ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

**Artisan Technology Group**
(217) 352-9330 | sales@artisantg.com | artisantg.com

**Full-service, independent repair center**
with experienced engineers and technicians on staff.

**We buy your excess, underutilized, and idle equipment**
along with credit for buybacks and trade-ins.

**Custom engineering**
so your equipment works exactly as you specify.

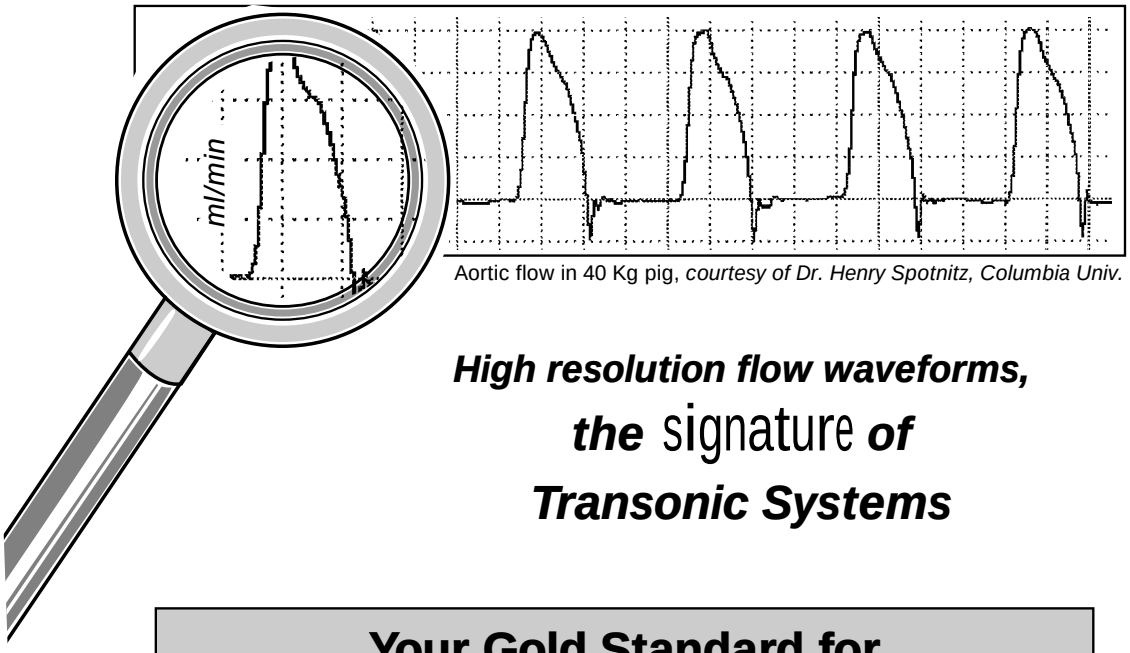
- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

**Expert team | Trust guarantee | 100% satisfaction**

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Transonic Systems Inc. T106/T206 HT107/HT207 T108/T208* at our website: *Click HERE*

# Flowmeters for




Aortic flow in 40 Kg pig, *courtesy of Dr. Henry Spotnitz, Columbia Univ.*

***High resolution flow waveforms,***
***the*** signature ***of***
***Transonic Systems***

## Your Gold Standard for Blood Flow Measurements

**1995** **One flowmeter that does it all! T106 flowmeter capabilities expanded for micro to large vessels.**

**1994** **A-Series flowprobes with small profile designed for cardiac output; WINDAQ Data Acquisition Package added.**

**1993** **V-Series Microcirculation flowprobes introduced for vessels as small as 250 microns.**

**1991** **T108 flowmeters with high resolution circuitry obsoletes T101D meter.**

**1990** **T106 Small Animal Flowmeter & 1 mm flowprobe introduced for rat research.**

**1989** **Sterile tubing flowsensors expand extracorporeal line.**

**1987** **In-line probes developed for measurements in tubing.**

**1983** **First T101D transit-time volume flowmeter established in Transonic Systems' founding year; R & S flowprobes developed.**



***To Order: Call 607-257-5300 or 800-353-3569; Fax 607-257-7256***

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Animal Research



## T106 / T206

### The Gold Standard for Blood Flow Measurement

## For Acute and Chronic Studies

### in vessel diameters 250 µ - 36 mm o.d.

*also for*

### *in vitro* and tubing applications *(see page 37)*

***Accurate • Repeatable • Validated***

Transonic Systems' Animal Research Flowmeters and perivascular flowprobes utilize transit-time principles of ultrasound to **directly quantitate volume flow.** Validated for accuracy in numerous applications *(page 45)*, Transonic Systems flowmeters are the **recognized gold standard** for blood flow measurement in cardiovascular research.

They feature unequalled resolution, zero baseline stability and built-in ease of use.

An **extensive selection of perivascular probes** accommodates an unsurpassed range of vessel sizes for chronic and acute studies.

**Extracorporeal flow measurements** in tubing are also easily obtained with in-line and sterile tubing flowsensors *(see page 38)*.

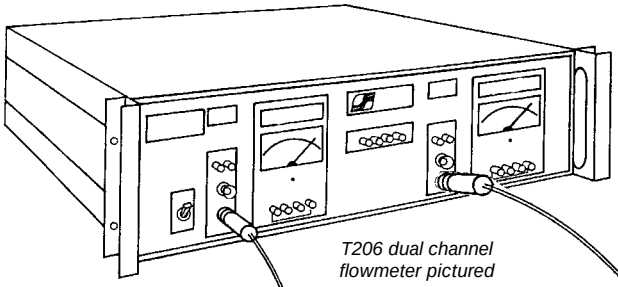
Available in **single and dual channel models**, Transonic Systems flowmeters have newly expanded flow measurement capabilities and enhanced data acquisition for comprehensive hemodynamic studies.

Transonic Systems Inc.
Excellence in Quantitative Hemodynamics
34 Dutch Mill Road, Ithaca NY 14850, USA. TEL: (607) 257-5300; FAX: (607) 257-7256



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Measurement Capabilities



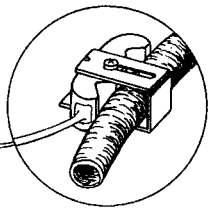
*T206 dual channel flowmeter pictured*

**T106 / T206**

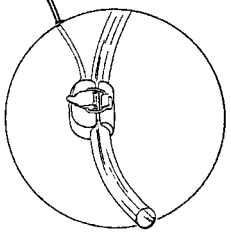
**Ultrasonic Transit-Time Technology**

- **Absolute volume flow in milliliters or liters per min.**
- **Bidirectional flow measurement**
- **Works on most aqueous solutions**

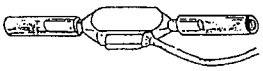
**Perivascular flowprobes** *(pages 7-15)* encircle a vessel and measure volume flow directly in milliliters or liters per minute. Miniaturized connector systems offer capabilities for chronic implants at single or multiple sites. *(see page 21)*



**Perivascular Flowprobe**



**Sterile tubing flowsensors (C-Series)** *(see page 38)*



**In-line flowprobes (N-Series)** *(page 39).*

***Direct Quantification of Volume Flow***

## T106U / T206U, T106 / T206 Animal Research Flowmeters

- Available in single or dual channel models
- Display average flow rate in ml or L/min
- Pulsatile and mean analog flow signals can be externally recorded from rear-panel BNC
- Provides at-a-glance monitoring of the quality of the ultrasound signal
- Low flow scale selection for increased sensitivity
- Proven transit-time ultrasound technology
- T106U/T206U provides low cost data acquisition and pressure recording.

## Acute or Chronic Animal Studies

**One flowmeter to study multiple animal models with exceptional resolution and reliability.**

- Measurement capability for vessels from 250 microns through 36 mm diameter
- Probes are non-constrictive and compatible for long-term implant
- New series of cardiac output flowprobes for highest accuracy in vessels with turbulent flow

## Extracorporeal & In Vitro Flow Measurements ***(also see page 31-39)***

**One flowmeter to measure a wide variety of liquids** *(ie. blood, saline, urine, buffers).*

- high resolution in-line flowprobes for tubing I.D. from 0.046" *(1.2 mm)* through 0.875" *(20.8 mm)*
- sterile tubing flowsensors for flexible tubing I.D. from 1.8" *(3.2 mm)* up to 3/4" *(19.0 mm)*



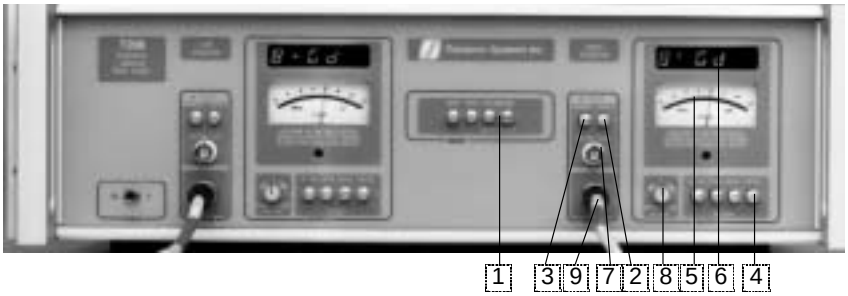
***To Order: Call 607-257-5300 or 800-353-3569; Fax 607-257-7256***

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Flowmeter Specifications

***Single-channel or dual-channel flowmeters are available for your application***

**T206 Dual Channel Flowmeter**
(*front panel)*




**T106**
single channel
10 lbs (4.5 Kg), 81/2"w x 5"h x 16"d
(90-130 Volts; 50-60Hz, single phase
(30 VA, 1.0 AMP slow-blow fuse);
200-260 Volts; 50-60Hz, single phase
(30VA, 0.4 AMP slow-blow fuse)

**T206**
dual channel
16 lbs. (7.2 Kg), 19"w x 5"h x 16"d
90-130 Volts; 50-60Hz, single phase
(60 VA, 1.6 AMP slow-blow fuse);
200-260 Volts; 50-60Hz, single phase
(60VA, 0.8 AMP slow-blow fuse)

**T106U/T206U**
single channel and dual channel model with data acquisition and pressure recording capability. Includes:

- **Computer Interface circuitry,** cable, and "WINDAQ" software to connect the flowmeter to an IBM compatible computer via its serial RS232 port;
- **Pressure** sensor amplification by flowmeter A/D board for acquisition of pressure data in addition to flow. RJ11 phone input jack for pressure transducers; 1 per flow channel.

**Synchronization** for multi-unit operation or simultaneous use with Doppler instrument is supplied as standard circuitry on all units.

**Gating (-G) Option** for use during MRI unit to eliminate cross-coupling interferences.

**Bubble Alarm (-B) Option** with audible alarm which sounds when gas bubbles pass through a sterile tubing flowsensor.

**Electrical Isolation**
Flowmeter is grounded. If accidentally ungrounded, line to ground leakage current is less than 50 µA. ETL listed.

1 **Push Button Control of**
Mode of operation: selects Measure, transducer Test, Calibrate External Recording Devices for Zero / Full Scale

2 Low Flow Range: expands displayed flow sensitivity by a factor of four;

3 Polarity of Displayed Flow: inverts polarity of analog flow outputs and flow displays

4 Output filtering: 0.1, 10, 30 and 100 Hz Low pass filtering applied to analog output signals

**Automatic Meter Adjustments**

- Probe size and corresponding flow output ranges (see flowprobe tables)
- Volume flow calibration of the applied probe
- Dual channel flowmeters synchronously monitor two flowprobes at the maximum rate without cross coupling interference

**Flowmeter Displays**

5 **Analog Meter** (taut-band needle)

6 **Digital Display**

- Volume flow (in Measure mode)
- Received signal amplitude (analog meter, Test mode)
- Diagnostic Data (digital display in Test mode)
- Probe scale data (in Zero and Scale factor Calibration modes)
- Test Light: indicates when acoustic signal and flow output signals do not meet specifications.

**Multi-Unit Synchronization**
Rear panel master/slave control and input cable to time ultrasound signals for concurrent operation with pulsed Doppler or sonomicrometry.

7 **Flow Monitor Outputs**
* Average volume flow; rear panel, BNC connector, 0.1Hz low-pass filtered
* Pulsatile/Average volume flow; front/rear panel, BNC connector, filtering controlled by front panel push buttons
Zero calibration = 0 Volts out
Scale factor flow = 1V ± 2%
Output resistance = 500 Ohm
Full range for flows = ± 5V (bi-directional flows, ± 5 times scale factor)

8 **Offset Adjustment Dial**
for Zero flow reading during occlusion or when no flow is passing through a sterile tubing flowsensor; front panel

9 **Probe Connector**
Accepts male CH10-style connector of probe or extension cable

**Digital Identification**
Probe identification and calibration parameters programmed into flowprobe connector.

**Ultrasonic Frequency**
Probe dependent (see probe tables)

**Ultrasonic Transducers**
R-, S-, Series: implantable (chronic/acute) perivascular flowprobes;
V-, Series: microcirculation flowprobes (T106/T206);
A-, Series: cardiac output flowprobes;
C-Series: sterile tubing (clamp-on) flowsensors for extracorporeal use with tubing.
N-Series: in-line flowprobes that splice into laboratory tubing

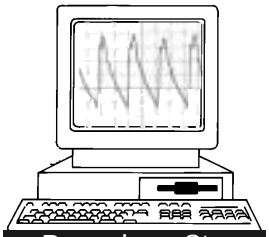
**Extension Cable**
1, 2, 3 meter cables available; supplied one per flowmeter channel purchased



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## U-Model includes both Computer & Pressure Options

**T106U/T206U** flowmeters combine the computer interface and pressure options as a low cost package at the initial purchase of the flowmeter. One pressure channel is supplied for each flow channel. The individual options may be retrofitted to previously purchased flowmeters.




**Personal Computer Interface (-P option)** provides the capability to record, store and playback flow data on an IBM-PC compatible computer with Windows capability *(See pages 57-60 for complete description)*.

***WinDaq software***

- Automatic time & date sampling
- Annotation capability
- Fully scalable
- up to 8 channels of data acquisition
- High speed sampling

**pRessure (-R option):** This top quality instrumentation amplifier allows the flowmeter to record simultaneous measurements of flow and pressure. With this enhancement - *an extension of our Personal Computer Interface Option* - the amplified pressure signal accompanies the flow signal to your computer. The sampling rate *(200 samples per second with 4-channel WinDaq and 100 samples per second with 8-channel WinDaq)* and resolution *(12 bits, 4096 steps)* make this suitable for mean pressure studies and certain types of waveform analysis. Abbott Transpac external transducers are provided for plug compatibility with RJ11 input phone jacks on the rear panel of the flowmeter. Other commercial transducers in +/-5 volt range are also compatible with the Pressure option circuitry although connector plugs may need adapters. *See page 61 for complete specifications.*

## More Electives!

**MRI Gating (-G) Option**

For Magnetic Resonance Imaging, the flowmeter can be programmed to temporarily interrupt its flow measurement sequence and shut down the flowmeter oscillators during the imaging cycle. This effectively eliminates interference to either flow measurements or imaging.

**Bubble Alarm (-B) Option**

Equips Transonic flowmeters with an audible alarm which sounds when the ultrasonic signal coupling through the flowsensor falls below an *(adjustable)* percentage of normal. The option allows the user to set an alarm to sound when air bubbles pass through a sterile tubing flowsensor.

**Multi-Unit Synchronization Selector (-S)**

Now standard on all T106/T206 flowmeters.



*To Order: Call 607-257-5300 or 800-353-3569; Fax 607-257-7256*

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Artisan Technology Group** is an independent supplier of quality pre-owned equipment

## Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

## We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

## Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP