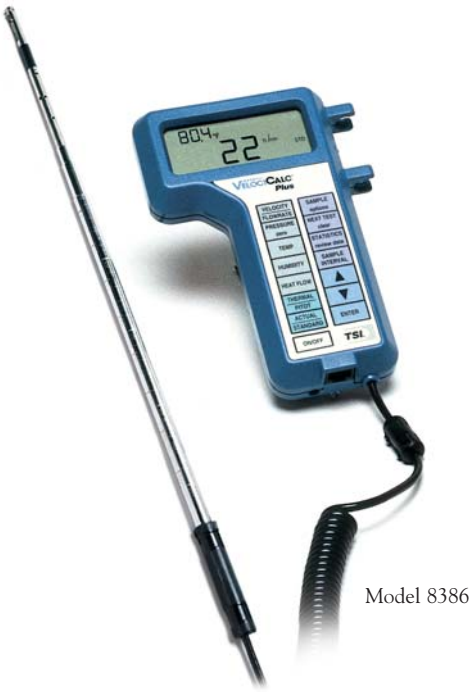
VelociCalc® Plus Multi-Parameter Ventilation Meters


Model 8386

TSI's VelociCalc Plus Multi-Parameter Meters simultaneously measure and data log several vent-ilation parameters using a single probe with multiple sensors. Based on the model, these hand-held instruments measure velocity, temperature, differential pressure and humidity. All versions calculate volumetric flowrate. The Model 8386 also performs dew point, wet bulb temperature and heat flow calculations.

Data Logging Capabilities

- Data logging ability allows user to log 1394 samples with a time and date stamp
- Simultaneously records all parameters available in each model
- Single point and continuous data logging modes to fit your application
- Data can be reviewed on-screen, printed or downloaded to a computer spreadsheet program
- TSI downloading software permits easy transfer of data to a computer
- Statistics function displays average, maximum and minimum values, and the number of recorded samples

Features and Benefits

- Wide velocity range of 0 to 10,000 ft/min
- Flowrate feature makes simple calculations of volumetric flowrate when the user inputs the duct shape and size, K factor or horn size
- Velocity measurements are made from the thermal sensor or a Pitot tube
- Automatic conversion between actual and standard velocity readings
- Direct calculation of dew point and wet bulb temperature - no psychrometric chart needed (Model 8386 only)
- Heat flow function calculates heat transferred after a heating or cooling element (Model 8386 only)
- Stable digital display when measuring fluctuating flows
- Back-lit display is easy to read in poor lighting conditions
- 40 inch telescoping probe with etched length marks to make duct traverse measurements easier
- Optional articulating probe available
- Optional portable printer provides hard copy documentation of your measurements

Specifications

Models 8384(A), 8385(A) and 8386(A)**

Velocity From Thermal Sensor (all models)

Range	0 to 9,999 ft/min (0 to 50 m/s)
Accuracy[1&2]	±3.0% of reading or +±3 ft/min (± .015 m/s), whichever is greater
Resolution	1 ft/min (0.01 m/s)

Velocity From a Pitot Tube (Models 8385(A) and 8386(A)):

Range[3]	250 to 15,500 ft/min (1.27 to 78.7 m/s)
Accuracy[4]	±1.5% at 2,000 ft/min (10.16 m/s)
Resolution	1 ft/min (0.01 m/s)

Volumetric Flowrate (all models)

Range	Actual range is a function of maximum velocity, pressure, duct size, and K factor

Duct Size (all models)

Range	1 to 250 in. in increments of 0.1 in. (1 to 635 cm in increments of 0.1 cm)

Static/Differential Pressure (Models 8385(A) and 8386(A)):

Range[5]	-5 to +15 in. H_2O (-9.3 to +28.0 mmHg, or -1245 to +3735 Pa)
Accuracy[6]	±1% of reading ±0.005 in. H_2O (±1 Pa or ±0.01 mmHg) ±0.02%/°F (±0.03%/°C)
Resolution	0.001 in. H_2O (1 Pa, 0.01 mmHg)

Instrument Temperature Range

Operating (Probe-8384 (A) and 8385 (A))
0 to 200°F (-17.8 to 93.3°C)

Operating (Probe-8386 (A))
14 to 140°F (-10 to 60°C)

Operating (Electronics)
40 to 113°F (5 to 45°C)

Storage	-4 to 140°F (-20 to 60°C)
Resolution	0.1°F (0.1°C)
Accuracy[7]	±0.5°F (±0.3°C)

Relative Humidity (Model 8386(A) only)

Range	0 to 95% rh
Accuracy[8]	±3% rh
Resolution	0.1% rh

Wet Bulb Temperature (Model 8386(A))

Range	40 to 140°F (5 to 60°C)
Resolution	0.1°F (0.1°C)

** Where 83XX(A) is listed, the specifications apply to both the 83XX (straight probe) and 83XX A (articulating probe) models.

1 Temperature compensated over an air temperature range of 40 to 150°F (5 to 65°C)
2 The accuracy statement of ±3.0% of reading or ±3 ft/min (±0.015 m/s), whichever is greater, begins at 30 ft/min through 9,999 ft/min.
3 Pressure velocity measurements are not recommended below 1,000 ft/min and are best suited to velocities over 2,000 ft/min. Range can vary depending on barometric pressure.
4 Accuracy is a function of converting pressure to velocity. Conversion accuracy improves when actual pressure values increase.
5 Overpressure range = 275 in H_2O (520 mmHg, 69 kPa)
6 Accuracy with instrument case at 77° F (25°C), add uncertainty of 0.02 %/°F (0.03%/°C) for change in instrument temperature.
7 Accuracy with instrument case at 77°F (25°C), add uncertainty of 0.05°F/°F (0.03°C/°C) for change in instrument temperature.
8 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.

Specifications are subject to change without notice.

Dewpoint (Model 8386(A) only)

Range	5 to 120°F (-15 to 49°C)
Resolution	0.1°F (0.1°C)

Heat Flow (Model 8386(A) only)

Range	Function of Flow Rate, Temperature, Humidity and Barometric Pressure
Measurements Available	Sensible Heat Flow, Latent Heat Flow, Total Heat Flow and Sensible Heat Factor
Units Measured	BTU/h, kW

Logging Capability (all models)

Range	Up to 1394 samples and 275 test id's (one sample can contain up to all eleven measurement types)
Intervals	2 sec, 5 sec, 10 sec, 15 sec, 20 sec, 30 sec, 60 sec, 2 min, 5 min, 10 min, 15 min, 20 min, 30 min, 60 min

Time Constant (all models)

Intervals	1 sec, 2 sec, 5 sec, 10 sec, 15 sec, 20 sec

External Meter Dimensions (all models)

Size Measurements	4.2 in. × 7.2 in. × 1.5 in. (10.7 cm × 18.3 cm × 3.8 cm)

Meter Probe Dimensions (all models)

Probe Length	40 in. (101.6 cm)
Probe Diameter (Tip)	0.276 in. (7.01 mm)
Probe Diameter (Base)	0.395 in. (10.03 mm)

Articulating Probe Dimensions (Models 8384A, 8385A, 8386A)

Articulating Section Length	6.4 in. (16.26 cm)
Diameter of Articulating Knuckle	0.372 in. (9.44 mm)

Meter Weight Dimensions (all models)

Weight (with batteries)	1.2 lbs (0.54 kg)

Power (all models)

Requirement:	Four AA-size batteries (included) or AC adapter (optional)

Model	Velocity	Volumetric Flowrate	Temperature	Differential Pressure	Thermal/Pitot	Humidity	Dewpoint	Wet Bulb Temperature	Heat Flow Calculations	Data Logging/Downloading	Statistics/Review Data	Density Correction Factor	Variable Time Constant	Articulating Probe	Printer Output	NIST* Calibration Certificate
8384	●	●	●							●	●	●	●		●	●
8384A	●	●	●							●	●	●	●	●	●	●
8385	●	●	●	●	●					●	●	●	●		●	●
8385A	●	●	●	●	●					●	●	●	●	●	●	●
8386	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●
8386A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

All models are available with either a straight or articulating probe.
*U.S. National Institute of Standards and Technology.