

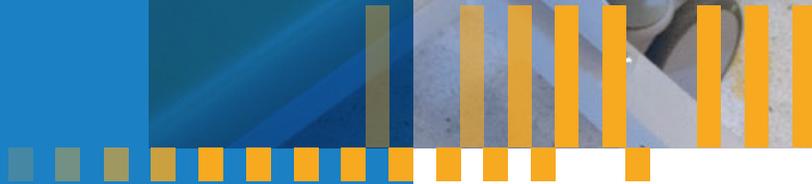


® Knowledge
Beyond
Measure.



TSI® Certifier™ Flow Analyzers

Ventilator Test Systems



TSI® - The Experts in Flow Measurement

Certifier™ Pro and Certifier™ Plus Flow Analyzers

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TSI® is now offering ISO 17025:2017 accredited calibrations for mass flow meters and Certifier™ flow analyzers

TSI's accredited calibration offerings conform to the ISO 17025 standard. Accredited calibration certificates include multi-point data, pass/fail statements, and flow measurement uncertainty values.

Customer Benefits of ISO 17025 Accredited Instruments Include:

- Reduces the risk of audit or compliance failures
- Saves time and money with a single document with full traceability
- Demonstrates product safety and efficacy
- Increases confidence in the measurements from your test instruments
- Signals your high quality and improves your reputation

ISO 17025 accreditation is a globally-recognized benchmark for precision, accuracy and reproducibility of analytical results. It is an international standard used as a means of determining the technical competence of laboratories to perform specific types of testing, measurement and calibration.

Scan QR code or email answers@tsi.com to learn more about accredited calibrations for TSI® flow instruments



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TSI® Flow Instruments - At Your Service Worldwide

Enjoy unparalleled high-quality services with reduced turnaround time thanks to TSI® regional centers.

- ★ **Shoreview, MN | US**
- ★ **High Wycombe | UK**
- ★ **Singapore | Singapore**



ISO
17025
Certified

We offer Accredited Calibration ISO17025 for select products at Shoreview and High Wycombe facilities.



Testing Biomedical Equipment Has Never Been Easier

Benchtop and Handheld Test Systems

Certifier™ flow analyzers are multi-functional test instruments used by manufacturers and biomedical professionals to test a wide range of respiratory medical devices such as mechanical ventilators, anesthesia machines, air-oxygen blenders, oxygen concentrators, insufflators, and CPAPs, APAPs, or BiPAPs.

Intuitive and familiar interface is simple to use

- High resolution, color touchscreen
- Displays 1 to 18 parameters at a time
- View all data and settings from a single screen

Easy instrument setup and operation

- Automatic breath detection
- Real-time graphing and trigger indicators
- User configurations to save test setups

Measurements you can trust

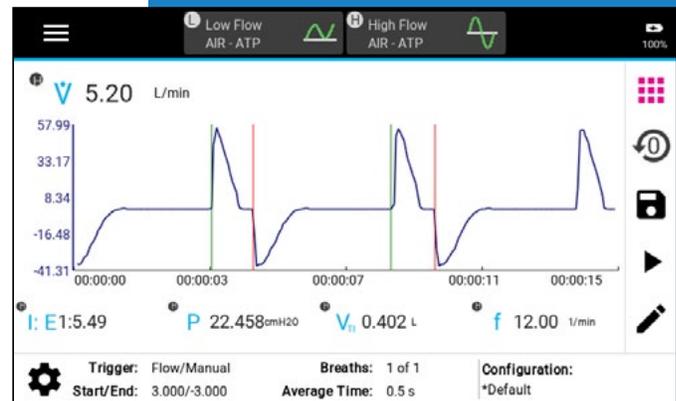
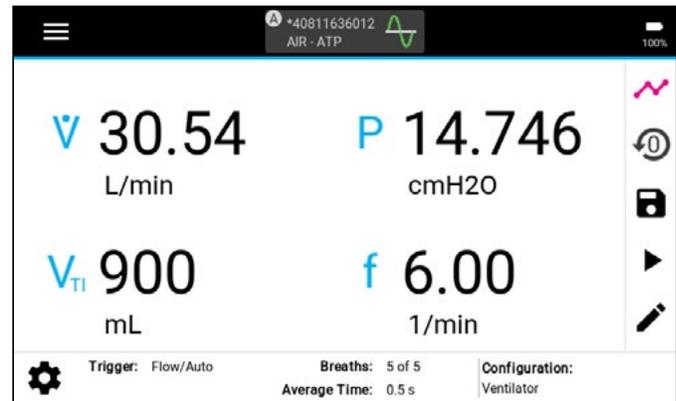
- Measures 31 different test parameters
- Highly accurate and reliable flow measurements
- Oxygen sensor and anesthesia sensor integration options

Data acquisition and reporting options

- Pause display, save test data and screenshots
- Saves to Certifier and exports via USB
- Optional wireless mobile app integration

Robust instrument design

- Field serviceable rechargeable battery
- Durability to withstand daily use and transport
- Certifiers include 2-year standard warranty



Certifier™ Flow Analyzers Product Family

TSI® offers a portfolio of Certifier™ flow analyzer solutions to best meet individuals' test equipment preferences and biomedical testing needs. Certifier™ flow analyzer models are complimentary to each other and users can easily switch between the different models without additional product training.

Same User Interface and Operation

- Same touchscreen operation to add, change, or move measurement parameters and units
- Same screen layout and graphical elements
- Font size automatically resizes based on number of measurements selected

Shared Components

- Many accessories can be shared between Certifier models
- Such as inlet filters, connectors, battery pack, power supply, test lungs, stylus, and more

Common Functionality

- Configurations can be transferred between Certifier models
- Automatic breath detection and trigger indicators
- Save data and screenshots with USB export
- Oxygen sensor calibration process

Choose the Certifier model that's right for you

Models	Certifier Pro Benchtop 4090	Certifier Plus Handheld 4080-S, 4080-F
System Design	All-in-one design, integrates high and low flow channels plus oxygen sensor	Modular design, cable connects flow module(s) to interface module
Flow Accuracy	1.75% of reading	2% of reading
Oxygen Sensor	Internal	External with optional 4073 kit
Battery Operation	6-8 hours	8+ hours
User Benefits	Faster test setups and fewer components to manage	Highly portable with multiple mounting options
Ordering	Easy to order with a single model number	Flexibility to order a test system or individual modules as needed



tsi.com/certifiers

Certifier™ Pro Flow Analyzer Benchtop Test System

Model 4090

Combines measurements in a single analyzer

- High flow, low flow, pressures
- Integrated oxygen sensor, TSI® calibrated

High accuracy measurements

- Flows at 1.75% of reading
- Pressures at 0.5% of reading

Exceptional usability

- Less cabling for easy test setups
- Battery operation (6 hours) power down flow channels to extend operation
- O₂ sensor and battery are field replaceable



Certifier™ Pro Flow Analyzer Model 4090 Accessories (also available separately)

Specify	Description
4090	Certifier Pro Flow Analyzer
1602341	High Flow Inlet Filter, 22 mm x 22 mm M/F, HEPA
1602317	Low Flow Inlet Filter, 1/4 inch, HEPA, plus tubing
1611221	Adapter, high pressure port
1102091	Adapter, 22 mm x 6 mm, qty 2 (to connect to Low Flow Filter to high flow channel using 130373 F/F adapter)
1102093	Adapter, 15 mm ID x 22 mm OD
130373	Adapter, 22mm F to 22mm F, Straight
130374	Adapter, 15mm M to 22mm F, Pediatric cuff
1611330	Airway pressure fitting with screen
3002053	Pressure tubing, silicone, 1/8-inch ID x 1/4-inch OD x 48 in.
130400	Power supply 100/240 VAC to +12 VDC 2.1 mm plug, includes plug set with NA, UK, EU, CN, SAA connectors
130377	Oxygen sensor cell (installed)
130385	Battery, 4 cell Lithium-Ion 7.2 V 6.4 Ahr (installed)
130375	Hanging Clip (to hang the instrument from a ventilator rail)
130378	Optional Carrying Case <ul style="list-style-type: none"> ▪ Fitted for the Certifier Pro, dimensions 19 x 14.75 x 6.5 inches ▪ Hard outer shell and foam protection



Certifier™ Plus Flow Analyzer Handheld Test System

Models 4080-S and 4080-F

A portable, handheld flow analyzer

- Compact and lightweight
- Battery operation (8 hours)
- Multiple mounting options

High accuracy measurements

- Flows at 2% of reading
- Pressures at 0.5% of reading

Modular design offers flexibility

- Buy in pieces to stay below capital budget limits
- Only purchase the components that you need
- Maximize testing up-time with a second flow module



Certifier™ Plus High Flow Test System, Standard Kit

Model 4080-S

- Includes 4089 interface module, 4081 high flow module, and accessories



Certifier™ Plus High Flow Test System, Full Kit

Model 4080-F

- Includes 4089 interface module, 4081 high flow module, 4073 oxygen sensor kit, test lung, mounting kit, and more

Certifier™ Plus Primary Accessories

Certifier™ Plus Oxygen Sensor Kit

Model 4073

- Measures oxygen concentration
- O₂ sensor connects to high flow module
- 4073 kit not compatible with Certifier™ Pro



Certifier™ Plus Low Flow Module Kit

Model 4082

- For testing the fresh-gas delivery on anesthesia systems
- Measures N₂O and CO₂ gas flows
- Connects to 4089 interface module



Certifier™ Plus Mounting Kit

Part number 130399

- Securely mount the Certifier Plus to ventilator rails, mobile carts, and more
- Attach interface module and a flow module (as shown below)



Upgrade from Certifier™ FA+ to Certifier™ Plus

Certifier™ Plus Interface Module

Model 4089 or 4089-F

- Larger display, 8-hour battery operation, mounting options
- 4089 works with your existing 4081 and 4082 flow modules
- Familiar interface minimizes new equipment training



Certifier Legacy
4080 FA+
Certifiers not shown at scale

Certifier™ Plus Instrument Kits

Parts	Description	4080-S High Flow System, Std. Kit	4080-F High Flow System, Full Kit	4081 High Flow Module Kit	4082 Low Flow Module Kit	4089 Interface Module, Std. Kit	4089-F Interface Module, Full Kit
4089	Interface module	■	■			■	■
4081	High flow module	■	■	■			
4082	Low flow module				■		
4073	Oxygen sensor kit		■				■
1602341	Inlet filter, 22mm M/F	■	■	■			
1611221	Adapter, high pressure	■	■	■			
1102091	Adapters, 22mm x 6mm (2)	■	■	■			
1102093	Adapter, 15mm ID x 22mm OD	■	■	■			
1611330	Airway pressure fitting	■	■	■			
3002053	Pressure tubing, silicone	■	■	■			
2913110	Velcro strap (for use with 4081)	■	■	■			
130384	Flow module cable, coiled	■	■			■	■
130400	Power supply with plug set	■	■			■	■
130385	Li-ion battery (installed)	■	■			■	■
130392	Protective cover (attached)	■	■			■	■
130389	Hybrid carrying case	■				■	
130396	Adult test lung, 1.0L		■				■
130399	Mounting kit, interface + flow		■				■
130373	Adapter, 22mm F to 22mm F		■				■
130374	Adapter, 15mm M to 22mm F		■				■
130370	Stylus, capacitive touch		■				■
130393	Deluxe carrying case, fitted		■				■
1602342	Inlet Filter, 3/8 to 1/2 inch barb				■		
1601180	Coupling, 3/8 inch tube				■		
1601179	Adapter, 3/8 inch tube to barb				■		

Certifier™ Featured Accessories

Anesthesia Sensor Kit

Part number 4093

- Multi-gas sensor for testing anesthesia machines
- Measures concentration of anesthetic agents plus N₂O and CO₂
- Plug-and-play operation with both Certifier™ models



Pronk Mobilize™* Integration Chip

Part number 130401

- Enables your Certifier™ Pro or Plus to wirelessly communicate with the Pronk Mobilize™ app
- Real-time, wireless data capture and control of the Certifier from your iOS mobile device
- Run checklists, acquire data, and automatically generate test reports through the Pronk Mobilize™ app

* Pronk Mobilize™ products only currently available in North America.



Features and Specifications

Certifier™ Flow Analyzer Test Systems

Models 4090, 4080-S, 4080-F

Features	Certifier Plus
Gas Calibrations	Air, O ₂ , Air/O ₂ mixtures, N ₂ , CO ₂ , N ₂ O
Flow Direction	Bi-directional (4081 high flow module)
Gas Conditions	STP, ATP, BTPS, BTPD, plus user-defined
Temperature & Pressure Compensated	Yes
Max Breath Rate	1500 BPM
Pressure Measurements	Low, High, Barometric
Dual Flow Module Capability	Yes
Display	5-inch color touchscreen display up to 18 test parameters
User configurations	Save, load, and transfer test setups
Batteries	Li-Ion rechargeable (4-cell)
AC adapter	Yes
Data acquisition	Save measurement data and screen captures to internal memory, USB export
Export / Import	USB

4090 Specifications – Flow

Measurements	Gas/Mode	Range	Accuracy**
Flow Rate – High Flow	Air, O ₂	-200 to +300 slpm*	± 1.75% plus 0.05 slpm
	Air/O ₂ mixtures	-200 to +300 slpm	± 3% plus 0.075 slpm
	N ₂	-200 to +300 slpm	± 3% plus 0.05 slpm
Flow Rate – Low Flow	CO ₂	-40 to +40 slpm	± 3% plus 0.05 slpm
	Air, O ₂	0.01 to 20 slpm	± 1.75% plus 0.008 slpm
	N ₂ O	0.01 to 20 slpm	± 3% plus 0.025 slpm
	N ₂	0.01 to 20 slpm	± 3% plus 0.01 slpm
	CO ₂	0.01 to 20 slpm	± 3% plus 0.01 slpm

4080 Specifications – Flow

Measurements	Gas/Mode	Range	Accuracy**
Flow Rate – High Flow	Air, O ₂	-200 to +300 slpm	± 2% or 0.075 slpm
	Air/O ₂ mixtures	-200 to +300 slpm	± 3% or 0.1 slpm
	N ₂	-200 to +300 slpm	± 3% or 0.075 slpm
Flow Rate – Low Flow	CO ₂	-40 to +40 slpm	± 3% or 0.075 slpm
	Air, O ₂	0.01 to 20 slpm	± 2% or 0.008 slpm
	N ₂ O	0.01 to 20 slpm	± 3% or 0.025 slpm
	N ₂	0.01 to 20 slpm	± 3% or 0.01 slpm
	CO ₂	0.01 to 20 slpm	± 3% or 0.01 slpm

* slpm = Standard Liters per Minute

** Accuracy stated as percent of reading at TSI standard gas conditions

4090 and 4080 Specifications – Volumes, Pressures, Timing, Frequency, Oxygen Concentration, Temperature

Measurements	Gas/Mode	Range	Accuracy**
Inhaled Volume – High Flow	Air, O ₂	0.001 to 10 liters	± 2% plus 0.02 liters
	Air/O ₂ mix, N ₂ , CO ₂	0.001 to 10 liters	± 3% plus 0.02 liters
Inhaled Volume – Low Flow	Air, O ₂	0.001 to 10 liters	± 2% plus 0.005 liters
	N ₂ O, N ₂ , CO ₂	0.001 to 10 liters	± 3% plus 0.005 liters
Exhaled Volume – High Flow	Air, O ₂	0.001 to 10 liters	± 2.5% plus 0.02 liters
	Air/O ₂ mix, N ₂ , CO ₂	0.001 to 10 liters	± 3% plus 0.04 liters
Minute Volume – High Flow	Air, O ₂ , Air/O ₂ mix, N ₂ , CO ₂	0.001 to 100 liters	± 3% plus 0.02 liters
Minute Volume – Low Flow	Air, O ₂ , N ₂ O, N ₂ , CO ₂	0.001 to 100 liters	± 3% plus 0.005 liters
Low Pressure	PIP, PEEP, P _{MAP} , P _{MIN} , P _Δ , P _{PLAT}	25 to +150 cm H ₂ O	± 0.5% or 0.15 cm H ₂ O
High Pressure	P _{High}	-10 to +150 psi	± 1% or 0.1 psi
Absolute Pressure	P _{ABS}	50 to 200 kPa	± 0.7% kPa
Static Compliance	C _{STAT}	0.01 to 1000 cm H ₂ O/mL	± 3% or 1 cm H ₂ O/mL
Respiratory Time	t _I , t _{IP} , t _{HP} , t _E , t _R	0.04 to 30 secs	± 2% or 0.01 secs
Respiratory Rate	f	1 to 1500 bpm	± 2% or 0.01 bpm
I:E Ratio	I:E, I:E _{HP}	1:100 to 100:1	± 4% of reading
Oxygen Concentration	O ₂ %	21% to 100%	± 2% of reading
Temperature	T	5 to 40°C	± 1°C at flow rates above 2 L/min

Certifier™ Flow Analyzer Service

- TSI® optimizes the calibration of your Certifier Flow Analyzer, third-party labs can only verify your instrument
- TSI® Service typically turns your instrument around in 1-week
- Service your Certifier Flow Analyzer from the nearest TSI® service center

Quality Guard Service Plans

- An easy way to budget for and manage your TSI® equipment service
- Plans include extended bumper-to-bumper warranty plus annual clean and calibration
- Multi-year plans are available for new Certifier flow analyzer and flow meter instruments



TSI® Factory vs. Third-Party Service:

	TSI®	Third-Party
Instrument Calibration Verification ¹	✓	✓
As-Found Calibration Certificate	✓	✓
Adjustment of Sensor Calibrations	✓	—
As-Left Calibration Certificate ²	✓	—
Factory-Trained Technicians	✓	—
Perform Repairs with Original Factory Parts	✓	—
Update Instrument Firmware (if applicable)	✓	—
Program New Calibration Date into Instrument	✓	—
90-Day Service Warranty	✓	—

¹ Calibration Verification is a multi-point calibration check by TSI prior to performing service on the instrument.

² As Left Calibration Certificate is a multi-point check to verify the sensor adjustment and calibration curve fitting.



Find out more at
[tsi.com/flow_service](https://www.tsi.com/flow_service)



Knowledge Beyond Measure.

TSI Incorporated - Visit our website www.tsi.com for more information.

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