

## Model 4600 Stack Gas Analyzer

### Superior Benefits

- No sample conditioning required
- No moving parts
- Temperature-controlled environment not required
- Local or remotely mounted controller
- Provision for steam and instrument air blowback
- Electronic zero and span
- Solid state detector
- Microprocessor-based electronics
- Split-beam technology
- Unsurpassed long-term accuracy
- Multi-point sampling
- Fully accepted by USEPA 40 CFR 60 and Part 75
- Remote dial-in facility via modem

### Applications

- Sulfur recovery units
- Sulfuric acid plants
- Nitric acid plants
- Power generation plants
- Cement kilns
- Smelters
- Pulp mills
- Fluid catalytic cracker stacks

### The Need

Measurement of sulfur dioxide (SO<sub>2</sub>) in stack gas not only helps process engineers to efficiently operate the plant, but is also mandated by various environmental protection agencies. Sulfur dioxide measurement also gives critical information about the performance of SO<sub>2</sub> removal processes such as scrubbers before the effluent is vented to the atmosphere. The AMETEK Western Research Model 4600 is a basic sulfur dioxide analyzer with various options available to customize the system for specific operational needs.

The Model 4600 has proven to be the instrument of choice for these applications through years of reliable service. The analyzer assures compliance with US Environmental Protection Agency (EPA) and other worldwide regulatory requirements for pollution control.

### Principle of Operation

The Model 4600 is based on proven split beam photometer technology operating in the ultraviolet (UV) portion of EMR spectrum. This unique design gives a highly stable response and is essentially drift free. Unlike other designs, it eliminates the requirement of cumbersome lamp current control cards and automatic gain compensations. The use of high energy metallic vapor lines as a source gives high accuracy, linearity and dynamic range.

The sample system is a hot/wet extractive type and is elegantly designed to withdraw a representative sample from the process stream. The sample is kept above the dew point at all times for analysis. The need for high maintenance dryers or dilution systems is eliminated.

The Model 4600 comes on a backplate, or preinstalled in a standalone cabinet/walk-in shelter, and is field proven with hundreds of certified installations worldwide.



Model 4600 Analyzer System

# Model 4600 Stack Gas Analyzer

## Performance Specifications

**Methodology:** Non-dispersive ultraviolet

**Measurement Range:** 0 to 100 ppm to 0 to 5000 ppm SO<sub>2</sub> typical, other ranges available

**Options:**

- 0 to 25% O<sub>2</sub>
- Mass Emissions (SO<sub>2</sub> lb./hr. or kg/hr.)
- Moisture correction (SO<sub>2</sub> dry basis)

**Accuracy:** ±2% full scale

**Sensitivity:** 0.1% full scale

**Linearity:** 0.6% of span

**Repeatability:** 0.25% of span

**Reproducibility:** 0.5% of span

**Zero Drift:** Less than ±1.0% of full scale in 24 hours

**Response Time:** T90 less than 60 seconds (typical, including sample system)<sup>(1)</sup>

**Outputs:**

- Two (2) 4 to 20 mA, self-powered, linear, 1200 ohms load
- Eight (8) digital outputs, dry alarm contacts
- Three (3) digital outputs, dry temperature alarm contacts
- One (1) digital input for remote calibration

**Zero:** Automatic with instrument air at 80 to 100 psig 0.1 nm<sup>3</sup>/h (3 SCFH)

**Calibration:** Automatic with span filter, manually operated from the controller; Automatic with calibration gas injected at the probe

**Process Sample Pressure:** Not critical

**Sample Flow:** 3 to 5 LPM (0.1 to 0.2 SCFM)

**Sample Transport:** Instrument air driven eductor

**Digital Communication:** RS485 serial port; Remote dial-in capabilities available with AMETEK Western Research software

**Electrical Classification Options:**

CE

The analyzer's Field Unit is designed for use in NEC/CEC Class I, Division 2, Groups A,B,C,D, T6 to T4 areas. Optional versions are available for Class 1, Division 1, Group C, D or ATEX II 2 G IIC T3 areas.

The analyzer's Controller is designated for use in Class I, Division 2, Groups A, B, C, D areas. It may be supplied in an ATEX II 2 G EEx d IIC T6 enclosure on special order.

The analyzer's Power Supply is only suitable for non-hazardous and Class 1, Division 2 area installations.

**Controller Mounting:** Local or remote<sup>(2)</sup>

**Utilities:**

- Electrical: 120/240 VAC 50/60 Hz 2000 w
- Instrument Air: 400 to 700 kPa (60 to 100 psig) minimum at 20 nm<sup>3</sup>/hr (600 SCFH)

**Ambient Temperature:** -20° C to 50° C (-4° F to 120° F) for field unit and controller

**Physical Dimensions: (H x W x D):**

Field Unit: 1829 x 1219 x 305 mm (72 x 48 x 12 inches)

Controller Options:

- Through Panel Mount: 167 x 266 x 316 mm (6.57 x 10.45 x 12.4 in.)
- 19 Inch Rack Mount: 133 x 483 x 320 mm (5.25 x 19.0 x 12.6 in.)
- Surface Mount: 289 x 292 x 194 mm (11.38 x 11.5 x 7.62 in.)
- NEMA 4X Enclosure: 379 x 319 x 211 mm (14.94 x 12.55 x 8.31 in.)

**Approximate Weight:** Field Unit: 409 kg (900 lb.)

**AMETEK**  
PROCESS INSTRUMENTS

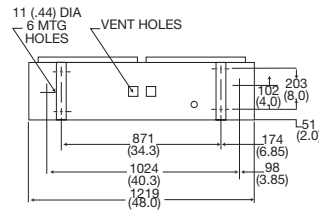
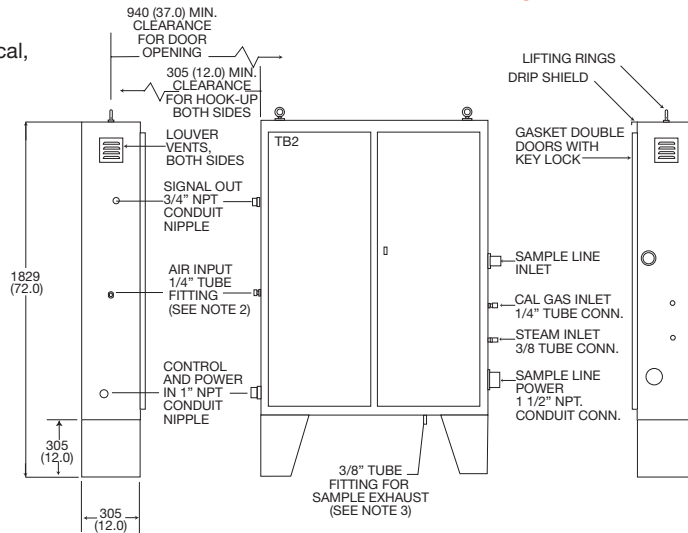
2876 Sunridge Way N.E., Calgary, AB T1Y 7H9  
Ph. 403-235-8400, Fax 403-248-3550  
[www.ametekpi.com](http://www.ametekpi.com)



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4600 Stack (05/07/07)

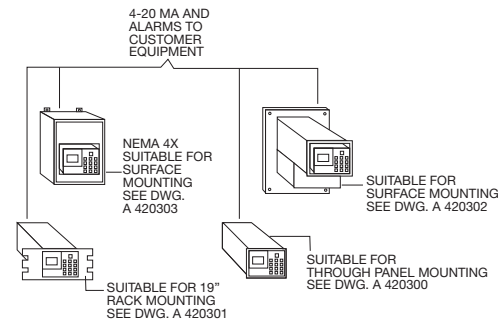
One of a family of innovative process analyzer solutions from AMETEK Process Instruments.  
Specifications subject to change without notice.

## Model 4600 Stack Gas Analyzer



### NOTES:

1. XXX DIMENSIONS ARE IN MM (XXX) DIMENSIONS ARE IN INCHES.
2. AIR REQUIREMENTS:  
400-700 kPa (60 - 100 psig)  
20Nm<sup>3</sup>/hr (600 scfm)
3. WARNING: 3/8" SAMPLE DISCHARGE TUBE MAY CONTAIN HAZARDOUS CONCENTRATIONS OF TOXIC GASES. CUSTOMER MUST PROVIDE 3/8" DISCHARGE TUBE TO A SAFE AREA. THE DISCHARGE TUBE MUST NOT BE VENTED INSIDE ANY BUILDING.
4. CABINET FINISH: POWDER-PAINTED CARBON STEEL.



(1) Response time will vary with sample line length.

(2) For the CENELEC Zone 1 configuration, the power supply and controller must be mounted in a safe area at a remote location.

### SALES AND MANUFACTURING:

#### USA - Delaware

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

#### USA - Oklahoma

2001 N. Indianwood Ave., Broken Arrow OK 74012 • Tel: 918-250-7200, Fax: 918-459-0165

#### USA - Pennsylvania

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

### WORLDWIDE SALES AND SERVICE LOCATIONS:

#### USA - Texas

Tel: 281 463 2820, Fax: 281 463 2701

#### 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

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Tel: 33 1 30 68 89 20, Fax: 33 1 30 68 89 29

#### GERMANY

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

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Tel: 971 4 881 2052, Fax: 971 4 881 2053

#### SINGAPORE

Tel: 65 6484 2388, Fax: 65 6481 6588

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