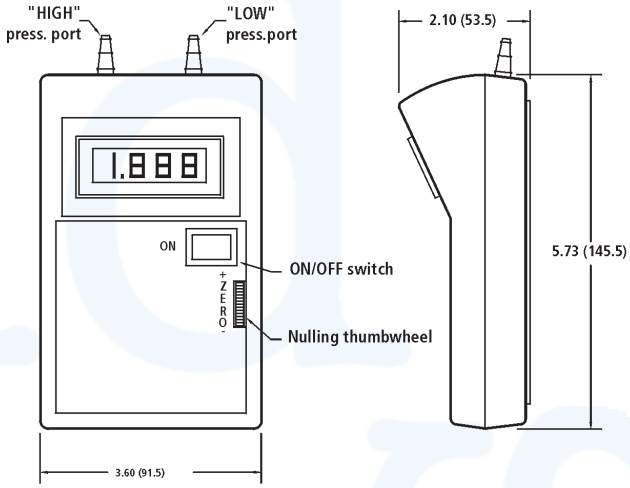
MODEL MA2

DIGITAL MANOMETER



ALL DIMENSIONS ARE IN INCHES (MILLIMETERS)

DESCRIPTION

This hand-held manometer is a compact, bi-directional, battery-operated digital manometer with excellent sensitivity and stability down to 0.001" of water column (or 0.1 Pascal). The sensing element is a Modus proprietary highly sensitive differential capacitance cell, designed to operate at extremely low pressures. This sensing element has been used for many years in other Modus pressure transmitters and has proved very reliable. This sensing element is used for pressures below 1.00 inch of water column. Pressures greater than 1 inch of water are sensed by the latest silicon based technology.

The Modus digital manometer is an ideal instrument for HVAC test and balance work, furnace draft measurement, clean room or paint spray booth differential pressure measurement and other specialized low differential pressure measurement applications.

To enhance the versatility of the manometer, an accessory kit or individual accessories may be ordered separately to fit specific applications.

SPECIFICATIONS

General

Pressure ranges are available in English or metric units, see Reference Table C

Performance

Resolution: see Reference Table C
Accuracy: +/- 1/2% of range plus 1 digit
Position sensitivity: less than 2.5% of range

Environmental

Operating temperature range: 0°C to +50°C (+32°F to 122°F)
Storage temperature range: -20°C to +70°C (-4°F to 160°F)

Electrical Connections

Low battery indicator: the symbol “BAT" appears on the display
Battery: one 9 Volt alkaline
Battery life: 200 hours (may be operated for another 20 hours without loss of accuracy after the first appearance of the "BAT" symbol on the display)

Physical

Standard accessories: instruction card and 9V battery
Connections: metal fittings for 3/32" or 3/16" (2.5 or 5mm) I.D. flexible tubing. Display: LCD, .5" digit height
Operating medium: air or non-corrosive non-explosive gases only
Maximum momentary pressure limit: Refer to Reference Table C
Controls: ON/OFF switch and thumbwheel for exact nulling of display
Physical dimensions: see outline drawing
Weight: 0.63Lb (285g)

ACCESSORIES

The accessories are:

Part Number and Description

SD-015	Surge Damper with 15 second time delay
SD-030	Surge Damper with 30 second time delay
SD-060	Surge Damper with 60 second time delay
KT1	Accessory kit *(see below for description)
A-4001	Carrying case (9.5"x13"x5.5")
A-303	Static pressure tip with magnetic mounting clip
A-344	Insertion tube
A-2011	10 Ft length of 3/16" I.D. rubber tubing
A-3001	Stepped straight connector for tubing size from 3/32" to 3/16" I.D. (2.5 mm to 5 mm I.D.)
A-3002	Stepped “Y” connector for tubing size from 3/32" to 3/16" I.D. (2.5 mm to 5 mm I.D.)
166-6	6" Pitot tube
160-12	12" Pitot tube**
160-18	18" Pitot tube**
160-24	24" Pitot tube**
160-36	36" Pitot tube**
160-48	48" Pitot tube**
160-60	60" Pitot tube**

** These Pitot tubes will not fit in the standard carrying case.
* The KT1 accessory kit consists of: (1) carrying case (with storage compartment for the digital manometer), (1) 6" Pitot tube, (2) static pressure tips, (1) insertion tube, (2) 5 Ft lengths of rubber tubing, (2) stepped straight connectors, (2) stepped "Y" connectors.

ORDERING INFORMATION

Order Number
(See Table below and Reference Table C)

MA2 - PR
EXAMPLE:
MA2 - 01E

PR = Pressure Range (See Reference Table C)
Enter the 3 digit code from Standard Pressure Range - Table C

MODEL AN-1A

Annunciator

DESCRIPTION

This single-point annunciator provides a visual and audible warning of an alarm condition occurring at a remote location. It operates, either with the Room Pressure Monitor Model RPM-1 which supplies the necessary power to the annunciator, or with any dry contact and an external power supply.

Alarm Sequence

Under normal conditions, the green LED is "STEADY ON." When an alarm condition occurs, the green LED turns off, the red LED "FLASHES ON" and the audible alarm "PULSES ON." Momentarily pressing the acknowledge button silences the audible alarm but the red LED stays "FLASHING ON," as a reminder, until the alarm fault is corrected. When the conditions are normal again, the annunciator resets itself. The green LED returns to "STEADY ON," the red LED and audible alarm are "OFF."

SPECIFICATIONS

Behind the front panel are two potentiometers. One potentiometer provides a variable time delay from the moment the alarm is received by the annunciator, until it responds to the time delay. This delay may be adjusted between 5 and 45 seconds. The annunciator will not change to the alarm mode if the alarm condition disappears before the end of the time delay. This eliminates nuisance alarms caused by short transients.

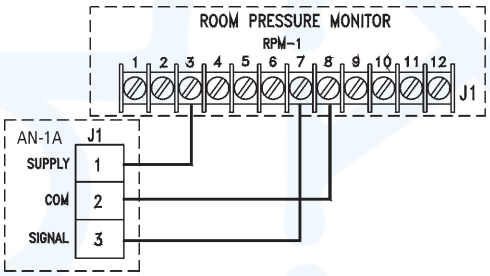
The other potentiometer sets the volume of the audible alarm, from zero to maximum. The volume is also a function of the power supply voltage. The external power supply to the annunciator can be between 5 and 32 Vdc, with a maximum supply current of 13 mA. The maximum volume levels that can be expected from a distance of 1 meter at various supply voltages are outlined below:

External Supply	Max. Volume
5 Vdc	80 db
8 Vdc	92 db
12 Vdc	98 db
18 Vdc	103 db
24 Vdc	108 db

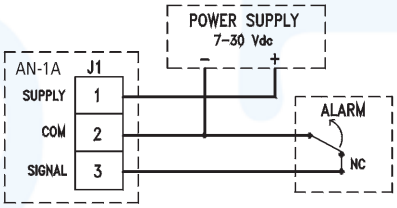
The input signal may be either a dry contact or a voltage. The input voltage may be as high as the supply voltage. The alarm mode occurs when the input signal exceeds 2.5 Volts. When the signal is a dry contact, the contact must be closed under normal conditions. The current through the contacts is 1 mA.

The annunciator is designed for flush installation in a wall. The front panel is the same size as the standard electrical wall plate 2-3/4" x 4-1/2"). It is supplied with a standard plastic (PVC) switch box, 2-13/16" deep. This box includes four integral clamps, swing arms and ears. Other boxes with a minimum depth of 1-1/4" may be substituted by the user.

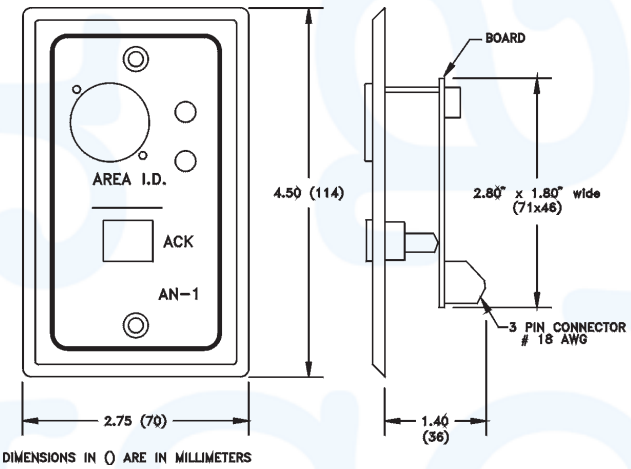
WIRING DIAGRAMS



a. Wiring to the Room Pressure Monitor Model RPM-1



b. Wiring to dry relay contact with external power supply



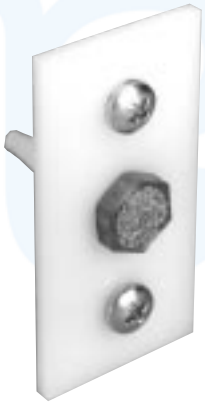
ORDERING INFORMATION

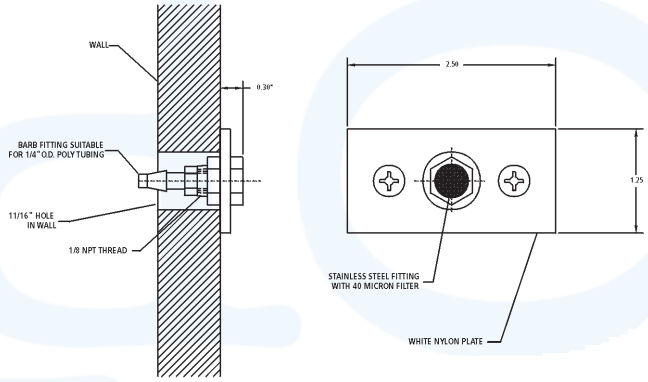
Order Number

AN-1A

MODEL AST-1

Static Pressure Probe





TYPICAL INSTALLATION OF STATIC PRESSURE PROBE

ORDERING INFORMATION

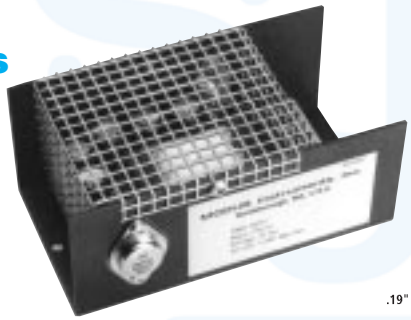
MODEL AST-1

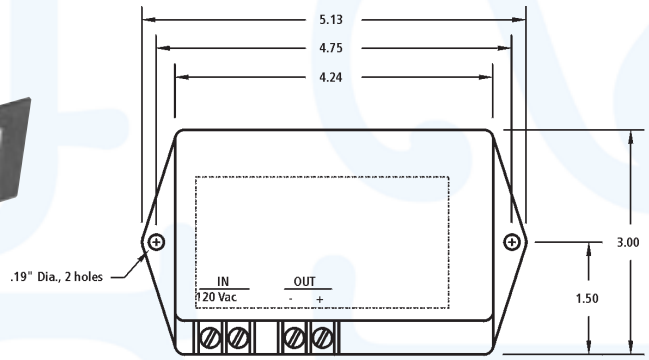
SPECIFICATIONS

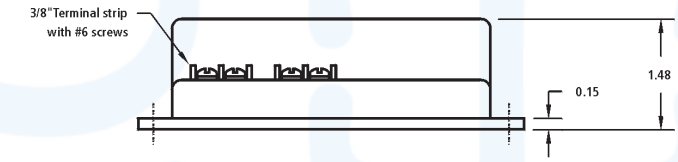
This pressure probe conveniently terminates the end of a 1/4" O.D. plastic tubing at the point where static pressure is being measured.

Power Supplies

120 Vac IN/Vdc OUT





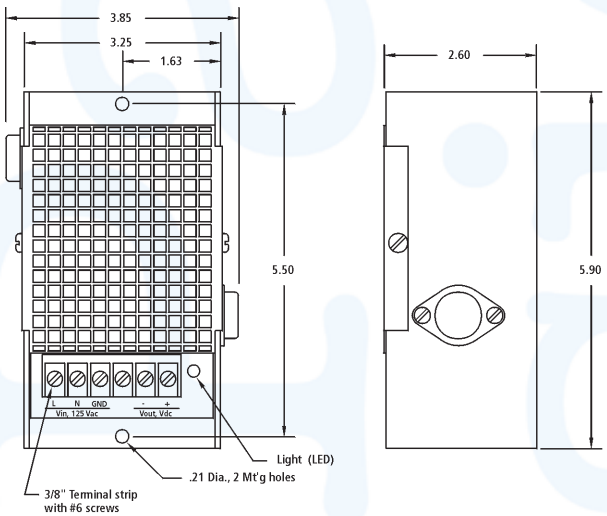


POWER SUPPLY, Model PS1-

DESCRIPTION

Modus offers three models of small AC to DC power supplies. The low output ripple and good voltage stability under varying load and line power conditions make these power supplies well suited for powering control instruments and transmitters, such as 4-20 mA current loops.

These power supplies are conservatively rated for long life and do not require derating within the temperature, current output and line voltage operating ranges.



POWER SUPPLY, Model PS2- OR PS3-

SPECIFICATIONS

Performance

All power supplies are current-limited and internally protected to prevent damage from accidental short circuits. A status light (LED) indicates the presence of an output voltage on the PS2- and PS3- models. Isolation between input and output is 1500 Vrms minimum and the output is floating to allow grounding where it is most convenient. The Input voltage range is 105 to 135 Vac 50/60 Hz.

Environmental

Operating temperature: 0°C to +52°C (+32°F to +125°F)

Electrical Connections

Wiring is by means of 3/8" terminal strip with #6 screws

Physical

Weights: PS1-0.52 Lb (236 g), PS2-1.38 Lb (625 g), PS3-1.56 Lb (707g)

ORDERING INFORMATION

Order Number
(Order by Model Number, see Table below)

Model No	Output Current	Output Voltage	Typ. Load Regulation*
PS1-12	150mA	12 Vdc ± 0.5 V	10mV
PS1-24	70mA	24 Vdc ± 1.2 V	22mV
PS2-12	625mA	12 Vdc ± 0.5 V	18mV
PS2-24	365mA	24 Vdc ±1.0 V	25mV
PS3-24	625mA	24 Vdc ±1.0 V	25mV