EM2000 / EMS2000 mechanical differential pressure gauges

User manual | Consolidated English translation

1. Applications and principle

The gauges measure fan and blower pressure, filter resistance, air velocity, furnace pressure, orifice-plate differential pressure and bubbler level. The original also lists pneumatic measurement associated with fluid amplifiers and hydraulic systems, combustion air/gas ratio and automatic-valve control, and blood-pressure or respiratory-pressure monitoring in medical equipment. The instrument itself is for air or other noncorrosive gases; these application examples do not authorize direct liquid service.

Application sectors include healthcare, microelectronics, aerospace, environmental engineering, biotechnology, pharmaceuticals, building automation, HVAC, food and beverage, and precision electronics manufacturing.

A magnetic helix mechanism avoids the gear-contact friction of conventional mechanisms. No liquid fill is required. The gauge resists shock and vibration and measures positive, negative or differential pressure. Several mounting methods are available.

2. Construction and specifications in the source leaflets

Parameter	EM2000	EMS2000
Housing	Precision die-cast aluminum housing	Precision die-cast aluminum front; ABS + PC rear
Dimensions	Ø120.65mm × 55.56mm	Ø120.65mm × 55.56mm
Approximate weight	560g	560g
Finish	Baked coating	Baked coating on metal parts
Measuring spans	Minimum 30Pa; maximum 10kPa	Minimum 30Pa; maximum 10kPa
Rated pressure, as printed	−10kPa to 10kPa	−10kPa to 10kPa
Accuracy	±2% to ±4%FS	±2% to ±4%FS
Temperature	−7°C to 60°C	−7°C to 60°C
Connections	1/8in female tapered pipe thread; high/low pairs on the side and back	Same connection arrangement
Referenced standard	GB/T 1226-2017	GB/T 1226-2017

Both technical blocks describe die-cast aluminum with chromate-treated aluminum components tested for 168 hours in a salt-spray test and a dark-gray final coating. For EMS2000, this metal description applies to its aluminum front construction; the model-specific features explicitly identify an ABS + PC rear housing.

Installation and connection

3. Choose the installation position

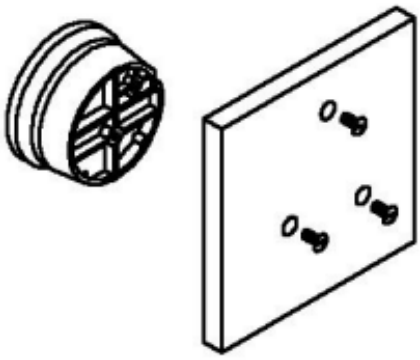
Select a location without severe vibration and with an ambient temperature no higher than 140°F (60°C). Avoid direct sunlight, which can accelerate clouding of the transparent plastic cover. A long pressure tube delays response but does not by itself change accuracy. Keep the tubing unobstructed. If pressure pulsation or vibration causes excessive pointer movement, additional damping can be supplied by the manufacturer.

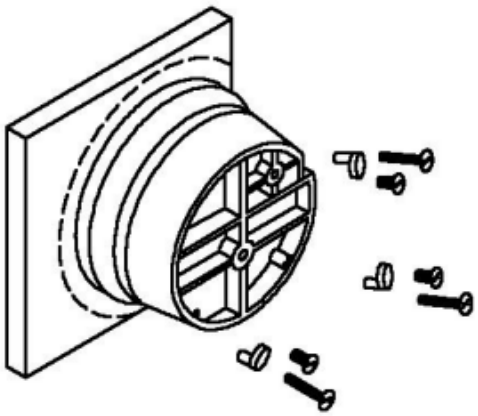
The gauges are calibrated with the diaphragm vertical. Mount vertically to maintain the specified accuracy. Specify a different operating orientation when ordering.

4. Mount the gauge

Surface mounting: Position three mounting holes at 120° intervals around the bolt circle and use machine screws of a suitable length. Keep the rear pressure-relief clearance unobstructed.

Flush mounting: Prepare the panel opening, insert the gauge and secure it with suitable machine screws and mounting adapters. For pipe mounting, order the pipe-mounting kit separately.





5. Set zero after mounting

With no differential pressure applied, use the external zero-adjustment screw at the bottom of the cover to set the pointer exactly to zero. Vent the high- and low-pressure connections while checking or adjusting zero.

6. Connect the pressure source

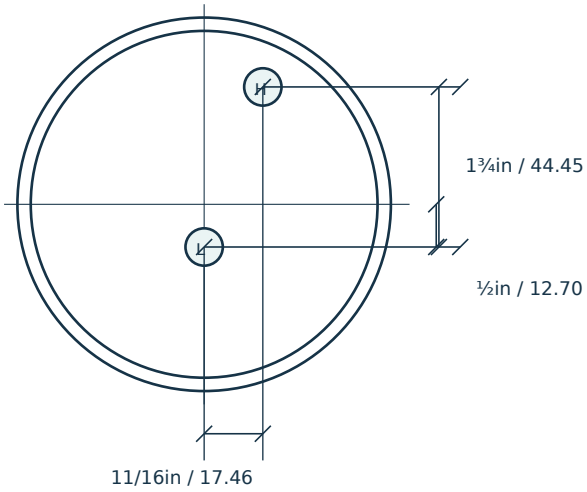
Mode	Connection
Positive pressure	Connect the pressure source to either high-pressure port. Plug the unused high-pressure port. Leave one or both low-pressure ports vented.
Negative pressure	Connect the vacuum or lower-pressure source to either low-pressure port. Plug the unused low-pressure port. Leave one or both high-pressure ports vented.
Differential pressure	Connect the higher-pressure source to a high-pressure port and the lower-pressure source to a low-pressure port. Plug the unused ports.

If a vented side is exposed to dirty air, fit a filter vent plug to keep the interior clean. For temporary installations, use rubber or polyethylene tubing with an Ø4mm inside diameter. For permanent installations, use tubing of at least 1/4in; copper or aluminum tubing is recommended.

Reference dimensions and accessories

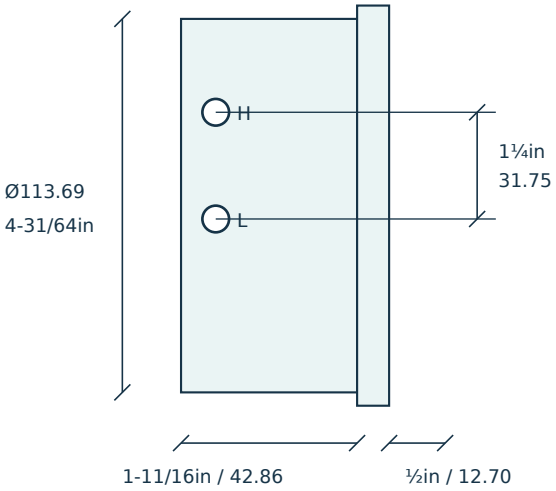
Dimensions retain the source inch and mm values. Connection positions and dimension relationships are shown schematically; the drawing is not to scale.

Rear connections



H: high; L: low — both 1/8in female NPT

Side connections



Front bezel: Ø4¾in / 120.65mm

Overall depth: 55.56mm

Feature	Dimension / instruction
Mounting screws	Three #6-32 tapped holes, 3/16in (4.76mm) deep
Bolt circle	4⅛in (104.78mm), equally spaced holes
Rear high/low vertical separation	1¾in (44.45mm)
Rear low port below horizontal centerline	½in (12.70mm)
Rear port horizontal offset	11/16in (17.46mm)
Side high/low vertical separation	1¼in (31.75mm)
Body diameter	4-31/64in (113.69mm)
Rear-to-side-port reference offsets	15/32in (11.91mm) and 17/32in (13.49mm), referenced to the two rear planes
Main body axial depth	1-11/16in (42.86mm)
Front section depth	½in (12.70mm)
Front bezel diameter	4¾in (120.65mm)
Surface-mount rear clearance	Four spacer pads provide 0.58mm clearance, approximately 0.023in; keep clear for overpressure relief

7. Included parts

Two 1/8in male-thread hose-barb fittings; two 1/8in NPT male-thread pressure-port plugs; three mounting adapters/clips with screws. The parts list describes the adapters as surface-mount components, while the technical block describes clips for flush mounting.

Precautions and configuration notes

8. Media and pressure precautions

Use only air or other noncorrosive gases. If overpressure occurs or the indications are abnormal, contact the manufacturer. The original specifically warns that exposure of the internal magnet to hydrogen can lead to toxic or explosive gas formation; consult the manufacturer before any hydrogen application. Do not treat the standard construction as approved for hydrogen service.

The pressure range printed on a dial is the measurement span. Observe the pressure rating marked on the supplied instrument, and keep the relief opening unobstructed. A relief device is not an extension of the normal pressure rating.

9. Configuration-specific ratings

The leaflet configuration has measuring spans from 30Pa to 10kPa, a -10 to 10kPa rated-pressure entry and approximately 560g mass. Additional configurations offer spans up to 100kPa, -68 to 103kPa rated pressure, approximately 540g mass and rounded dimensions of 120×55mm. Apply the ratings marked on the supplied gauge.

Accuracy is ±2%FS at 21°C, with ±3% for the 125Pa and 250Pa configurations and ±4% for the 60Pa configuration. The rubber relief plug opens at approximately 172kPa. Relief pressure is separate from the normal operating-pressure rating.

10. Mounting and housing details

Use three equally spaced mounting positions at 120° on the stated bolt circle. Keep the four rear spacer clearances of 0.58mm, approximately 0.023in, unobstructed. The tapped mounting holes are #6-32.

EMS2000 uses an aluminium front and an ABS + PC rear housing. Apply the mounting, pressure connection and zero-setting procedures to the supplied construction.

Source publisher

ELECALL trademark holder and manufacturer: Yueqing ELECALL Electric Co., Ltd. Address: No. 246 Weishi Road, Yueqing Economic Development Zone, Zhejiang, China. Telephone: 4006-111-323. The source also includes the ELECALL trademark and a QR code.