

# FLOW INSTRUMENTATION

Tools for all your gas flow measurements

OCTOBER 2020



# 5000 SERIES, WHAT'S NEW?

- USB Communications and power
- Colour touch screen
- Changeable tube ends
- Bidirectional sensing
- Multiple gas calibrations to reduce lifetime calibration costs
- Differential Pressure sensing options
- Relative Humidity compensation options
- Datalogging options
- Companion software suite bringing many new features



## TSI 5000 SERIES

The new 5000 series are the next generation of mass flow meters for analysing gas flows. The 5200 Series flow body is designed with a reduced internal volume to minimize circuit dead space and provide highly accurate volume measurements at up to 30 litres per minute. The 5300 series is a general purpose flowmeter for flows as high as 300 litres per minute.

### Features

- 4 millisecond bi-directional flow response
- High accuracy ( $\pm 2\%$  of reading,  $\pm 1.5\%$  of reading optional)
- Low pressure drop minimizes back pressure
- Wide dynamic operating range (1000:1 turndown ratio)
- Multiple gas calibrations available, user-selectable

### Applications

- Product Development
- Manufacturing
- Quality Assurance

## ACCESSORIES

Full range of parts and accessories on our website



SUITABLE FOR  
**TSI 5300 SERIES**

### INLET FILTER – HIGH PRESSURE

High Flow Filter, HEPA, 3/8 inch female NPT connection. Max operating pressure 50 PSI @70 F. Used in higher pressure applications.



SUITABLE FOR  
**TSI 5300 SERIES**

### INLET FILTER – LOW PRESSURE

High Flow Filter, HEPA, 22mm OD and 22mm ID connection. Resistance ~ 1.0 cm H<sub>2</sub>O @ 60 L/min. Used in low pressure applications.



SUITABLE FOR  
**TSI 5000 SERIES**

### FLO-SIGHT PC SOFTWARE (ADV)

Allows users to control and operate their 5000 Series Flow Multi-Meter directly from their computer. Enables additional functionality and configuration options not available from the Meter itself.



SUITABLE FOR  
**TSI 5000 SERIES**

### DELUXE CARRYING CASE

9.5 x 13.75 x 4.75 inches, divided into 5 sections, padded. Compatible with all 5000 Series models.



SUITABLE FOR  
**TSI 5000 SERIES**

### WALL MOUNTING KIT

Includes wall back plate, meter plate, three (3) M3 x 8mm screws, and two (2) 8-32 x 3/8 inch screws.



SUITABLE FOR  
**TSI 5000 SERIES**

### TABLETOP STAND

Steel stand with rubber feet, includes three (3) screws (M3 x 8mm).

# PRODUCT SELECTOR



## LOW FLOW 5200 SERIES

## HIGH FLOW 5300 SERIES

Flow Range	0-30 Std L/min			0-300 Std L/min	
MODEL FEATURES	Base (5200, 5300)	Advanced (5210, 5310)	Humidity (5220, 5320)	High Accuracy (5230, 5330)	Wide Accuracy (5203, 5303)
Flow, Totalizer Measurements	X	X	X	X	X
Temperature, Absolute Pressure Measurements	X	X	X	X	X
Volume Measurement (Displayed on screen)		X	X	X	
Differential Pressure Measurement		X	X	X	
Data Logging		X	X	X	
Relative Humidity Measurement			X	X	
Humidity Compensation			X	X	
Higher Accuracy (1.7% of reading)				X	
Tabletop Stand Included				X	
Wide Accuracy Spec (3% of reading)					X
GASES TO BE MEASURED	Air, N <sup>2*</sup>	Air, O <sub>2</sub> , Air/O <sub>2</sub> mix, N <sup>2*</sup>	Air, CO <sub>2</sub> , N <sup>2*</sup>	O <sub>2</sub> Only	CO <sub>2</sub> Only
<b>5200 Series Low Flow</b>					
Base Model	5200-1	5200-2	5200-3	5200-6	5200-7
Advanced Model	5210-1	5210-2	5210-3	5210-6	5210-7
Humidity Model		5220-2			
High Accuracy Model		5230-2			
Wide Accuracy Spec Model		5203-2			
<b>5300 Series High Flow</b>					
Base Model	5300-1	5300-2	5300-3	5300-4	5300-5
Advanced Model	5310-1	5310-2	5310-3	5310-4	5310-5
Humidity Model		5320-2			
High Accuracy Model		5330-2			
Wide Accuracy Spec Model		5303-2			

\* Nitrogen gas is a correction from the air calibration

# FLOWMETER BROCHURE

TSI thermal mass flow meters incorporate a proprietary platinum film sensor design for measuring gas flows in applications demanding fast response, low pressure drop, and high accuracy over a wide flow range.

## GENERAL PURPOSE FLOWMETERS

### TSI 4000 SERIES



The TSI 4000 Series Mass Flowmeters can be used for a multitude of gas flow measurement applications. They provide accurate results with multiple data output options. The meters have an accuracy specified as two percent of reading with a quick four-millisecond response time ensuring accuracy in fluctuating flows.

#### Features

- 4 millisecond flow response
- High accuracy  $\pm 2\%$  of reading
- High turndown ratio
- Low pressure drop
- Convenient analog output of flow rate
- 4040 handles 0 - 300 litres per minute
- 4140 handles 0 - 20 litres per minute

#### Applications

- Medical
- Industrial
- Laboratory

## ACCESSORIES

Full range of parts and accessories on our website

SUITABLE FOR

TSI 4040 SERIES

TSI 4140 SERIES



### TSI 4199 FLOWMETER BATTERY PACK

Flowmeter Battery Pack, includes six AA-size batteries.

SUITABLE FOR

TSI 4043

TSI 4045



### TSI 1602345 FILTER .375 INCH, FNPT, HEPA GRADE, LOW PRESSURE DROP

Filter, 3/8" FNPT, HEPA Grade, Low Pressure Drop. For use with flowmeter models 4043, 4045.

SUITABLE FOR

TSI 4146



### TSI 1040229 DAMPENING CHAMBER MODULE

Dampening Chamber Module for 4146 Primary Calibrator.

SUITABLE FOR

TSI 4040 SERIES



### INLET FILTER – HIGH PRESSURE

High Flow Filter, HEPA, 3/8 inch female NPT connection. Max operating pressure 50 PSI @70 F. Used in higher pressure applications.

SUITABLE FOR

TSI 4140 SERIES



### INLET FILTER – LOW PRESSURE

High Flow Filter, HEPA, 22mm OD and 22mm ID connection. Resistance ~ 1.0 cm H<sub>2</sub>O @ 60 L/min. Used in low pressure applications.

# PRODUCT COMPARISON



## LOW FLOW 4140 SERIES

## HIGH FLOW 4040 SERIES

Model	41401	4140	41403	4143	41433	40401	4040	4043	4045
Gas Calibration	Air	Air, O <sub>2</sub> , N <sub>2</sub>	Air, O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O	Air, O <sub>2</sub> , N <sub>2</sub>	Air, O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O	Air	Air, O <sub>2</sub> , N <sub>2</sub> , Air/O <sub>2</sub> Mixture		
Inlet/Outlet Diameter	6.4 mm			9.53 mm		22 mm ISO tapered		12.7 mm	19.1 mm
Flow Measurement	Range (Std L/min)	0.01-20				0-300		0-200	0-300
	Accuracy (Air or O <sub>2</sub> )	±2% of reading or 0.005 Std L/min*				±2% of reading or 0.05 Std L/min*			
	Accuracy (N <sub>2</sub> )	±3% of reading or 0.010 Std L/min*				±3% of reading or 0.1 Std L/min*			
	Accuracy (Air/O <sub>2</sub> mixture)	N/A				N/A	±3% of reading or 0.1 Std L/min*		
	Accuracy (N <sub>2</sub> O)	N/A	±3% of reading or 0.010 Std L/min*	N/A	±3% of reading or 0.010 Std L/min*	N/A			
Response	4 ms to 63% of full scale flow								
LCD Display Units	L/min, Std L/min, cm <sup>3</sup> /min, Std cm <sup>3</sup> /min					L/min, Std L/min			
Overall Dimensions	127 mm x 49 mm x 32 mm					182 x 63 x 53 mm			
Volume** Measurement	Range	0.01 – 99.9 liters							
	Accuracy	±2% of reading							
Pressure Measurement	Range	50-199 kPa absolute							
	Accuracy	±1 kPa							
	Response	<4 ms to 63% of final value for step change							
Temperature Measurement	Range	0-50°C							
	Accuracy	±1°C at flow greater than 1 Std L/min							
	Response	<75 ms to 63% of final value for step change							
Outputs	Analogue	0-10 VDC flow only, zero and span adjustable via RS232							
	Digital	RS232							
DC Power Input	7.5 VDC ±1.5 V, 300 mA max								
Mounting Threads	6-32, 6 mm					8-32, 6 mm			

\*Whichever is greater \*\*Supplied through RS232 port only.

Specifications subject to change without notice.

# PRIMARY CALIBRATORS

Why is the adjustment and primary calibration of air sampling instruments necessary? Instruments that sample air must be flow adjusted, calibrated and routinely checked to ensure the accuracy of flow rate. The frequency of flow adjustment and/or calibration depends on the use, care and handling of the air sampling instruments and the regulations they are complying with. Determining exposure to various physical, chemical, radiological and biological substances is based on the accuracy of the total volume of air sampled and the sample duration. Personal sampling pumps must be calibrated before and after each use and routinely checked during use. Flow calibrators are used to adjust and measure the flow rate of air sampling instruments.



## TSI 4000/4100 SERIES

This small, portable, battery-operated unit is lightweight and easy to use. Volumetric flowrate is displayed continuously so adjustments to pump flow can be made in real-time. This primary calibrator is accurate to +/- 2% of reading.

TSI 4046 has a range of 2.5 to 300 litres per minute (lpm)

TSI 4146 has a range of 0.01 to 20 liters per minute (lpm)

### Features

- Provides continuous real-time volumetric flow rate readings, so pump adjustment and calibration is fast and easy
- Battery powered, compact and lightweight
- Field portable — use the same primary calibrator for adjustment, calibration and periodic checks
- Comes with a NIST traceable calibration certificate
- Kits come complete and are ready to use

### Applications

- Environmental sampling
- Indoor air quality
- Industrial hygiene sampling

## ZEFON DIGICAL PRIMARY CALIBRATOR

A primary calibration device, the Zefon DigiCal™ Primary Flow Calibrator provides instantaneous readings when calibrating instruments like Zefon Escort ELF and Zefon Escort LC Sampling Pumps. Just press the plunger and the DigiCal™ does the work. Its friction-less flow cell replaces conventional bubble tubes and makes calibration easier. The DigiCal™ achieves extreme accuracy by utilising a quartz-controlled timer and microprocessor to provide instantaneous flow measurement and digital display. Each DigiCal™ is shipped complete with calibrator, charger, soap solution, dispenser bottle and operation manual.

### Features

- True primary standard
- Compact, lightweight, easy to use
- Work at any altitude without correction
- Instant readout of volumetric flow
- ± 0.5% accuracy
- Microprocessor controlled to provide fast, accurate, repeatable measurements



# VENTILATOR TEST SYSTEMS

Without ventilator test instruments, biomedical equipment technicians (BMETs) and medical professionals – including doctors and nurses – cannot be sure that the medical equipment in use is functioning properly, putting everyone at risk, most importantly the life of the patient. TSI's Certifier® Gas Flow Analysers save you time and money in measuring a wide range of biomedical testing parameters including gas flow, volume, pressure, temperature and concentration, as well as breathing parameters, and offer the flexibility of testing a wide range of medical equipment including mechanical ventilators, anaesthesia machines, CPAPs and BPAPs, air oxygen blenders, insufflators and oxygen concentrators.



## TSI 4070 CERTIFIER FA

The TSI 4070 Certifier FA Ventilator Test System is capable of testing multiple parameters of ventilator performance. It is designed to measure air, oxygen, and nitrous oxide flow and pressure in institutional, home care, field service, laboratory, and production applications. The 4070 is a battery-operated flow analyzer that can also test a variety of other medical equipment such as anesthesia gas delivery machines and oxygen concentrators.

### Features

- Simple, easy to read, user interface
- Backlit LCD display
- Entire kit weighs less than 1.4 kg
- Volumes and flow in BTPS, ATP, or STP

### Applications

- Ventilator testing
- Anesthesia gas delivery machine testing
- Oxygen concentrator testing



## TSI 4080 CERTIFIER FA PLUS

The TSI 4080 Certifier FA Plus Ventilator Test System is the full-feature system capable of testing virtually all models of ventilators: adult, pediatric, anesthesia, neonatal and high-frequency. It can also test a variety of other medical equipment such as anesthesia gas delivery machines, insufflators and oxygen concentrators. Its compact size makes this ventilator tester ideal for use in field service, biomedical shops, and manufacturing.

### Features

- Color touch screen graphical user interface
- Real-time graphing mode
- Bi-directional flow measurement
- Data storage using SD Flash card and internal memory
- Access stored data through USB interface
- Report printing capability
- Rechargeable battery plus AC operation
- Meets RoHS Directive 2011/65/EU

### Applications

- Ventilator testing
- Anesthesia gas delivery machine testing
- Oxygen concentrator testing

# KENELEC SCIENTIFIC

## Our company:

Established in 1962, Kenelec Scientific is one of Australia's leading scientific and environmental technology companies. Based in Melbourne, with distributors located throughout Australia and New Zealand, we are industry leaders in the supply of globally sourced, latest generation technologies at competitive prices.

## Our services:

### Sales

Buy the latest equipment from some of the most trusted brands in the industry.

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Rent or rent-to-buy the latest instruments for the duration that you need them.

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In addition to the options in this catalogue, we also offer a number of other specialised monitoring solutions, as well as being able to build a system to meet your exact requirements.



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Desktop Aerosol Monitor**  
simultaneous real-time  
measurements



**TSI AM520i  
Personal Monitor**  
real-time readings



**TSI 8048 PortaCount  
Respirator Fit Tester**  
quantitative respirator  
fit tester



**TSI 9306 AeroTrak  
Handheld Particle Counter**  
versatile handheld particle  
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