Input Settings
INP O Input Filtering Operations
```

■ **Input Status Report**

To get a real-time report of the present condition of the eight inputs, including any that may have exceeded an alarm set point, type INP R at the command prompt.

Analog inputs will provide LO, HI, and OK status; discrete will provide AL and OK indicators.

```
COMMAND>INP R

INPUT STATUS REPORT
===== ====== ======
Input #1     OK      -94 F
Input #2     OK      -78 F
Input #3     OK      -89 F
Input #4     OK      -93 F
Input #5     OK      -93 F
Input #6     OK      -93 F
Input #7     OK      -93 F
Input #8     OK      -93 F

Time:  08/03/96 05:53:21
```

■ **Input Operation Parameters**

Type INP O at the command prompt to get a sub-menu parameters (applied globally to all inputs) that affect the sensitivity and responsiveness of the monitored inputs.

```
COMMAND>INP O

INPUT OPERATIONS
===== ==========
1 = Input Dampening:       Enabled
2 = Input Deadband:        1
3 = Rate of change period:  00:00:10 (hh:mm:ss)
0 = Previous Menu
```

Input Damping

Input damping causes the OMA-D570 to react slowly to a rapidly changing input. For example, if temperature were being monitored and the temperature probe was moved from an ice bath to a hot water bath, a damped input would show a gradual change in temperature every 10 to 20 seconds, rather than an instantaneous change. This option will eliminate many false alarm situations.

```
COMMAND>INP O

INPUT OPERATIONS
===== ==========
1 = Input Dampening:      Enabled
2 = Input Deadband:       1
3 = Rate of change period:  00:00:10 (hh:mm:ss)
0 = Previous Menu

Choose a Number>1
Input Dampening  is Enabled
Change Present State? [y/n]> No
```

Deadband

When set to a value greater than 1, the OMA-D570 system will not report a change in input value until the change exceeds the deadband.

```
COMMAND>INP O

INPUT OPERATIONS
===== ==========
1 = Input Dampening:      Enabled
2 = Input Deadband:       1
3 = Rate of change period:  00:00:10 (hh:mm:ss)
0 = Previous Menu

Choose a Number>2
Enter New Deadband in ADC counts> 1
```

Rate-of-Change Period

The rate of change period is the time period that the OMA-D570 waits before taking the samples that are to be used in the rate of change alarm checks. Note: This time period only applies to the rate of change set point checks. All other set points are checked and acted upon once every 100 ms.

■ **Input Setup Parameters**

Type INP S at the command prompt to control the configuration parameters for each input. You will get a list of all configurable inputs. Select the input you wish to configure and you will get a sub-menu containing parameters for that input.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  <Label>
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                  <Label>
02 = Sensor Type            Temperature (°F)
03 = High Alarm Set Point   260
04 = Low Alarm Set Point    -94
05 = Response Time          0 Sec.
06 = Output On Set Point    260
07 = Output Off Set Point   -94
08 = Calibration Offset     0
09 = Data Logging           Enabled
00 = Previous Menu

Choose a Number>
```

The Input Setup - Present Settings menu varies depending upon the sensor type and whether or not it is an extended input. While each sensor type has a unique set of parameters, many of those parameters can be found in more than one set. A chart of sensor types and parameters is shown below.

Common Parameters

	Label	Sensor Type	Data Logging
Temperature °F	x	x	x
Temperature °C	x	x	x
Dry Contact	x	x	x
Pulse Totalizer	x	x	x
Pulse Rate	x	x	x
Linear	x	x	x
4 to 20 mA	x	x	x
Extended Input	X		X

Alarm Parameters

	High Alarm	Low Alarm	Alarm State	Response Time	Rate Setpoint

	Setpoint	Setpoint			
Temperature °F	x	x		x	x
Temperature °C	x	x		x	x
Dry Contact			x	x	
Pulse Totalizer	x			x	
Pulse Rate	x	x		x	
Linear	x	x		x	x
4 to 20 Ma	x	x		x	x
Extended Input	X	X		X	

Output Control Parameters

	Output On Setpoint	Output Off Setpoint	Output On State	Output Off State
Temperature °F	x	x		
Temperature °C	x	x		
Dry Contact			x	x
Pulse Totalizer				
Pulse Rate	x	x		
Linear	x	x		
4 to 20 mA	x	x		
Extended Input				

Span/Scaling Parameters

	Top/Bottom of Scale	Gain	Calibration	Units	Open/Closed Description
Temperature °F			x		
Temperature °C			x		
Dry Contact					x
Pulse Totalizer		x		x	
Pulse Rate		x		x	
Linear	x		x	x	
4 to 20 mA	x		x	x	
Extended Input	x				

Extended Input Specific Parameters

External Input Module

Channel Address

Sensor Output Range
Fault Value
Label

Each of the eight input channels can be given a name. Type INP S and choose from the menu the input you want to name. A second menu will be given, listing all parameters associated with that input. Choose menu item #1 Label and enter the label name for the input.

At the enter label prompt:
- accepts 1 to 12 characters.
- accepts all data characters: A-Z, a-z, 0-9, specials.
- pressing ENTER without entering any characters keeps the current label.

Hiding Inputs

By typing =HIDE=, you are able to remove this particular item from all reports. To bring the input "out of hiding," simply enter a new label for that input.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  <Label>
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                 <Label>
02 = Sensor Type           Temperature (°F)
03 = High Alarm Set Point  260
04 = Low Alarm Set Point   -94
05 = Response Time         0 Sec.
06 = Output On Set Point   260
07 = Output Off Set Point  -94
08 = Calibration Offset    0
09 = Data Logging          Enabled
00 = Previous Menu

Choose a Number>1
Enter New Label>Outside Air
```

Sensor Type

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  <Label>
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                   <Label>
02 = Sensor Type             Temperature (°F)
03 = High Alarm Set Point    260
04 = Low Alarm Set Point     -94
05 = Response Time           0 Sec.
06 = Output On Set Point     260
07 = Output Off Set Point    -94
08 = Calibration Offset      0
09 = Data Logging            Enabled
00 = Previous Menu

Choose a Number>2
AVAILABLE CHOICES
-----------------
1 = Temperature (°F)
2 = Temperature (°C)
3 = Dry Contact
4 = Pulse Totalizer
5 = Pulse Rate
6 = Linear
7 = Reserved-Custom A
8 = Reserved-Custom B
9 = 4 to 20mA
0 = Previous Menu

Choose a Number> 6
```

Alarm Set-Points

Each of the input channels can be given alarm set points.
Inputs configured with a temperature, pulse rate, custom, linear, or 4 to 20 mA sensor type can be given high and low alarm set points. Inputs configured as pulse totalizers have only a high alarm set point. Inputs configured as Dry contacts have only one alarm state.

If the input value falls below the low alarm set point or above the high alarm set point for a defined period of time, the OMA-D570 system will recognize an alarm condition. In the case of a dry contact, if the input state equals the configured alarm state then an alarm condition is triggered.

To enter a low alarm or high alarm limit, type INP S. Each of the input items should be given a low set point, below which the OMA-D570 system will be activated and send alarm messages, and a high set point, conversely above which the system will be activated.

When adding data at the "Enter New Value" prompt, please note that the range depends on the input type as well as the bottom and top of scale definitions.

To disable the low alarm, set it equal to the bottom of scale parameter. To disable the high alarm, set it equal to the top of scale parameter.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  Outside Air
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                 Outside Air
02 = Sensor Type           Temperature (°F)
03 = High Alarm Set Point  260
04 = Low Alarm Set Point   -94
05 = Response Time         0 Sec.
06 = Rate Alarming         Disabled
07 = Output On Set Point   260
08 = Output Off Set Point  -94
09 = Calibration Offset    0
10 = Data Logging          Enabled
00 = Previous Menu

Choose a Number>3
Enter New High Alarm>25
```

Response Time

Each of the input channels can be given a response time. This time determines how long an alarm condition must exist before it is recognized as an alarm. Type INP S and choose the input you want to modify from the menu. A second menu will be given listing all parameters associated with that input. Choose Response Time and enter the desired response time. The response time can range from 0 second to 10,000 seconds (about one week). The response time only applies to alarm set points.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  Outside Air
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                  Outside Air
02 = Sensor Type            Temperature (°F)
03 = High Alarm Set Point   260
04 = Low Alarm Set Point    -94
05 = Response Time          10000 Sec.
06 = Rate Alarming          Disabled
07 = Output On Set Point    260
08 = Output Off Set Point   -94
09 = Calibration Offset     0
10 = Data Logging           Enabled
00 = Previous Menu

Choose a Number>5
Enter New Response Time>120
```

Rate Alarm Set-Points

The OMA-D570 system is capable of detecting and alarming on various input rate of change conditions. The conditions detected vary depending upon the input type.

- For temperature, linear, and 4-20 mA, sensor types a single rate of change set point may be entered. This set point may be positive or negative and is in addition to the normal high and low alarm set points. Each of these set points are entered in engineering units. Unlike the high and low set points which are continuously scanned 10 times/second, the rate at which these inputs are scanned for rate-of-change condition is based on the rate of change scan period. (See INP O.)

- The rate of change scan period is a global, user-programmable time period, from 1 second to 24 hours. Being global, this period applies to all temperature, linear, and 4-20 ma, sensor types. Upon system reset, each of these inputs will have their current values stored in memory. After the rate-of-change time period has elapsed, the input values are read and compared to the previously stored value. If the difference of these two values exceeds the rate-of-change set point, then an alarm is triggered. The alarm response time does not apply to the rate-of-change set points. Only the readings taken at the rate-of-change interval are compared to the rate-of-change set point. Any activity occurring between the rate-of-change interval is ignored.

- For pulse count rate sensor types, the input is always represented by a positive hourly rate. This hourly pulse count rate is updated only once per hour, on the hour. If the rate exceeds either the high or low set point, then an alarm will be triggered. The alarm response time does not apply to these set points.

- Discrete and pulse count totalizer sensor types do not have rate-of-change set points.

Output ON / OFF Control Set-Points

Each of the input channels can be programmed with output control set points. The output control set points only affect outputs that have a control mode of Automatic, Automatic Day, and Automatic Night. If the input value goes above the output ON set point, the output will be turned ON and remain ON until it falls below the output OFF set point. The response time does not apply to Output On and Output Off set points.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  Outside Air
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                 Outside Air
02 = Sensor Type           Temperature (°F)
03 = High Alarm Set Point  260
04 = Low Alarm Set Point   -94
05 = Response Time         120 Sec.
06 = Rate Alarming         Disabled
07 = Output On Set Point   260
08 = Output Off Set Point  -94
09 = Calibration Offset    0
10 = Data Logging          Enabled
00 = Previous Menu

Choose a Number>7
Enter New Output On>255
```

Calibration

Each of the input channels can be calibrated by adding (or subtracting) a calibration constant to the raw (unscaled) input value. To enter a new calibration constant, type INP S and choose from the menu the input you want to calibrate. A second menu will be given, listing all parameters associated with that input. Choose "Calibration".

The OMA-D570 system will display the measured value of the input and ask you to enter the actual value. When you do, a calibration offset will be calculated and stored in the OMA-D570 system's memory.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  Outside Air
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                 Outside Air
02 = Sensor Type           Temperature (°F)
03 = High Alarm Set Point  260
04 = Low Alarm Set Point   -94
05 = Response Time         120 Sec.
06 = Rate Alarming         Disabled
07 = Output On Set Point   260
08 = Output Off Set Point  -94
09 = Calibration Offset    0
10 = Data Logging          Enabled
00 = Previous Menu

Choose a Number>8

Sensor Calibration
====== ===========

Outside Air  OK      84 F

Enter current sensor value: 82
```

Data Logging

Data logging can be enabled or disabled on a "per channel" basis.

```
COMMAND>INP S

SET/CHECK INPUT SETTINGS
========= ===== ========
1 = Input #1  Outside Air
2 = Input #2  <Label>
3 = Input #3  <Label>
4 = Input #4  <Label>
5 = Input #5  <Label>
6 = Input #6  <Label>
7 = Input #7  <Label>
8 = Input #8  <Label>
0 = Previous Menu

Choose a Number>1

Input #1
PRESENT SETTINGS
======= ========
01 = Label                 Outside Air
02 = Sensor Type           Temperature (°F)
03 = High Alarm Set Point  260
04 = Low Alarm Set Point   -94
05 = Response Time         120 Sec.
06 = Output On Set Point   255
07 = Output Off Set Point  -94
08 = Calibration Offset    2
09 = Data Logging          Enabled
00 = Previous Menu

Choose a Number>9
Warning:  Changing this option will reformat the data
  logs, permanently
erasing all log data.
Data Logging for this input is Enabled.
Change Present State? [y/n]> No
```

Dry Contact Specific Parameters:

```
Input #1
PRESENT SETTINGS
======= ========
01 = Label                 Input #1
02 = Sensor Type           Dry Contact
03 = Open Description       ON
04 = Closed Description     OFF
05 = Alarm                 Deselected
06 = Response Time         15 Sec.
07 = Output On Control     Deselected
08 = Output Off Control    Deselected
09 = Data Logging          Enabled
00 = Previous Menu

Choose a Number>
```

Closed Description - You will be prompted to select a word to be displayed or vocalized when a contact is closed. (When less than 2.5 VDC.) Words included in this list are:
Open, Closed, High, Low, Alarm, OK, On, Off, 1, and 0.

Open Description - You will be prompted to select a word to be displayed or vocalized when a contact is open. (When greater than or equal to 2.5 VDC.) Words included in this list are: Open, Closed, High, Low, Alarm, OK, On, Off, 1, and 0.

Alarm When - You will be prompted with the following menu:
Alarm When Open*
Alarm When Closed*
Alarm Deselected.

Output On When - You will be prompted with the following menu:
Output On When Open*
Output On When Closed*
Output On Control Deselected

Output Off When - You will be prompted with the following menu:
Output Off When Open*
Output Off When Closed*
Output Off Control Deselected

The corresponding output must be in one of the Automatic control modes for the above control logic to affect that output's state.

*Open and Closed will be replaced with the terms defined as the Open / Closed Descriptions.

Pulse Totalizer and Pulse Rate Sensor Types:

Pulses are automatically counted for all eight inputs regardless of input type. Each input channel has a 24bit pulse counter. These 24bit counts can be viewed with the CNT R command. If you want to log or alarm on an input's pulse count total, you must set that input's sensor type to Pulse Totalizer. If you want to log or alarm on an input's hourly pulse rate then you must set that input's sensor type to Pulse Rate. When using either of these types, only the 16 least significant bits are used. This provides a count or hourly rate from 0 to 65535. For totalizer input types the count will roll over to 0 once 65535 is reached. The pulse rate input types will hold at 65535 if more than 65535 counts occur in one hour.

Gain: Both types allow you to enter a gain value. The gain value is used to convert the pulse counts into engineering units.   For example: If every single count is 10 gallons you would set the gain to 10. If every count is only one tenth of a gallon, you would set the gain to 0.1 . Once you have entered the gain, all of your setpoints must be entered in engineering units not pulse counts. All reports will show engineering units.

Setpoints: Pulse Rate input's have high and low alarm setpoints as well as Output On and Off setpoints. Pulse Totalizer inputs only have a high alarm setpoint. The allowable range for each of these setpoints is from 0 to 65535 multiplied by the gain parameter.

Logging: When the high resolution log is enabled then a 16bit (0 – 65535) count value is logged. If it is disabled then an 8bit (0 – 255) value is logged.

LOG (Event and Data Recorder)

It is often desirable to track conditions (such as tank level or ambient air temperature) over extended periods of time. The OMA-D570 system provides this ability by recording and maintaining a history of input and output conditions, information that provides valuable insight into the operation of a process, equipment, or facility. This information can be readily accessed through the RS-232 port or via telephone.

■ **Help with the LOG command**

Type LOG at the command prompt and the OMA-D570 system will return a list of valid data logging and trending commands and related instructions.

```
COMMAND>LOG

LOG FUNCTIONS
=== =========
LOG O Data log Download Operations
LOG S Set/Check Data Log Settings
```

■ **Download Logged Data**

To download data from the OMA-D570 system, type LOG O. The information can be downloaded in a variety of data formats.

```
COMMAND>LOG O

DATALOG OPERATIONS
======= ==========
1 = Download uncompressed periodic log in ASCII.
2 = Download uncompressed periodic log using X-modem.
3 = Download compressed periodic log using X-modem.
4 = Display data log configuration.
0 = Previous Menu

Choose a Number>
```

Download Uncompressed ASCII

Information downloaded in this format can be read directly on the screen. The uncompressed ASCII log download option causes the OMA-D570 system to display the contents of data logger memory in uncompressed log format. This data can be captured by a terminal program and saved in a text file.

When the data log is transferred, the oldest records are transmitted first and the most recent is last.

Download Uncompressed X-Modem

Most terminal emulation program - including HyperTerminal and ProComm - include the ability to transfer information as a file using X-Modem protocol. Its advantage is its immunity to line noise and built-in error correction. The resulting file is stored on your PC and can be used without further processing. Information downloaded in this format can be imported directly into many programs such as Excel or Lotus.

Download Compressed X-Modem

This method of transferring information is similar to the above method except that the OMA-D570 compresses the information before it sends it, resulting in much faster download times. To use the information, it must first be de-compressed using a file utility supplied by [short company name].

Display Data Log Configuration

Reports the data logger's set-up and status.

```
COMMAND>LOG O

DATALOG OPERATIONS
======= ==========
1 = Download uncompressed periodic log in ASCII.
2 = Download uncompressed periodic log using X-modem.
3 = Download compressed periodic log using X-modem.
5 = Display data log configuration.
0 = Previous Menu

Choose a Number>5

Current Data Log Configuration
Input #1     Logging
Input #2     Logging
Input #3     Logging
Input #4     Logging
Input #5     Logging
Input #6     Logging
Input #7     Logging
Input #8     Logging

Periodic log capacity: 1364 records.
Current log usage:  7.77%
```

■ Configure the Data Logger

To configure the data logger, type LOG S at the command prompt.

```
COMMAND>LOG S

DATA LOG SETUP
==== === =====
1 = Non-Critical Alarm Log Period   00:00:10.0
2 = Critical Alarm Log Period       00:00:30.0
3 = High Resolution Mode       Enabled
4 = Clear Periodic Log
0 = Previous Menu

Choose a Number>
```

Non-Critical Alarm Log Period
Critical Alarm Log Period

Log Rate

If periodic logging is enabled, this parameter tells the OMA-D570 system how often to sample and record input conditions. Intervals can be set to any time, 00:00:05 to 99:59:59.

High Resolution Mode

When the high resolution mode is enabled, two bytes will be stored for each input selected for logging. When the high resolution mode is disabled, only one byte per selected input is logged. Low resolution is recommended in most cases to conserve memory. Changing this parameter requires the logger to be reformatted, which erases all currently stored information. All logged information, therefore, must be downloaded prior to changing this value.

Clear Log

This action permanently erases the contents of the data logger's memory. Note: you normally do not have to clear memory - when it is full, it will automatically clear the oldest information in its memory. You can use this clear function after you download the contents of the data logger's memory if you want to eliminate the possibility of downloading redundant information in the future.

OUT (Output Commands)

The OMA-D570 system has four outputs that can be configured for manual or automatic operation.

■ **Help with the OUT command**

Type OUT at the command prompt and the OMA-D570 system will return a list of valid output commands and related instructions.

```
COMMAND>OUT

OUTPUT FUNCTIONS
====== =========
OUT R Output Status Report
OUT O Turn Output1 ON or OFF
OUT S Set/Check Output Settings

COMMAND>
```

■ **Output Status Report**

To get a real-time report of the present condition of the outputs, along with their mode of control, type OUT R at the command prompt.

```
COMMAND>OUT R

OUTPUT STATUS REPORT
====== ====== ======
Output #1    Manual OFF
Output #2    Manual OFF
Output #3    Manual OFF
Output #4    Manual OFF

Time:  08/03/96 06:59:26
```

■ **Output Control Operations**

To manually turn an output on or off, type OUT O at the command prompt. The OMA-D570 system will report the present value of the first input and permit you to toggle the value by pressing the space bar. Press <ENTER> when the output is in the desired state. The OMA-D570 system will repeat the process with the next output and continue doing so until all of the outputs have been accessed.

```
COMMAND>OUT O

TURN OUTPUTS ON OR OFF
==== ======= == == ===
Press SPACE to change, CR if OK
Output #1    OFF ON  OFF
Output #2    OFF ON
Output #3    OFF ON
Output #4    OFF ON
```

■ **Output Setup**

Type OUT S at the command prompt to control the configuration parameters for each output. You will get a list of all configurable outputs. Select the one you wish to configure and you will get a sub-menu of parameters for that output.

```
COMMAND>OUT S

SET/CHECK OUTPUT SETTINGS
========= ====== ========
1 = Output #1  <Label>
2 = Output #2  <Label>
3 = Output #3  <Label>
4 = Output #4  <Label>
0 = Previous Menu

Choose a Number>1

Output #1
PRESENT SETTINGS
======= ========
1 = Label                  <Label>
2 = On Time per Minute      60
3 = Control Mode            Manual
4 = Power-up State          OFF
5 = Alarm Mask              FF
0 = Previous Menu

Choose a Number>
```

Labels

Each of the eight output channels can be given a name. Type OUT S and choose from the menu the input you want to name. A second menu will be given, listing all parameters associated with that input. Choose menu item #1 Label) and enter the label name for the input. Each label can be up to 12 characters long and can contain any alphanumeric or printable character.

Hiding Outputs

By typing =HIDE=, you are able to remove this particular item from all reports. To bring the input "out of hiding," simply enter a new label for that output.

```
COMMAND>OUT S

SET/CHECK OUTPUT SETTINGS
========= ====== ========
1 = Output #1  <Label>
2 = Output #2  <Label>
3 = Output #3  <Label>
4 = Output #4  <Label>
0 = Previous Menu

Choose a Number>1
```

```
Output #1
PRESENT SETTINGS
======= ========
1 = Label                   <Label>
2 = On Time per Minute      60
3 = Control Mode            Manual
4 = Power-up State          OFF
5 = Alarm Mask              FF
0 = Previous Menu

Choose a Number>
Enter New Label>Heater
```

On-Time per Minute

This parameter can be used to 'throttle' an output (rather than have it constantly on or off). If an output has been turned on, and this parameter is set for 40, then the output will cycle on for 40 seconds and off for 20 seconds (ad infinitum). If the parameter is set for 60, the output remains on constantly. The minimum value is one. The default value is 60 seconds.

```
COMMAND>OUT S

SET/CHECK OUTPUT SETTINGS
========= ====== ========
1 = Output #1  Heater
2 = Output #2  <Label>
3 = Output #3  <Label>
4 = Output #4  <Label>
0 = Previous Menu

Choose a Number>1

Output #1
PRESENT SETTINGS
======= ========
1 = Label                   <Label>
2 = On Time per Minute      60
3 = Control Mode            Manual
4 = Power-up State          OFF
5 = Alarm Mask              FF
0 = Previous Menu

Choose a Number>2
Enter New Value> 20
```

Control Mode

See Controlling Outputs for description of control modes.

```
COMMAND>OUT S

SET/CHECK OUTPUT SETTINGS
========= ====== ========
1 = Output #1  Heater
2 = Output #2  <Label>
3 = Output #3  <Label>
3 = Output #3  <Label>
0 = Previous Menu

Choose a Number>1

Output #1
PRESENT SETTINGS
======= ========
1 = Label                   <Label>
2 = On Time per Minute      60
3 = Control Mode            Manual
4 = Power-up State          OFF
5 = Alarm Mask              FF
0 = Previous Menu

Choose a Number>3
AVAILABLE CHOICES
-----------------
1 = Manual
2 = Automatic
3 = Automatic Day
4 = Automatic Night
5 = Close on Present Alarms
6 = Open on Present Alarms
7 = Close on Unacknowledged Alarms
0 = Previous Menu

Choose a Number>2
```

Power-up State

By default, all outputs are off after a power-up reset. By changing the Power-up State setting to On, you can have an output turn on immediately after a reset.

Alarm Mask

See Controlling Outputs for description of control modes.

PHO (Telephone Dialing Directory)

The PHO commands configure the OMA-D570 system to deliver alarm messages to up to eight people, pagers, computers or facsimile machines.

■ **Help with the PHO command**

Type PHO at the command prompt and the OMA-D570 system will return a list of valid phone directory commands and related instructions.

```
COMMAND>PHO

PHONE FUNCTIONS
===== =========
PHO R Phone Number Report
PHO S Set/Check Phone Settings
PHO O Edit Phone Directory
```

■ **Phone Directory Listing**

This lists the names, phone numbers and dialing instruction that have been programmed into the OMA-D570's memory.

```
COMMAND>PHO R

PHONE NUMBER REPORT
===== ====== ======
1 - J. Flynn F5432151
2 - Data Ctr V1-215-543-8066-68
3 - Phone #3 No Number
4 - Phone #4 No Number
5 - Phone #5 No Number
6 - Phone #6 No Number
7 - Phone #7 No Number
8 - Phone #8 No Number
```

■ **Add/Edit Phone Numbers**

This enables you to change the names, phone numbers and dialing instruction for people to be alerted in the event of an alarm condition.

```
COMMAND>PHO O

PHONE NUMBER SETUP
===== ====== =====
1 = J. Flynn F5432151
2 = Data Ctr V1-215-543-8066-68
3 = Phone #3 No Number
4 = Phone #4 No Number
5 = Phone #5 No Number
6 = Phone #6 No Number
7 = Phone #7 No Number
8 = Phone #8 No Number
0 = Previous Menu

Choose a Number>1

1)  J. Flynn - F5432151
---------------------------------

1 = Change Label Name
2 = Change Phone Number
3 = Erase Entry
0 = Previous Menu

Choose a Number>1

Enter New Label>J. Smith

OK - Entry Updated

1)  J. Smith - F5432151
---------------------------------

1 = Change Label Name
2 = Change Phone Number
3 = Erase Entry
0 = Previous Menu

Choose a Number>2

When entering a phone number the first character
is used to determine the type of dial out.
Valid choices are : V - Voice Mode, D - Data Mode
                    F - Fax Mode
This prefix is not optional.

Enter New Phone Number >V555-1212
OK - Entry Updated

1)  J. Smith - V555-1212
---------------------------------

1 = Change Label Name
2 = Change Phone Number
3 = Erase Entry
0 = Previous Menu

Choose a Number>
```

■ **Phone Parameters**

This enables you to specify how many rings the OMA-D570 system will wait before it answers an incoming phone call. You can also specify touch-tone or pulse dialing methods.

```
COMMAND>PHO S

SET / CHECK PHONE SETTINGS
=== = ===== ===== ========
1 = Rings to Answer      1
2 = Default Dial Method: Touch Tone
0 = Previous Menu

Choose a Number>
```

POW (AC Power Monitor)

■ **Help with the POW Command**

Type POW at the command prompt and the OMA-D570 system will return a list of valid power monitoring commands and related instructions.

```
COMMAND>POW

AC POWER FUNCTIONS
== ===== =========
POW R AC Power Report
POW S Set/Check AC Power Fail Settings
```

■ **Power Status Report**

This enables you to report the current condition of the AC line power that is supplying operating voltage to the OMA-D570.

```
COMMAND>POW R

AC POWER REPORT
== ===== ======
AC Power is On
```

■ **Power Failure Alarm Parameters**

Change alarm parameters associated with the AC line power.

```
COMMAND>POW S

AC POWER FAIL SETTINGS
== ===== ==== ========
1 = AC Power Fail Alarm:        Disabled
2 = AC Power Fail Alarm Delay:  1 min.
0 = Previous Menu

Choose a Number>
```

Power Alarm

When enabled, the OMA-D570 system will begin an alarm sequence when the power has been off for the specified alarm delay time.

Power Alarm Delay

The power must be off continuously for this amount of time before a power alarm is recognized. A time period of 5 to 15 minutes is recommended in most cases to prevent alarms during momentary outages. Enter a much smaller time if you are monitoring power sensitive devices but set it much higher if the location is prone to long power outages and the equipment you are monitoring would not be affected.

RTU (Real-Time Update)

■ **RTU**

Type RTU at the command prompt and the OMA-D570 system will return a continuously updated input/output status report.

RUN (Runtime Meters)

An input's runtime meter is considered to be running when the input exceeds its output on setpoint.

■ **Help with the RUN command**

Type RUN at the command prompt and the OMA-D570 system will return a list of valid runtime commands and related instructions.

```
COMMAND>RUN

RUNTIMER FUNCTIONS
======== =========
RUN R Input Runtimer Report
RUN O Runtimer Operations

COMMAND>
```

■ **Runtime Meter Report**

Type RUN R at the command prompt to view the run-time totals for all of the inputs.

```
COMMAND>RUN R

INPUT RUNTIME REPORT
===== ======= ======
Outside Air  : 00:00
Input #2     : 00:00
Input #3     : 00:00
Input #4     : 00:00
Input #5     : 00:00
Input #6     : 00:00
Input #7     : 00:00
Input #8     : 00:00

Time format: hh:mm:ss
```

■ **Resetting the Runtime Meters**

Type RUN O at the command prompt to reset any or all of the runtime meters.

```
COMMAND>RUN O

INPUT RUNTIME OPERATIONS
===== ======= ==========
1 = Clear Outside Air  : 00:00
2 = Clear Input #2     : 00:00
3 = Clear Input #3     : 00:00
4 = Clear Input #4     : 00:00
5 = Clear Input #5     : 00:00
6 = Clear Input #6     : 00:00
7 = Clear Input #7     : 00:00
8 = Clear Input #8     : 00:00
9 = Clear all input runtimes
0 = Previous Menu

Choose a Number>
```

SCH (Scheduled Dialout)

■ **Help with the SCH Command**

Type SCH at the command prompt and the OMA-D570 system will return a list of valid power monitoring commands and related instructions.

```
COMMAND>SCH

DIAL OUT SCHEDULER
==== === =========
SCH S Dial Out Scheduler Settings

COMMAND>
```

■ **Scheduled Dialout Settings**

```
COMMAND>SCH S

DIAL OUT SCHEDULER SETTINGS
==== === ========= ========
1 = Dial Out Scheduler:  Disabled
2 = Scheduler Interval:  Daily
3 = Delivery Day:        N/A
4 = Delivery Hour:       12
5 = Phone Number:
0 = Previous Menu

Choose a Number>
```

Dial Out Scheduler

When enabled, the OMA-D570 system will automatically dial out to the phone number defined in the scheduler settings at the defined interval at the defined day/time.

Scheduler Interval

The value can be set to either hourly, twice daily, daily or weekly.

Delivery Day

If the scheduler interval is set to weekly, you can select what day of the week you wish the OMA-D570 system to dial out.

Delivery Hour

This defines what hour the OMA-D570 system will dial out.

Phone Number

This is the phone number the OMA-D570 system will call and deliver its status reports to. Call type can be either voice, data, or fax. See PHO O for a description of how to enter a dialout phone number.

SEC (Security & Identification)

The SEC commands allow you to configure your OMA-D570 system with passwords, identification fields and geo-codes, and give you access to important system information.

■ **Help with the SEC command**

Type SEC at the command prompt and the OMA-D570 system will return a list of valid security commands and related instructions.

```
COMMAND>SEC

SECURITY FUNCTIONS
======== =========
SEC R System Counters Report
SEC S Set/Check Security Settings
```

■ **Security Report**

The OMA-D570 system has several internal event counters and timers that are useful as an indication of proper system operation. The information can be viewed by typing SEC R at the command prompt.

```
COMMAND>SEC R

SECURITY REPORT
======== ======
Total Alarms:          0
Access Denials:        2
On-line Sessions:     13
Service Outages:      15
System Hours:        9.9
```

■ **Add/Edit Security Codes and Identification**

Your OMA-D570 system has a multi-level password system as well as several key identification fields that are used to safeguard the OMA-D570 system's data and authenticate the location of the site originating the data.

Several of these fields are user programmable and can be changed by typing SEC S at the command prompt.

```
COMMAND>SEC S

SET/CHECK SECURITY SETTINGS
======== ======== ========
1 = Security Code 1
2 = Security Code 2
3 = Security Code 3
4 = Code Number        ********
5 = Unit Phone Number
6 = Site Name          ******** ************
7 = Automatic Report   Disabled
0 = Previous Menu

Choose a Number>
```

Security Codes

Your OMA-D570 system has three levels of security, each permitting access to the system but with varying degrees of privilege. These security codes are also used when accessing the OMA-D570 system from a touch-tone telephone.

Level Three Security -
Level Three security permits a user to access the report ("R") commands.

Level Two Security

Level Two security permits a user to access and change certain operational ("O") commands as well as report ("R") commands.

Level One Security
Level One security permits a user to access and change the set-up commands ("S") as well as the operational ("O") and reporting ("R") commands.

To set or change security codes, you must have a level one Security Code. At the command prompt, type SEC S and choose menu selections 1, 2, or 3.

You will be prompted to enter a new security code. The security code is eight digits long and all eight must be entered. Only the digits 0-9 are accepted.

For security reasons, the OMA-D570 system will ask you to re-enter your code,

```
COMMAND>SEC S

SET/CHECK SECURITY SETTINGS
========= ======== ========
1 = Security Code 1
2 = Security Code 2
3 = Security Code 3
4 = Code Number         ********
5 = Unit Phone Number
6 = Site Name           ********************
7 = Automatic Report    Disabled
0 = Previous Menu

Choose a Number>1
Enter New Level 1 Security Code>********
To avoid misspelling errors...
Enter New Level 1 Security Code>********
Security Code 1 updated.
```

Entering your code number

You can program an eight-character alphanumeric code to provide your OMA-D570 system a unique identity. That code, which will appear in the log-on message, typically is an account number, site code, or serial number.

At the command prompt, type SEC S, choose menu selection number 4, and type your eight-character code.

Entering the unit phone number

You can program a 15 character alphanumeric code to provide your OMA-D570 system with additional identity. The unit phone number will be part of the OMA-D570 system's voice mode alarm dial message.

Entering your location name

Similarly, to complete your unique system signature, you can program your OMA-D570 system with a location name which, like your code number, will appear in the log-on message. Typically, the location name is the address where the system is located.

TST (Testing & Diagnostics)

■ **Help with the TST command**

Type TST at the command prompt and the OMA-D570 system will return a list of valid system test commands and related instructions.

```
COMMAND>TST

DIAGNOSTIC FUNCTIONS
========== =========
TST R Diagnostics Report
TST S Set/Check System Settings
```

■ **Memory Check / System Information**

Type TST R at the command prompt and the OMA-D570 system will run a self-diagnostic test and generate a report.

```
COMMAND>TST R

SYSTEM INFORMATION
====== ===========

Version Information
*******************
Hardware version: MSG570G
Software version: 10B8
Compiled: 05/08/98 17:23:26
Flash checksum: bdb2

Option Information
******************
FFT option: Disabled.
Custom voice option: Enabled.
Data Log Capacity: 32kb.
Modem: Internal

NV Information
*************
Serial number: 00FFFFFF
NV parameter CRC: 9362

Diagnostic Information
*********************
Realtime Clock: Operational.
Modem status: Operational
Last Error: None.
```

■ **Factory Diagnostics**

The TST S command is used at the factory for system set-up and test. Use it only at the direction of a factory technician.

```
COMMAND>TST S

DIAGNOSTIC SETUP
========== =====
1 = Load Factory Setup
2 = Download Current User Setup
3 = Upload Current User Setup
4 = Hardware Reset
5 = Clear Last Error Code
0 = Previous Menu

Choose a Number>
```

VOX (Custom Voice Functions)

■ **Help with the VOX Command**

Type VOX at the command prompt and the OMA-D570 system will return a list of valid power monitoring commands and related instructions.

```
COMMAND>VOX

DIAL OUT SCHEDULER
==== === =========
VOX S Custom Voice Phrase Setup
VOX R Custom Voice Phrase Report

COMMAND>
```

■ ■ **VOX S Custom Voice Phrase Settings**

```
COMMAND>VOX S

CUSTOM VOICE SETUP
====== ===== =====
01 = Phrase 01: Empty
02 = Phrase 02: Empty
03 = Phrase 03: Empty
04 = Phrase 04: Empty
05 = Phrase 05: Empty
06 = Phrase 06: Empty
07 = Phrase 07: Empty
08 = Phrase 08: Empty
09 = Phrase 09: Empty
10 = Phrase 10: Empty
11 = Phrase 11: Empty
12 = Phrase 12: Empty
13 = Phrase 13: Empty
14 = Phrase 14: Empty
15 = Phrase 15: Empty
16 = Phrase 16: Empty
17 = Greeting:  Empty
0 = Previous Menu

Choose a Number>1

Phrase 01: Empty
Enter new phrase name or Empty to delete entry: Blower
Enter new file size (1-4096): 1203
Begin X-modem transfer now.
```

VOX S allows you to define text phrases and upload a custom voice message for each of those phrases. When giving an input report in voice mode, if an input's label name matches one of the voice phrase names, that phrase's voice message is played.

See User Programmable Voice for a complete description of how to create your own vocabulary.

■ **VOX R Custom Voice Phrase Listing**

```
COMMAND>VOX R

CUSTOM VOICE PHRASE REPORT
====== ===== ====== ======
Phrase 01: Blower
Phrase 02: Pump
Phrase 03: Pressure
Phrase 04: Level
Phrase 05: Chiller
Phrase 06: Empty
Phrase 07: Empty
Phrase 08: Empty
Phrase 09: Empty
Phrase 10: Empty
Phrase 11: Empty
Phrase 12: Empty
Phrase 13: Empty
Phrase 14: Empty
Phrase 15: Empty
Phrase 16: Empty
Greeting:  Empty
```

XON (Extended On)

■ **XON**

Type XON at the command prompt and the OMA-D570 system will give you an option to disable the activity timer.

```
COMMAND>XON
EXTENDED ON SETTING
======== == =======
Extended on setting Disabled
Change Present State? [y/n]> Yes
Warning: System will stay on-line until a BYE command
  is issued
or carrier detect is lost.
```

Accessories

Below is a list of some of the most popular accessories for theOMA-D570. For information concerning these and other accessories, contact technical support.

> *Weather-proof enclosure*
>
> *Solar panel*
>
> *Temperature sensor (30F to 100F)*
>
> *Temperature sensor (-40F to +40F)*
>
> *Satellite tranceiver*
>
> *Input expansion module*
>
> *Flow sensor*
>
> *Pressure sensor*
>
> *Humidity sensor*