User's Guide

OM-MT20
Operator's Manual

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INTRODUCTION

Congratulations on your purchase of the Omega OM-MT20 Temperature Acquisition Module for Palm OS (Operating System) handheld computers!

The OM-MT20 Temperature Acquisition Module enables you to measure and record temperature values right on your Palm OS handheld computer, and organize your data to turn it into useful information.

This manual will describe the features of the hardware to help you get the most out of your OM-MT20.

Consult the OM-MT20 software section of this manual and the documentation that came with your Palm OS handheld computer if you are not familiar with the operation of these components.

What's In This Package

Your OM-MT20 Temperature Acquisition Module comes complete with the following components:
- 1 OM-MT20 Temperature Acquisition Module
- 2 AAA batteries
- 1 OM-MT20 Manual
- 1 OM-MT20 Software CD-ROM

If any of these components are missing please contact Omega Engineering.

Safety Precautions

Your OM-MT20 Temperature Acquisition Module is a precision electronic device. As with any such electronic device, care should always be exercised in its proper use.

Do not, under any circumstances, attempt to measure temperatures on energized electrical components or inside electrical or electronic enclosures.

The wires in thermocouple sensors carry electrical signals and power and should not be exposed to any environment where they could cause harm.

Never plug anything into the OM-MT20 module inputs except type J, K ,T, or E thermocouples. If you are unsure about thermocouple compatibility please consult Omega Engineering.

Do not drop your OM-MT20 module.

Do not store your OM-MT20 module in direct sunlight or near a source of heat or cold outside of the operating limits of the module (refer to the specifications included in this manual).

Always keep your OM-MT20 module dry. Do not immerse your OM-MT20 module in water.

Never open the OM-MT20 module case. There are no user modifiable or serviceable parts, adjustments, or mechanisms contained in the case. If you are having any problem with the operation of your module please contact Omega Engineering.

Palm OS Handheld Computer Compatibility

The OM-MT20 Temperature Acquisition Module is compatible with handheld computers running either Palm OS version 2.x or Palm OS 3.x. These include the following handheld computers:

- Palm Pilot SE, Palm Pilot Professional, Palm III series, Palm VII.
- IBM WorkPad
- Symbol Technologies SPT 1500

Check the Omega website for information regarding compatibility with other handheld computers as they become available.

HARDWARE

Getting Started

The OM-MT20 Temperature Acquisition Module is very easy to use. To get started as quickly as possible follow these simple steps.

- Install two AAA batteries to power up your OM-MT20 Module.
- Install the Palm Desktop version 2.x or 3.x onto your PC, HotSync your Palm to your desktop, and run the setup.exe program included on the OM-MT20 OmegaWare software CD-ROM.

Consult the OM-MT20 manual and the documentation that came with your Palm OS handheld computer if you are not familiar with the operation of these components.

- Clip the OM-MT20 onto the HotSync / serial port located on the bottom of your Palm OS handheld computer,
- Plug one or two thermocouple probes with miniature connectors into the inputs located on the bottom of your OM-MT20 module.
- Launch your preferred OM-MT20 application software to collect and manage your temperature information.
- Use the HotSync capabilities of the Palm OS handheld computer to upload your collected temperature data to your personal computer desktop.

Thermocouple Sensors

Thermocouple Types and Configurations

The OM-MT20 is designed to operate with type J, K, T, and E thermocouples with industry standard miniature connectors.

Thermocouple sensors are available in a wide range of configurations from various suppliers. These configurations range from very small beaded thermocouples with minimal thermal mass to heavy-duty penetration probes. Please contact Omega Engineering if you have any difficulty locating a sensor suited to your application.

Installing Sensors

The industry standard miniature connectors on the thermocouple have a wide blade and a narrow blade. Insert the connector in the channel 1 or channel 2 input on the OM-MT20 with the narrow blade (sometimes marked with a "+") on the right.

The lower input port of the OM-MT20 is configured as channel 1.

The upper input port of the OM-MT20 is configured as channel 2.

Batteries

Battery Installation

Remove the battery cover by gripping the ribs at the right front and left front corners of the OM-MT20 case between your thumb and forefinger. Holding the case in one hand and the battery cover in the other, slide the cover forward without lifting to expose the battery compartment.

Place two standard AAA alkaline cells in the battery compartment in the orientation indicated by the markings in the compartment and replace the cover.

Battery Life

A new set of batteries in the OM-MT20 will last approximately 100 hours while taking temperatures every second.

The OM-MT20 module is inactive when it is not taking temperatures or communicating with the Palm OS handheld computer. Significant power savings can be realized by increasing the interval between temperature readings. For example, when data logging every ten seconds, a new set of batteries should last for approximately 1000 hours.

Actual battery life will depend on how you use your OM-MT20 Temperature module.

If you use any power source other than AAA alkaline batteries to power your OM-MT20 module you will cause damage to the module.

Specifications

- Inputs
  1 or 2 External Thermocouples
  Internal Temperature (Thermistor)
  Internal Battery Voltage

- Supported Temperature Sensors
  Thermocouple Types J, K, T, E
  Uses industry standard miniature connectors
  The thermocouple leads must be less than 3 meters in length.

- Units
  Degrees F or C

- Temperature Measuring Range
  -328°F (-200°C) to +1832°F (+1000°C) for Type J
  -328°F (-200°C) to +1832°F (+1000°C) for Type K
  -328°F (-200°C) to +734°F   (+390°C) for Type T
  -328°F (-200°C) to +1814°F (+990°C) for Type E

- Resolution
  .1 degree for all temperatures in range

- Accuracy
  ±1.8°F (±1°C) ±0.1% of Reading
  When subjected to a field strength of at least 3V/m over a frequency range of 27-500 MHz in accordance with BS EN50082-1, the unit exhibited no more than +/-3°C error.

- Data Storage
  10,000+ readings for SE and AL with 300K free memory on your Palm

- Logging Interval
  1 second to 49 hours

- Power
  2 AAA alkaline batteries provide 100 hours of continuous operation

- Operating Temperature Range
  32°F (0°C) to +122°F (50°C)

- Dimensions (Versid Module Only)
  3.2 x 2.6 x 0.875 inches
  (8.13 x 6.60 x 2.22 cm)

- Weight, with Batteries
  2.8 ounces
  (79.4 grams)

Regulatory Compliance

FCC Declaration of Conformity

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not properly installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications to the unit must be approved in writing by the manufacturer's Engineering Department. Changes or modifications made without written approval may void the user's authority to operate this equipment.

CE Declaration of Conformity

We, Omega Engineering, Inc., declare that the OM-MT20 Temperature Acquisition Module, in accordance with the following Directives:

89/336/EEC The Electromagnetic Compatibility Directive and its amending directives

has been designed and manufactured to the following Specifications:

BS EN55022:1998   Information Technology Equipment - radio disturbance characteristics:
                 limits and methods of measurement

BS EN550082-1:1998   Electromagnetic Compatibility – generic immunity standard

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the Directives.

Paul Thogersen

Calibration

Your OM-MT20 Temperature Acquisition Module has been calibrated at the factory to provide accuracy per the included specifications.

In normal usage and with proper care there is no reason to suspect that your module will go out of calibration.

If you suspect that your module is not providing the specified accuracy please contact Omega Engineering.

Certification of Accuracy

Many users have a requirement to certify the accuracy of their instruments on a periodic basis. If you have such a requirement please contact Omega Engineering Technical Support with regard to purchasing a certificate of accuracy for your OM-MT20 Temperature Acquisition Module.

SOFTWARE

OmegaWare Software Features		
Features	**OmegaWare AL Software**	**OmegaWare SE Software**
Degrees Measured	Degrees F or C	Degrees F or C
Thermocouples Supported	J-K-T-E	J-K-T-E
Displays Maximum Reading	N/A	Yes, by channel
Displays Minimum Reading	N/A	Yes, by channel
Displays Average Reading	N/A	Yes, by channel
Storage Capability	Automatically stores each reading	Stores reading as saved by operator
Storage Capacity	Up to 10,000 readings in Palm unit	Up to 10,000 readings in Palm unit
View All Data On-Screen	Yes	Yes
Delete Capability	Delete data set	Delete all data
Time/Date Stamp	Yes	Yes
Upload to PC in .csv File Format	Yes	Yes
Displays Test Name	Yes, user-defined	N/A
Displays Operator Name	Yes, user-defined	N/A
Displays Test Description	Yes, user-defined	N/A
Sensor Labels	Yes, user-defined	N/A
Multiple Data Sets	Yes, user-defined	N/A
Set Test Duration	Up to 100 hours	N/A
Set Logging Interval	From 1 second to 49 hours	Updates every 1, 2 or 4 seconds
Set Start Method	Choose Button, Time Delay, or Temperature Threshold	N/A
On-Screen Tips at **i** Logo Prompt	Yes	Yes
Multi-Capability Platform	Yes, with Palm OS Computer	Yes, with Palm OS Computer

Software Installation

Setting Up Your PC

Before installing OmegaWare software you must install either the Palm Desktop 2.x or 3.x on your IBM compatible personal computer.

You must also have your Palm OS handheld computer available and the HotSync cradle (or HotSync cable) installed and ready for use.

Before you begin, any Palm OS handheld computer you wish to install OmegaWare Software onto must have already gone through the HotSync procedure at least once before any OmegaWare Software can be installed.

If you have not done this or are unsure how to do this, please refer to the documentation that was included with your Palm OS handheld computer.

If you need assistance installing or operating your Palm OS handheld computer you should contact technical support, as listed in your Palm OS handheld computer's manual.

Installing OmegaWare Software

OmegaWare AL and SE software is contained on the CD-ROM which came with your OM-MT20 Temperature Acquisition Module.

This CD-ROM includes the OmegaWare AL and SE applications for Palm OS handheld computer and all necessary data files. Also on this CD-ROM are the Windows 95 files required to upload the temperature data collected using OmegaWare AL and SE to your PC using the Palm HotSync Manager.

To install all of the above software insert the OmegaWare CD-ROM into your personal computer. Run the setup.exe program from the CD-ROM, this will launch the OmegaWare installation program.

Follow the instructions provided by the installation program.

The desktop components of OmegaWare AL will be installed in the Program Files\Omega\AL directory of your PC. The desktop components of OmegaWare SE will be installed in the Program Files\Omega\SE directory of your PC.

OmegaWare AL SOFTWARE

Getting Started

Launching OmegaWare AL Software

Launch your OmegaWare AL software by tapping on the applications button (silk screen) on your Palm OS handheld computer. OmegaWare AL appears represented by an Omega icon in the applications screen with the program name "Omega AL".

OmegaWare AL Software Main Screen

Once the program has launched, the main screen will appear. This screen displays an array of four buttons.

You must have your OM-MT20 module connected to your Palm OS computer before you run OmegaWare AL .

The Run Test Button
Tap this button to begin the process of defining a test to execute. (see Running a Test for more details).

The View Data Button
Tap this button to see a list of data files available for viewing. (see Viewing Data Details for information).

The Options Button
Tap this button to change the temperature units, thermocouple type, and the default operator name.

The About Button
Tap this button to retrieve information about the hardware and software in your OM-MT20 system.

Running A Test

Tapping the Run Test button will bring up the first Enter Test Parameters screen. Using the input fields and option selections available in this screen, you may enter the following test parameters:

Operator: Enter an operator name for the test. This field is optional.

Duration: Enter the test length by tapping the duration selector. A dialog box will appear. The time can be changed by highlighting either Hours, Minutes or Seconds and then tapping the up arrow to advance the field or the down arrow to decrement. Tap OK to accept the changes or Cancel to discard.

Interval: Enter the logging rate by tapping the interval selector. Enter the logging rate using the same method as the Duration.

Start Mode: Start your test by utilizing either one of three methods.
- Button Start: The test will begin when any button is pressed (except the power button)
- Delay Start: The test will begin after the specified delay has passed. Tap the delay time selector to enter a delay time.
- Temperature: The test will begin when either sensor reaches the desired temperature. The temperature threshold may be a descending or rising temperature. Note: only sensors selected to be active during the test will be checked for the temperature threshold.

Tapping the Next button advances you to the second test entry screen where you can enter the following parameters:

Test Name: Enter a unique test name. The name may consist of up to 28 characters. This is also the name that will be used by the OmegaWare AL Conduit when uploading the test data to your PC.

Description: This is a 50 character field for your own use. This field is optional.

Sensors: Enable the sensors to be used by tapping the check box on the left. Enter a label for each sensor selected. Sensor labels are optional. At least one sensor must be selected before the test will execute.

Tap Back to return to the first test entry screen.

Tap Start Test for OmegaWare AL to begin watching for the start of test condition.

Viewing Data Details

Tapping on the View Data button on the main screen will display a list of data files stored in memory.
Highlight the data file you wish to view and tap on the View Details Button.

The View Data Details screen displays the following:

- Test Name

- Operator

- Test length in hours, minutes, and seconds

- Logging interval in hours, minutes and seconds

- How the test ended

- List of all data points saved

- Date and time stamp of each reading

Tap the menu button while in this screen for these additional features:

- View the test description

- View sensor descriptions

- Delete the current test

Deleting Data

Tap on the menu button then select Delete Selected Test from the data file list screen to erase the selected
data file from memory.

System Options

Options Screen

Tap the Options button from the main screen to open the OmegaWare AL Defaults Dialog.

The Defaults Dialog allows you to customize OmegaWare AL.

Temperature Units
Select either Fahrenheit or Celsius

Operator
Enter the default name of the operator. This field is for your own use and may be left blank if desired.

Tap the OK button to save any changes made and return to the main screen.

Tap the Cancel button to return to the main screen and disregard any changes.

Sensor Type
Select thermocouple type K, J, T, or E.

About OmegaWare AL

You can view the OmegaWare AL About dialog box by tapping the About button from the main screen.

This dialog displays the OmegaWare AL software version number, OM-MT20 Temperature Acquisition Module firmware version, serial number and percent of battery power left on the OM-MT20 module.

Tap the OK button to return to the main screen.

HotSync and Data Uploads

The OmegaWare AL conduit is included as part of the OmegaWare Setup CD-ROM and is installed on your PC as part of the Palm HotSync Manager.

Every time you HotSync, the OmegaWare AL conduit will retrieve any OmegaWare AL data files saved on your Palm OS device and copy them to the hard drive of your PC. The data is saved in the file:

Program Files\Omega\AL\User_Name\TestName.CSV

Note: User_Name is the name of the Palm OS handheld computer as seen by the HotSync Manager.

The OmegaWare AL conduit program allows your data to be uploaded to your PC in degrees C or F. This and other conduit settings can be changed by using the custom conduit property of the HotSync Manager. Please refer to the Palm HotSync Manager documentation for information on changing conduit settings.

OmegaWare AL data format on your PC

OmegaWare AL data on your PC is saved in a comma separated value file. The CSV file format is compatible with most spreadsheet, statistical analysis, text editing, word processing and data base programs.

The data is saved in the FILENAME.CSV file (where FILENAME is entered by the operator when the test parameters are defined in OmegaWare AL) in the following format:

- Test Name

- Handheld User_Name (HotSync name)

- Test Description

- Operator Name

- Sensor Labels

- Test Length (HH:MM:SS)

- Logging Rate (HH:MM:SS)

- Temperature Scale (C/F)

- Start Date

- Start Time

- Reading # (Elapsed Time Stamp or Actual Time Stamp) Channel 1 data, Channel 2 data

Restoring the OmegaWare AL Application

If the OmegaWare AL application on your Pilot should need to reinstalled, run the shortcut "Install OmegaWare AL on PP" which is located in the Omega program group. The Omega program group is accessible from the Windows 95 Start button.

Make sure you have your Palm OS handheld computer available as it will be required during the installation. In addition, make sure the PalmOS handheld computer you wish to install OmegaWare AL onto has gone through the HotSync process at least once on the particular computer you will restore OmegaWare AL from.

OmegaWare SE SOFTWARE

Getting Started

Launching OmegaWare SE Software

Launch your OmegaWare SE software by tapping on the applications button (silk screen) on your Palm OS handheld computer. OmegaWare SE will appear as an Omega icon in the applications screen with the program name Omega SE.

OmegaWare SE Software Main Screen

Once the program has launched, the main screen will appear. This screen displays an array of four buttons.

You must have your OM-MT20 Temperature Acquisition Module connected to your Palm OS handheld computer before you run OmegaWare SE.

The Collect Data Button
Tap this button to view temperature data in real time and store individual readings.

The View Data Button
Tap this button to view stored temperature data.

The Options Button
Tap this button to select temperature units, sensor type, sampling interval, and timeout.

The About Button
Tap this button to retrieve information about the hardware and software in your OM-MT20 system.

Collecting Temperature Data

Tapping on the Collect Data button will display temperature information as measured by your thermocouples.

Channel 1 is displayed on the left while channel 2 is displayed on the right. The temperature units symbol (°F or °C) is displayed in the upper right of the screen. The selected sensor type (J,K,T,or E) is displayed in the upper left of the screen. Temperature readings are updated after each sampling interval. This interval can be set in the OmegaWare SE preferences screen (see later section of this manual). The word "sampling" is displayed on the screen each time the temperature reading is updated.

Saving Temperature Readings
The temperature readings currently being displayed can be saved into memory by pressing any hardware button on your Palm OS handheld computer (except the power button). Once a reading set is saved, it will be uploaded to your PC the next time you HotSync.

Viewing and Clearing Saved Data

Tapping on the View Data button on the main screen will display detailed information about the readings stored in memory. These details include:

- Time and date the last reading was saved.

- Time and date first reading in memory was saved.

- Current temperature scale (°F or °C).

- Number of readings stored.

- Maximum, minimum and average readings of each sensor (as calculated from the saved data).

Listing Readings

Tap on the menu button and select List Readings to view a list of all readings stored by the OmegaWare SE application. Use the scrollbar at the right of the data, if necessary. Highlight a data point to view the date and time it was logged.

Deleting Data

Tap on the menu button and select Clear Readings to erase all readings in the OmegaWare SE application from the memory of the Palm OS handheld computer.

This will delete all data collected by OmegaWare SE. If you are unsure as to whether or not your data is saved on your PC, we suggest you HotSync before you clear the memory.

System Options

Options Screen

Tap the Options button from the main screen.

The Preferences Dialog allows you to customize the following OmegaWare SE features.

Temperature Units
Select either the Fahrenheit or Celsius temperature scale.

Thermocouple Type
OmegaWare SE supports four thermocouple types: K,J,T or E.

Update Interval
Select either 60/Min (1 reading every second), 30/Min (1 reading every 2 seconds) or 15/Min (1 reading every 4 seconds).

Sleep Timeout
OmegaWare SE software can override the system auto-off setting (from the General Preferences screen) and prevent your Palm OS handheld computer from turning off for a long period of time. Choose either 10 Min, 20 Min, 30 Min, Never, or keep the current system setting.

Choosing a longer auto-off setting can cause the Palm OS handheld computer to operate until its batteries are completely depleted. If this happens you will lose all of the data and applications stored on the device unless you replace the batteries immediately.

To prevent the Palm OS Handheld computer's batteries from depleting after you have chosen a longer auto-off setting you must either exit the OmegaWare SE software or turn off your Palm OS handheld computer manually.

Exiting Preferences
Tap OK to save any changes made or tap "Cancel" to abort any changes.

About OmegaWare SE

You can view the OmegaWare SE About dialog box by tapping the About button on the main screen.

This dialog displays the OmegaWare SE software version number, OM-MT20 Temperature Acquisition Module firmware version, serial number and percent of battery power left on the OM-MT20 module.

Tap the Done button to return to the main screen.

HotSync and Data Uploads

The OmegaWare SE conduit is included as part of the OM-MT20 Setup CD-ROM and is installed on your PC as part of the Palm HotSync Manager.

Each time you HotSync, the OmegaWare SE conduit will retrieve any temperature data saved in the Palm OS handheld computer's memory and copy it to your hard drive.

The data is saved in the file:
>   Program Files\Omega\SE\User_Name\SEData.CSV

 Note: The User_Name is the name of the Palm OS handheld computer as seen by the HotSync Manager. If multiple Palm OS devices are synchronized to the same PC the data from each will be saved in a separate directory.

The data is saved in a comma separated value file. This CSV file format is compatible with and can be easily imported into most spreadsheet, charting, statistical, text editing, word processing and data base programs.

File Format for SEData.CSV

The data saved in the "SEData.CSV" file has the following format:
Record #1: User Name
Record #2: Temperature Units
Record # 3 until end of data: Reading #, Date, Time, Channel 1 data, Channel 2 data

The OmegaWare SE conduit will overwrite the currently saved SEData.CSV file each time you HotSync. To save data from a previous HotSync you should rename the currently saved file or copy it to another directory before you HotSync new data to the PC.

Restoring the OmegaWare SE Application

If the OmegaWare SE software on your Palm OS handheld computer should need to be reinstalled, run the shortcut "Install OmegaWare SE on PP" which is located in the Omega program group on your PC. The Omega program group is accessible from the Windows 95 Start button.

Make sure you have your Palm OS handheld computer and HotSync cradle available as they will be required during the installation.

CONTACTING OMEGA

If you are experiencing any technical problems, or require any assistance with the proper use or application of the OM-MT20 module or software, please contact Omega at the locations listed on the inside front cover of this manual.

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This is a legal agreement between you, the end user, and Omega Engineering, Inc. (Omega). The enclosed Omega software programs ("SOFTWARE") are licensed by Omega to the customer. If you do not agree to the terms of this agreement, promptly return this software and all accompanying materials to Omega or its authorized distributor.

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WARRANTY / DISCLAIMER

OMEGA ENGINEERING, INC. and its supplier warrant this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY / DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and its supplier and hold OMEGA and its supplier harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS,
please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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Where Do I Find Everything I Need for Process Measurement and Control? OMEGA…Of Course!

TEMPERATURE
Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
Wire: Thermocouple, RTD & Thermistor
Calibrators & Ice Point References
Recorders, Controllers & Process Monitors
Infrared Pyrometers

PRESSURE, STRAIN AND FORCE
Transducers & Strain Gauges
Load Cells & Pressure Gauges
Displacement Transducers
Instrumentation & Accessories

FLOW/LEVEL
Rotameters, Gas Mass Flowmeters & Flow Computers
Air Velocity Indicators
Turbine/Paddlewheel Systems
Totalizers & Batch Controllers

pH/CONDUCTIVITY
pH Electrodes, Testers & Accessories
Benchtop/Laboratory Meters
Controllers, Calibrators, Simulators & Pumps
Industrial pH & Conductivity Equipment

DATA ACQUISITION
Data Acquisition & Engineering Software
Communications-Based Acquisition Systems
Plug-in Cards for Apple, IBM & Compatibles
Datalogging Systems
Recorders, Printers & Plotters

HEATERS
Heating Cable
Cartridge & Strip Heaters
Immersion & Band Heaters
Flexible Heaters
Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL
Metering & Control Instrumentation
Refractometers
Pumps & Tubing
Air, Soil & Water Monitors
Industrial Water & Wastewater Treatment
pH, Conductivity & Dissolved Oxygen Instruments