

TSI Ventilation and IAQ Products



New Products
March 2011





Agenda

- New products
 - 9565 VelociCalc and 7575 QTRAK Overview
 - Bluetooth Communications
 - Airflow Probe 800187
 - Language Additions
 - Software updates
 - Resources



Agenda

- New products
 - Volatile Organic Compounds (VOC) Probes
 - What are VOC's?
 - Applications and Customers
 - Models and Technology
 - Features
 - Setup
 - Resources
 - Availability



New Products: 9565 VelociCalc and 7575 QTRAK

- Replacing 9555 VelociCalc and 7565 Q-Trak
 - 9555/7565 Asian Language project started last year
 - Original plan was to keep existing model numbers
- Required new pcb and microprocessor
- Create new models
 - Provides us with the opportunity to launch a new product
 - Helps service differentiate between old and new models



9565 VelociCalc and 7575 QTRAK Overview



- The VelociCalc 9565 series is a direct replacement for the 9555
- The QTRAK 7575 is a direct replacement for the 7565
- Same features and functionality as old models
 - Use existing plug-in probes
 - Instrument case look and feel
 - Carrying case and accessories
 - Supports 8934 wireless printer
- No change in pricing



9565 VelociCalc 7575 Q-Trak Models



Old Models	New Models	New Service Models
9555	9565	CL-9565-P
9555-A	9565-A	RP-9565-P
9555-P	9565-P	CL-9565-X
9555-X	9565-X	RP-9565-X
7565	7575	CL-7575-X
7565-X	7575-X	RP-7575-X

9565 VelociCalc and 7575 QTRAK Overview



- Additional capabilities
 - Bluetooth bi-directional communications
 - Download stored data to a PC
 - Remote polling from a PC
 - Program Test ID names from a PC
 - Supports additional probes
 - Volatile Organic Compounds (VOC) probes
 - **9565-P** can use Airflow probe (straight pitot probe) Model 800187

9565 VelociCalc and 7575 QTRAK Overview



- Additional capabilities
 - Added four Asian languages
 - Traditional Chinese
 - Simplified Chinese
 - Japanese
 - Korean
 - Added dots to soft keys
 - Updated LogDat2 and TRAKPRO software
 - Updated instruction manual
 - Updated specification data sheet



Bluetooth Bi-Directional Communications



- Communication via Hyperterminal or other terminal emulation software
 - Not supplied by TSI
- Download stored data
- Remote Polling
 - Data analysis
 - Trending
- Range: 100 ft. (30 m)

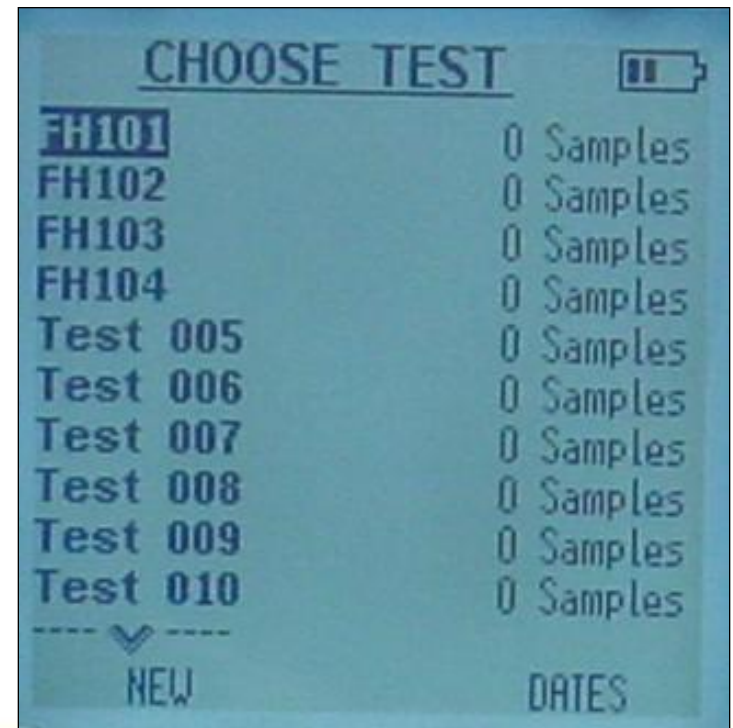
```
-----  
MODEL: 9565-P  
SERIAL: 9565P1105003  
REV: 3.01.0  
PROBE: 784  
PROBE#: P07150016  
TEST ID: TSI 2468  
Sample 1 Date: 23/03/11  
Sample 1 Time: 13:27:52  
-----  
  
Velocity  
Avg 164 ft/min  
Min 3 ft/min  
Max 321 ft/min  
# Samples 3  
  
Samples  
23/03/11  
13:27:52 169 ft/min  
13:27:58 321 ft/min  
13:28:18 3 ft/min  
-----
```

Bluetooth Bi-Directional Communications



- Application: Programming Test ID's
 - Enhances productivity
 - Faster than programming thru meter keypad
 - Useful for Laboratories with dozens of fume hoods
 - Each fume hood has a unique identification
 - Program each FH identification into meter
 - Test fume hoods
 - Generate reports

```
TID001  FH101
OK
TID002  FH102
OK
TID003  FH103
OK
TID004  FH104
OK
```



Bluetooth Bi-Directional Communications



ENERGY AND COMFORT

Ventilation Test Instruments

Bluetooth® Communications for the Model 9565 VELOCICALC® Meter and Model 7575 Q-TRAK™ Monitor

Application Note TSI-150

The Model 9565 VELOCICALC meter and Model 7575 Q-TRAK IAQ monitor feature Bluetooth wireless communications for use with a Bluetooth-enabled computer. A computer can command the VELOCICALC or Q-TRAK meter to:

- Reply with model and serial numbers of the VELOCICALC or Q-TRAK meter and the currently attached probe.
- Reply with current values for all measurements to be logged.
- Reply with logged data either for a particular TestID or all TestIDs.
- Change the names of TestIDs used to log data.

Bluetooth Communications Requirements

Bluetooth communications between a TSI instrument and computer require Bluetooth communications and use of a terminal emulation program, such as HyperTerminal, be installed on the computer. This application note assumes that you already have Bluetooth communications installed on your computer. If your computer does not have Bluetooth communications, purchase and install a Bluetooth dongle or another means of Bluetooth communications. HyperTerminal is included in Windows® XP and earlier operating systems, but not in Windows Vista® or Windows 7 operating systems.

- For Windows XP operating system or earlier, you can find HyperTerminal by clicking on the Start button, then **All Programs**, **Accessories** and finally **Communications**.

If HyperTerminal is not installed on your computer, install it by opening the **Control Panel**, selecting **Add or Remove Programs**, selecting **Add/Remove Windows Components**, and choosing **HyperTerminal**.

- For Windows Vista and Windows 7 operating systems, obtain and install a terminal emulation program. Purchase HyperTerminal from Hilgraeve or obtain another terminal emulation program.

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Bluetooth Setup

Bluetooth data transfers occur over a Bluetooth Serial Port. To determine the COM Port of the Bluetooth Serial Port:

1. Right-click the Bluetooth icon in the lower right-hand corner of the screen.
2. Select "Bluetooth Configuration" as shown in Figure 1.
3. Determine the COM port used for Bluetooth communications. Depending on the drivers on your computer, the COM Port used may be on the **Communications Port** tab, **Local Services** tab, or elsewhere. Take note of the COM port for later use.
4. Select the **Start up automatically** checkbox, which may be found by double-clicking the **Bluetooth Serial Port** in the **Local Services** tab as shown in Figure 2, to allow the TSI instrument to connect in the future without going through this process.
5. Ensure that the TSI Instrument can find your computer by selecting **Let other Bluetooth devices discover this computer**, on the **Accessibility** tab as shown in Figure 3.
6. Select the **OK** button to save changes and exit.

Note: You may have to press the OK button on more than one window.

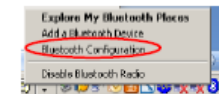


Figure 1. Selecting Bluetooth Configuration.

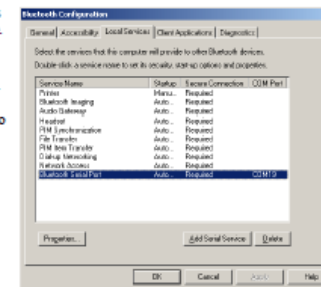


Figure 2. Selecting Bluetooth Serial Port.



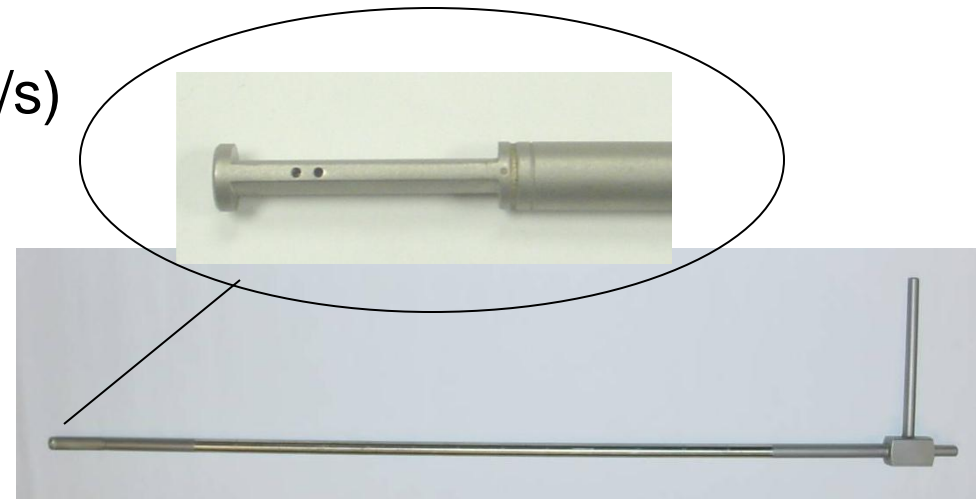
Figure 3. Enabling Bluetooth Discovery.

Application Note TSI-150



Airflow Probe

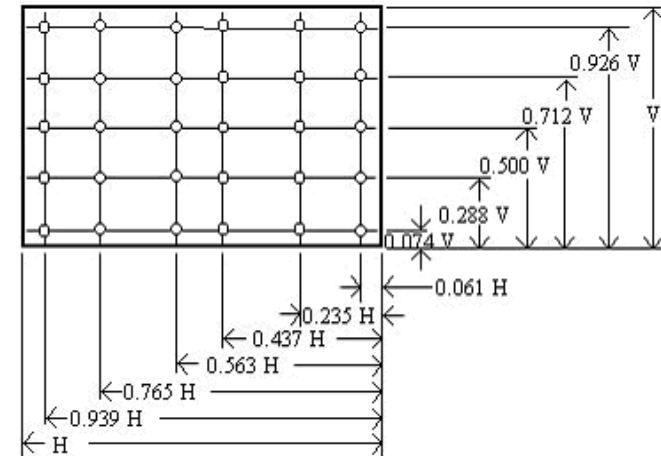
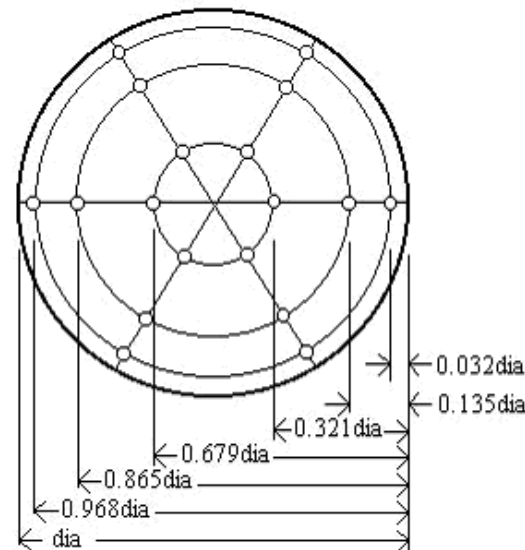
- Straight pitot probe
 - Duct traversing
- Applicable with the 9565-P
 - Range: 250 to 15,500 ft/min (1,27 to 78,7 m/s)
 - Accuracy: $\pm 1,5\%$ at 2000 ft/min (10,16 m/s)
 - Resolution: 1 ft/min (0,01 m/s)





Airflow probe

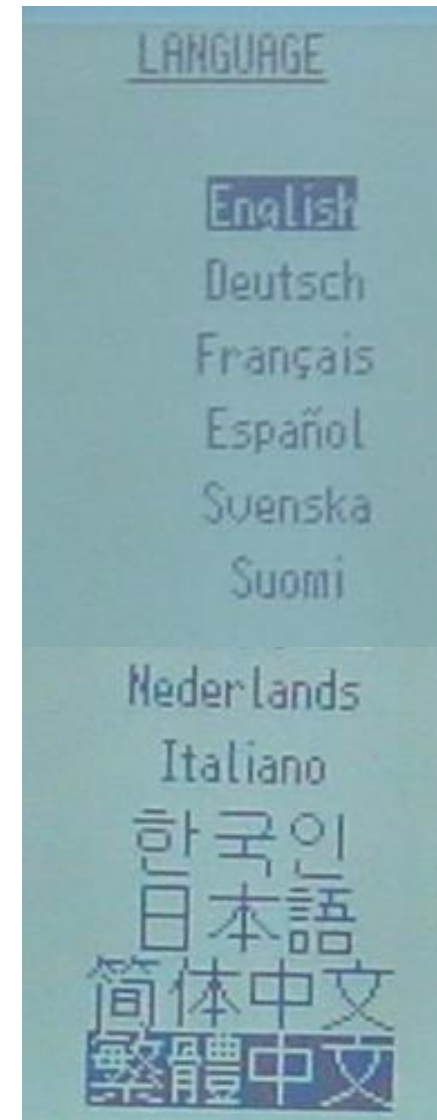
- Small diameter ductwork
 - Standard pitot probes may not be able to be inserted due to 90° angle
- High temperature airstreams
 - Temperatures up to 800°C





Languages

- Multi language capability built into instruments
 - 12 total
- Unique to TSI
- Why important
 - Multi-national companies looking to standardize on equipment
 - Penetrate new regions
 - Builds on TSI's reputation of being a global company





Software Update: LogDat2 Revision 1.4.1

TSI Incorporated

LogDat2™ Software CD-ROM



Manuals are in Adobe Acrobat (pdf) format and require your PC to have the free Adobe Acrobat Reader installed to display them.

● Install LogDat2™ Software (32-bit)

(For Windows® XP, Vista®, and 7 operating systems.)

● Install LogDat2™ Software (64-bit)

(For Windows® 7 operating system.)

● Documentation

● Visit TSI Web Site (www.tsi.com)*

● exit

* Requires internet connection

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Software Update: TrakPro Revision 4.5.1

TSI Incorporated

TrakPro™ Data Analysis Software CD-ROM



Manuals are in Adobe Acrobat (pdf) format and require your PC to have the free Adobe Acrobat Reader installed to display them.

- **Install TrakPro™ Software (32-bit)**
(For Windows® XP, Vista®, and 7 operating systems.)
- **Install TrakPro™ Software (64-bit)**
(For Windows® 7 operating system.)
- **Documentation**
- **Visit TSI Web Site (www.tsi.com)***



* Requires internet connection

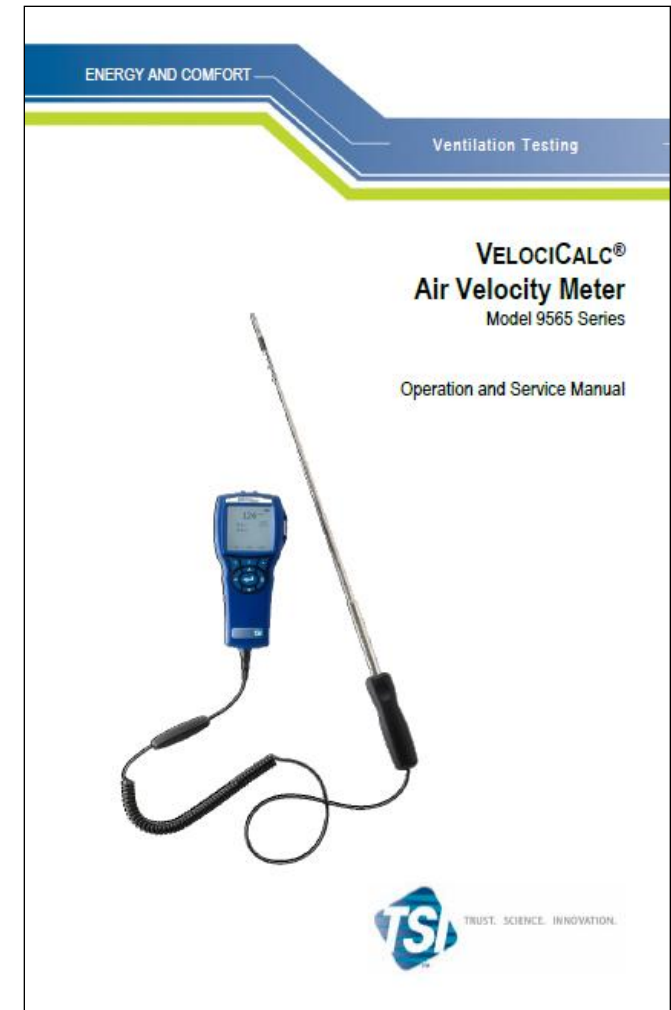
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Resources: User Manual

- More information!!!
 - Increased from 22 to 47 pages
- Alternate language manuals to be released in early April
 - Website
 - Add to multi language CD





Resources: User Manual

Connecting the Static Pressure Probe

The Static Pressure probe included with the 9565-P is connected to the + port on the 9565-P using the included tubing. The Static Pressure probe is used to measure the duct static pressure and features a magnet which holds the probe to the ductwork.



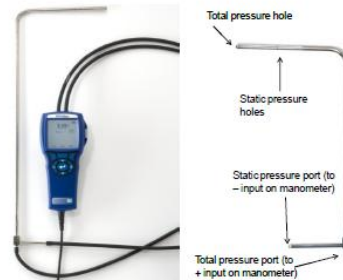
Connecting an Optional Pitot Probe or Airflow (straight pitot) Probe

When connected to a pitot probe, air velocity or air volume can be measured. A pitot probe can be connected to the "a" and "v" pressure ports on the Model 9565-P using two pieces of tubing of equal length. The total pressure port of the pitot probe connects to the "a" port on the meter, and the static pressure port of the pitot probe connects to the "v" port on the meter.

For information on how to perform a duct traverse, refer to [Application Note TSI-106](#).

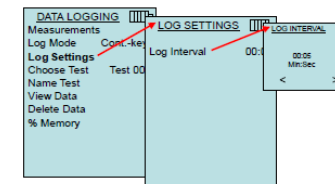
NOTE: The pitot velocity needs a valid temperature to perform the standard or actual velocity correction. This is accomplished in the "Actual/Std Setup" menu. If no probe capable of measuring temperature (plug in probe or thermocouple) is connected, the "Temp Source" must be set to "Entered". The duct air temperature must then be manually inputted by the user using the "Entered Temp" setting. If the "Temp Source" is set to Probe or Thermocouple 1 or 2, and no probe is connected, dashes (-----) will appear on the display.

For more information on entering the temperature manually, refer to the [Actual/Standard Setup](#) section of this manual.



Do not use the instrument or probes near hazardous voltage sources since serious injury could result.

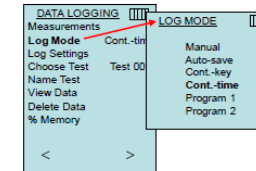
When set to Cont. key, the log interval can be adjusted.



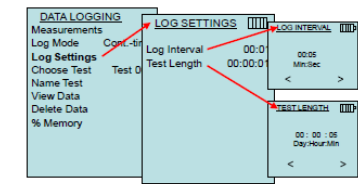
NOTE: Pressing the ▲▼ keys simultaneously will lock the keypad to prevent unauthorized adjustments to the instruments during unattended logging. A "Lock" symbol will appear on the display. To unlock the keypad, press the ▲▼ keys simultaneously. The "Lock" symbol will disappear.

Cont-time Logging

In Cont-time mode, the user starts taking readings by pressing the ← key. The instrument will continue taking samples until the time as set in "Test Length" has elapsed.



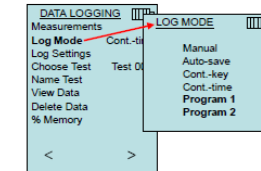
When set to Cont-time, the log interval and test length can be adjusted.



NOTE: Pressing the ▲▼ keys simultaneously will lock the keypad to prevent unauthorized adjustments to the instruments during unattended logging. A "Lock" symbol will appear on the display. To unlock the keypad, press the ▲▼ keys simultaneously. The "Lock" symbol will disappear.

Program 1 and Program 2

Program 1 and Program 2 are customized data logging setup programs. Setting them up is performed using TSI's TRAKPRO Data Analysis software.



Resources: 9565 Spec Sheet



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ENERGY AND COMFORT

Ventilation Test Instruments

ENERGY AND COMFORT

Ventilation Test Instruments

Specifications

VELOCALC

Models 9565, 9565-A, 9565-P, 9565-X and Optional Probes

Velocity (Pitot or Airflow probe for Meter Models 9565, 9565-A, 9565-P)
 Range¹ 25.0 to 15,500 ft/min (1.27 to 78.7 m/s)
 Accuracy² ±1.5% at 2,000 ft/min (7.62 m/s)
 Resolution 1 ft/min (0.01 m/s)

Duct Size
 Dimensions 1 to 500 inches in increments of 0.1 in.
 (2.5 to 12.70 cm in increments of 0.1 cm)

Volumetric Flow Rate
 Range Actual range is a function of velocity, pressure, duct size,
 and K factor

Static/Differential Pressure (Meter Models 9565, 9565-A, 9565-P)
 Range³ -15 to +15 in. H₂O (28.0 to +28.0 mm Hg,
 -3.773 to +3.773 Pa)
 Accuracy ±1% of reading ±0.005 in. H₂O (±0.01 mm Hg, ±1 Pa)
 Resolution 0.001 in. H₂O (0.1 Pa, 0.01 mm Hg)

Barometric Pressure
 Range 20.36 to 36.648 in. Hg (517.15 to 930.87 mm Hg)
 Accuracy ±2% of reading

Instrument Temperature Range
 Operating (Electronics) 40 to 113°F (5 to 45°C)
 Storage -4 to 140°F (-20 to 60°C)

Data Storage Capabilities
 Range 25,500+ samples and 100 test files

Logging Interval
 1 second to 1 hour

Time Constant
 User selectable

External Meter Dimensions
 3.8 in. x 8.3 in. x 2.1 in. (9.7 cm x 21.1 cm x 5.3 cm)

Meter Weight with Batteries
 0.8 lbs. (0.36 kg)

Power Requirements
 Four AA-size batteries or AC adapter

To Order

Multi-function Ventilation Meter with differential pressure sensor and Thermoanemometer Probe

Specify Description
 9565 Multi-function ventilation meter 9565-P with straight air velocity probe Model 954
 9565-A Multi-function ventilation meter 9565-P with articulated air velocity probe Model 956

Multi-function Ventilation Meter Only Choose a probe most appropriate for your measurement needs.

Specify Description
 9565-X Multi-function ventilation meter, no plug-in probes, no differential pressure sensor
 9565-P Multi-function ventilation meter, no plug-in probes, with differential pressure sensor, tubing and static pressure probe

NOTE: All models include instrument, hard carrying case, 4 alkaline batteries, USB cable, universal power supply, instruction manual, calibration certificate, Load2 and TapPro downloading software.

Models 9565, 9565-A and 9565-P also include (1) 8-ft. (2.4-m) rubber tube and (1) static pressure tip.

- 1 Pressure velocity measurement not recommended below 1000 ft/min (3 m/s) and are best suited to velocities over 2,000 ft/min (610 m/s). Range can vary depending on barometric pressure.
- 2 Accuracy is a function of measuring pressure (velocity). Conversion accuracy improves when actual pressure values increase.
- 3 Operating range = 10 in. H₂O (260 mmHg, 40 kPa).
- 4 Sample rate configurable over an air temperature range of 40 to 150°F (5 to 60°C).
- 5 Thermoanemometer range is 20 ft/min through 15,000 ft/min (6.1 m through 4570 m/s).
- 6 Accuracy with instrument case at 77°F (25°C), air velocity at 0.0077 ft/min (0.0024 m/s) for change in instrument temperature.
- 7 Accuracy with probe at 77°F (25°C), air velocity at 0.1% (0.01 ft/min, 0.0030 m/s) for change in probe temperature, include 1% test error.
- 8 At 177°F (80°C), air velocity at 0.125% (0.0038 m/s) for change in instrument.
- 9 A calibration temperature accuracy of 0.025°C (0.045°F) for change in temperature.



Model 9565

Features and Benefits

- Best in class air velocity accuracy
- Optional "smart" plug-in probes, including VOC, CO₂ and rotating vane probes
- Accommodates up to two K-type thermocouples
- Large graphic display
 - Displays up to 5 measurements simultaneously
 - On-screen messages and instructions
 - Program for local language
- Intuitive menu structure allows for ease of use and setup
- Multiple data logging formats
- Bluetooth communications for transferring data or remote polling
- Includes TapPro™ and Load2™ downloading software with USB cable

VELOCALC® Multi-Function Ventilation Meter Series 9565

The 9565 VelocCalc Series are portable, hand held, Multi-Function Ventilation Test Instruments featuring a menu driven user interface for easy operation in your local language. On-screen prompts and step-by-step instructions guide the user through operation, instrument setup and field calibration. The 9565 also features an ergonomic, over molded case design with probe holder and a keypad lockout to prevent tampering during unattended use. These instruments are available with or without a differential pressure sensor and are designed to work with a wide range of plug-in probes.

Applications

- HVAC testing and balancing
- Clean room testing
- Biological safety cabinet and laboratory fume hood testing
- HVAC commissioning and troubleshooting
- IAQ investigations
- Thermal comfort studies
- Ventilation evaluations
- Process air flow testing

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Resources: 9565 Spec Sheet



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VelocCalc Plug-In Probes

The plug-in probes allow users to make various measurements by simply plugging in a different probe that has the features and functions best suited for a particular application.

Plug-in probes for the 9565 VelocCalc series can be ordered at any time and include a data sheet with certificate of traceability. When it's time for servicing, only the probe needs to be returned since all the calibration data is stored within the probe.

Thermocouple Air Velocity Probes

TSI offers four models featuring multiple measurements in a compact robust probe design. These telescopic probes are available in straight or articulating construction, and with or without a relative humidity sensor. Models with a relative humidity sensor can also calculate wet bulb and dewpoint temperature.

Common applications include duct traversing, face velocity testing of chemical fume hoods, biological safety cabinets and HEPA filters. When combined with the 9566, advanced measurement applications can be performed including heat flow, draft rate and turbulence intensity.

Rotating Vane Anemometer Probes

Rotating vane probes are available in 1.5" (38 mm) and 4" (100 mm) diameters, and measure air velocity and temperature with flow calculation. Measurement applications include face velocity as well as air velocity in turbulent air streams. An optional telescopic articulating probe is available for both models, and an Aircone Kit is available for the 4" vane head model.

Pitot Probes and Airflow Probe 800187

Pitot probes are used to obtain air velocity and air volume measurements within ductwork by performing a duct traverse. Consult factory for sizes and part numbers.

The Airflow Probe Model 800187 is an 18" (46 cm) straight Pitot probe that can be used to perform duct traverses and are ideally suited for measuring in small diameter ductwork.

LogDat2™ Downloading Software

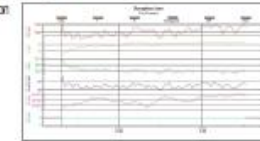
The VelocCalc Model 9565 Series includes downloading software called LogDat2. LogDat2 software transfers the stored data from the Model 9565 to a computer as a spreadsheet file. This software is useful for applications such as duct traverses, fume hood, and filter face velocity testing.

Reading Type	Standard	Temperature	Relative Humidity	Pressure	Velocity	Wet Bulb	Dewpoint	Wet Bulb
Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Velocity	ft/min	°F	%RH	in. Hg	ft/min	°F	°F	°F
Average	ft/min	°F	%RH	in. Hg	ft/min	°F	°F	°F
Minimum	ft/min	°F	%RH	in. Hg	ft/min	°F	°F	°F
Date	MM/DD/YYYY	Time	HH:MM	Day	Day	Day	Day	Day
MM/DD/YYYY	Time	HH:MM	Day	Day	Day	Day	Day	Day
3/2/2011	8:45:40	84.1	71.0	22.1	21.3	51.8		
3/2/2011	8:46:02	83.6	71.0	22.1	21.3	51.8		
3/2/2011	8:46:24	83.5	71.0	22.1	21.3	51.8		
3/2/2011	8:46:46	83.9	71.0	22.1	21.3	51.8		
3/2/2011	8:47:08	83.9	71.0	22.1	21.3	51.7		
3/2/2011	8:47:30	83.8	71.0	22.1	21.3	51.7		
3/2/2011	8:47:52	83.7	71.0	22.2	21.3	51.7		

Data Collection and Reporting

Expanded data logging capacity and the inclusion of TRAKPRO Data Analysis Software provides the capabilities to work more effectively and efficiently. The 9565 can store up to 38.9 days of data collected at one-minute log intervals. The stored data can be recalled, reviewed on screen, and downloaded for easy reporting.

- Log multiple parameters to investigate trends.
- Store up to 38.9 days of data collected at one-minute log intervals.
- User selectable logging intervals and start/stop times.
- Download data to TrakPro data analysis software.
- Report generation.
- Instrument programming.
- Graph creation.



Probe Specifications

Models 960, 962, 964, 966, 995, 496, 980, 982, 984, 985, 986, 987, 792, 794, 984, 985, 986, and 987

960 Thermocouple Straight Probe Velocity and Temperature
 Range 0 to 0,999 ft/min (0 to 50 m/s) 0 to 200°F (0 to 93°C)
 Accuracy ±3% of reading or ±3 ft/min (±0.015 m/s), whichever is greater ±0.5°F (±0.2°C)
 Resolution 1 ft/min (0.01 m/s) (0.1°F) (0.1°C)

962 Thermocouple Articulating Probe Velocity and Temperature
 Range 0 to 0,999 ft/min (0 to 50 m/s) 0 to 200°F (0 to 93°C)
 Accuracy ±3% of reading or ±3 ft/min (±0.015 m/s), whichever is greater ±0.5°F (±0.2°C)
 Resolution 1 ft/min (0.01 m/s) (0.1°F) (0.1°C)

964 Thermocouple Straight Probe Velocity, Temperature and Humidity
 Range 0 to 0,999 ft/min (0 to 50 m/s) 14 to 140°F (0 to 60°C)
 Accuracy ±3% of reading or ±3 ft/min (±0.015 m/s), whichever is greater ±0.5°F (±0.2°C) ±3% RH
 Resolution 1 ft/min (0.01 m/s) (0.1°F) (0.1°C)

966 Thermocouple Articulating Probe Velocity, Temperature and Humidity
 Range 0 to 0,999 ft/min (0 to 50 m/s) 14 to 140°F (0 to 60°C)
 Accuracy ±3% of reading or ±3 ft/min (±0.015 m/s), whichever is greater ±0.5°F (±0.2°C) ±3% RH
 Resolution 1 ft/min (0.01 m/s) (0.1°F) (0.1°C)

496 Rotating Vane 1.5 in. (38 mm) Velocity and Temperature
 Range 100 to 3,000 ft/min (50 to 150 m/s) 32 to 140°F (0 to 60°C)
 Accuracy ±3% of reading or ±1 ft/min (±0.03 m/s) ±2.0°F (±1.0°C)
 Resolution 1 ft/min (0.01 m/s) (0.1°F) (0.1°C)

995 Rotating Vane 4 in. (100 mm) Probe Velocity and Temperature
 Range 50 to 5,000 ft/min (25 to 500 m/s) 32 to 140°F (0 to 60°C)
 Accuracy ±3% of reading or ±1 ft/min (±0.03 m/s) ±2.0°F (±1.0°C)
 Resolution 1 ft/min (0.01 m/s) (0.1°F) (0.1°C)

980 800 Probe CO₂, Temperature and Humidity
 Range 0 to 5,000 ppm CO₂ 0 to 95% RH 14 to 140°F (0 to 60°C)
 Accuracy ±3% of reading or ±50 ppm, whichever is greater
 CO₂ ±3% RH ±1.0°F (±0.6°C)
 Resolution 1 ppm CO₂ 0.1% RH 0.1°F (0.1°C)

982 800 Probe Model CO₂, Temperature and Humidity
 Range 0 to 500 ppm CO₂ 0 to 5000 ppm CO₂
 0 to 95% RH 14 to 140°F (0 to 60°C)
 Accuracy ±3% of reading or ±50 ppm, whichever is greater
 CO₂ ±3% RH ±1.0°F (±0.6°C)
 Resolution 0.1 ppm CO₂ 0.1% RH 0.1°F (0.1°C)

792 and 794 Thermocouple Proben Temperature
 Range -40 to 1200°F (-40 to 650°C)
 Accuracy ±0.1% of reading ±2°F (±0.65°C) of reading ±1.1°C
 Resolution 0.1°F (0.1°C)

984 Low Concentration (ppb) VOC and Temperature
 Range 10 to 20,000 ppb, 10 to 60°C (0 to 140°F)
 Accuracy ±0.5°C (±0.9°F)
 Resolution Up to 10 ppb (0.1°C) (0.1°F)

985 High Concentration (ppm) VOC and Temperature
 Range 1 to 2,000 ppm, -10 to 60°C (0 to 140°F)
 Accuracy ±0.5°C (±0.9°F)
 Resolution Up to 10 ppm (0.1°C) (0.1°F)

986 Low Concentration (ppb) VOC, Temperature, CO₂ and Humidity
 Range 10 to 20,000 ppb, 0 to 5,000 ppm CO₂
 10 to 60°C (0 to 140°F) 5 to 95% RH
 Accuracy ±3% of reading or 50 ppm, whichever is greater
 ±0.5°C (±0.9°F) ±3% RH
 Resolution Up to 10 ppb 0.1 ppm CO₂ 0.1°C (0.1°F) 0.1% RH

987 High Concentration (ppm) VOC, Temperature, CO₂ and Humidity
 Range 1 to 2,000 ppm, 0 to 5,000 ppm CO₂
 10 to 60°C (0 to 140°F) 5 to 95% RH
 Accuracy ±3% of reading or 50 ppm, whichever is greater
 ±0.5°C (±0.9°F) ±3% RH
 Resolution Up to 10 ppm, 0.1 ppm CO₂ 0.1°C (0.1°F) 0.1% RH



Resources: Old versus New



ENERGY AND COMFORT

9565 Ventilation Products

ENERGY AND COMFORT

7565 QTRAK IAQ Monitor

VelociCalc Meter Comparison: 9565 Versus 9555 Series

VelociCalc 9565 Series Overview

- The VelociCalc 9565 series is a direct replacement for the 9555 series
- Same features and functionality as the 9555
 - Use existing plug-in probes
 - Instrument case look and feel
 - Carrying case and accessories
- 9565 includes additional capabilities
- No change in pricing

Additional Capabilities of the 9565 Series

- Bluetooth bi-directional communications
 - Download stored data to a PC
 - Remote polling from a PC
 - Program Test ID names from a PC
 - Supports 8934 wireless printer
- Supports additional probes
 - Volatile Organic Compounds (VOC) probes
 - Aiflow probe model 800187 (straight pitot probe)
- Added four Asian languages
 - Traditional Chinese
 - Simplified Chinese
 - Japanese
 - Korean
- Added dots to soft keys
- Updated instruction manual
- Updated specification data sheet



QTRAK IAQ Monitor Comparison: 7575 Versus 7565

QTRAK 7575 Overview

- The QTRAK 7575 series is a direct replacement for the 7565
- Same features and functionality as the 7565
 - Use existing plug-in probes
 - Instrument case look and feel
 - Carrying case and accessories
- 7575 includes additional capabilities
- No change in pricing

Additional Capabilities of the 7575

- Bluetooth bi-directional communications
 - Download stored data to a PC
 - Remote polling from a PC
 - Program Test ID names from a PC
 - Supports 8934 wireless printer
- Supports additional probes
 - Volatile Organic Compounds (VOC) probes
- Added four Asian languages
 - Traditional Chinese
 - Simplified Chinese
 - Japanese
 - Korean
- Added dots to soft keys
- Updated instruction manual
- Updated specification data sheet





Pricing

- New models priced the same as the old models

2011 Pricing			
Model	US/INTL USD	Euro	GBP
9565	2135	1355	1120
9565-A	2290	1455	1210
9565-P	1290	815	680
9565-X	1090	690	570
7575	2935	1865	1550
7575-X	1090	690	570

Volatile Organic Compounds (VOC) Probes



- New Plug and Play accessory probes
- Compatible with the new 9565 VelociCalc and 7575 Qtrak
 - Also compatible with the 9555 VelociCalc and 7565 Qtrak
 - Firmware must be 2.10 or higher



What are Volatile Organic Compounds (VOC)



- Organic-based chemicals that off gas as vapors/gases
- Include:
 - Ammonia
 - commonly found in cleaning products
 - Chlorine
 - Disinfectants
 - Keeps swimming pools clean and sanitary
 - Plasticizers used in making plastics
 - Benzene
 - Used in the production of plastics, fuels, dyes, and synthetic rubber
 - Ethylene glycol
 - automotive antifreeze
 - Diesel fuel, gasoline, kerosene and propane vapors





Where Can VOC's Be Found

- Carpet and padding
- Various building materials
- Adhesives and caulks
- Oil based paints and varnishes
- Vinyl floors
- Cosmetics
- Cleaning and disinfecting products





VOC Health Effects

- Depends on the type of chemical, amount in air, exposure length, and personal sensitivity to a specific VOC
- Short term exposure may lead to headaches, nausea, eye irritation, ...
 - Sick building syndrome
- Long term exposure may increase risk sensitization or chronic illness/disease (e.g., cancer, etc....)





VOC Probe Applications

- Low concentration (ppb) models best suited for IAQ investigations and building commissioning where low level sensitivity is necessary
 - Building Commissioning
 - Sensitization investigations
- High concentration (ppm) models best suited for IAQ investigations and new construction where high levels may be encountered
 - Off-gassing of new building materials
 - Mold investigations
 - Point source tracking





VOC Probe Applications

- IAQ investigations
 - Complaints
 - Sick building syndrome
- Industrial hygiene surveys
- Building commissioning
 - i.e. LEED/Green Building Council
- Track down emissions to their source





Customers

- Commissioning agents
- Public Health Departments (County, State, and Federal levels)
- IAQ Consultants
- Industrial Hygienists
- Mold Remediation Companies
- Facilities/Maintenance Departments
- Contract Facilities/Maintenance Service Providers



VOC Probe Models

- Four models available
 - Low Concentration (ppb)
 - Model 984 - VOC and temperature
 - Model 986 - VOC, temperature, CO₂ and humidity
 - High Concentration (ppm)
 - Model 985 - VOC and temperature
 - Model 987 - VOC, temperature, CO₂ and humidity





VOC Probe Models

- Probe Models 986 and 987 with VOC, CO₂, temperature, and relative humidity include:
 - Probe
 - NIST traceable calibration certificate
 - VOC calibration collar
 - CO₂ calibration collar





VOC Probe Models

- Probe Models 984 and 985 with and temperature include:
 - Probe
 - NIST traceable calibration certificate
 - VOC calibration collar





VOC Sensor Technology

- Uses a Photo-Ionization Detection (PID) sensor to measure VOCs
- The PID uses an ultraviolet (UV) light source to ionize/break down VOCs
- The PID sensor measures the charge of the ionized gas
 - Charge is directly proportional to the concentration of VOCs in the air sample based on a calibration to isobutylene gas
- See Application Note TSI-147 for more information on VOC sensing technology



VOC Probe Features

- Calculates VOC exposure in mass concentration
- Compact size
- Competitively priced to others in the marketplace
 - Feature a lower cost of ownership due its compact design and construction which is geared for field service capability.



VOC Probe Features

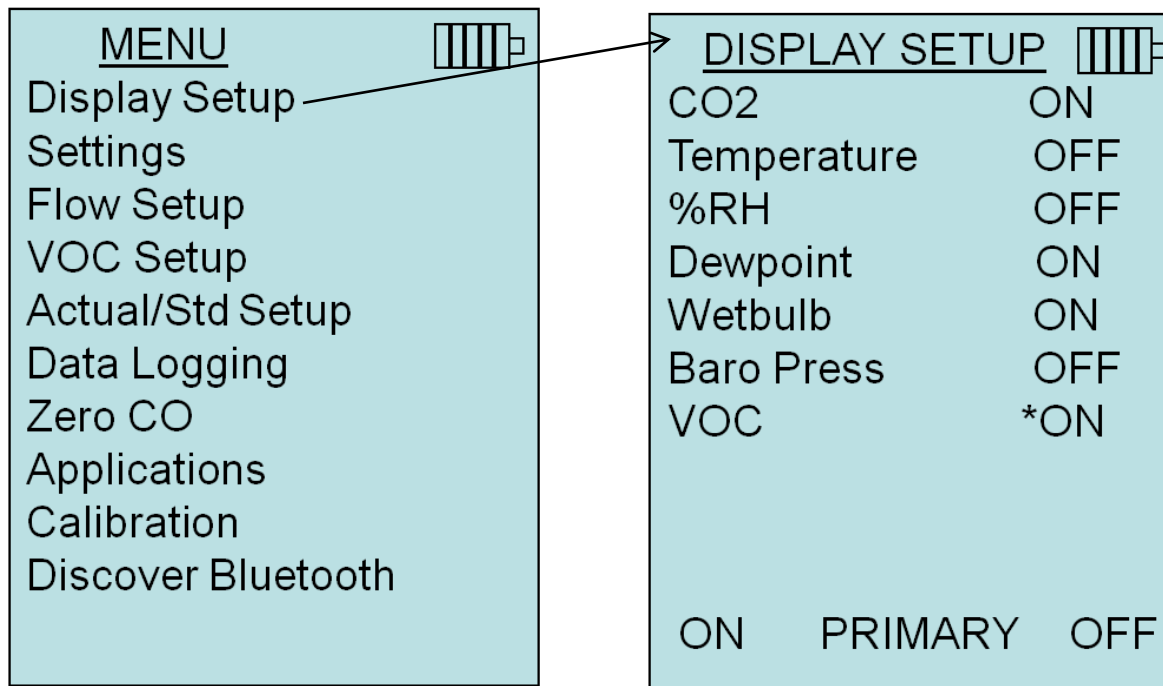
- Field calibration
 - Temperature
 - Relative humidity
 - Volatile organic compounds (VOC)
 - Carbon dioxide (CO₂)
- Field Maintenance
 - Replaceable sensors
 - Sensor maintenance
 - Lamp cleaning
 - Lamp replacement





VOC Probe Setup

1. Connect probe to meter
2. Turn instrument ON
3. Go to Display Setup menu
4. Choose measurements to appear on main screen



- When set to **PRIMARY**, measurement will be the large font on the display.

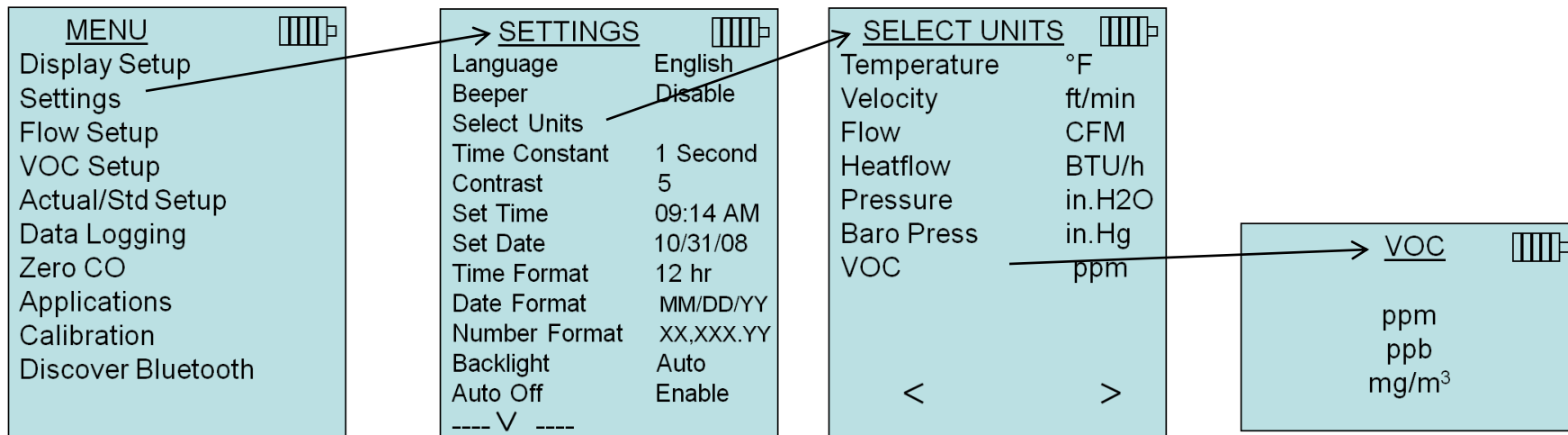
- When set to **ON**, measurement will be displayed as a secondary parameter (up to 4 can be displayed).

- When set to **OFF**, measurement will not be displayed.



VOC Probe Setup

- To change units of measurement:
 1. Go to the Settings menu
 2. Choose Select Units menu
 3. Adjust VOC unit of measurement





VOC Probe Setup for Mass Concentration

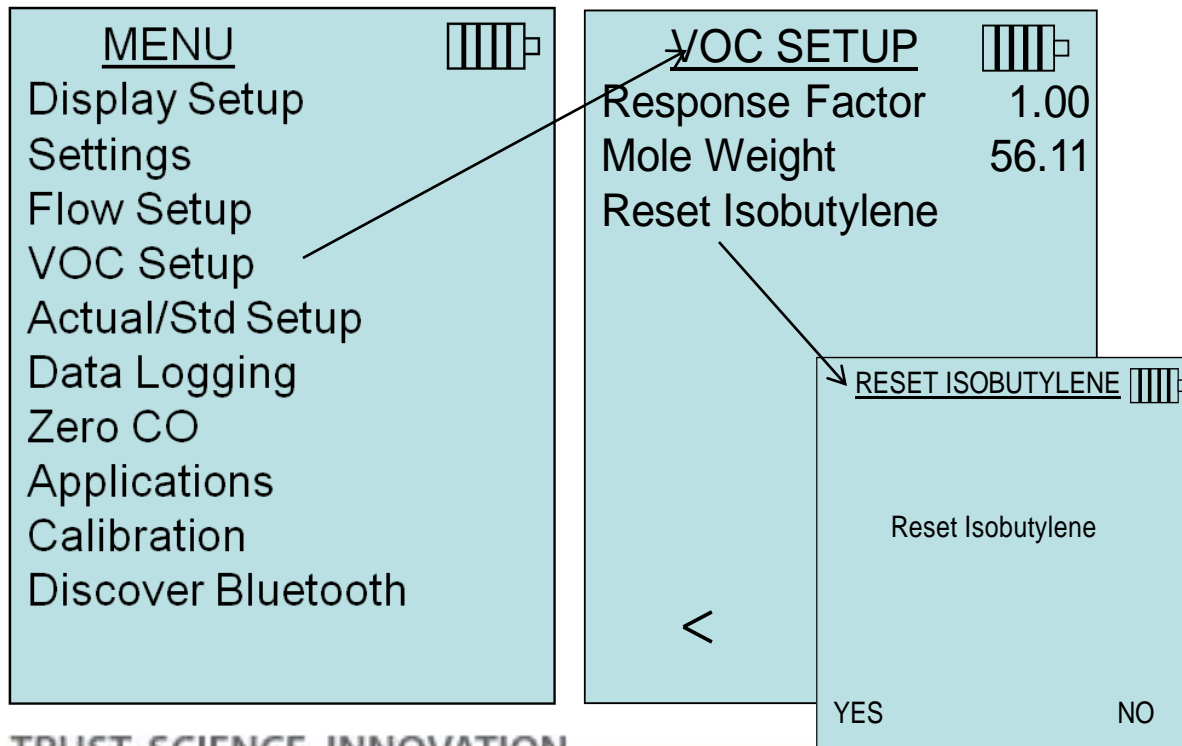
- Go to the VOC Setup menu
- Enter Response Factor
- Enter molecular (mole) weight

The **Response Factor** is used to calculate the actual concentration of a specific VOC.

The **Mole Weight** of a specific gas allows for converting concentration (PPM or PPB) to mass concentration (mg/m^3).

Reset Isobutylene will restore the factory to factory conditions for Isobutylene (56.11).

For more information, refer to Application Note TSI-148.





VOC Probe Setup for Mass Concentration

- Application Note TSI-148: Response Factors for VOC's
 - Lists data for specific VOC's
 - Response factors and molecular weights

Gas/VOC	CAS No.	Formula	Response Factor	Relative Response	MDL (ppb)	MDL (ppm)	Molecular Weight (g/mol)
Acetaldehyde	75-07-0	C ₂ H ₄ O	4.9	21	25	480	44.05
Acetic Acid	64-17-7	C ₂ H ₄ O ₂	36.2	3	180	3615	60.05
Acetic Anhydride	108-24-7	C ₄ H ₆ O ₃	4.0	25	20	400	102.1
Acetone	67-64-1	C ₃ H ₆ O	0.7	140	5	70	58.08
Acetonitrile	75-05-8	CH ₃ CN	ZR	ZR	ZR	ZR	41.05
Acetylene	74-86-2	C ₂ H ₂	ZR	ZR	ZR	ZR	26.04
Acrolein	107-02-8	C ₃ H ₄ O	4.0	25	20	400	56.06
Acrylic Acid	79-10-7	C ₃ H ₄ O ₂	2.7	36	15	275	72.06
Acrylonitrile	107-13-1	C ₃ H ₃ N	ZR	ZR	ZR	ZR	53.06
Allyl alcohol	107-18-6	C ₃ H ₆ O	2.1	48	10	200	58.08
Allyl chloride	107-05-1	C ₃ H ₅ Cl	4.5	22	20	450	76.53
Ammonia	7664-41-7	H ₃ N	8.5	12	40	850	17.03
Amyl acetate, n-	628-63-7	C ₇ H ₁₄ O ₂	1.8	56	10	180	130.2
Amyl alcohol	71-41-0	C ₅ H ₁₂ O	3.2	31	15	320	88.15
Aniline	62-53-3	C ₆ H ₇ N	0.5	200	3	50	93.13
Anisole	100-66-3	C ₇ H ₈ O	0.5	211	2	50	108.1

VOC Probe Pricing



Model	Description	US/Intl List	EURO List	GBP List
984	VOC (ppb), T probe	3110	2240	1900
985	VOC (ppm), T probe	2850	2050	1740
986	VOC (ppb), CO2, T, H probe	3650	2630	2230
987	VOC (ppm), CO2, T, H probe	3540	2550	2165
CL-984	Calibrate 984 Probe	270	155	130
RP-984	Repair 984 Probe	460	265	225
CL-985	Calibrate 985 Probe	270	155	130
RP-985	Repair 985 Probe	460	265	225
CL-986	Calibrate 986 Probe	360	210	180
RP-986	Repair 986 Probe	570	330	280
CL-987	Calibrate 987 Probe	360	210	180
RP-987	Repair 987 Probe	570	330	280
801780	Replacement Lamp with spring, ppm	235	170	145
801781	Replacement Electrode Stack and Tool, ppm	115	85	70
801782	Lamp cleaning kit with Spring	150	110	90
801783	Replacement PPM sensor	1250	905	770
801784	Replacement PPB sensor	1140	825	700
801785	Replacement Lamp with spring, ppb	235	170	145
801786	Replacement electrode stack and tool, ppb	115	85	70



VOC Probe Resources

- VOC Probe specification data sheet
- 9565 Specification sheet
- 7575 Specification sheet
- Application notes
 - TSI-146 Field Calibration
 - TSI-147 PID Technology
 - TSI-148 PID Response Factors
 - TSI-149 VOC Probe Maintenance



VOC Probe Resources



Ventilation Test Instruments



Volatile Organic Compounds (VOC) Indoor Air Quality Probes

TSI VOC probes are pre-calibrated, plug-and-play accessory probes for multi-purpose meters Models 7575 Q-Trak monitor and 9565 VoloCuc® meter. When combined with these meters, long-term data analysis can be performed and reported which is useful for monitoring or investigating the indoor environment.

Applications

- IAQ investigations
- Industrial hygiene surveys
- Building commissioning
- Track down emissions to their source

Data Collection and Reporting

Expanded data logging capacity and the inclusion of TruPro Data Analysis Software provides the capabilities to work more effectively and efficiently. The Q-Trak monitor can store up to 38.9 days of data collected at one-minute log intervals. The stored data can be recalled, reviewed on screen, and downloaded for easy reporting. TruPro software helps you to generate professional graphs for your reports.



Features and Benefits

- Pre-calibrated plug-and-play accessory probe for TSI Models 7575 Q-Trak™ monitor and 9565 VoloCuc® meter
- Compact design with ergonomic handle
- Four versions available with multiple measurement capability
 - Model 984 - Low concentration (ppb) VOC and temperature
 - Model 985 - High concentration (ppm) VOC and temperature
 - Model 986 - Low concentration (ppb) VOC, temperature, CO₂ and humidity
 - Model 987 - High concentration (ppm) VOC, temperature, CO₂ and humidity
- Calculates VOC exposure in mass concentration
 - Requires knowledge of VOC being measured
 - Enter specific response factor into meter
- Two-year factory warranty
- Send only the probe back for factory calibration

ENERGY AND COMFORT

Ventilation Test Instruments



Field Service

TSI VOC probes are competitively priced to others in the marketplace but feature a lower cost of ownership due to its compact design and construction which is geared for field service capability.

- Field calibration
 - Temperature
 - Relative humidity
 - Volatile organic compounds (VOC)
 - Carbon dioxide (CO₂)
- Replaceable sensors
- Sensor maintenance
 - Lamp cleaning
 - Lamp replacement



Instrumentation

The 7575 Q-Trak monitor or 9565 VoloCuc meter feature a menu-driven user interface for easy operation. VOC probes are also compatible with Anelov™ Instruments TM60 series and TSI's discontinued 7565 and 9555 series, if instrument firmware is at revision 2.10 or higher.

On-screen prompts and step-by-step instructions guide the user through operation and field calibration. These instruments also feature an ergonomic, over-molded case design and a keypad layout to prevent tampering during unattended use.

- Display up to five measurements simultaneously
- Log multiple parameters to investigate trends
- Calculate dew point, wet bulb and percent outside air (VOC models 986 and 987)
- Store up to 38.9 days of data collected at one-minute log intervals
- User-selectable logging intervals and start/stop times
- Internal barometric pressure sensor
- Download data to TruPro™ data analysis software
 - Report generation
 - Graph creation
 - Instrument programming

Specifications

VOC Probes for Multi-Purpose Meters Models 984, 985, 986, and 987

Model 984 Low Concentration (ppb) VOC and Temperature
 Range 10 to 20,000 ppb, 14 to 140°F (-10 to 60°C)
 Accuracy ±1.0°F (+0.5°C)
 Resolution Up to 10 ppb, 0.1°F (0.1°C)

Model 985 High Concentration (ppm) VOC and Temperature
 Range 1 to 2,000 ppm, 14 to 140°F (-10 to 60°C)
 Accuracy ±1.0°F (+0.5°C)
 Resolution Up to 10 ppm, 0.1°F (0.1°C)

Model 986 Low Concentration (ppb) VOC, Temperature, CO₂, and Humidity
 Range 10 to 20,000 ppb, 0 to 5,000 ppm CO₂
 14 to 140°F (-10 to 60°C), 5 to 95% RH
 Accuracy ±3% of reading or 50 ppm, whichever is greater
 ±1.0°F (+0.5°C), ±3% RH
 Resolution Up to 10 ppb, 0.1 ppm CO₂, 0.1°F (0.1°C), 0.1% RH

Model 987 High Concentration (ppm) VOC, Temperature, CO₂, and Humidity
 Range 1 to 2,000 ppm, 0 to 5,000 ppm CO₂
 14 to 140°F (-10 to 60°C), 5 to 95% RH
 Accuracy ±3% of reading or 50 ppm, whichever is greater
 ±1.0°F (+0.5°C), ±3% RH
 Resolution Up to 10 ppm, 0.1 ppm CO₂, 0.1°F (0.1°C), 0.1% RH

Probe Dimensions
 Length 7.0 in. (17.8 cm)
 Base Diameter 0.75 in. (1.9 cm)
 Tip Diameter 1.0 in. (2.54 cm)

Note: The 984 and 986 probes are designed to measure ppb concentrations of VOCs. The 10 to 20,000 ppb range corresponds to 0.01 to 20 ppm.

* Accuracy with instrument case at 77°F (25°C), and uncertainty of 0.5°F (0.2°C) for change in instrument temperature.

† Accuracy with probe at 77°F (25°C). Add uncertainty of 0.1% RH/F (0.2% RH/°C) for change in probe temperature. Includes 1% hysteresis.

Q-Trak, TruPro, and VoloCuc are trademarks of TSI Incorporated.

Specifications are subject to change without notice.

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Contact your local TSI Distributor or visit our website www.tsi.com for more detailed specifications.

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Product Availability

- New meters and VOC probes are available **Now**
 - Orders coming in for the old 9555 or 7565 will be automatically switched to the 9565 or 7575





Website Updates

- New product information will be uploaded to the website April 1





Price Catalogs

- Updated price catalogs will be sent out with your TAP 2011 packet
 - Contingent when 2011 TAP agreement is signed
 - Those who have signed, information will be sent out within 5 working days

Questions???



Thank You!!!

