



Process Analyzer
Vapor Pressure Process Analyzer RVP-4

Credible Solutions for the Oil and Gas Industry

Vapor Pressure Process Analyzer RVP-4

Process Analyzer

To remain competitive, today's refiners must employ all optimization and product control techniques available. The use of online physical property analyzers is one of the key features to reach those objectives because they measure important quality properties in the process directly.

The vapor pressure is an indication of a liquid evaporation rate and relates to the tendency of volatile components to escape from the liquid. To assure safe storage and transportation of petroleum products, minimize environmental pollution and assure proper functioning of combustion engines it is important to measure the vapor pressure.

BARTEC BENKE

Your partner
for innovative
system solutions.



The BARTEC BENKE specialists have many years of experience. They create system solutions that you can rely on: efficient and dependable for decades to come.

ASTM compliant cylinder piston design with 4:1 expansion

Suitable for high pressure applications (LPG)

Suitable for high viscous samples (Crude Oil) without flushing cycles

No maintenance approach

Integral temperature control unit

Network and fieldbus communication

APPLICATION

The BARTEC BENKE Vapor Pressure Process Analyzer RVP-4 measures the vapor pressure of various petroleum products. Due to its design it can be used for gasoline applications as well as for high pressure applications on natural gas liquids. It is also the best choice for applications for viscous samples such as crude oil without the necessity of implementing additional wash cycles. It is also possible to measure the vapor pressure at different temperatures e.g. True Vapor Pressure (TVP) for storage tank application.

**Special Features:**

- **Rugged design of measuring cell**
- **High precision and maximized performance** due to optimized assembly of measuring cell
- **Minimized maintenance requirements** due to temperature control and insulating system without oil bath/pumps
- **Wide range of inlet temperatures.**
- **Also applicable for highly viscous samples**
- **Low sample consumption**
- **Re-cooling of peltier device** by either product or coolant
- **Available communication interfaces:**
 - Modbus/RTU, Modbus/TCP (bidirectional)
 - Remote access via Ethernet (VDSL or FOC is)
- **Integrated failure diagnosis and self monitoring**
- **Heat tracing if required**
- **Validation report for quality assurance**
- **Freely programmable digital and analog inputs**

Norms and Standards:**Compliant with:**

- **ASTM D5191**
- **DIN EN ISO 13016-1**

Correlates with:

- **ASTM D4953 (DVP)**
- **ASTM D323 (RVP)**
- **ASTM D5482 (Mini Method Atmospheric)**
- **ASTM D6377 (VPCR)**
- **ASTM D1267 (LP Gas)**
- **ASTM D6897 (LPG Expansion)**

Make your decision for a strong partner!

Choose **BARTEC GROUP** also for:

- **Fast Loop Systems**
- **Sample Conditioning Systems**
- **Validation Systems**
- **Recovery Systems**
- **Chillers**
- **Air Conditioning Systems/HVAC**
- **Pre Commissioned Analyzer Shelters/ Turn-Key Solutions**

**DASTEC S.R.L.**Representantes / Distribuidores Exclusivos
Buenos Aires, Argentina
Tel.: (54 - 11) 5352-2500
Email: info@dastecsr.com.ar
Web: www.dastecsr.com.ar

EXPLOSION PROTECTION

Marking ATEX: II 2 G IIC T4 Gb
NEC 500: Class I, Div. 2, Groups B, C, D, T4
NEC 505: Class I, Zone 1, AEx IIB+H2 T4
CEC Sec. 18: Class I, Zone 1, Ex IIB+H2 T4
TR CU Certification available

TECHNICAL DATA

Technology expansion with piston
Method compliant with: ASTM D5191, DIN EN 13016-1
correlates with: ASTM D4953*, ASTM D323,
ASTM D5482, ASTM D6377 (Crude Oil),
ASTM D1267, ASTM D6897
Measuring range fuel up to 1.6 bar (23 psi)
LPG up to 16 bar (232 psi)
Repeatability ≤ DIN EN/ASTM
fuel typ. 1.5 mbar (0.02 psi)
LPG typ. 50 mbar (0.73 psi)
Reproducibility ≤ DIN EN/ASTM
Measuring cycle discontinuous,
cycle time 7 min typically,
depends on sample composition
Product streams 2 x sample, 1 x validation
(additional hardware required)
Measuring temperature 37.8°C (100°F),
up to 60°C (140°F) optional

■ **Electrical data**
Nominal voltage 230 VAC ± 10 %, 1 phase; 50 Hz;
other ratings on request
Maximum power consumption approx. 500 W
■ **Protection class** IP 54 (NEMA 13)
■ **Ambient conditions**
Ambient temperature operation 5 to 40°C (41 to 104°F)
storage 0 to 60°C (32 to 140°F)
Ambient humidity operation 5 to 80 % relative humidity,
non-corrosive
storage 5 to 85 % relative humidity,
non-corrosive

Sample
Quality filtered 10 µm, moisture content max. 500 ppm
(≤ 37 cSt at inlet temperature)
Properties pour point 15 K below measuring
temperature or cloud point temperature,
for crude oil applications WAT needed
Consumption approx. 2 to 10 l/h (depends on product)
approx. 30 l/h for re-cooling of peltier device
(not required if suitable coolant is available)
Pressure at inlet min. 2 bar (29 psi) above measuring range
standard: up to 8 bar (116 psi)
optional: up to 18 bar (261 psi)
Temperature at inlet
Standard $T_M^{**} < 45^\circ\text{C}$: $T_M^{**} - 40\text{ K} < T_{\text{INLET}}^{***} < \text{max. } 45^\circ\text{C}$ (113°F)
Optional $T_M^{**} > 45^\circ\text{C}$: $T_M^{**} - 30\text{ K} < T_{\text{INLET}}^{***} < T_M^{**} + 5\text{ K}$
variation of temperature should not
exceed 0.2 K/min

Utilities

■ Instrument air

Consumption

Purge
Operation

Pressure at inlet Quality

■ Coolant

Consumption

Temperature

Pressure at inlet Quality

Signal outputs and inputs

Analog outputs

Digital outputs

Digital inputs

Electrical data of signal outputs and inputs

Analog outputs

Digital outputs

Digital inputs

Auxiliary power supply output

Control unit

Central control unit

Operating system

Control software

User interfaces

Display

Keyboard

Connections

Tube fittings

Vent/Drain

Weight and dimensions

Weight

Dimensions (W x H x D)

Space requirements

Optional interfaces

Analog outputs

MODBUS interface

Remote access

8 Nm³/h while purging (~12 min)
approx. 1 Nm³/h
4.7 to 6 bar (68 to 87 psi)
humidity class 2 or better acc. to ISO 8573.1sample as coolant: 20 to 40 l/h or
plant cooling water: 10 to 30 l/h for
re-cooling of peltier device5 to 50°C (41 to 122°F), variation of
coolant should not exceed 1.0 K/min2 to 7 bar (29 to 101.5 psi)
filtered 50 µmvapor pressure
(others on request)

Alarm, Ready / Valid

Stream Selection, Validation Request, Reset

max. 8 (4 to 20 mA; 1000 Ω)
active isolated on request

24 VDC; max. 0.5 A

high: 15 to 28 VDC / low: 0 to 4 VDC

24 VDC; max. 0.8 A

Industrial PC

Windows Embedded Standard 7[®]

PACS

TFT display with touch function
1024 x 768 pixelvirtual keyboard, controlled via
TFT display with touch functionSwagelok[®] 6 mm/12 mm/18 mm
other fittings on requestopen to atmosphere
backpressure on request

approx. 250 kg

approx. 1191 x 1930 x 710 mm

right: 150 mm / left: 100 mm

on request

MODBUS/RTU via RS485 or RS422
or FOC is, MODBUS/TCP via FOC is

via Ethernet (VDSL or FOC is)

*Calculation of DVPE is standardized in ASTM D5191 / **T_M = Measuring Temperature / ***T_{INLET} = Sample Inlet Temperature**Important notice** RVP-4 is subject to continuous product improvement, specifications are preliminary and may be subject to change without notice. If your technical data do not comply with existing data, please contact us for technical clarification.