

TIF VA500A

DIGITAL HVAC ANALYZER

Owner's Manual



TABLE of CONTENTS

1. INTRODUCTION	4
2. FEATURES	5
3. WARNINGS & PRECAUTIONS	5
4. INSTRUMENT DESCRIPTION	6
5. OPERATING INSTRUCTIONS	6
5.1 MEASURING TEMPERATURE AND DEW POINT ..	7
5.2 MEASURING HUMIDITY LEVEL	7
5.3 MEASURING AIR VELOCITY	8
5.4 MEASURING AIR VOLUME	8-10
5.5 MEASURING CAPACITY	10-14
6. MAINTENANCE	14
6.1 LOW BATTERY INDICATION	14
6.2 BATTERY REPLACEMENT	15
7. SPECIFICATIONS	15
8. WARRANTY & SERVICE	16

1. INTRODUCTION

Congratulations! You now own one of the finest HVAC tools available today. The unique TIF VA500A provides you with all the necessary information to measure HVAC performance – including Temperature, Humidity, Dew Point, Velocity, Volume and Capacity. The VA500A can be used for anything from simple Temperature readings to complex multi-outlet computations of BTU's, from Humidity measurement to system balancing or total outlet output. An advanced measurement instrument designed for in field use, the VA500A is lightweight, completely portable and ergonomically designed. Three simple keypad buttons control the unit, providing quick and easy operation. An advanced microprocessor does all the computations needed – and the results are displayed on a large LCD screen.

For the best results with your new VA500A, please read this manual carefully. It describes operation, care and additional information that will allow you to get the greatest benefit from your new instrument.

2. FEATURES

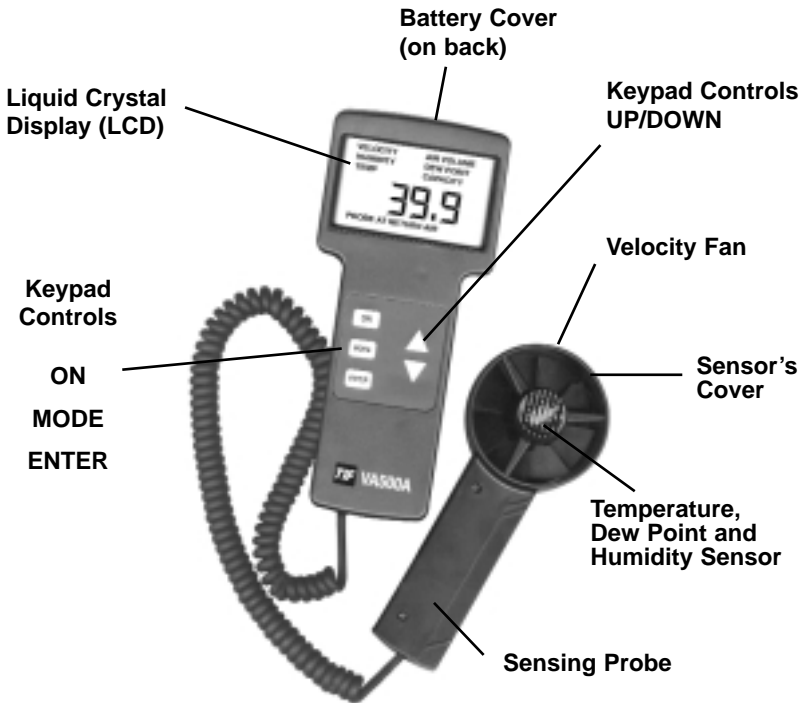
MEASURES:

- Temperature in ° F
- Humidity in % Relative Humidity
- Air Velocity in Feet per Second
- Air Volume in Cubic Feet per Minute
- Capacity in BTU's per Hour
- Dew Point in ° F
- Allows the measuring of round grills
- Memory allows Cumulative Volume and BTU measurements
- Keypad Controls
- Portable and Lightweight
- Durable sensing mechanisms
- Six foot (1.8m) coil cord
- Tough ABS housing
- Large 3" x 1.75" Liquid Crystal Display
- Carrying Case Included
- One Year Warranty

3. WARNINGS & PRECAUTIONS

- When the instrument is first introduced into a new environment, i.e. from a service vehicle into a building, allow 10 minutes for the instrument's humidity sensor to stabilize.
- Remember to allow unit readings to stabilize in order to avoid false readings.
- Do not place Sensor Cover in direct contact with any surface, especially extremely hot or moist ones.
- Do not expose Sensor to temperatures outside its range.
- Do not expose Fan to velocities above its range.
- Avoid contact with solvents and liquids.
- Avoid extreme mechanical shock or vibrations.
- Always take care to keep the coil cord free of rotating objects such as fan blades or cages.

4. INSTRUMENT DESCRIPTION



5. OPERATING INSTRUCTIONS

Units of Measure

PARAMETER	UNITS OF MEASURE
Temperature	°F
Humidity	%RH
Air Velocity	Ft/sec
Width / Length	Inch (also accepts diameter)
Air volume	CFM
Power	BTU/H
Dew Point	°F

Press ON button - the unit will beep and the LCD lights.
Press ON button again to switch the unit off.

5.1 Measuring Temperature and Dew Point

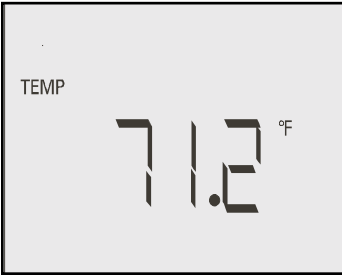


Figure 1

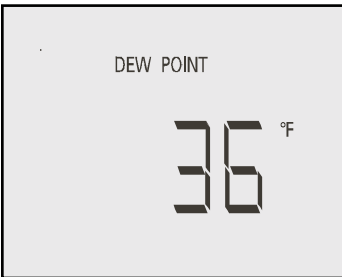


Figure 2

5.1.1 The VA500A will switch on in the TEMP mode. If already in another mode, press the MODE button until TEMP is displayed on LCD. (Fig. 1)

5.1.2 Place the probe in front of the outlet (or the area to be measured) so that the SENSOR'S COVER IS FACING THE OUTLET.

5.1.3 The temperature in °F is displayed.

5.1.4 To Display Dew Point - Press Δ button. Dew Point is displayed in °F. (Fig. 2)

5.2 Measuring Humidity Level



*Sensor's Cover

5.2.1 Press the MODE button - HUMIDITY% will be displayed on LCD.

5.2.2 Place the probe in front of the outlet (or area to be measured) so that the sensor's cover is facing the outlet.

5.2.3 Relative Humidity level in % is displayed. (Fig. 3)



Figure 3

5.3 Measuring Air Velocity



Figure 4

5.3.1 Press the MODE button - VELOCITY will be displayed on LCD.

5.3.2 Place the probe in front of the outlet (or area to be measured) so that the sensor's cover is facing the outlet.

5.3.3 Air velocity in feet per second (fps) is displayed. (fig.4).

5.4 Measuring Air Volume



Figure 5

5.4.1 Press the MODE button - AIR VOLUME and "ENTER WIDTH" (flashing) will be displayed on LCD. (Fig. 5) The VA500A is requesting the A/C outlet's width.

5.4.2 Using the ∇/Δ buttons, enter the appropriate measurement in inches.

5.4.3 Press ENTER to store the width in memory. AIR VOLUME and "ENTER LENGTH" (flashing) will be displayed on LCD. (Fig 6) The VA500A is requesting the A/C outlet's length.



Figure 6

5.4.4 Using ∇/Δ buttons, enter the appropriate measurement in inches. **DO NOT PRESS ENTER UNTIL STEP 5.4.6**



Figure 7

5.4.5 TO MEASURE ROUND GRILLS – after step 5.4.1 press the ENTER button for more than 2 seconds, until DIAMETER is displayed on LCD (Fig. 7); then follow Steps 5.4.4 to 5.4.7.

5.4.6 Place the probe in front of the unit's outlet so that the sensor's cover is facing the outlet. Press ENTER. The VA500A will flash "WAIT" for about 20 seconds. Keep the probe in front of the outlet's grill and when "start average" begins to flash; move the probe back and forth across the unit's outlet. (***See diagram below step 5.4.7**).

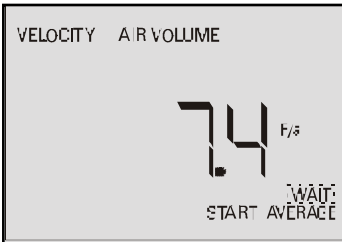


Figure 8

Make sure to cover the complete area of the grill, moving the probe at a rate of speed to cover the entire grill in less than 10 seconds. Go back and repeat moving the probe across the outlet for one minute. At the end of one minute the VA500A will beep, signaling that the measurement time has ended.

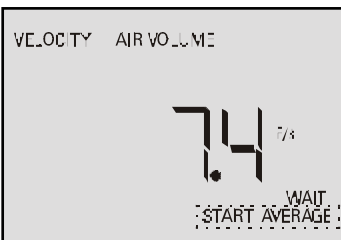


Figure 9

5.4.7 The LCD will display the measured Air Volume in CFM (cubic feet per minute) (Fig. 10).

*When moving probe along the grill's borders (A,D) keep the probe halfway out of the grill.

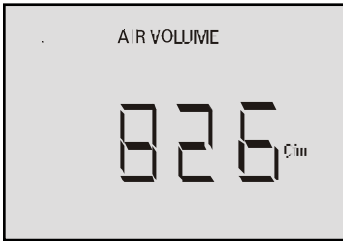
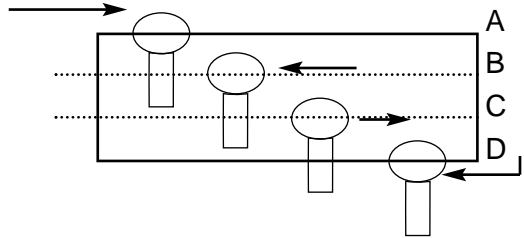


Figure 10

Note: Aim at getting an average reading from all available openings. (see next step)

5.4.8 To repeat this measurement or IF YOU WISH TO MEASURE ADDITIONAL OPENINGS, press ENTER and repeat steps 5.4.2-5.4.7. Measure each opening as previously described in order to obtain an overall average reading. At the completion of each test, the sum of ALL measurements can be displayed by pressing the Δ button.

5.5 Measuring Capacity

IMPORTANT NOTE: Before you begin to measure capacity, press the MODE button until you reach the HUMIDITY mode. Put the probe in front of the inlet air (or ambient room humidity) so that the sensor's cover is facing AWAY FROM THE INLET GRILL and wait until the humidity measurement stabilizes (this also allows the "TEMP" measurement to stabilize). DO NOT place the probe at the output grill because it will take a long time (10 minutes) to return to normal room temperature and humidity conditions!

Page 10

5.5.1 Press MODE button - CAPACITY will be displayed on LCD (Fig.11).

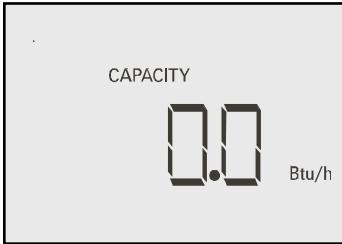


Figure 11

NOTE: When measuring return air it is recommended that the FAN SPEED IS SET ON HIGH and the probe is placed at the center of the inlet grill. (no movement is necessary during this measurement) (See Fig. 14)

5.5.2 Align the probe in front, at the center of unit's inlet, (or ambient room temperature) so that the sensor's cover is facing AWAY FROM THE INLET grill and press ENTER. The LCD will display HUMIDITY %, CAPACITY, Probe at RETURN AIR and "WAIT" will be flashing (Fig.12) The VA500A will start measuring the unit's inlet air parameters while displaying a flashing "WAIT". After one minute of measuring, the unit will beep and the "WAIT" will stop flashing, signaling that the measurement has ended.

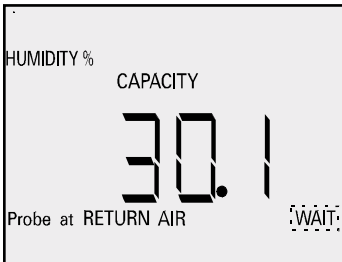


Figure 12

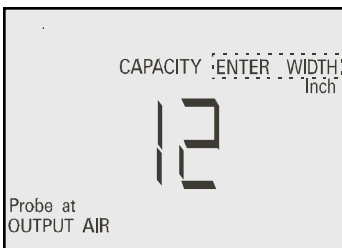


Figure 13

5.5.3 Flashing "ENTER WIDTH" will be displayed on LCD. (Fig.13)

5.5.4 Using the ∇/Δ buttons enter the outlet's width, in inches and press ENTER (Fig.14 step 3). Flashing "ENTER LENGTH" will be displayed on LCD.

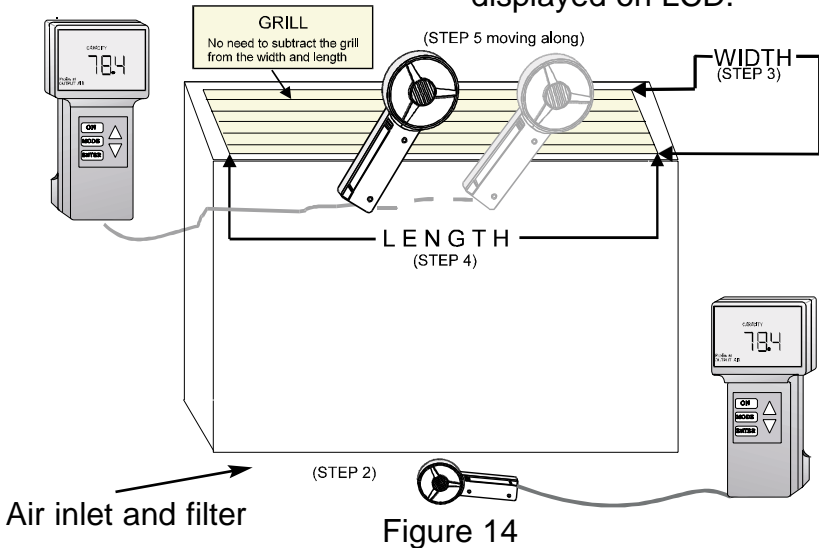


Figure 14

NOTE: When measuring return air the probe should be in the center of the inlet (no need to move it during measuring)

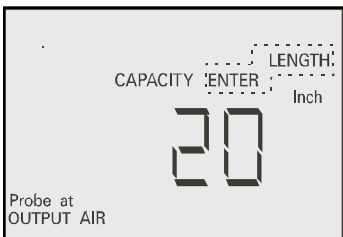


Figure 15

5.5.5 The VA500A is requesting the A/C outlet's length. Using the ∇/Δ buttons enter the outlet's length, in inches. (Fig.14 step 4 & Fig.15) **DO NOT PRESS ENTER UNTIL STEP 5.5.7**

5.5.6 TO MEASURE ROUND GRILLS - At step 5.5.3, press ENTER button for more than 2 sec until DIAMETER (flashing) is displayed on LCD.

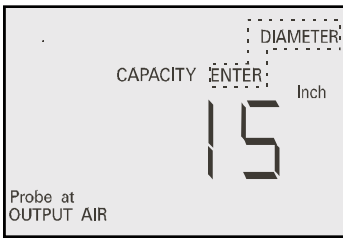


Figure 16

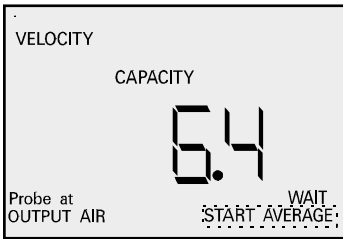


Figure 17

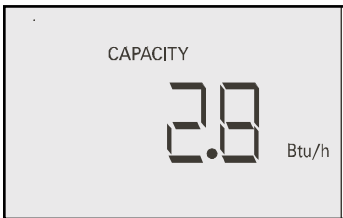


Figure 18

IMPORTANT: Review Step 5.4.6 and diagram*, before starting Step 5.5.7 & 5.5.8

5.5.7 Place the probe in front of the outlet so that the sensor's cover is facing the outlet. Press ENTER, "WAIT" will flash.

No need to move probe at this time, the VA500A is waiting until the sensors stabilize with the new TEMP. and HUM. readings (about 90 seconds) then "START AVERAGE" will flash (Fig. 17)

5.5.8 Measure for one minute (Fig.14 step 5) making sure to move the probe over the complete area of the grill (Ref. Step 5.4.6) Aim at getting an average reading from all available openings. At the end of one minute the unit will beep and the LCD screen will display the results in Btu/h.(Fig.18)

5.5.9 To repeat this measurement, the return air and grill size are already in memory, simply press ENTER and repeat sections 5.5.3 -5.5.8 above.

5.5.10 When there are several outputs openings but the same return air, press ENTER and repeat sections 5.5.3 - 5.5.8 for each one. In Step 5.7 "WAIT" will flash for 20 seconds.

Each time a measurement ends the LCD will display the Btu/h for that specific outlet. If you wish to know total Btu/h of all the outlets measured up to now, press Δ button.

Note: If you wish to go through the complete process of measuring capacity again, which includes the return air measurement, you should wait 10 minutes to allow the humidity sensor to return to ambient conditions.

6. MAINTENANCE

Your VA500A requires no maintenance apart from battery replacement. From time to time wipe the unit clean with a damp cloth. Do Not use solvents or abrasives. Occasionally inspect the coil cord for nicks and/or cuts and return for replacement if any are found.

6.1 Low Battery Indication

The battery requires replacement when the LCD characters begin to flash on and off.

6.2 Battery Replacement

To replace the battery, slide the battery compartment cover, located on the back of the top portion of the unit, upward to access the battery. Remove and replace with a new and/or a tested 9V alkaline battery. Replace cover before operation.

7. SPECIFICATIONS

Ranges:

Temperature:	23°F to 149°F (-5° to 65°C)
Humidity:	10-95% Rh
Velocity:	1.8 to 49 fps (0.5 to 15 m/sec.)

Accuracy:

Temperature:	+/- 2°F
Humidity:	+/- 3% Rh
Velocity:	+/- 3%
Dew Point	+/- 3%

Response Time:

Temperature:	< 5 secs.
Humidity:	< 10 secs.
Velocity:	Instantaneous
Dew Point	< 10 secs.

Display:	5 digit 1.75" LCD
Coil Cord Length:	72 inches (1.8m)
Operating Temperature:	32°F to 122°F (0° to 50°C)
Power Supply:	One 9V Alkaline battery
Battery Life:	Approx. 8 hours continuous
Weight:	15 ounces (430g)
Dimensions:	
Controls -	8" x 3.5" x 2" (20.3 x 8.9 x 5 cm)
Probe -	6.75" x 3" x 2" (17.1 x 7.6 x 5 cm)

8. WARRANTY & SERVICE

Limited Warranty

This instrument has been designed and manufactured to provide unlimited service. Your TIF Instrument has a limited warranty against defective materials and / or workmanship for one year from the date of purchase. Should the unit be inoperative, a no-charge repair or replacement will be made to the original purchaser, if the claim is made within one year from the date of purchase.

This warranty applies to all repairable instruments that have not been tampered with or damaged through improper use. Repaired or replaced tools will carry an additional 90-day warranty.

Returning Your Unit For Repair

BEFORE returning your instrument for repair please make sure that you have carefully reviewed this manual and that the battery is working properly.

If the unit still fails to work properly please
Call (800) 327-5060 or (954) 499-5400.