

EM520 handheld differential pressure meter

Professional version | Complete English user manual

1. Features

The EM520 combines a microcontroller, high-sensitivity differential-pressure sensor and dot-matrix LCD. It measures positive, negative and differential pressure, with Chinese or English interface selection. Twelve pressure units and two air-velocity units support metric and imperial measurements. Upper and lower pressure limits trigger a flashing display. A separately purchased Pitot tube enables air-velocity measurement in closed ducts, with adjustable air density in kg/m^3 or lb/ft^3 . Up to 50 readings are retained in memory. Manual or timed automatic shutdown is selectable.

2. Technical specifications

Parameter	Specification
Pressure limit	$\pm 5000\text{Pa}$; exceeding the limit can damage the instrument
Accuracy	$\leq \pm 3\% \text{FS}$
Resolution examples	1Pa ; 0.01kPa ; $0.01\text{inH}_2\text{O}$
Repeatability	$\pm 0.25\% \text{FS}$
Response time	Approximately 0.5s at $25^\circ\text{C} \pm 2^\circ\text{C}$
Functions	Manual zero; HOLD reading lock; maximum, minimum and average; relative difference
Pressure connectors	$1/8\text{in}$ (3.18mm) quick connections
Operating temperature	0°C to 40°C
Storage temperature	-10°C to 60°C
Overrange indication	HI; stop measurement when this appears
Power	One 9V 6F22 battery
Battery life	Approximately 30 hours of continuous use with backlight off
Net weight	163g including protective cover, excluding battery and accessories
Dimensions	$155\text{mm} \times 80\text{mm} \times 32\text{mm}$ including protective cover

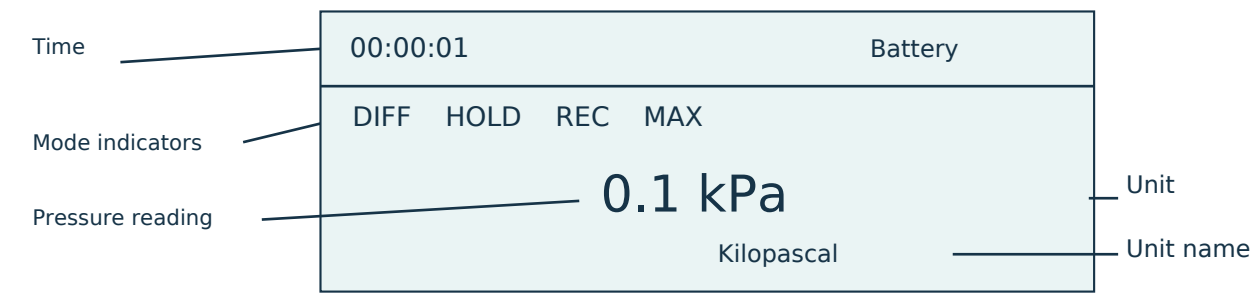
3. Package contents and battery installation

One EM520 instrument; two hoses; one 9V 6F22 battery; one user manual; one inspection certificate; one TPU protective cover. The Pitot tube is not included.

Remove the protective cover and open the battery compartment to install the battery. Observe positive and negative polarity. Design and specifications may change without prior notice.

Display, keys and unit resolution

4. LCD indications



The display identifies time, battery condition, measurement modes, the numeric pressure reading, the engineering-unit symbol and its full name. DIFF, HOLD, REC and MAX are examples of active-function indicators.

5. Key layout and paired functions

Position	Key functions
Upper left	UNIT / BACK
Upper center	RECORD / OK
Upper right	POWER / MENU
Lower left	HOLD / FUNCTION / ▼
Lower right	DIFF / ZERO / ▲

6. Complete unit and resolution table

Displayed unit	Meaning	Resolution
Pa	Pascal	1
kPa	Kilopascal	0.01
bar	Bar	0.001
oz/in²	Ounce-force per square inch	0.01
psi	Pound-force per square inch	0.001
inHg	Inch of mercury	0.001
mbar	Millibar	0.1
mmHg	Millimeter of mercury	0.01
cmH₂O	Centimeter of water	0.1
ftH₂O	Foot of water	0.001
inH₂O	Inch of water	0.01
kgf/cm²	Kilogram-force per square centimeter	0.001
m/s	Meter per second	0.1
fpm	Foot per minute	1

Measurement and system menus

7. Measurement operations

Function	Operation
Power	Press POWER to enter measurement. Hold POWER to switch off.
Manual zero	Select the pressure unit, then hold ZERO to reset the indication. A startup reading may not automatically be zero.
Unit selection	Press UNIT to cycle the pressure units.
Maximum / minimum / average	Hold FUNCTION to activate and cycle these modes. The active mode appears on the display.
Relative difference	Press DIFF. The displayed difference equals the current reading minus the pressure reading immediately before DIFF was enabled.
Reading hold	Press HOLD to freeze the current value; press it again to release.
Record one reading	Press RECORD once to store one reading. REC appears. Up to 50 readings remain stored after power-off.
Clear all records	Hold RECORD until the clear indication appears. All saved readings are erased.
Backlight	In measurement mode, any key except POWER activates the backlight for approximately 15 seconds.
Shutdown default	Manual shutdown is the default; timed shutdown can be selected in the menu.

8. System menu

Press MENU to enter. Use the arrow keys to navigate or adjust values, OK to confirm, and BACK to return.

Menu	Procedure
View data	Press OK, then use ▲/▼ to browse saved readings. Press BACK to exit.
Limit warning	Open the warning-enable item with OK and select On. After the success indication, set the upper and lower limits with ▲/▼ and confirm. The LCD flashes when measured pressure is outside the set limits.
Time	The timer starts at 00:00:00 (hours:minutes:seconds) every time the meter is switched on. Press OK to set the current time. This setting is not retained after power-off.
Language	Select Chinese or English and confirm.
Timed shutdown	Choose 5 minutes, 10 minutes or no automatic shutdown. With no automatic shutdown, the meter remains on until manually switched off or the battery is exhausted.
Air density	Press OK and adjust the density with ▲/▼. Hold BACK to switch between kg/m ³ and lb/ft ³ . Press OK to save and exit.
Factory reset	Press OK and select Yes to initialize the instrument.

Pitot-tube air-velocity measurement

9. Required equipment and connections

A separately purchased Pitot tube is required. Connect its total-pressure outlet to the instrument's positive (+) pressure port using one hose. Connect the static-pressure outlet to the negative (–) port with the second hose. Make both connections tight and leak-free.

Set the air density for the measurement environment, using kg/m^3 or lb/ft^3 . Air-velocity units are m/s and fpm . The manual provides an air-density setting but does not describe a separate menu for entering a Pitot coefficient.

10. Pitot coefficients in the original manual

Pitot type	Coefficient range printed in the source
L type	0.99–1.01
S type	0.81–0.86

The source calls these values “air-density coefficients” and recommends consulting the Pitot manufacturer. A Pitot coefficient is dimensionless and is not an air density in kg/m^3 or lb/ft^3 . Do not enter these coefficient values directly as the air density. Use the Pitot manufacturer's applicable calibration and confirm compatibility with the meter's velocity conversion.

11. Low-velocity limitation

A nonzero indicated velocity may appear when there is no airflow. The source says that readings below 3.0m/s are not a reliable velocity reference; readings above 3.0m/s may be used when airflow is present. It does not define an accuracy specification for velocity or the exact 3.0m/s boundary.

12. Operating notes

Press RECORD briefly to save a reading; hold it to erase all records. Relative difference is current pressure minus the captured baseline. Hold BACK to change air-density units; BACK shares the UNIT key.

The EM520 configuration described here has a $\pm 5000\text{Pa}$ pressure limit. Select any other range as a separately specified instrument configuration.

Use the positive and negative pressure ports as shown for differential and Pitot measurements. Airflow readings represent velocity; no volumetric-flow calculation is provided.

Unit symbols are normalized here; the instrument/source may use forms such as KPa , Bar , Ozin^2 , Psi and Kgcm^2 . Resolution is expressed in the unit listed in the first column.

Source attribution

ELECALL and its Chinese trademark are held by Yueqing ELECALL Electric Co., Ltd., which authorizes the product. The Chinese source names Yueqing Liangzi Electric Co., Ltd. as manufacturer. Address: No. 246 Weishi Road, Yueqing Economic Development Zone, Zhejiang Province, China. Telephone: 0577-62792850. The English source page gives the ELECALL brand-holder address.