

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA’s 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 in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use if its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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 hold OMEGA 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.

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,

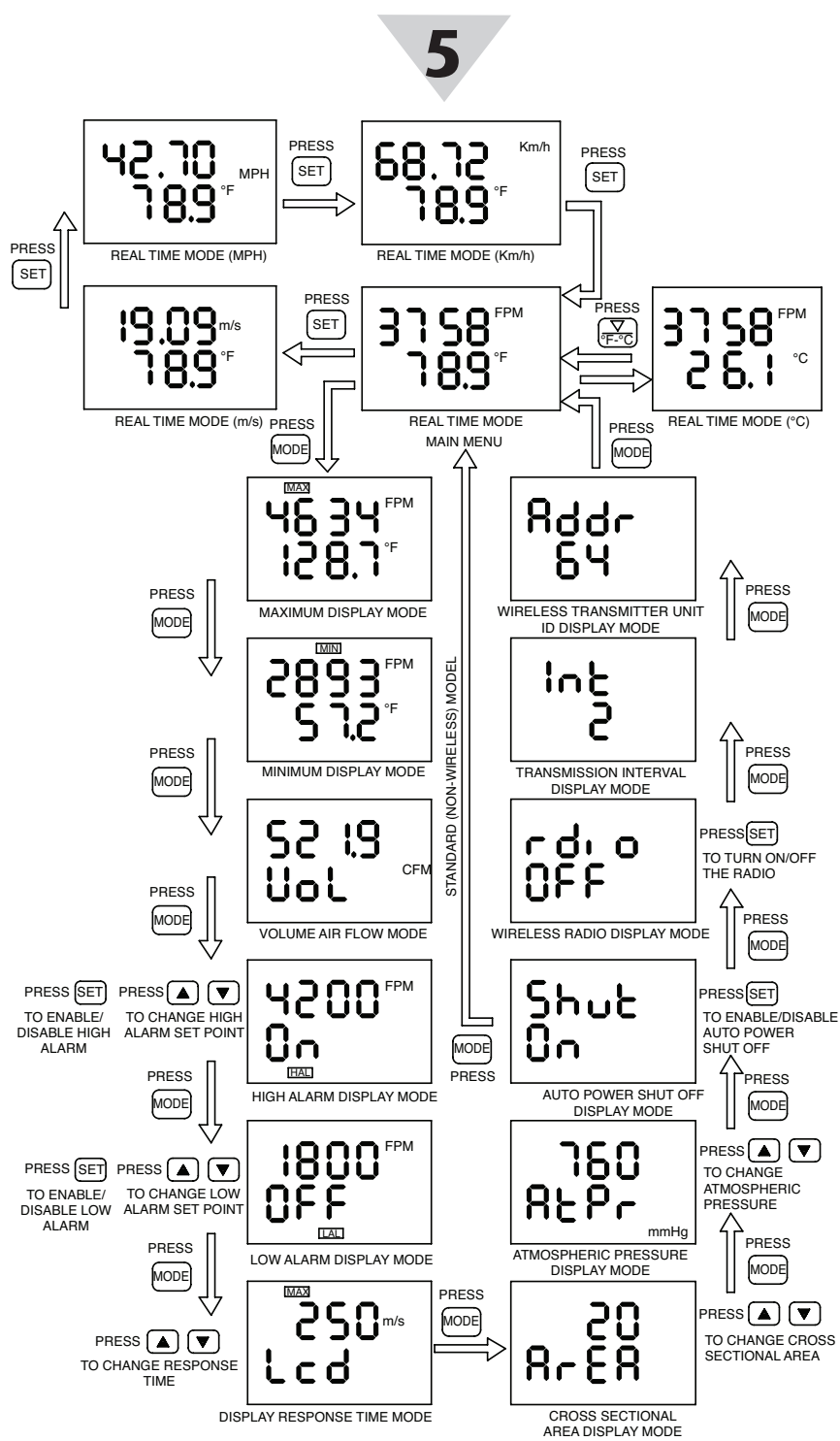
consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

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

OMEGA’s policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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Using This Quick Start Manual

Use this Quick Start Manual with your HHF1000 series handheld air velocity/temperature meter for quick installation and basic operation. For detailed information, refer to the User’s Guide (Manual Number M4979).

General Information

The HHF1000 series handheld air velocity/temperature meter measures and displays air velocity mass flow and air temperature of clean air flows in ducts & pipes, while producing very little pressure drop in the flow stream. The sensor design is based on three RTD elements, one measures the air temperature and the other two measure the air velocity.

The HHF1000 displays the air velocity in feet per minute (FPM), meter per second (m/s), miles per hour (MPH), and kilometer per hour (Km/h). The air temperature is displayed in °F & °C. The volume air flow is displayed in Cubic Feet per minute (CFM) and Cubic meter per minute (CMM). The sensor probe is 12" long as standard. The 304 Stainless steel sensor tubing is provided with inch marks for ease of insertion depths. The sensor probe comes in two different versions as follows:

- Fixed 12 inches long Probe
- Telescopic probe adjustable from 10 to 36 inches.

The unit powers from a 9V battery or a 9Vdc adapter.

Model No.	Velocity Range FPM(m/s)	Description
HHF1001A	0 to 5000 (0 to 25.4)	Air velocity/temperature meter, Fixed probe
HHF1001R	0 to 5000 (0 to 25.4)	Air velocity/temp meter with remote Telescopic Probe
HHF1001A-W	0 to 5000 (0 to 25.4)	Air velocity/temp meter, fixed probe & wireless
HHF1001R-W	0 to 5000 (0 to 25.4)	Air velocity/temp meter, telescopic probe & wireless

NOTE:

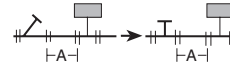


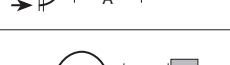

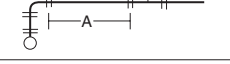

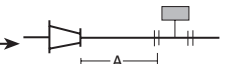

The HHF1000 series air velocity/temperature meter is not explosion proof, nor is it intrinsically safe. Do not use for flammable or hazardous gases, or in hazardous areas.

The HHF1000 series air velocity/temperature meter is intended for use with clean air or Nitrogen ONLY. Do not use with other gases, as it will produce an un-calibrated and non-linear display measurement. In addition, air carrying dust or oil (such as found in blow/compressor systems that utilize oil) can lead to coating of the sensor and thus inaccurate readings.

The HHF1000 is a bi-directional device, meaning the air flow in the forward or reverse direction provides the same readings.

Installation

1. Install the 9V battery in the battery compartment of the case. You can remove the battery door to get to the compartment.
2. Remove the protective cap from the sensor tip.
3. Run a length of straight pipe before and after the flow sensor probe. The amount of upstream straight pipe required depends on the type of obstruction which is immediately upstream of the flow sensor. Downstream of the flow sensor, in all situations, run 5 diameters of straight pipe regardless of the downstream obstruction.
4. Align the sensor probe with the air flow. Make sure the air flow is perpendicular to the sensor windows. The score line on the sensor tubing is another way of aligning the sensor to the flow stream. The score line starts from the center of the sensor window and as a result it can be aligned properly.
5. One way of installing the sensor probe into a flow stream is to utilize a compression fitting such as Omega’s SSLK-14-14 stainless steel compression fitting with Teflon ferrule, which allows adjustment of the insertion depth of the probe.
6. Turn on the power switch and start measuring air velocity & temperature.

Typical Piping	Recommended Straight Pipe Length "A"		Remarks
	Without Vanes	With Vanes	
	15D	15D	Closed Branch
	20D	15D	Elbow, Tee, Branch Pipe
	25D	15D	Elbow, 2 planes
	25D	15D	Long-radius bends
	30D 25D	15D 15D	Elbow Long-radius bends
	40D 35D	15D 15D	Elbow Long-radius bends
	20D	15D	Contracting Pipe
	40D	20D	Expanding Pipe
	Recommend Meter Be Installed Upstream		Regulating, reducing valves Ball, check valves Shut-off valves

Note: Straight pipe length on the downstream side to be 5 pipe diameters minimum.
Note: D – Pipe internal diameter

Piping Requirement

Main Operation





Changing Display Engineering Units – You can change the air velocity Engineering unit display from feet per minute (FPM) to meter per second (m/s), miles per hour (MPH), and kilometers per hour (Km/h) from the keypad (Press SET key). You can change the temperature display from °F to °C or vice versa by pressing the DOWN key.

Turn On Display Backlight – You can turn the LCD backlight on or off by pressing the UP key. The backlight will turn off after 10 seconds if the UP key is not pressed again.

High & Low Alarm Set Points – You can set and enable the high & low alarm set points for the air velocity as shown in the keypad flow chart. When in the alarm condition, the HAL or LAL icon will flash on the LCD.

Display Volume Air Flow – The unit calculates volume air flow by multiplying the air velocity by the cross sectional area of the pipe or the duct. The cross sectional area can be set in the display menu as shown in the keypad flow chart in square inches units. The volume air flow is shown in cubic feet per minute or cubic meter per minute when air temperature is displayed in Degrees C.

Auto Power Shutoff – You can turn on the auto power shutoff feature (Default is ON) to save battery life. If no keys are pressed for 5 minutes, the unit will shut down to save battery life. Pressing any key will turn the unit back on.

Operation	Press 	Press 	Press 	Press 
Real Time	Go to Max Mode	FPM → m/s Knt/h ← MPH	°F → °C or vice versa	Turn On/off LCD Light
Display Max Vel. & Temp MAX Icon	Go to Min Mode	_____	_____	Reset Max, Min, Velocity & Temperature
Display Min Vel. & Temp MIN Icon	Go to Volume Air Flow Mode	_____	_____	Same
Display Vol. Flow In CFM or CMM	Go to High Alarm Mode Velocity	_____	_____	_____
Display High Alarm Velocity Set Point	Go to Low Alarm Mode Velocity	Enable/Disable High Alarm, HAL Icon when enabled	Increment high Alarm Set Point	Decrement high Alarm Set Point
Display Low Alarm Velocity Set Point	Go to Display Response Time Mode	Enable/Disable Low Alarm, LAL Icon When Enabled	Increment Low Alarm Set Point	Decrement Low Alarm Set Point
Display LCD Response time	Go to Cross Sec. Area Mode	_____	Increment Response Time	Decrement Response Time
Display Cross Sectional Area Sq In	Go to Atmos. Press. Mode	_____	Increment Cross Sec. Area	Decrement Cross Sec. Area
Display AtPr & mmHg Icon	Go to Power Shutoff Mode	_____	Increment Atmospheric Pressure	Decrement Atmospheric Pressure
Display Power Shutoff	Go to Real Time Mode OR Go to Radio Mode (Wireless)	Turn On/off	_____	_____
Display Radio Mode	Go to Time Interval Transmission	Turn On/off	_____	_____
Display Time Interval Transmission	Go to Transmission Unit ID	_____	_____	_____
Display Transmitter Unit ID	Go to Real Time Mode	_____	_____	_____

Keypad Functional Flow Chart

NOTE:

The HHF1000 air velocity/temperature meter saves the following parameters in the non-volatile memory, so removing the power will not affect these settings: High and Low alarm air velocity set points and status (On or Off), Display Response time in msec, Cross sectional area in Square inches, Atmospheric Pressure in mmHg.