

ON-LINE REID VAPOR PRESSURE MONITOR

44800D NEC Purge • 44800E CENELEC Purge
44800DX NEC Purge • 44800H CENELEC Purge

Measure vapor pressure quickly, conveniently and completely on-line!

The PSPI Reid Vapor Pressure Monitor is an on-stream process monitor for measuring the RVP of blended fuels, distillates and other multiple component hydrocarbon fuels. The 44800 *directly* measures vapor pressure—no RVP correction necessary! With its unique engineering and design, the need for auxiliary air conditioning, cooling, atmospheric drains and sample recovery systems has been eliminated. And the average cycle time is still less than six minutes! Operation of the monitor is completely customizable with user-programmable measurement cycles, units and alarms. The 44800 Reid Vapor Pressure Monitor is completely microprocessor controlled with self-diagnostic capabilities, making it economical and simple to operate and maintain.

- Measures RVP from 0 to 22 psi
- Results directly correlate to ASTM D 4953 and D 323 with repeatability of ± 0.05 psi (± 0.0035 bar)
- Integral heating/cooling system maintains proper measurement chamber temperature, eliminating need for auxiliary air conditioning or coolant systems
- Ultrasonic agitation of sample speeds analysis time
- Monitor automatically returns sample to process stream from 2 to 25 psig below inlet pressure
- Reads out directly in RVP units
- Typical applications are locations where fuel production needs to be optimized while complying with stringent RVP requirements



44800DX

THEORY OF OPERATION

The PSPI Reid Vapor Pressure Monitor is an on-line instrument designed to automatically determine the hydrocarbon fuels' RVP value in correlation to ASTM D 4953 and D 323 test procedures. Pre-heated/cooled sample (37.8°C; 100°F) enters the lower (sample acquisition) chamber of the test cell. The sample is introduced at an angle to produce a swirling motion which, combined with a 2-minute flush period, clears the previous sample and vapors from the cell and ensures that the next sample is representative of current conditions. A 10mL sample is captured in an annular opening machined in the circumference of the spool valve. As the spool rises within the test cell, the temperature controlled sample is pulled into the conically shaped upper measurement chamber, which has a volume of nitrogen equal to four times the sample volume (40mL). This ensures that the measurement is performed at a vapor/liquid ratio of 4:1. Vaporization from the sample causes an immediate rise in pressure within the chamber. An ultrasonic agitator within the measurement chamber also agitates the sample, further enhancing vaporization and speeding the equilibration process. Chamber pressure is continuously measured with a sensitive pressure transducer. Chamber pressure, when the liquid and vapor phases reach equilibrium, is the RVP value. This value can be corrected, if necessary, using any previously programmed correction factors and output as the final RVP value.

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SPECIFICATIONS

Performance

- **Measurement Range:** 0 to 22 psi (0 to 1.5 bar) selectable units: psi, bar, kPa, millibar, mmHg
- **Reproducibility:** ±0.15 psi (±0.010 bar)
- **Correction Factors:** User-adjustable offset and slope
- **Measurement Frequency:** Cycle time varies with process operating conditions; typically 6 minutes or less
- **Ambient Temperature Limits:** 5° to 40°C (41° to 104°F); weather protection required; no direct sunlight

Sample Requirements

- **Flow Rate:** Approximately 10 mL per measurement
- **Pressure:** Greater than the highest expected vapor pressure, but less than 100 psig (6.8 bar); 25 psig (1.7 bar) minimum
- **Temperature:** 2° to 49°C (35° to 120°F)
- **Fast Loop Flow Rate:** 50 to 100 mL per minute of filtered sample
- **Return Pressure:** Monitor returns sample directly to process stream from 2 to 25 psi below inlet pressure

Utility Requirements

- **Electrical:** 115 or 230 VAC (±10%), 50/60 Hz, single phase, 1000 watts
- **Vent Control Gas Supply:** *D/E Models*—Clean, dry Nitrogen (98% pure) or other inert gas at 80 to 100 psig (5.5 to 6.8 barg), *DX/H Models*—Clean, dry instrument air at 80 to 100 psig (5.5 to 6.8 barg)

Signal Outputs


- **Analog Outputs:** Isolated 4-20 mAdc RVP value (standard)
- **Alarm Relays:** 4 SPST fail-safe alarm relays (standard); High RVP, Low RVP, Critical, Warning
- **Serial Output:** RS-232C serial output available (optional)
- **"Come Read" Contact:** Dry relay contact (optional)

Signal Inputs


- **Customer Alarm:** Terminals available for customer-supplied dry contact alarm connection
- **Remote Standby:** Terminals available for customer-supplied dry contact control of instrument; allows control room to take monitor "off-line"

Area Classification

Purged Enclosures:

- **42800D:** NEC Class 1, Div 1, Groups C&D
- **42800E:** Designed to comply with CENELEC Zone 1;  compliant

Explosion-Proof Enclosures:

- **42800DX:** NEC Class 1, Div 1, Groups C&D
- **42800H:** CENELEC EExd IIC T4 certified;  compliant

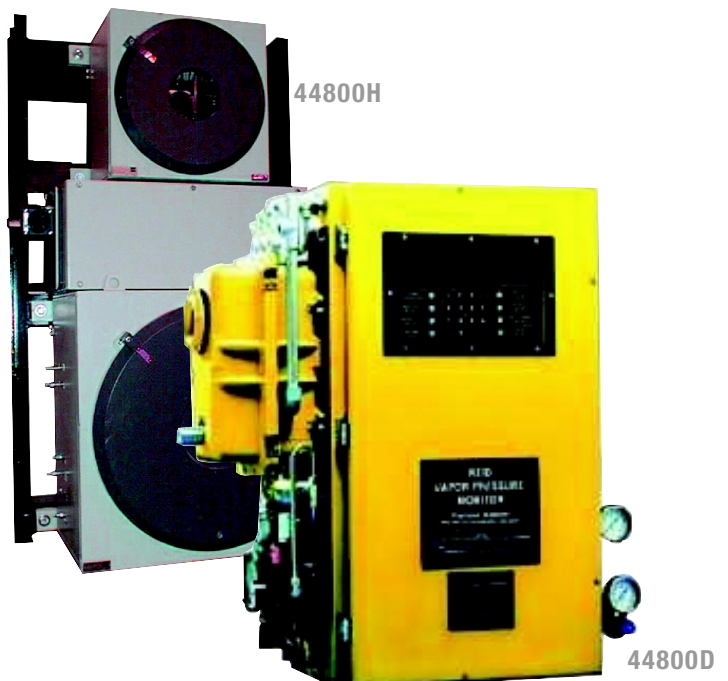
Dimensions & Weight

Uncrated:	H	W	D	units
44800D:	1054	1092	356	mm
159 kg (350 lbs)	42	43	14	inches
44800E:	1321	991	356	mm
159 kg (350 lbs)	52	39	14	inches
44800DX:	1830	851	762	mm
386 kg (850 lbs)	71	34	30	inches
44800H:	1870	965	864	mm
386 kg (850 lbs)	74	37	30	inches
Crated:	H	W	D	units
44800D:	1220	1194	458	mm
227 kg (500 lbs)	48	47	18	inches
44800E:	1474	1093	458	mm
227 kg (500 lbs)	58	43	27	inches
44800DX:	1981	965	864	mm
454 kg (1000 lbs)	78	38	34	inches
44800H:	2057	1041	864	mm
454 kg (1000 lbs)	81	41	34	inches

Optional Accessories

- **Filter Coalescer** separates water from petroleum liquids and acts as high-efficiency filter
- **Sample Conditioning System** prepares and presents representative sample to analyzer with minimum lag time

Due to PSPI's commitment to continual product development, specifications are subject to change without notice.



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