SpectraSensors SE600 Series Datasheet

Sample extraction systems

The SE600 Series is a line of gas extraction and pre-conditioning products specifically designed to extract and transfer process gas samples to a patented Tunable diode laser absorption spectroscopy (TDLAS) analyzer in a manner that supports accurate and repeatable measurements. Working in conjunction with our technology partner A+ Corporation, using their Analytically Correct™ Engineered Systems (ACES™) platforms, we have optimized SE600 components to ensure gas samples remain in the gas phase and liquid samples are correctly vaporized for introduction to an analyzer. The SE600 Series supports a range of TDLAS analyzer applications in the natural gas transmission and processing industries.

SE600 systems include sample probes which need no special tools for installation. They simply attach to the process pipe through a full port ball valve and adjust into the pipe using an open end wrench, rotating and adjusting the probe tip to the desired depth. Probes are offered in three standard lengths which allow probe insertion up to 54.6 cm (21.5 inches); custom lengths are also available.

Key Features

- Genie® Direct Drive™ Probes
- Insert and retract without process shutdown
- Available with different insertion depths
- Install through an isolation ball valve without special tools
- Uses Genie® Membrane Filter Technology™

- Systems preserve sample integrity by:
  - Preventing condensation of gas samples
  - Controlled vaporization of liquid streams
  - Separation and removal of entrained liquids

- Heated pressure regulators to compensate for Joule-Thomson cooling from depressurization of gas sample

- Field proven in natural gas transmission and gas processing applications

- CSA and ATEX Component Certifications
Design choices  The SE600 Series is offered with 1 inch NPT standard pipe connections with choices for membrane separator location, coalescing filters, pressure regulators, heater blocks, and power. The separators and filters are used for medium to high liquid contaminant loading in the process stream and can be in the form of a membrane filter at the probe tip inside the process pipe or a separate membrane separator/coalescer combination external to the pipe. There are various pressure regulators; which one to use will depend on the heating requirement needed to keep the process in a gaseous state.

SE600 systems are offered with a heated enclosure to help minimize ambient temperature cooling of the gas. Models equipped with heated pressure regulators are available to minimize the Joule-Thomson cooling effect from depressurizing the process gas for sample transfer. Regulators are offered to ensure the correct heating capacity is available for the gas sample. Systems are offered with two power choices; 24 VDC or 110-265 VAC, which are constructed with electrical components certified to CSA Class I, Div 1, or ATEX Zone 1 classifications.

Complete solution  Heat trace tubing is available to connect an SE600 system to an analyzer. Heated and insulated tubing bundles are recommended for all installations to maintain compositional integrity from the extraction point at the tap to sample input at the analyzer.

SpectraSensors also offers fixed insertion length sample probes. Please see SC401 Pony and P53 Datasheets.
Installation considerations for analytical performance

1. Sample Extraction
   - Sample probe required to control sampling of gas
   - Gas pressure reduction and heating requirements vary from stream to stream
   - Controlled amount of entrained particles, liquids, & oil in sample for stable TDLAS measurement

2. Sample Transport
   - Materials of construction to mitigate corrosion, analyte adsorption or absorption
   - Ambient temperature range (diurnal and seasonal) should be considered
   - Distance to analyzer (tubing routing, bends, support) should be no more than 30m (100 ft) for best results

3. Sample Conditioning
   - Requires stable sample at analyzer inlet for accurate & repeatable TDLAS measurement

Advanced Thermo-modeling

Phase Diagram: SpectraSensors has developed an advanced thermo-modelling tool based upon data and experience gained from successful installation of thousands of TDLAS analyzers. We use this proprietary tool, along with application information to calculate heating requirements necessary to achieve isothermal conditions throughout the entire sampling process. Information from our client’s process gas stream (composition, temperature, pressure, etc.) is linked from our proprietary tool to a NIST database to generate a phase diagram which guides the selection of appropriate system components.
### Specifications

#### Application Data

| Process Connections | ¾ or 1 inch NPT pipe thread  
|                     | ¾ or 1½ inch NPT or flanged connections available upon request |
| Probe Lengths*      | Choice of 12, 18, or 24 inch (30, 46, or 61 cm); other lengths available upon request |
| Wetted Materials    | Machined parts: 316 Stainless Steel/NACE compliant, Kevlar® threaded bushing  
|                     | All other metal parts: Stainless Steel/NACE compliant  
|                     | Regulator seat material: PFA, PEEK, or PCTFE depending on the system  
|                     | Sealing material: PTFE/fluoroelastomer or RGD resistant HNBR  
|                     | Membrane: Type 6/1 BTU Inert  
|                     | Filter element: 0.1 micron coalescer (Model SE630 only) |
| Temperature Range   | -26.1° to 85°C (-15° to 185°F) |
| Outlet Pressure Range | 0-50 psig (0-3.4 bar) |

#### Electrical Data

| Power Supplies      | 110/120 VAC, 260/265 VAC, or 24 VDC (24 VDC not available on models SE622 or SE640) |

#### Port Sizes

| Outlet Port | Heat trace entry boot to ¼ inch tube fitting |
| Conduct Connection | ½ inch NPT |
| Relief Valve/Regulator Port | SE610, SE620, SE621: ¼ inch NPT |
| Drain Port   | SE630: ¼ inch NPT |

#### Area Classification

| Certifications | The systems are constructed of components which meet the following ratings;  
|                | CSA: Class I, Div 1, Groups C & D  
|                | ATEX: Zone 1 |

**Note:** Model SE610 shown. All models offer same probe lengths and insertion depths.

*Probes must be fully inserted; exact length requirements must be determined at time of order.

SpectraSensors offers a full range of TDLAS analyzers to measure H₂S, H₂O, CO₂, C₂H₂, and NH₃. See [SpectraSensors.com](http://SpectraSensors.com) for more information on products and solutions.

Genie is a Registered Trademark of A+ Corporation  
Direct Drive and ACES are trademarks of A+ Corporation  
Kevlar is a registered trademark of I. E. duPont Nemours

### Contact

www.spectrasensors.com/contact