

Model IPS-4 Integrated Process UV / Visible Spectrophotometer

Features and Benefits

- || Measures up to eight analytes
- || Low cost of ownership
- || Long lamp life
- || No moving parts
- || IP65, weatherproof
- || Integrated, customizable sample system
- || Fast Ethernet and MODBUS communications



General Purpose IPS-4

The Need

Today's chemical producers and consumers are under tremendous pressure to cut costs, lower maintenance expenses, and improve product quality. In order to meet these demanding objectives, process engineers and operators need analytically capable and reliable process analyzers which require minimal maintenance and operator intervention. The analyzers also need to be easy to use and capable of communicating in a wide variety of ways. It is also a benefit if the

analyzer is durable enough to be installed in outdoor, wash-down, hazardous, and other environmentally harsh locations.

The Solution

AMETEK's IPS-4 UV analyzer is a huge step forward in capability and reliability for process spectrophotometers. Using the most modern electronics and diode array technology, the IPS-4 is engineered to perform a wide variety of liquid and gas analyses using UV-VIS spectroscopy.

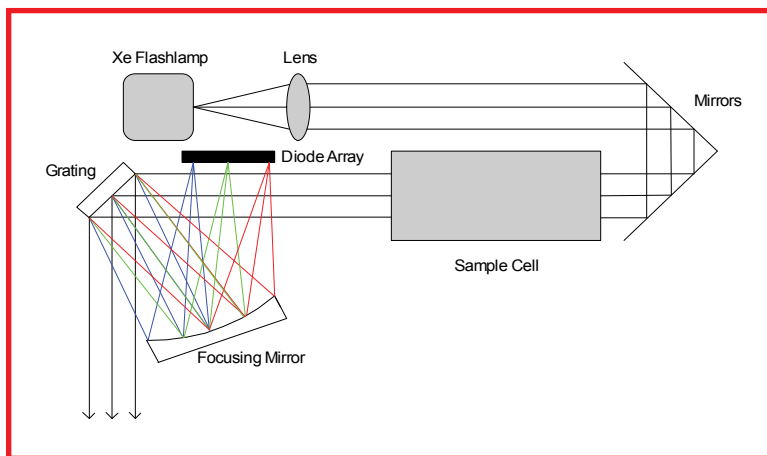
Analytical Performance

The IPS-4 is capable of detecting, quantifying, and compensating for multiple chemicals of interest and interfering species. Up to eight analytes of interest can be measured simultaneously through the combination of a modern, diode array-based optical system with our proprietary process-ready electronics.

This combination offers many advantages such as no moving parts, a high signal-to-noise ratio, minimized stray light effects, fast and full spectral acquisition, and wide dynamic range. These traits help to make the IPS-4 a highly capable process analyzer.

Optical System

The IPS-4 UV's optical system is designed to increase reliability and dramatically reduce the need for routine maintenance, thereby drastically cutting its cost of ownership. The lamp used in the optical system is a xenon flash lamp which has a greater than two year expected life. Use of the diode array and fixed optical bench means



Schematic of the IPS-4 UV's Optical System

that there is no filter wheel or motor to maintain, no optical filters to replace, and no optical couplings to align. The resulting optical system is small, insensitive to mechanical tolerances, insensitive to movement, and free of moving parts.

The AMETEK-designed electronics are engineered to withstand harsh outdoor, industrial environments. They possess excellent temperature stability, reliability, and a host of self-diagnostic and predictive maintenance capabilities. The combined result of the IPS-4's design is a spectrophotometer with high reliability and a minimal need for routine maintenance.

Interface Options

Manufacturing facilities have a wide variety of communication needs from their process analyzers. To meet the varied needs of our customers, we have equipped the IPS-4 with numerous analog and digital communications capabilities. A detailed, multi-line display along with a 22-key keypad provides the primary local indications. The keypad is a stainless steel, piezo-electric device which is the ultimate in durability and reliability. The

pixel-based display is detailed enough to allow for a selection of display language. The analyzer also communicates through a variety of analog signals, alarm contacts, and three types of digital communication.

Digital communication options include a RS-232, RS-485 with MODBUS RTU protocol, and a built-in Fast Ethernet port.

Wide Environmental Tolerance

Process analyzers must often be installed in harsh environments. Unlike other process analyzers, the IPS-4 is designed to handle most environmental challenges without the need for additional protection or prohibitively expensive shelters.

The IPS-4 is supplied in an IP65 NEMA 4X optional enclosure. This enclosure is more than capable of handling even wash-down environments without allowing water or dust to ingress. The standard enclosure is made from 304 stainless steel, with 316 stainless steel as an option.

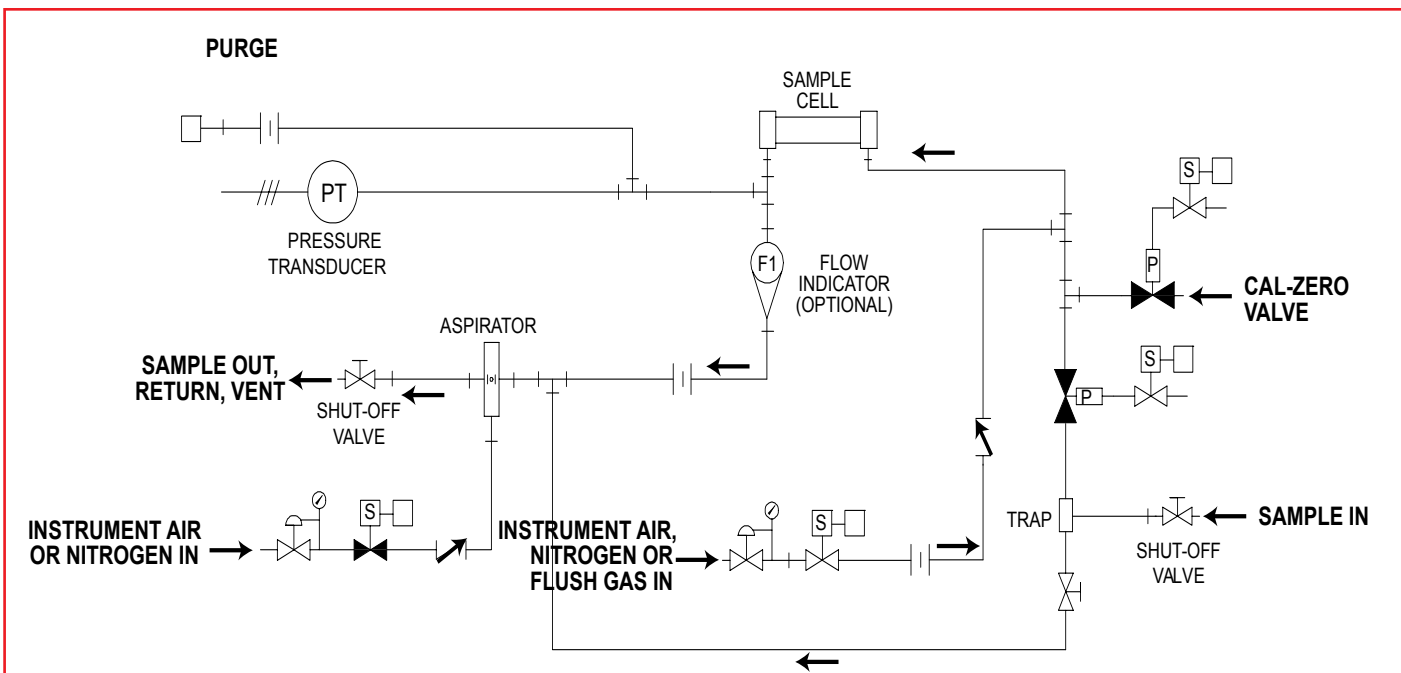
When installed outdoors, the IPS-4 will tolerate ambient temperatures from -20° to 50°C (-4° to 122°F) without external heating/cooling. When installed indoors, the analyzer

takes up minimal space as it is designed with a very narrow profile. The width of the IPS-4 has been kept to only 78 cm (<31 inches) to minimize the amount of precious wall space it occupies. This narrow width is maintained even when a wide range of custom sample handling and conditioning systems are integrated into the IPS-4's sample cell enclosure.

Custom Sampling Systems

The IPS-4 is engineered to be a fully integrated, turn-key solution to your specific process analysis need. AMETEK will engineer a sample handling and conditioning system to meet the requirements of your sample fluid and application. Automatic zero and span fluid injection, corrosion-resistant materials, filtration, pumps or eductors, and heated sample lines are a few of the customizations AMETEK can engineer into the IPS-4 to meet your application requirements.

The IPS-4 may be the solution you need to improve the quality and efficiency of your process. Contact your AMETEK Process Instruments salesperson to discuss your specific application today.



Flow diagram of an optional gas sample system



IPS-4 equipped with optional gas sampling system and optional sample system heater

Performance Specifications

Photometric Range: 0 to 3.0 AU;
Minimum Full Scale is 0.1 AU at
specified precision

Analyzer Range: ppm to 100%
depending upon specific application

Measurement Precision¹: <1% of full
scale range

Repeatability¹: <2% of full scale
range (application specific)

Linearity¹: <1% of full scale range

Stability¹: 0.5% of full scale range

24-Hour Zero Drift¹: <1% of full
scale range over 24 hours

Response Time: <2 seconds for
the photometric measurement. Total
system response depends upon
sample system.

Sample System Limits

Sample Pressure: Up to 100 barg
(1450 psig) for some configurations

Oven Temperature: Oven heater
capable of maintaining 150°C
(302°F)

Analytes: Up to eight analytes can be
measured

Instrument Air: 4.8 – 6.9 barg (70 -
100 psig)

Inputs:

2 non-isolated analog inputs (0-5V,
0/4-20mA)

2 optically isolated discrete DC
inputs

22 key piezoelectric keypad

Outputs:

265 x 64 pixel vacuum fluorescent
display with multi-lingual capability
(Language options include: English,
Spanish, French, German, Russian.
This is a partial listing. Contact
AMETEK for more information.)

2 isolated analog outputs (0/4-20
mA) (Two additional analog outputs
optional)

8 dry relay contacts (NO, 100VA,
240 V)

RS-485 isolated (supports
MODBUS RTU)

RS-232 non-isolated

Fast Ethernet (IEEE802.3)

Utility Requirements

Electrical:

120 VAC (105 to 132 VAC), 47 to 63 Hz
240 VAC (209 to 264 VAC), 47 to 63 Hz

Power Consumption:

< 700 W with oven heater

< 300 W without oven heater

Environmental Requirements

Ambient Temperature: -20 to 50°C
(-4° to 122°F) without external
heating or cooling

Ingress Protection:
IP65 and NEMA 4X

Enclosure material: Stainless steel

Physical Dimensions

(W x H x D): 78 cm x 53 cm x 30 cm
(30.7" x 20.9" x 11.8")

Weight: 66 kg (145 lb) for base
system

Approvals and Certifications

NEC/CEC General Safety
requirements, CE & IP65, NEMA 4X

Standard General Purpose model:

NEC/CEC Class I Div 2 A, B, C,
D; Class II Div 2 F & G; Class III

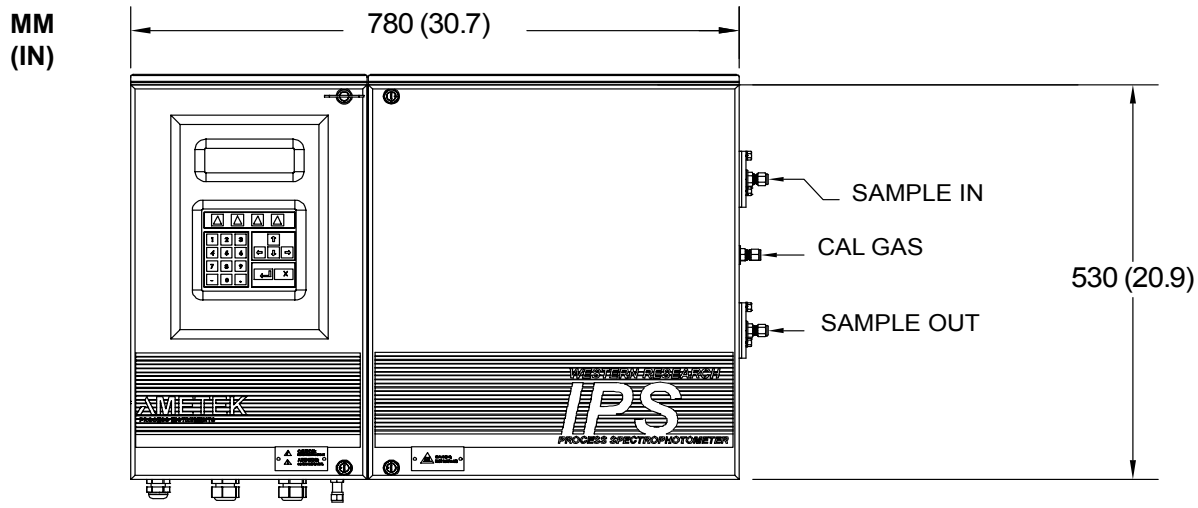
Zone 1/Div 1 option:

NEC/CEC Class I Div 1 A, B, C,
D; Class II Div 1 F & G; Class III
(pending)

¹ These specifications are based on normal operation of the analyzer as described in the manual supplement. Normal analyzer operation may include periodic zeroing and spanning.

Model IPS-4 Integrated Process UV / Visible Spectrophotometer

PROCESS



FRONT VIEW

General Purpose Model Shown



**PROCESS INSTRUMENTS
WESTERN RESEARCH**

455 Corporate Blvd., Newark DE 19702
Ph. 302-456-4400, Fax 302-456-4444
www.ametekpi.com



© 2014, by AMETEK, Inc.
All rights reserved. Printed in the U.S.A.
F-0212 Rev 3 (1014)

*One of a family of innovative process analyzer solutions from AMETEK Process Instruments.
Specifications subject to change without notice.*

SALES, SERVICE AND MANUFACTURING:

USA - Pennsylvania
150 Freeport Road, Pittsburgh PA 15238 • Tel: +1-412-828-9040, Fax: +1-412-826-0399

USA - Delaware
455 Corporate Blvd., Newark DE 19702 • Tel: +1-302-456-4400, Fax: +1-302-456-4444

Canada - Alberta
2876 Sunridge Way N.E., Calgary AB T1Y 7H2 • Tel: +1-403-235-8400, Fax: +1-403-248-3550

WORLDWIDE SALES AND SERVICE LOCATIONS:

USA - Houston, Texas
Tel: +1-713-466-4900, Fax: +1-713-849-1924

BRAZIL
Tel: +55 19 2107 4100

CHINA
Beijing / Tel: +86 10 8526 2111, Fax: +86 10 8526 2141
Chengdu / Tel: +86 28 8675 8111, Fax: +86 28-8675 8141
Shanghai / Tel: +86 21 6426 8111, Fax: +86 21 6426 7818

USA - Austin, Texas
Tel: +1-512-252-2440, Fax: +515-252-2430

FRANCE
Tel: +33 1 30 68 89 20, Fax: +33 1 30 68 89 99

GERMANY
Tel: +49 21 59 91 36 0, Fax: +49 21 59 91 3639

INDIA
Tel: +91 80 6782 3200, Fax: +91 80 6782 3232

SINGAPORE
Tel: +65 6484 2388, Fax: +65 6481 6588