1450 First Ave.
Chippewa Falls, WI 54729
(800) 283-1141 or (715) 723-1141
Fax: (715) 723-7890
sales@pacer-instruments.com

Model DA40

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:

Pacer Industries, Inc.
1450 First Avenue
Chippewa Falls, WI 54729
PH: 715-723-1141
FX: 715-723-7890

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 Pacer Industries 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.

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INTRODUCTION

Pacer's model DA40 digital anemometer is a versatile instrument for measuring air velocity from HVAC ducts or process airflow.

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

Features include choice of probe diameters, custom cable lengths, tolerance of temperatures up to 210˚F (98.9˚C) at the probe, and durability.

SECTION 1 - SPECIFICATIONS

Range:

AP275 probe:	40 – 7800 FPM (0.2 - 40.0 MPS)
AP100 probe:	60 – 6800 FPM (0.3 – 35.0 MPS)

Accuracy: ±1.0% of reading ±1 digit

Resolution: 1 FPM or 0.01 MPS

Operating Temperature:

Instrument:	32 to 125˚F (0 to 50˚C)
Probes:	-4˚ to 210˚F (-20˚ to 98.9˚C)

Power Supply: 2 AA alkaline batteries, E91 Eveready or equivalent

Battery Life: Approximately 300 hours

Battery check: Automatic low battery display

Dimensions:

Instrument:	7.1" x 3.0" x 0.8"
AP275 probe:	2 ¾" diameter
AP100 probe:	1" diameter

Weight: 8 ounces with batteries

Display: 0.5" LCD, 4 digits

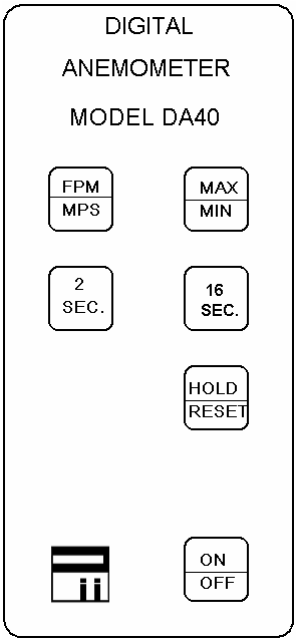
Options:

Model CG-4 charger:	PN 3303 (with 4 NiMH batteries)
Additional probe:	AP100 (1") or AP275 (2 ¾")
Cable longer than 5':	Model 3834, specify length
Extra extension rod:	PN 5001 rigid, PN 5002 flexible

Included:

1 piece:	vane-type probe head, choice of AP100 or AP275
3 pieces:	PN 5001 rigid extension rod
1 piece:	PN 5002 flexible extension rod
1 piece:	PN 3834 5 ft. connection cable
2 pieces:	AA 1.5V alkaline batteries
1 piece:	PN 6004 hard-shell carrying case
1 piece:	M2942 operation manual

SECTION 2 – SWITCH FUNCTIONS



ON/OFF Pressing "ON/OFF" key switches unit ON. Pressing the key a second time turns it OFF.

FPM/MPS Pressing "FPM/MPS" key toggles unit from FPM (1 FPM resolution) to MPS (0.01 MPS resolution).

2 SEC. Pressing "2 SEC." key sets measurement period to two seconds. The display will show "2 SEC.", then a measurement value. It will update every two seconds with average of the preceding two seconds.

16 SEC. Pressing "16 SEC." key sets measurement period to sixteen seconds. The display will show "16 S" for 16 sec., then a measurement value. It will update every two seconds with average of the preceding sixteen seconds.

MAX/MIN Pressing "MAX/MIN" key displays the highest reading since turn-on. Pressing key a second time will display lowest reading since turn-on. In "2 SEC." mode display reads "H 2" ("L 2") followed by reading. In "16 SEC." mode display reads "H 16" ("L 16") followed by reading. See APPENDIX A for description of algorithm that determines MAX and MIN.

Clear internal memory by turning unit OFF. Clear the "MAX/MIN" mode by pressing any other key (except "HOLD").

HOLD/RESET Pressing "HOLD/RESET" key will freeze the reading on the display; "HOLD" is displayed and the reading is held.

Pressing "HOLD/RESET" key a second time frees the display.

SECTION 3 – OPERATION

NOTE: Unit should be "OFF" before changing batteries or attaching probe.

1) Remove battery compartment lid and insert batteries; replace lid (see APPENDIX D).

2) Attach the probe cable by aligning the keyway(s), inserting connector(s) and turning collar(s) to tighten (see APPENDIX B for connector wiring diagram).

3) Press the "ON/OFF" key to turn unit ON. The display will show all its elements (see APPENDIX C) followed by the remaining battery capacity ("bA85" means the battery is at 85% capacity) followed by "2.75" or "1.00" indicating the AP275 or AP100 probe, respectively, is attached.
NOTE: When the battery symbol appears during normal operation, replace the batteries.

4) Press "FPM/MPS" key, if necessary, to display desired units. Place probe in the air stream with direction arrow (if present) in the direction of the airflow. To calculate CFM see APPENDIX E.

5) To correctly measure the air velocity from a large duct, set unit to "16 SEC." mode and move probe about the area of the opening. After 16 seconds, the unit will display the velocity for the preceding 16 seconds, updating after that every 2 seconds by adding the latest 2 second measurement and dropping the oldest 2 second measurement.

6) To get maximum readings since turn-on, press "MAX/MIN" key; to get minimum readings, press "MAX/MIN" key a second time. For explanation of the displayed views, see **"**MAX/MIN**"** paragraph in SECTION 2, also APPENDIX A.

7) To HOLD the displayed reading, press the "HOLD/RESET" key. Press key again to clear the HOLD condition.

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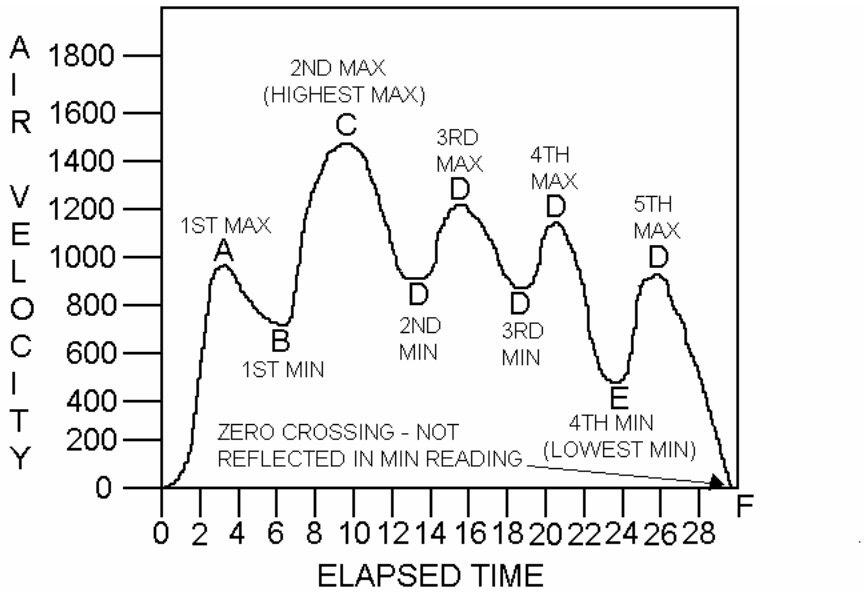
APPENDIX A – MAX/MIN CALCULATIONS



A) 1st MAX reading. Also first minimum reading, to be replaced at B.

B) This 1st MIN at B is the lowest yet and will be registered as velocity increases.

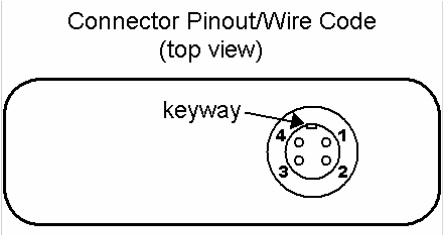
C) This 2nd, higher MAX at C will register as the velocity decreases, replacing 1st MAX.

D) This 2nd MIN at D is higher than the MIN already registered and will be ignored.

E) This 4th MIN at E is lower than the 1st MIN, registered at B, and will replace it.

F) The zero crossing at F does not form a MIN and will be ignored. This protects against false MIN readings when the probe is withdrawn from the air stream.

APPENDIX B – CONNECTOR DIAGRAM



Air Velocity Connector

Pin 1 Large/Small Probe Bit	Grn
Pin 2 Velocity Input Pulse	Brn
Pin 3 Ground	Gry
Pin 4 V+ (power)	Wht

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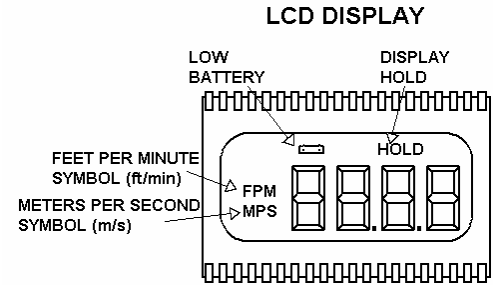
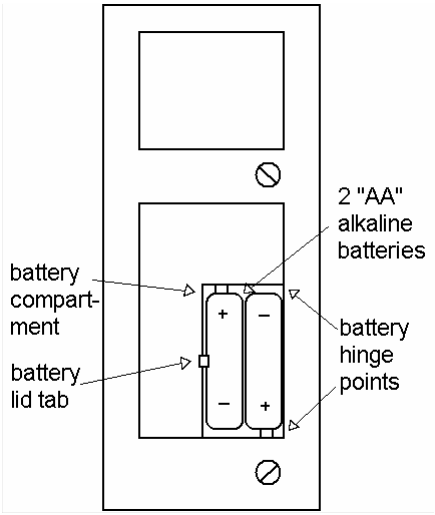
APPENDIX C – LCD DISPLAY SYMBOLS

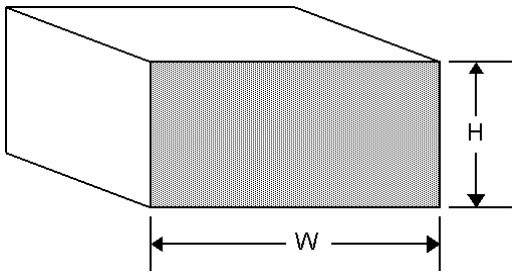


APPENDIX D – CHANGING BATTERIES



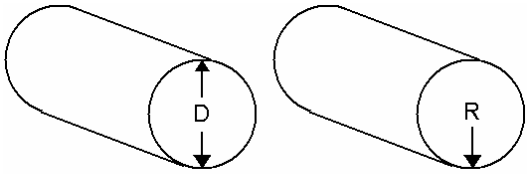
APPENDIX E – AIRFLOW VOLUME CALCULATIONS

Theory: To calculate cubic feet per minute (CFM) from a measured air velocity (FPM), you need the calculated cross-sectional area of the air flow stream:
Volume Flow (CFM) = Velocity (FPM) X Area (sq ft).
In rectangular duct work this cross sectional area equals the Width times the Height.



W x H=A (cross-sectional area)

In circular ductwork this cross section area equals the radius squared times π (3.14).



R x R x 3.14=A (cross-sectional area)

To convert an area calculated in square inches to an area calculated in square feet (which is required for the Volume Flow equation above) divide by 144: (area in sq in.)/144 = (area in sq ft.).

Example: The air duct is rectangular, the width is 24 in. and the height is 12 in. The air velocity reading through the duct is 450 FPM. Calculate the Volume Flow.

Step 1: Cross-sectional area = 24 in. x 12 in. = 288 sq in.
Step 2: 288 sq in /144 = 2 sq ft.
Step 3: Volume flow = Air Velocity x Area, therefore, Volume flow rate = 450 FPM x 2 sq ft. = 900 CFM.

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