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95 Krif Road
Keene, NH 03431
(800) 283-1141 or (603) 352-0187
EFax: (603) 352-7649
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Model AT400



User Manual

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., Inc.
95 Krif Road
Keene, NH 03431
PH: 603-352-0187
EFax: (603) 352-7649

Please include a note with name, address, telephone number and description of the problem. Although we provide assistance on Miltronics, Pacer Instruments and Pacer Legacy 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)

CE 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 touch the circuit board when 120/220VAC is or has been applied. Only connect 120/220VAC wires to the unit with power disconnected. Double-check to make sure the wires are in the correct terminals before applying power.

Power may still be present after voltage has been removed via storage in the capacitors. Only authorized repairs can be accomplished after proper discharging of the circuits.

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.



The transmitter case is designed to protect against dust and powerful water jet penetration (IP 66), when properly closed. [2]

Do not over-tighten the cover screws, only secure snugly. Over-tightening may cause cover warping and damage. Only insert round, appropriate sized cables into the Liquid Tight Cord Grips. Use of non-round, double cables/wires, or too small cabling may reduce the IP rating and cause damage.

CAUTION (continued)



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.



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.



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.

INTRODUCTION

The AT400 and TAT420 air velocity transmitters supply accurate air velocity and (TAT420) temperature data from a building or process airflow on a continuous basis to a computer, chart recorder, printer, and meter or control circuit.

Every instrument has terminals for both DC and AC power, and 0-1V, 0-5V and 4-20mA outputs. The outputs are concurrent and can accept multiple wires (depending on the gauge used).

The heavy, all metal (except for the electronics pod) air probes can be used for airstreams that have a wide range of humidity, temperature and contaminants without compromising accuracy.

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.

SPECIFICATIONS

Sensors:

Air Velocity sensor:	Metal rotating vane 1” or 2 ¾”
Temperature (TAT420):	PT100 RTD

Range:

Air Velocity: 1” Probe:	300-6890 FPM (1.5-35 MPS)
2 ¾” Probe:	50-7800 FPM (0.2-40 MPS)
Temperature (TAT420):	-4˚ to 176˚F (-20˚ to 80˚C)

Accuracy:

Air Velocity Probes:

2 ¾” Probe: ±1%+1 digit

1” Probe: ±0.5% full scale +0.75% reading + 1 digit

Temperature Probe:	±1.0˚C (TAT420)
Transmitter Air Velocity:	± 0.02 mA
Transmitter Temperature:	± 0.10 mA (TAT420)

Response Time:

Air Velocity:	2 second average and update
Temperature (TAT420):	Approximately 60 seconds

Analog Outputs (separate and concurrent):

Air Velocity:

0-1V, 0-5V and 4-20mA represent 0-6800FPM (0-35MPS) for the 1” probe and 0-7800FPM (0-40MPS) for the 2 ¾” probe

Temperature (TAT420):

0-1V, 0-5V and 4-20mA represent -4 to 176˚F (-20˚ to 80˚C)

Operating Range:	-4˚ to 176˚F (transmitter)
	-22˚ to 212˚F (probe heads)
Power Supplies:	120 or 220VAC, 50-60Hz, also 10-30VDC

Input Current (with all options):

10-30VDC:	AT400: 22mA, TAT420: 43mA
110VAC:	AT400: 19mA, TAT420: 21mA
220VAC:	AT400: 10mA, TAT420: 11mA

Output Impedance (0-1V and 0-5V outputs):

1KΩ

Enclosure:

ABS plastic, NEMA Class 4

Dimensions:

Housing:	4.8” x 4.8” x 2.2”
Probe:	1” or 2 ¾” diameters

Weight: 18 ounces

Options:

Custom cable lengths: For probe cables[1]

Included:

- (1) AT400 Instrument
- (1) Vane-type probe head, choice of AP100 or AP275
- (1) Probe connection cable, 5 ft. for AP275
  NOTE: If a longer cable is ordered, the 5ft. is not included.
- (1) AT400 operation manual
- Certificate of Calibration with Data

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INSTALLATION AND SETUP FOR AT400, TAT420

MOUNTING THE TRANSMITTER

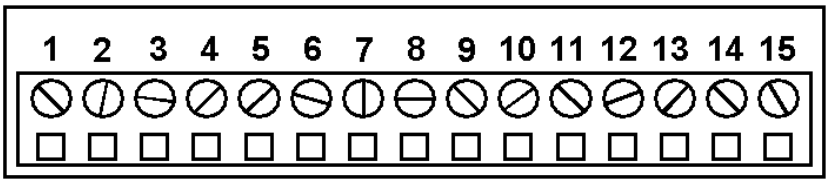
Mount transmitter on a secure surface. The recommended screw size is a #8 x ¾" (or longer) tapping screw.

Note: Make all connections with Power Off. Remove cover to attach Transmitter to mounting area and to attach power and signal cables. Attach in location free of physical dangers such as excessive heat or continuous condensing moisture.[2]

Note: On the AT400, terminals 1-3 are not be installed.

Note: Terminals 13-15 are not installed on any transmitter.

TERMINAL CONNECTIONS



1. 4-20 mA temp
2. 0-1 Volt temp } TAT420
3. 0-5 Volt temp
4. 4-20 mA air velocity
5. 0-5 Volt air velocity
6. 0-1 Volt air velocity
7. Ground
8. V+ (10-30 VDC)
9. 220 VAC
10. 110 VAC
11. 220/110 VAC
12. No Connection
13. Not Installed
14. Not Installed
15. Not Installed

POWER HOOKUP*

WARNING: Use extreme caution when handling power wires. Make sure the wires are disconnected from the source.

1a) 110VAC power: hook white (neutral) wire into slot 10. Then hook black (hot) wire into slot 11.

1b) 220VAC power: hook either hot wire into slot 11. Then hook the other hot wire into slot 9.

1c) 10-30VDC: first hook ground wire into slot 7. Then hook V+ wire into slot 8.

AIR VELOCITY OUTPUT*

2a) 0-1V F/S output: hook output ground reference to slot 7. Then hook the air velocity output wire to slot 6.

2b) 0-5V F/S output: hook output ground reference to slot 7. Then hook the air velocity output wire to slot 5.

2c) 4-20mA F/S output: hook output ground reference to slot 7. Then hook the air velocity wire to slot 4.

TEMPERATURE OUTPUT (TAT420)*

3a) 0-1V F/S output: hook output ground reference to slot 7. Then hook temperature output wire to slot 3.

3b) 0-5V F/S output: hook output ground reference to slot 7. Then hook temperature output wire to slot 2.

3c) 4-20mA F/S output: hook output ground reference to slot 7. Then hook temperature output wire to slot 1.

MOUNTING THE PROBE

Mount the probe in the air stream to be measured. A common 3/8” by 16-tpi threaded rod or bolt can be used to mount the probe to a fixture. Connect the air probe to the unit via the connector on the top of the case.

METRIC OR ENGLISH UNITS

Shown on the diagram but no longer available

REPLACING COVER

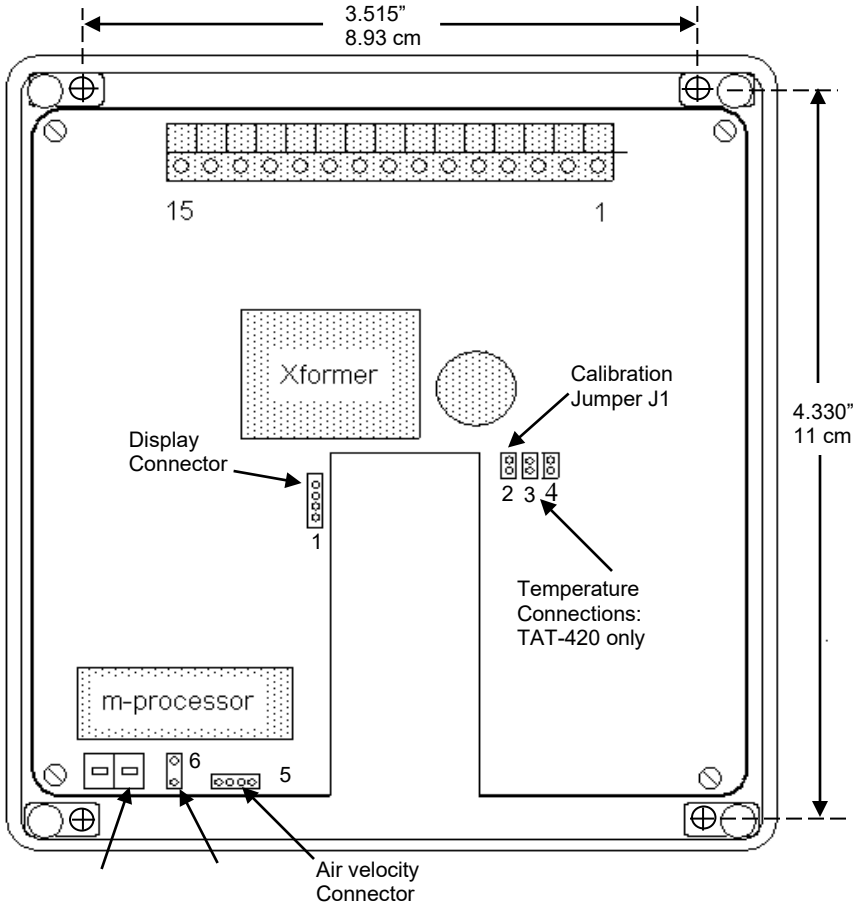
Use care not to damage the seal.

DISPLAY SWITCH

Shown on the diagram but no longer available

*NOTE: Be sure to tighten screws above slots when finished.

Diagram 1: Location and Polarity of Connectors and Switches.



APPENDIX A – No Longer Available

APPENDIX B – No Longer Available

[1]In order to insure the proper calibration, all custom-length cables for air probes with temperature sensors must be ordered at the time the transmitter is purchased; or the unit must be returned for calibration.

[2]Cable grips will seal on round cables from 2.5 to 6.5mm diameter. For wire bundles, if you wish to insure water tightness, use RTV silicon or other sealant safe for electronics at end of cable grip.

Notes:

Notes:



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