OM-60-TH SERVICE LOGGER WITH TEMPERATURE/HUMIDITY/DEW POINT SENSOR

The OM-60-TH is a Service Logger with a temperature/humidity/dew point sensor. The OM-60-TH is specified for air use only. The sensor is field interchangeable and is available as part # OM-60-MOD-TH.

Immersion of the sensor in any kind of liquid, or exposure to corrosive chemical environments and/or cutting or splicing of the OM-60-MOD-TH cables by the user is not recommended and will void the sensor warranty.

GETTING STARTED

Plug the OM-60-MOD-TH sensor into the Service Logger. If portable use or battery backup is desired, place a fresh 9V alkaline battery into the unit. Any other type of battery will result in unsatisfactory performance and may cause damage to the instrument. Plug in the power adapter if a 110 (220) Volt outlet is accessible.

Press the "ON" button on the front panel. The display will show the instrument name. If no display is visible, or if the display is all black, adjust the display control until the lettering is visible.

```
SERVICE LOGGER
    VER 2.0
```

If no sensor is connected, or if the sensor has become defective, the display will show this message. The Service Logger will recognize when a sensor is plugged in and will automatically set up the correct menus and displays for that sensor.

```
     PLEASE
CONNECT SENSORS
```

This is the **Operating Mode** display for the OM-60-MOD-TH sensor. Temperature, relative humidity in percentages, and dew point are continuously measured and displayed. This is the mode the Service Logger will go to after it is turned on.

```
TEMP  RH  DEW
74F   42%  49F
```

CHANGING SETTINGS

Every function of the Service Logger can be set through a series of menus. Settings are stored in memory and remain there even without main and backup power sources until altered by the user. Each sensor will have settings unique to its function and the Service Logger will select and display the correct menus for each sensor that is plugged in.

Changing Recording Time and Sampling Rate

Press and hold the [MENU ENTER] button until the display changes to the to the Recording Rate menu. The user may select the sampling rate and recording time for the Service Logger.

```
RECORDING RATE
15HR EVERY 15SEC
```

Use the [STATUS] or [RECORD] buttons to change the recording time and sampling rate according to the table listed below.

| Recording Time	Sampling Rate
40 Days	15 Minutes
2 Weeks	5 Minutes
60 Hours	1 Minute
30 Hours	30 Seconds
15 Hours	15 Seconds
5 Hours	5 Seconds

When the [MENU ENTER] button is pressed 3 more times (to cycle through the remaining functions), the recording time and the sampling rate will be saved into memory and the Service Logger will return to the operating mode. Otherwise the unit will return to the operating mode after approximately 1 minute and changes will be saved into memory.

Changing Scale to °F or °C

Press the [MENU ENTER] button until the display reads:

```
TEMPERATURE SET
TO FAHRENHEIT
```

or
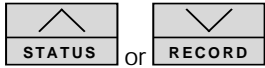
Use the [△ STATUS] or [▽ RECORD] buttons to change the setting to the desired scale.

| TEMPERATURE SET |
| TO CELSIUS |

When the [MENU ENTER] button is pressed twice more (to cycle through the remaining functions), the temperature scale setting will be saved into memory, and the Service Logger will return to the operating mode. Otherwise the unit will return to the operating mode after approximately 1 minute and changes will be saved into memory.

RECORDING DATA

One of the most important functions of the Service Logger is to record information over a period of time. This function is like a chart recorder except that the information is stored in memory rather than being printed on paper. The user can choose to print the information, transfer the information to a computer for advanced analysis or long term storage, or review the information on the Service Logger's display.

In the case of the OM-60-MOD-TH sensor, the temperature, relative humidity, and dew point will be recorded. Different sensors will, of course, record different information depending on the function of that sensor. The Service Logger has a memory capacity to record up to 4000 samples of data. It is the option of the user to record data to the maximum capacity of the Service Logger or to terminate a recording when sufficient information has been gathered.

<u>IMPORTANT !</u>
Each new recording will erase any previously recorded information. It is the responsibility of the user to either print or store a previous recording prior to starting a new one.

The first step in making a recording is to select the proper recording time and sample rate. If, for example, a sampling rate of 15 seconds is being used, then every 15 seconds the temperature, relative humidity and dew point will be measured and stored into digital memory. No record of information is made between each sample even though the display will continuously show the environment the OM-60-MOD-TH sensor is exposed to.

For a recording to accurately reflect a series of events, it is up to the user to select a recording interval that best suits the particular application. In some situations maximum recording time may be sacrificed so that more frequent sampling may be accomplished. Long term monitoring will require less frequent sampling in favor of longer recording times.

The next step is to select how the Service Logger will record the information from the OM-60-MOD-TH sensor. There are 3 possible ways to record information.

Press and hold the [RECORD] button until the record display appears. The four recording modes can be scrolled and changed by using the [STATUS] button:

1. **Record information to memory only.** This option stores information into the Service Logger's memory. No printer or computer connection is required for this function.

    > **RECORD ON, REAL TIME PRINT OFF**

2. **Record information to a printer.** This option does not store information into memory, but does print each sample as it is *recorded* to a printer. This is referred to as REAL TIME PRINTING. **A printer must be connected for this function!** If no printer is connected, or if the printer is *off-line*, or if the printer is out of paper an error message will be displayed to alert the user to a problem. Switching to this option will **terminate recording** if the Service Logger was set to record previously.

    > **RECORD OFF, REAL TIME PRINT ON**

3. **Record information to memory and to a printer.** This is a combination of options 1 and 2. Information is stored in memory and at the same time each sample is *recorded* to a printer. As in option 2., **a printer must be connected** and functioning or an error message will be displayed.

    > **RECORD ON, REAL TIME PRINT ON**

4. If a recording is in progress, this option will **terminate all recording functions**. This option may also be used if the user decides to cancel a recording session and return to the operating mode. In order to terminate a recording, press the [RECORD] button again at this time.
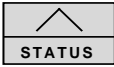
    > **RECORD OFF, REAL TIME PRINT OFF**

Press the [RECORD ▽] button after selecting the recording mode. This will display the starting time of the recording. The display will show the

DAY	HOUR	MIN
FRI	15	16

starting time of the last recording and allow the user to enter a new starting time.

The [STATUS △] button will advance the item that is flashing. Press and hold the [STATUS △] button to scroll this item. Press the [RECORD ▽] button to change to the next item which will then start to flash. This will set the starting time of the recording which will appear on the display or printout after a recording has been
made. Note that the previous starting time is always displayed when a new recording is started.

When the Service Logger is in the recording mode, it will prevent the user from changing the settings. The user will only be allowed to check the recording rate when they press the [MENU ENTER] button.

Press the [MENU ENTER] button to return to the operating mode and begin the recording.

If option 1 or 3 is selected, an "R" will be displayed in the upper right hand corner of the display. An "R" indicates that a recording is in progress.

TEMP	RH	DEW R
76°F	41%	50°F

While you are recording it is possible to check how much memory has been used. Press and

WED:14:22:20
78% MEM. LEFT

hold the [STATUS △] button until the display shows the starting time of the recording and the
percent of available remaining memory. As the recording continues this number will decrease. The Service Logger will continue to record until the recording is terminated manually or when all of the available memory has been used. When *0% Memory Left* is displayed, this will indicate that almost all of the available memory has been used and the Service Logger will shortly terminate the recording automatically.

Sample of a typical printout at the beginning of recording:
The time is specified using the format D(ays):H(ours):M(inutes):S(econds) in the 24 hour system. This convention is used in the printout and the display.

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Service Logger

Temp (F)	Humi (%)	Dew (F)	Time (D:H:M:S)
75	40	49	WED:14:03:00
75	40	49	WED:14:03:05
75	40	49	WED 14:03:10
75	40	49	WED:14:03:15

PRINTING RECORDED DATA

After a recording has been made the user will probably want some way to view and analyze the recorded information. This is most easily accomplished by printing out the data samples. The printed data can be analyzed or stored for future reference. Several print options are available.

Filtering Printed Recordings

If the user were to print out a recording which used all of the memory capacity of the Service Logger, this would be a very long record of 4000 data samples. To print this out line by line on a standard computer printer would use over 60 sheets of paper! Obviously this would be a cumbersome and time consuming process. The Service Logger allows the user to print out information based on a change in temperature or a change in relative humidity. Note that only ONE CHANNEL of data can be filtered. In most cases the information required from the record is only when the temperature or relative humidity changes. If the temperature or relative humidity remains constant, it is not necessary to print line after line of the same information.

The Service Logger allows the user to select from 1° to 10° of temperature change or 1 to 10% of relative humidity change to print out. What this means is that data samples that are less than the selected temperature or relative humidity change are ignored during the printing process and only when the temperature or relative humidity has changed by the selected amount is a sample printed out. That temperature or relative humidity becomes the new value to compare to and the temperature or relative humidity will have to change again by the selected amount before another sample is printed.

One important point to remember is that even if a data sample is not printed, the Service Logger still has to recall it from memory and compare it to the filter selection. Therefore, a printout may take up to 10 minutes for a scan of all 4000 data samples. This may sound complicated, but is easy to understand by using an example recording.

Example:
A recording has been made of an office over a 30 hour period to monitor air quality. This means that a data sample is recorded every 30 seconds. For the printout, the user has selected a change of 2° of temperature. Shown below

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would be a typical printout of the data using the above selections. (In a real printout there will be no spaces between the lines of printing, but in our example these were added to allow room for comments to be inserted.)

Service Logger

Temp(F)	Humi(%)	Dew(F)	Time(D:H:M:S)	
74	40	49	MON:08:25:00	This is the first data record and starting time of the re cording on Monday at 8:25 a.m.
76	38	48	MON:10:25:00	The room has warmed up by 2° at 10:25 a.m. on the same day.
78	42	53	MON:13:42:30	The room has continued to warm by 2° at 13:42 (1:42 p.m.) on the same Monday.
76	42	51	MON:18:58:30	The room has cooled by 2° at 18:58 (6:58 p.m.) on the same Monday.
74	38	47	TUE:06:03:00	The room has continued to cool by another 2° at 6:03 a.m. on the Tuesday of the same week.
72	36	43	TUE:09:14:30	The room has cooled by 2° at 9:14 a.m. on the Tuesday of the same week.
End of Data				This indicates the end of the recording and shows that the temperature re- mained within 2° of 72°F for the remainder of the recording period.

The above example shows that by using the filtering function the user can take a printout that would consume over 60 pages of paper and condense it into a single page.

How to Send Recorded Data to a Printer

Press [MENU ENTER] several times until this display appears. This is where the print function is accessed.

PUSH MENU TO RUN OTHERS TO PRINT

Press [⌃ STATUS] or [⌄ RECORD] to scroll through the print options until this display appears.

SEND RECORDED DATA TO PRINTER

Press [MENU ENTER] to advance to the next print selection.

SEND OUT ALL OF THE TEMP DATA
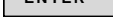
Press [⌃ STATUS] to select a temperature filter function,

SEND TEMP ON X DEGREE CHANGE

or

Press [⌄ RECORD] to select a relative humidity filtering function.

SEND HUMIDITY ON X % CHANGE

Press [MENU ENTER] to continue.

If [MENU ENTER] is pushed, the Service logger will return to the operating mode.

PUSH ^ START PRT PUSH MENU TO QUIT

If [⌃ STATUS] is pushed, the printing will begin and the flashing dots indicate printing functions. When the Service Logger is finished printing, it will return to the Operating Mode.

PRINTING PLEASE WAIT…

Printer Error Messages

If a printer is not connected and set to operate, an error message will be displayed to alert the user to a printer problem.

There are several possible problems that may occur if the printer is not ready. The Service Logger will alert the user to a problem with the printer. As each printer has its own set of controls and settings, the user is recommend to consult the owners manual supplied with the printer.

This is an error message that appears when the printer is not connected or turned off. Make sure the printer cable is attached to both the printer and the Service Logger and that power is supplied to the printer.

> PLEASE CONNECT
> THE PRINTER

This is an error message to alert the user that the printer has run out of paper. Refer to the owners manual of the printer for instructions on paper replacement.

> PRINTER IS OUT
> OF PAPER

This is an error message to indicate that the printer has not been set to ON LINE. Refer to the owners manual for specific instructions on setting the printer controls.

> PRINTER IS NOT
> ON LINE

VIEWING RECORDED DATA

One of the features of the Service Logger is that recorded information may be read directly on the display. The same filter functions that are available for printing data are also available for reading data on the display. This allows the user to let the Service Logger scan the recorded data and display only the information that is of interest to the user. Without this function the user would have to manually scan a potential 4000 data samples to find the information of interest.

Press and hold [MENU ENTER] until this display appears. The actual recording rate is unimportant.

> RECORDING RATE
> XXHR EVERY XXSEC

Press [MENU ENTER] again to cycle to the next screen. As before, the scale does not pertain to the viewing function.

> TEMPERATURE SET
> TO FAHRENHEIT

This is where the viewing function is accessed.

Press [△ STATUS] or [▽ RECORD] to access this menu.

| PUSH MENU TO RUN |
| OTHERS TO PRINT |

Press the [▽ RECORD] button once to scroll to this function.

| READ RECORDED |
| DATA FROM SCREEN |

Press [MENU ENTER] to advance to the next display selection.

This is the first filter option. Selecting this will print every data sample that has been recorded.

| SEND OUT ALL OF |
| TEMP DATA |

Press [△ STATUS] to select a temperature filtering function or [▽ RECORD] to select a relative humidity filtering function.

| SEND OUT ALL OF |
| HUMIDITY DATA |

Use the [△ STATUS] button to select 1° to 10° of temperature change, then press [MENU ENTER] to continue.

| SEND TEMP ON |
| X DEGREE CHANGE |

Use the [▽ RECORD] button to select 1 to 10% relative humidity change, then press [MENU ENTER] to continue.

| SEND HUMIDITY |
| ON X % CHANGE |

This is the first data sample. Press [△ STATUS] to advance forward through the data samples.

Press [▽ RECORD] to go backwards through the data samples. Note that the top line of the display will show the time the sample was recorded.

| WED:14:22:15 |
| 73°F   42%   48°F |

This indicates the end of a data recording. Press [△ STATUS] to return to the beginning of the data

| REACHED THE END |
| OF RECORDED DATA |

recording or [RECORD] to go to the last previous data sample.

Press [MENU ENTER] at any time to return to the Operating Mode.

TRANSFERRING DATA TO A COMPUTER

After a recording has been made, the user may download the data to any PC compatible computer. The advantage of doing this is that it allows the use of more sophisticated analysis tools as well as long term storage. Unlike the Print and View functions no filtering options are available in this mode. The entire re-cording is sent to the computer. The supplied software will convert the data re-cording to an ASCII file which can then be imported into a variety of data analy-sis software, word processing, and data base programs. It is suggested that if the user plans to download recorded data on a regular basis to copy the trans-fer program to the users hard disk.

To start the transfer program, insert the supplied diskette in drive A. Type "A:SUPCO" and follow the instructions on the computer screen. A README file is also included on the floppy diskette which has detailed instructions on the use of the transfer program and reflects the latest information that is not in-cluded in this manual.

IMPORTANT!
To use this function the 25 pin cable (DB25 Male-Male) must be connected to the Service Logger and the PC compatible computer printer port. If you are unsure of which connector is the printer port consult the owners man-ual which was supplied with the computer.

The computer transfer cable can be purchased from OMEGA or authorized dealer as part # OM-CC6.

The printer cable can be purchased from OMEGA or authorized dealer as part # OM-PC6.