

# PM880

## Panametrics Portable Hygrometer

### Applications

This rugged, intrinsically safe, portable hygrometer measures moisture in gases and non-aqueous liquids. It is used in conjunction with Moisture Image® Series (MIS), TF and M Series moisture probes for applications including:

- Natural gas
- Chemical and petrochemical gases
- Non-aqueous liquid applications
- Air separation plants
- Tanker preparation and filling
- Industrial gases
- Gas cylinder preparation and filling
- Shipboard applications
- SF6 circuit breakers
- Furnace gases/heat treating
- General plant/facility maintenance



### Features

- Hand-held portable design
- Intrinsically safe
- IP67 rated
- Large graphic display
- Internal data logger
- IrDA® communication with PC
- Stores up to 60 log/site files
- Simple programming via graphic user interface
- Compatible with all GE moisture probes
- Lightweight hand-held sample system
- Convenient carrying bag to store hygrometer and all accessories
- Self-paced e-learning class provides comprehensive review of features and operation



GE imagination at work

The PM880 hygrometer is a complete, intrinsically safe, portable system with options and accessories to meet all industrial moisture measurement needs.

This hygrometer is small, lightweight, and easy-to-use. The large LCD displays moisture readings in dew point (°C or °F), ppmv, ppmw, lb/MMSCF (natural gas), and a variety of other unit options. Data can be viewed in alphanumeric or graphic formats. A rechargeable battery pack and battery charger make this the ideal go-anywhere moisture analyzer.

The PM880 comes in a soft carrying case with zippered compartments, a handle, and a shoulder strap. The case accommodates the PM880, a sample system, flexible hosing, probes with protective covers, a Moisture Image Series probe electronics module, an operating manual, a battery pack, a battery charger, and probe cables.

Training for the PM880 is available on-site, in the factory or on line. GE offers extended warranties and service agreements for the PM880 as well as a range of services including NIST-traceable calibration, field calibration, rentals and moisture surveys.



The PM880's large LCD displays moisture readings in dew point (°C or °F), ppm<sub>v</sub>, ppm<sub>w</sub>, lb/MMSCF (natural gas), and a variety of other unit options in graphic or alphanumeric formats.

## PM880 AC Accessories

- 1 Portable, infrared thermal printer and battery charger
- 2 Zippered soft carrying case
- 3 Flexible braided–stainless steel hose
- 4 MIS probe electronics module
- 5 TF moisture probe
- 6 M Series moisture probe with probe cable
- 7 Portable sample system
- 8 PC infrared adapter
- 9 PM880 battery and charger



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Online Training Programs

A self-paced, online training class is available to learn more about the features and operation of the PM880 hygrometer. The comprehensive course contains nine learning modules examining topics including basic moisture measurement theory, programming, sample system operation, and basic troubleshooting.

# PM880 Specifications

## Overall

### Channels

Single channel

### Dimensions

- Size: 9.4 x 5.5 x 1.5 in (238 x 138 x 38 mm)
- Weight, electronics: 2.5 lb (1.13 kg)
- Weight, sample system: 4 lb (1.8 kg)

### Enclosure

Type 4X, IP67

## Electronics

### Internal Battery

Rechargeable. PM880 batteries can be installed or removed in hazardous areas. Batteries must be recharged in non-hazardous areas only.

### Battery Life

15 to 24 hours depending on type of probe; battery life reduced when operating below 32°F (0°C)

### Battery Charger

- Switchable input: 115 or 230 VAC, 50/60 Hz
- Requires approximately three hours for full battery recharge

### Memory

FLASH memory

### Operating Temperature

14° to 122°F (-10° to 50°C)

*To ensure maximum battery life, GE does not recommend storing at temperatures exceeding 95°F (35°C) for longer than one month.*

### Keypad

25-key, rubberized, tactile membrane

### Display

240 x 200 pixel, graphic backlit LCD display

## Printer/Terminal Output

Infrared communication port

## Cables

Cable type dependent on probe type: M Series, TF Series, or Moisture Image Series. LEMO®-to-bayonet connector

## Cable Length

- Standard: 10 ft (3 m)
- Optional: Consult GE for other lengths

## Hazardous Area Classification

Intrinsic-safety certification: Baseefa (2001) Ltd. Ⓢ II 1 G EEx ia IIC T3 (-20°C ≤ T<sub>0</sub> ≤ +50°C) Baseefa02ATEX0191; and CSA C US Class I, Division 1, Groups A, B, C & D, Type 6

## European Compliance

Complies with EMC Directive 89/336/EEC, ATEX Directive 94/9/EC

## Operational

### Site Parameter Programming

Menu-driven, graphic, operator interface uses keypad and soft-function keys. Online help functions. Memory storage for saving site parameters.

### Data Logging

Memory capacity to log over 100,000 moisture data points. Programmable keypad for log units, update times, and start and stop times.

### Display Functions

Displays measurements and logged data in alphanumeric or graphic format.

### Display Units

- Moisture: DP temperature, ppmv, ppmw, % RH, lb/MMSCF, and others
- Temperature: °F, °C, and °K
- Pressure: psig, bar, kPa (gauge), kg/cm<sup>2</sup> (gauge), and others

## Moisture Measurement

### Compatibility

Compatible with all GE aluminum oxide moisture probes: M Series, TF Series, and Moisture Image Series. Each probe type requires a different type of I/O cable.

### Calibration

GE moisture sensors are computer-calibrated to National Institute of Standards and Technology (NIST) traceable moisture concentrations.

## Dew/Frost Point Temperature

### Overall Calibration Range Capability

-166°F to 140°F (-110°C to 60°C)

### Calibration Range Options

- Standard: 68°F to -112°F (20°C to -80°C) with data to -166°F (-110°C)
- Ultralow: -58°F to -166°F (-50°C to -110°C)
- Extended high: 140°F to -112°F (60°C to -80°C) with data to -166°F (-110°C)

### Accuracy

- $\pm 3.6^\circ\text{F}$  ( $\pm 2^\circ\text{C}$ ) from 140°F to -85°F (60°C to -65°C)
- $\pm 5.4^\circ\text{F}$  ( $\pm 3^\circ\text{C}$ ) from -85°F to -166°F (-65°C to -110°C)

### Repeatability

- $\pm 0.9^\circ\text{F}$  ( $\pm 0.5^\circ\text{C}$ ) from 110°F to -85°F (60°C to -65°C)
- $\pm 1.8^\circ\text{F}$  ( $\pm 1.0^\circ\text{C}$ ) from -86°F to -166°F (-66°C to -110°C)

### Operating Pressure

5  $\mu$  of Hg to 5000 psig (345 bar) limited by pressure sensor—see pressure measurement specifications

## Temperature Measurement

Optional thermistor available for all GE moisture probes

### Range

-22°F to 158°F (-30°C to 70°C)

### Accuracy

$\pm 0.9^\circ\text{F}$  ( $\pm 0.5^\circ\text{C}$ ) at -22°F (-30°C)



## Pressure Measurement

Optional pressure sensor available for TF Series and Moisture Image Series moisture probes

### Ranges

- 30 to 300 psig (3 to 21 bar)
- 50 to 500 psig (4 to 35 bar)
- 100 to 1000 psig (7 to 69 bar)
- 300 to 3000 psig (21 to 207 bar)
- 500 to 5000 psig (35 to 345 bar)

### Accuracy

$\pm 1\%$  at full scale

### Proof Pressure

Three times span of available range up to maximum 7500 psig (518 bar)

## Sample System

The SS880A standard sample system comprises an inlet needle valve, a built-in coalescing filter and sample cell with a bypass needle valve and venting tube, a pressure gauge (various ranges), and an outlet needle valve with venting tube.

### Wetted Parts

316 SS

### Operating Pressure

Configurations available for 300, 500, 1000, 2000, or 3000 psig (21, 35, 69, 207, or 345 bar), dependent on pressure gauge)

### Maximum Pressure Rating

- Standard: 3000 psig (207 bar)
- Optional: 5000 psig (345 bar)

### Other Options

- Inlet pressure regulator, 0 to 500 psig (1 to 345 bar) outlet
- Armored flowmeter, 1.3 to 13 SCFH
- 10-ft (3-m), flexible, polytetrafluoroethylene-lined, braided-stainless steel hose with 1/4-inch tube connections. Not recommended for dew point temperatures below -103°F (-75°C).



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