

PRODUCT DATA SHEET

IPS-4 UV/IR Full Spectrum Analyzer

Combining ultraviolet (UV) and infrared (IR) technologies to measure components of interest in complex streams, continuously and without concerns about cross-interferences

The IPS-4 analyzer utilizes both UV and non-dispersive infrared sensor (NDIR) optical benches to enable unparalleled high-quality process gas analysis. UV analysis is free of cross-interferences from lighter hydrocarbons, carbon dioxide (CO₂) and water (H₂O). IR analysis is a powerful tool in online component concentration measurement, but can be limited in accuracy due to cross-interference in complex streams; many gases exhibit multiple absorptions in the IR. Using the most favorable absorptions in both spectral areas and eliminating cross-sensitivity concerns, the IPS-4 IR/UV enables accurate measurement of up to eight components. Measurements are made simultaneously in the UV using diode array detection and in the IR using single beam multiwavelength technology, plus the readings are cross-correlated.

The UV readings are further verified (optical bench electronic verification) by evaluating detector response to known changes in lamp intensity. The single beam/multiple wavelength IR technology ratios the output signal of desired component to reference, minimizing common mode errors. The combination bench unit offers a very robust process analytical solution utilizing long lifetime optical components. The unit is web-enabled, and a heated oven for sample conditioning components is included as part of the analyzer package, when required.



KEY BENEFITS

- Multiple gas capability
- Analog and digital connectivity
- IP65/NEMA 4X enclosure houses all components
- Fully integrated sample conditioning

APPLICATIONS

- Feed forward analysis in sulfur recovery units
- Recycle gas composition
- Reactor and stripper efficiency

KEY MARKETS

- Sulfur recovery unit gas processing
- Petrochemical
- Refining

PERFORMANCE SPECIFICATIONS

| | |
|--|---|
| Analyzer range | ppm to 100% depending upon specific application |
| Linearity (independent) | UV: 1% of full-scale range , IR: typically ±2% full-scale range, Dual Bench (DB): typically ±2% of full-scale range (application dependent) |
| Measurement accuracy | UV: 1% of full-scale range , IR: typically ±2% full-scale range, Dual Bench (DB): typically ±2% of full-scale range (application dependent) |
| Repeatability | UV: 1% of full-scale range , IR: typically ±2% full-scale range, Dual Bench (DB): typically ±2% of full-scale range (application dependent) |
| Stability | 0.5% of full-scale range |
| Zero drift | <1.0% of full-scale range over 24 hours |
| Response time | <2 seconds photometric response, <30 seconds to T90 |
| Components | Up to eight components can be measured |
| Inputs | Two non-isolated analog inputs (0-5V, 0/4-20mA) Two optically isolated discrete DC inputs |
| Outputs | Local display Four isolated outputs (standard: 0/4-20 mA or 0-5V) (Eight isolated outputs optional) Eight dry relay contacts (NO, 100VA, 240 V) RS485 isolated (supports Modbus RTU) RS232 non-isolated Fast Ethernet (IEEE 802.3) |
| Sample system limits | Sample pressure: Up to 100 barg (1450 psig) for some configurations Oven temperature: Oven heater capable of maintaining 150°C (300°F) |
| Utility requirements | Electrical: 120 VAC (105 to 132 VAC), 47 to 63 Hz or 240 VAC (209 to 264 VAC), 47 to 63 Hz Power consumption: <700 W with oven heater <300 W without oven heater |
| Instrument air (for aspirator) | 4.8-6.9 barg (70-100 psig) |
| Environmental requirements | Ambient temperature: -20 to 50°C (-4° to 122°F) Ingress protection: IP65 and Type 4X stainless steel |
| Enclosure material | 304 Stainless Steel (316SS optionally available) |
| Physical dimensions (W x H x D) | 950 x 660 x 300 mm (37.4 x 26 x 11.8 in.) for basic analyzer. Back panel, where supplied: typically 1220 x 1220 mm (48.1 x 48.1 in.) Weight: 80 kg (176 lbs) for base system |
| Approvals and certifications | Meets various ATEX, CEC, IECEx & NEC hazardous area requirements. Consult AMETEK for specific details |

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