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VERAX
ISX & IMX

PRODUCT DATA SHEET

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512.537.8450 | 4109 Todd Lane, Suite 200 | Austin, Texas 78744 | sales@jp3.com

Verax ISX & IMX Analyzers

A Near-Infrared Analyzer for Real-Time Analysis

Single- or Multi-Stream, ATEX and IECEx Certified Analyzer System for Measurement of Hydrocarbon Composition, API Gravity, Vapor Pressure, BTU, Transmix, and Other Properties in Natural Gas, NGL, Condensate, Crude Oil and Refined Products

One Device Measures Composition and Properties of Gas and Liquid

The Verax ISX and IMX represents JP3's latest generation of near-infrared analyzers designed specifically for oil and gas applications. With faster measurement times, up to four independent spectrometer detectors, enhanced optical components and a patented flow cell, the Verax ISX and IMX provide significant improvements in measurement speed, quality, repeatability, stability and reliability in even the harshest environments. Natural gas or liquids can be accurately analyzed to obtain hydrocarbon composition, API gravity, vapor pressure, BTU, transmix, and other properties.

The unit is highly reliable, requires no consumable materials, requires no sample conditioning, and provides fast measurements with extremely high reproducibility and repeatability. Older, less reliable and maintenance intensive technologies can now be replaced with confidence.

Single- or Multi-stream Systems to Reduce Cost Per Read Point

Verax ISX contains a single spectrometer and detector, while the Verax IMX features four spectrometer detectors. This flexibility allows a system to be designed to minimize the cost per read point. A single read point project can use the Verax ISX, while a multi-read-point project can use a Verax IMX.

Measure in the Pipeline at Operating Pressure and Temperature

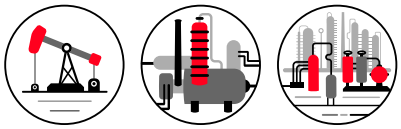
The VeraSight flow cell is installed directly on the process at operating pressure and temperature, requiring no sampling or conditioning systems. The flow cell is connected to the analyzer by a single pair of fiber optic cables, allowing the analyzer to be located as close to or as far from the process as desired. Each process stream can support any number of compositional and physical measurements. The Verax analyzer produces no emissions and requires no carrier gases or calibration gases.

Solid State Spectroscopy for Rapid Response Time

Using patented Near-Infrared (NIR) optical spectroscopy and advanced chemometric techniques, Verax ISX and IMX provide direct process readings in a matter of seconds, in either liquid and gas streams. No moving parts, no consumables, and no sample conditioning systems means longer life and reduced maintenance costs. Our patented laser source utilizes constant amplitude correction and wavelength calibration to deliver performance that is unmatched in the industry. The swept source Class 1 laser provides light intensity strong enough to easily measure even the lowest API gravity crudes.

Enhanced Uptime with Remote Monitoring

Verax's advanced electronics and communication capabilities allow easy integration into plant networks and systems. Verax also supports 24 x 365 monitoring, making even the most remote unmanned installations possible and economical.



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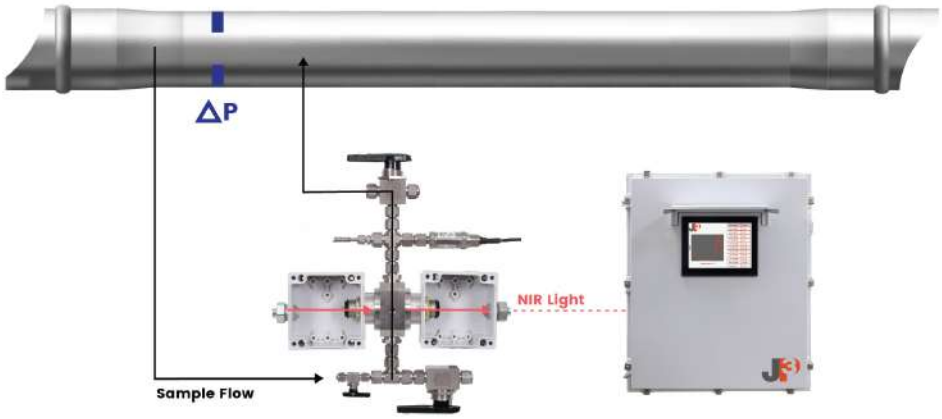
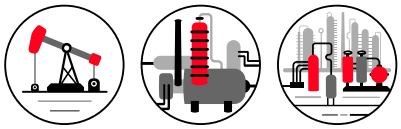


Environmental, Electrical, Communications, & Process

	Verax ISX/IMX Analyzer Control Unit
Dimensions	Standard: 30"W x 36"H x 12"D
Weight	83 lbs / 38 kg
Ambient	• -20°C to 55°C • Sunshade required if installed in direct sunlight • Environmental control required outside the supported range
Classification	• ATEX: II 3 G Ex ec nC IIC T3 Gc • IECEx: Ex ec nC IIC T3 Gc - EN IEC 60079-0: Equipment General requirements - EN IEC 60079-7: Equipment protection by increased safety "e" - EN IEC 60079-15: Equipment protection by type of protection "n"
Input Power	• Standard: 100-240VAC / 1.4-0.65 A • Alternative: 24VDC/5A
Enclosure	NEMA 4X IP 66
Ethernet	• MODBUS RTU over TCP • Hardware firewall • Optional: HTTPS interface for local visualization • Optional: Air-gapped from control unit • Optional: Fiber Balun for long-haul networking
Serial	• MODBUS RTU over Serial • Optional: Air-gapped from control unit
I/O	• Optional: Maximum 8 analog outputs 4-20mA / 0-10VDC • Optional: Maximum 12 digital outputs (dry contact) • Optional: Maximum 4 analog inputs 4-20mA / 0-10VDC • Optional: Maximum 8 digital inputs
HMI	12-inch touchscreen color display
Response Time	• <15 sec for 1-10 Concurrent Measurements per stream • <60 sec for 10+ Concurrent Measurements per stream
Number of Supported Optical Flow Cells	• Verax ISX: 1 Flow Cell • Verax IMX: Up to 4 Flow Cells

	VeraSIGHT Flow Cell Optical Flow Cell
Dimensions	• Standard: 16"W x 17"H x 5.25"D • Low pressure gas applications: 55"W x 17"H x 5.25"
Weight	12 lbs / 5.5 kg
Ambient	• Operation: -29°C to 70°C • Installation: 0°C to 60°C
Classification	• Conforms to Zone 1 location requirements • Class 1 laser output from analyzer control unit
Input Power	• Standard: None • Optional: 110-277 VAC heater blanket (80W)
Fiber	• Transmit: Single-mode from control unit to flow cell • Receive: Multi-mode from flow cell to control unit
Fluid Streams	Natural Gas, NGL, Crude, Condensate, Refined Products
Phase	Single Phase: Liquid or Gas
Line Pressure	0-1750 psig
Line Temperature	-29°C to 93°C (heater blanket required under -23°C)
Line Flow Rate	ΔP 1 PSI minimum between process inlet and return to induce flow



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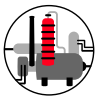
Applications

Each analytical standard in the tables below contains individual precision (repeatability and reproducibility) specifications. The combination of application and analytical method used determines the final performance of the resulting models.

Applications

Upstream

- Well pad separation units (gas and liquid)
- Vapor recovery units
- Compressor fuel gas
- Liquid and gas allocations
- Stabilizers
- Heater treaters
- Truck loading



Midstream

- Terminals (crude, NGL, condensate)
- Blending (crude, NGLs)
- Truck offloading
- Stabilization (crude, condensate)
- Pipelines (products, interfaces)
- Gas plants and fractionation plants
- Gas pipelines

Downstream

- Refinery crude supply
- Crude blending
- Crude Distillation Unit
- Terminals (Refined fuels, NGLs)
- Pipelines (refined fuels, Purity products)
- Gasoline blending (vapor pressure, butane)
- NGL blending (ethane/propane)

Typical Measurements

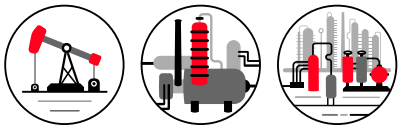
Market	Product	Measurement	Standards
Upstream	Crude	C1-C30+ Composition	GPA 2103, GPA 2186
Upstream	Crude	Vapor Pressure	ASTM D6377
Upstream	Crude	API Gravity	ASTM D4052
Upstream	Crude	True Boiling Point	ASTM D2892, ASTM D5236
Upstream	Crude	Simulated Distillation	ASTM D7169
Upstream	Condensate	C1-C15+ Composition	GPA 2103, GPA 2186
Upstream	Condensate	Vapor Pressure	ASTM D6377
Upstream	Condensate	API Gravity	ASTM D4052
Upstream	Natural Gas	C1-C15+	GPA 2286
Upstream	Natural Gas	Relative Density	GPA 2286
Upstream	Natural Gas	BTU	GPA 2286
Upstream	VRU Gas	C1-C15+	GPA 2286
Upstream	VRU Gas	Relative Density	GPA 2286
Upstream	VRU Gas	BTU	GPA 2286

Market	Product	Measurement	Standards
Upstream	Crude	C1-C30+ Composition	GPA 2103, GPA 2186
Upstream	Crude	Vapor Pressure	ASTM D6377
Upstream	Crude	API Gravity	ASTM D4052
Upstream	Crude	True Boiling Point	ASTM D2892, ASTM D5236
Upstream	Crude	Simulated Distillation	ASTM D7169
Upstream	Natural Gas	C1-C6+	GPA 2286
Upstream	Natural Gas	Relative Density	GPA 2286
Upstream	Natural Gas	BTU	GPA 2286
Upstream	NGL Products	C1-C6+	ASTM 2163
Upstream	NGL Products	Specific Gravity	ASTM D1657
Upstream	NGL Products	Vapor Pressure	ASTM D1267, D2598, D6897
Upstream	Condensate	C1-C15+ Composition	GPA 2103, GPA 2186
Upstream	Condensate	Vapor Pressure	ASTM 6377
Upstream	Condensate	API Gravity	ASTM D4052

Market	Product	Measurement	Standards
Downstream	Natural Gas	C1-C6+	GPA 2286
Downstream	Natural Gas	Relative Density	GPA 2286
Downstream	Natural Gas	BTU	GPA 2286
Downstream	Y Grade NGL	C1-C6+	GPA 2286
Downstream	Y Grade NGL	Vapor Pressure	ASTM D2163
Downstream	Y Grade NGL	Distillation	ASTM D7344, D2887
Downstream	NGL Products	C1-C6+	ASTM 2163
Downstream	NGL Products	Specific Gravity	ASTM D1657
Downstream	NGL Products	Vapor Pressure	ASTM D1267, D2598, D6897
Downstream	Gasoline	Benzene	ASTMD5580
Downstream	Gasoline	Density	ASTM D4502
Downstream	Gasoline	Distillation	ASTM D86
Downstream	Gasoline	RON	ASTM D2699

Market	Product	Measurement	Standards
Downstream	Gasoline	MON	ASTM D2700
Downstream	Gasoline	Vapor Pressure	ASTM D5191, D6378
Downstream	Gasoline	Butane	ASTM D2186
Downstream	Diesel Fuel	Cetane Index	ASTM D4737
Downstream	Diesel Fuel	Cetane Number	ASTM D613
Downstream	Diesel Fuel	Cloud Point	ASTM D2500
Downstream	Diesel Fuel	Density	ASTM D4502
Downstream	Diesel Fuel	Distillation	ASTM D86
Downstream	Diesel Fuel	Flash Point	ASTM D93
Downstream	Jet Fuel	Density	ASTM D4502
Downstream	Jet Fuel	Distillation	ASTM D86
Downstream	Jet Fuel	Flash Point	ASTM D56
Downstream	Jet Fuel	Freeze Point	ASTM D5972

*Note: This is not an exhaustive list of possible measurements and standards; many others are available.



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