ABB MEASUREMENT & ANALYTICS | DATA SHEET

RVP4500 series

Reid Vapor Pressure analyzers

Maximizing gasoline blending profits while meeting regulatory requirements.

Measurement made easy.

Key benefits

Correlation to the laboratory method
- First process RVP analyzer that better matches the laboratory methods by automatically saturating the sample

Improved blending with air saturation
- Reduces variable bias between lab and process RVP analyzer from changes in seasonal and octane level blends
- Allows blenders to optimize their blend on the less expensive feeds by safely blending closer to the sweet spot

Ethernet connectivity
- VistaReport, OPC, Modbus

Easy-to-read display
- Display visible in low light conditions

Different ranges due to variability of the feedstock going to the gasoline blenders
- RVP4500 0 to 20 psia
- RVP4550 0 to 20 psia with air saturation
- RVP4503 0 to 30 psia
- RVP4501 0 to 90 psia
- RVP4540 0 to 225 psia for LPG or LNG
- RVP4510 0 to 20 psia for shale gas condensate

ASTM method D5482 (off-line mode)
- RVP4500 meets the requirements for this ASTM method
- Allows results from process measurements to be accepted by the regulatory agencies

ASTM lab method D1267
- RVP4540 meets the requirements for this ASTM method and measures vapor pressure of LPG or LNG streams

ASTM method D323
- RVP4500 measurement correlates with the ASTM D323 with no correction factors or calibration required

Overview

Application
Reid Vapor Pressure (RVP) is a measure of the volatility of gasoline and other liquid petroleum products. It is mainly used for process control in gasoline blending and regulatory measurements. Our RVP 4500 series provides an accurate RVP value from gasoline in the low range to LPG and NGL in the high range due to more volatile light components such as methane, propane and butane. In a refinery, the most common measurement is for final gasoline quality and process control for blenders where the goal is to manipulate gasoline RVP value to ensure the product's optimal ignition quality, as well as to minimize RVP giveaway, which contributes to maximizing blending profits or margins.

Description
The RVP4500 analyzer series consists of several models to cover various range requirements.
The ranges allow the analyzers to be used not only on the final gasoline blending but also on the various feedstocks to the gasoline blender.

The RVP4550 offers a novel air saturation step that simulates the manual air saturation step of the laboratory method for the final gasoline blending operations.

The RVP4540 is the version used to measure the vapor pressure in LPG and NGL streams.

The RVP4510 is used for demanding shale gas condensate process streams, which is the liquid extracted aside from the shale gases.

Specification

Enviromental (enclosure)
- Protected from weather – IP 66, (NEMA 4 equivalent)

Ambient temperature range
- 0 to +32 °C (32 to 90 °F),
- 0 to +40 °C (32 to 104 °F) with Vortex option

Humidity
- 95% relative humidity, non-condensing

Dimensions (W x D x H)
- 762.0 mm x 222.3 mm x 1371.6 mm
- 30.0 in x 8.75 in x 54.0 in

Weight
- 56.7 kg (125 lbs)
  Minimum, configuration dependent

Mounting
- Wall – 33 mm (1.3 in) from wall with brackets
- Floor – Optional dolly

EMI/RFI considerations
- Conform to Class A industrial environment

Electrical entries
- On the side

Performance specification

RVP4500, RVP4501, RVP4503, RVP4510, RVP4540 and RVP4550

Cycle time

• Without air saturation	8.5 minutes
• With air saturation	10 minutes
• RVP4510	12 minutes

Repeatability

• RVP4500/RVP4503/RVP4550	0.05 psia
• RVP4501/RVP4510	0.20 psia
• RVP4540	1.8 psia

Reproducibility

• RVP4500/RVP4503/RVP4550	0.2 psia
• RVP4501	0.8 psia
• RVP4510	0.4 psia
• RVP4540	2.8 psia

Operating range

• RVP4500	0 to 20 psia
• RVP4501	0 to 90 psia
• RVP4503	0 to 30 psia
• RVP4510	0 to 20 psia
• RVP4540	0 to 225 psia
• RVP4550	0 to 20 psia

Pressure transducer
- High performance, accuracy
- 0.5% of full scale

Outputs
- 4 to 20 mA isolated, 600 Ω maximum
- Ethernet
- RS-232 serial output

RVP cell drain
- Cell drain must be unrestricted vent to atmosphere

Safety area classification

CSA/NRTL
- Class I, Division 1; Gas Groups B, C, D
- Temperature code 6

ATEX
- Zone 1: CE 0344; II 2 G Ex db IIB T3 Gb

IECEx
- Zone 1: Ex db IIB T3 Gb

Power (hot, neutral, ground)

Voltage
- 100 to 240 VAC

Frequency
- 50 to 60 Hz

Power consumption
- 150 W startup and steady-state operation
  Typical, varies with installed options

Instrument air

Supply connection
- ¼ in (6.4 mm) tube, minimum

Supply pressure
- 414 kPa (60 psig) minimum

Quality
- Instrument grade: clean, oil free and -34 °C (-30 °F) dew point

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