
PACER INSTRUMENTS™

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Model APT100 ROTATING VANE THERMO-ANEMOMETER PROBE



User Manual

INTRODUCTION

Congratulations on your purchase of an APT100 Rotating Vane Anemometer Probe! Sold as part number 10259-CAL.

These probes are characterized by durable metal construction and carefully balanced rotors which are sensitive to airflow rates while being rugged in order to handle a variety of flow rates.

Pacer's APT100 probe is widely used in industries and applications such as power generation, electronics manufacturing, fluids research, aerospace development, pharmaceutical, clean-room monitoring, HVAC, and industrial process control.

Pacer also offers a full line of handheld instruments and transmitters to complement our airflow, humidity, and temperature probes. These instruments feature rugged construction, digital readouts long with analog output, USB, and RS232 communications options. Please visit our website for more information.

At the time of receipt, if more than 4 months has elapsed since the date of the original calibration, Miltronics will provide an initial complimentary calibration at the customer's request. If you elect to utilize this service, please include a copy of your dated proof of purchase and a copy of the original calibration certificate included with your unit. Call 603-352-0187 and request a Service/Repair (SR) number prior to shipping your unit. Shipping is not included.

Warranty

This product is fully warranted against defective materials and/or workmanship for a period of one year after purchase, provided it was not improperly used. For your protection, please use this product as soon as possible. If returned, it must be securely wrapped, sent prepaid and insured to:

Miltronics Mfg. Svcs. Inc.
Attn: Pacer Instruments: Warranty Repair
95 Krif Road
Keene, New Hampshire 03431
USA

Please include a note with name, address, telephone number and description of the problem. Although we provide assistance on Pacer products both personally and through our literature, it is still the total responsibility of the customer to determine the suitability of the product for use in their application.

This manual is provided by Miltronics Mfg., Inc. without any kind of warranty. Precautions have been taken in accurately preparing this manual; however, we neither assume responsibility for any omissions or errors that may appear nor assume liability for any damages that result from the use of the products in accordance with the information contained in the manual.

IMPORTANT SAFETY INFORMATION

Classifications



Danger: To Prevent Serious Injury or Death

Warnings in this classification indicate danger that may result in serious injury or death if not observed.



Caution: To Prevent Damage to the Product

Warnings in this classification indicate risks of damage to the product that may void the product warranty and/or calibration.

Description of Symbols



ESD Caution: To Prevent Damage to the Product

Warnings in this classification indicate risks of damage to the product that may void the product warranty and/or calibration. Internal components are static sensitive and are not user serviceable. Opening the cases by a non-authorized service center and/or in a non-ESD safe environment may cause damage not covered by the manufacturer's warranty.



Important: Mandatory Action Required

The specific action is given near this symbol.



FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular situation.

IMPORTANT SAFETY INFORMATION (continued)



EU – Declaration of Conformity

Miltronics Mfg. Svcs., Inc. declares that the product for this manual complies with the essential requirements and other relevant provisions of Directive 1999/5/EC. A copy of the Declaration of conformity is available on request.



RoHS RoHS Statement

Concerning EU-Directive 2011/65/EU (RoHS 2), to the best of our knowledge, based on supplier provided information, all Miltronics Mfg. Svcs., Inc. / Pacer Instrument brand products, are not intentionally manufactured or formulated with the following substances: Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE). Minimal levels established in the 2005 RoHS Directive still apply under Article 4(2), Annex II: 0.1% by weight in homogenous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers; 0.01% by weight in homogenous materials for cadmium. Please be advised that we do not analyze for these substances.



WEEE – Waste Electrical and Electronic Equipment - 2002/96/EC

Miltronics Mfg. Svcs., Inc. asks that all our products to be recycled at the end of their current use, to comply with local waste requirements. Miltronics supports local Waste Electrical and Electronic Equipment (WEEE) directives where they are in operation. That means that WEEE may not be disposed as unsorted municipal waste but is to be collected separately. Miltronics consumer products are therefore labeled with a crossed-out “wheelie-bin” symbol which you can see above. Further, all our products bear any other appropriate symbols for their respective region. WEEE may contain hazardous substances which may negatively affect the environment and human health when disposed of through normal channels. Miltronics is committed to reduce the negative environmental and human health effects of WEEE.

DANGER



Never touch the vane assembly blades and/or thermal sensors.

The vane assembly blades may contain sharp edges which may cause minor cuts. The assembly contains precision bearings which are sensitive and the blades are finely adjusted to specific pitches. Touching this assembly or its parts may cause damage which can affect its operation and the calibration.

NOTE: If the vane assembly head or probe head requires cleaning we recommend a fine mist of isopropyl alcohol and a fine long-haired brush or send the unit in or servicing.



Do not disassemble or heat the batteries, or put them into a fire.

The may cause burns and the batteries may burst. Please dispose of used batteries in the proper manner per local ordinances.

CAUTION



When measuring, ensure that the direction arrow is facing the direction of airflow.

The arrow indicates the direction of airflow for the data provided on the calibration certificate. It is meant to allow for uniform and consistent readings as per the provided data. The probe will operate in the opposite direction but the data may be different.



Do not use or leave the instrument in a high temperature, high humidity, high speed airflows or dusty environments for prolonged periods.

The instrument may not function properly out of the specified operating conditions and/or have a greatly reduced operating life span.



Do not subject the instrument or the probe to strong impacts.

Dropping the instrument or the probe may cause damage or malfunction to the instrument and may change the calibration data. We recommend sending it in immediately to be checked.

CAUTION (continued)



Never disassemble, modify or repair the product.

Failure to observe the above may cause damage to the instrument or the probe. It may also void the manufacturer's warranty and calibration certificate.



Do not pick up or carry the instrument by the cable.

It may cause a malfunction or damage to the wiring of the cable.



Remove the batteries from the instrument when storing for long periods of time. When inserting the batteries, be sure to insert them with the polarity facing the correct direction.

Failure to do so may cause battery leakage and subsequent damage to the instrument. The manufacturer does not recommend any specific brand of batteries but a high-quality name brand alkaline battery seems to last the longest.



Do not wipe the instrument with a volatile solvent.

Use neutral solvents and simple cleaners to clean the instrument with a soft cloth.



Regularly check the head of the probe for contamination. Impurities (such as dust) on the blades and/or thermal sensor may affect the accuracy of the instrument.

NOTE: If the vane assembly head or probe head requires cleaning we recommend a fine mist of isopropyl alcohol and a fine long-haired brush or send the unit in or servicing.



When storing or shipping the instrument, the manufacturer recommends disconnecting the cable(s) and returning it to the original carrying case.

SECTION 1 - SPECIFICATIONS

Range: 300 to 6890 ft/min (1.5 to 35.00 m/sec)

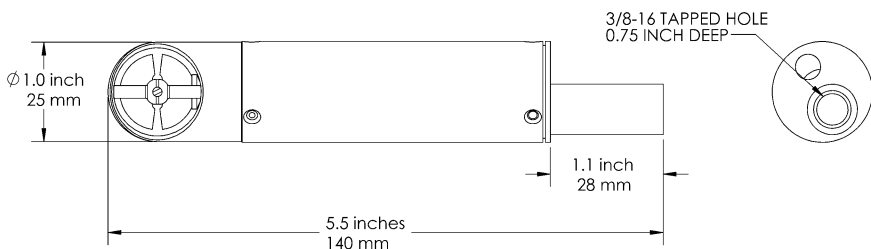
Temperature: -4° to 212°F (-20° to 100°C)

Accuracy: ±0.50% full scale ±0.75% of reading ±1 digit

Operating Temperature: -4° to 212°F (-20° to 100°C)

Cable Length: The pre-attached cable length is approximately 5' or 1.5m

Dimensions



ELECTRICAL AND SIGNAL INFORMATION

The AP100 probe outputs a calibrated, single-ended, 50% duty cycle 5-Volt square wave as shown on the next page. The frequency of this square wave corresponds to the airflow measured by the instrument according to the following formula:

$$Velocity = 3.1595 \times f + 36.4$$

where *Velocity* is the air velocity in **feet per minute** (FPM) and *f* is the output frequency of the signal from the probe in Hertz (Hz).

ELECTRICAL CONNECTOR PIN-OUT DIAGRAM

(Enlarged to show detail) (As viewed looking at connector face)

This connector is the one used for all Premier Series instruments.

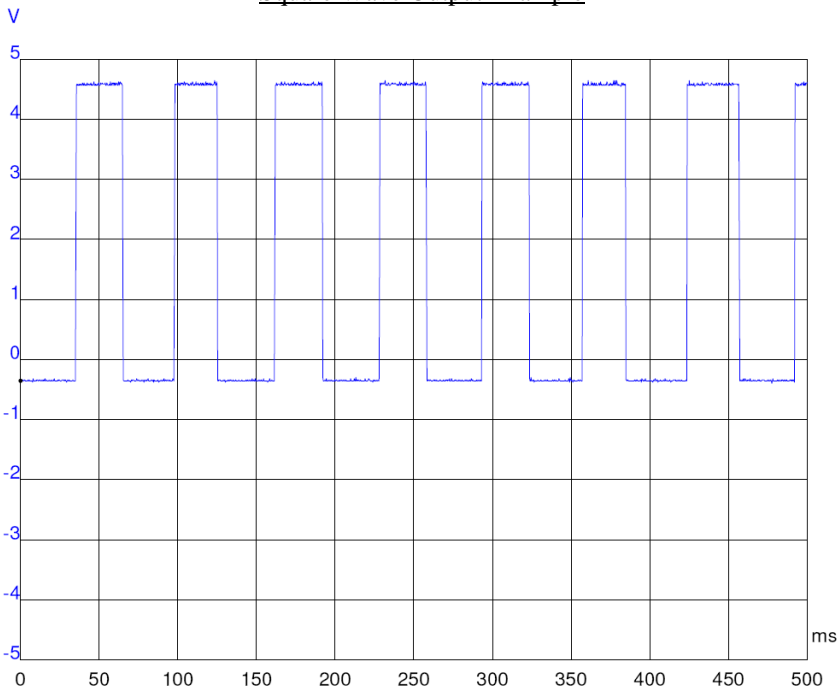


Mating Cable Connector:
Binder Part No. 99-0421-00-07
www.binder-usa.com

Pin Assignments

PIN	Purpose	Value
GROUND	Ground	Ground
PIN 2	Output Signal	5-Volt Square Wave (TTL), 50% duty cycle
PIN 3	Supply Voltage (V_{cc})	5 Volts DC @ 5 mA
PIN 4	Ground	Ground
PIN 5	PT100	RTD-1A
PIN 6	PT100	RTD-2A
PIN 7	PT100	RTD-2B

Square Wave Output Example



NOTE: The 1.00” probe is available with two connector options:

P/N 10259-CAL: works with all Premier Series instruments (DA420 and the TAT420 transmitter). Connector is a metal M9 threaded locking style.

P/N 6091: works with Legacy Series instruments (DA40T and the TAT-1 transmitter). Connector is a plastic bayonet locking style.

P/N 5190: works with Legacy Series instruments (DTA4000 and HTA4200). Connector is a metal bayonet locking style.

Also available is a 10’ extension cable (P/N 10318) for use with Premier Series instruments and the APT100 probe. *(It is recommended that only one extension cable be used on the APT100 probe, as signal loss may occur with the use of additional extension cables).*

CALIBRATION

To maintain your instrument in top working order, we recommend that you send it back to us for calibration each year, beginning one year after purchase.

Our NIST-Traceable multi-point calibration services include ensuring the instrument performs within its accuracy tolerance, making any necessary adjustments, and inspecting all aspects of the instrument's functionality so that you'll have another year of dependable service. Calibration also includes a complimentary firmware upgrade so that you know you'll have the latest advances in accuracy and reliability in your instrument.

Additional points other than our standard calibration are also available from the factory. We can offer precise calibration tailored to your specific measurement needs using our state-of-the-art facilities and calibration equipment.

Please contact us or visit our website for the latest information on calibrating your instrument.

NOTE: Probes sold individually are calibrated using a control instrument. The data contained on the certificate of calibration is for reference only. Additional equipment and connections may change or alter the data. It is highly recommended that the entire unit be re-calibrated at the manufacturer's facility.

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