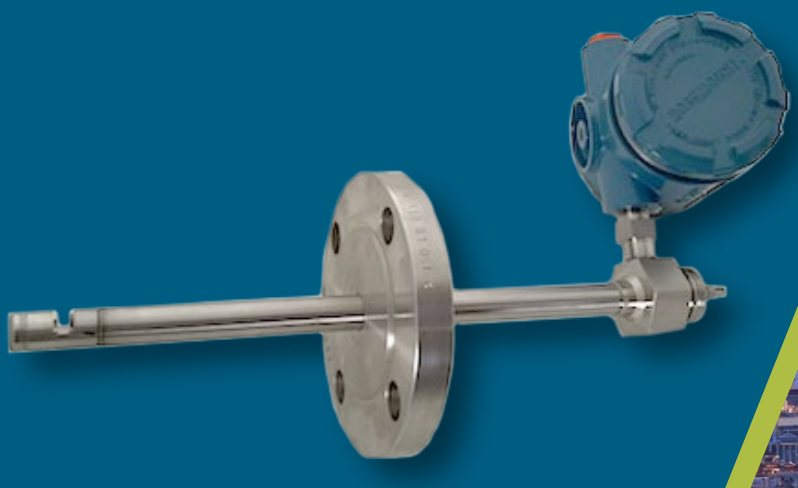
Process Insights™
Premium Insights Into Process

PROCESS INTERFACE

PRODUCT DATASHEET

RTD-SST™ Process Probe

Compatible with NIR and UV-VIS Analyzers



More signal

Less noise

Better measurement

- NIR probe with the built-in Resistance Temperature Detector (RTD)
- For temperature-sensitive measurements such as methanol in water
- Additional temperature data along with real-time NIR measurements
- Pipe or reactor installation

Resistance Temperature Detector (RTD)-SST Insertion Process Probe

The rugged and reliable RTD-SST™ Probe gives reactor operators additional temperature data along with real-time near-infrared (NIR) measurements. By adding a Resistance Temperature Detector (RTD) to the industry-standard single-sided transmission (SST™) probe, this fiber optic RTD-SST Probe provides more options for continuous process monitoring applications. The RTD-SST Probe is compatible with most analyzers and is easily installed in a pipe or reactor through a single access point. Older chemical plants or reactors without available access ports gain additional process analytical tools with this competitive solution. Users can simply replace their existing RTD with the RTD-SST Probe and achieve both measurements with one device. The RTD-SST design is also ideal for applications that benefit from high-accuracy temperature and NIR measurements being completed at the same location – for example, temperature-sensitive measurements such as methanol in water. Users who have an older reactor and cannot add a flange without getting their reactor recertified, will also save money by instead adding a NIR probe with the built-in RTD.

RTD-SST Probe Configurations

The RTD-SST Probe is available in several configurations. One configuration includes the RTD built into the SST Probe at the path piece (tip). This design is for older reactors with no available ports and suits any flange size. The user can carry out a form-fit replacement of the existing thermal well and RTD. This RTD-SST Probe provides better temperature compensation for NIR measurements than having an RTD and NIR probe installed on separate flanges. If the user prefers to supply their own thermal well and RTD, another configuration is available with the NIR probe built off-center and a coupler welded to the flange. This design is ideal for flanges four inches or larger.

A Simple, Serviceable Design

The RTD-SST Probe is a convenient, compact, rugged sample interface that is easy to install and even easier to service. This unique, compact design (U.S. Patent #6,043,895) houses incoming and outgoing optical fibers side-by-side in a single 3/4-inch, or 1-inch stainless steel body. A flange can be welded to the RTD-SST Probe to connect it to the process access port.

Process-Resistant Construction

The RTD-SST Probe is designed to withstand harsh process conditions. It is constructed from 316L stainless steel. It can also be made from other materials depending upon specific application requirements, such as Hastelloy C-276. The RTD-SST Probe's sapphire optical windows are sealed to the probe body with proprietary gold alloy brazing. These materials are unaffected by most hydrocarbons and polymers. Additionally, our special construction techniques also make the probe insensitive to most process pipe vibrations.

Dual Seal for Added Safety

Perhaps the most crucial aspect of any online sample interface design is the sealing approach. Since process fluid streams will be under pressure and the composition is often hazardous leaks are unacceptable. Additionally, moisture infiltration from the external environment adversely affects performance too. Our brand utilizes multiple o-ring seals that effectively address both issues. This protects the expensive internal optics.

Exceptional Light Transmission

Like all our sample interfaces, the RTD-SST Probe provides exceptional optical performance. Internal optics result in a collimated light beam for consistently accurate measurements. Typically, peak transmission exceeds 30%. That means more signal, less noise, and lower detection limits for the measurement. The optics on the RTD-SST Probe are permanently aligned at the factory. As a result, there is no need for any optical adjustments in the field. Additionally, there is no chance for optical misalignment to occur under normal processing conditions or during servicing.

Pathlength and Operating Range

The RTD-SST Probe is available in six standard pathlengths (2, 5, 10, 15, 20, and 50 mm), and in UV-VIS and NIR versions. It operates over the following temperature and pressure ranges:

- Temperature: -196 °C to 300 °C
- Pressure: 0 psi to 2000 psi [0 – 138 bar]

Optically Matched with All Our Analyzers and Compatible with Most Other Spectrometer Brands

The sample interface is a crucial component of a complete fiber optic-based analyzer system. For maximum performance, the probe or flow cell must be optically matched with both the analyzer (spectrometer) and the fiber that transmits the spectral signal. All our sample interfaces, analyzers, and fiber optic cables are optically matched, so when used in combination they achieve the highest possible consistency and performance. The RTD-SST Probe is also manufactured to facilitate full integration with any fiber optic system configured with SMA 905 connectors. This includes FT-NIR analyzers. When choosing a sample interface for an FT-NIR analyzer the current fiber core size must be taken into consideration. The RTD-SST Probe design works best when the size of the internal and external fiber core match.

One of the primary advantages of UV-VIS and NIR process spectroscopy is the utilization of intrinsically safe fiber optic cables to remotely locate the analyzer relative to the sample interface (probe or flow cell) installed in the process. Get the full power of this technology and choose the RTD-SST Probe along with one of our optically matched analyzers and process grade fiber optic cables – *for control you can measure!*

Specifications	
Probe Length	12; 18; 24; 30; 36; (inches) other lengths available on request
Optical Pathlength	2; 5; 10; 15; 20; 50 (mm) other lengths available on request
Spectral Range	UV-VIS (230 – 800 nm); NIR (800- 2100 nm)
Fiber Connector	400; 500; 600 µm / SMA 905; FC
Optical Efficiency	>30% for pathlengths < 20 mm
Temperature Range	-196 °C to 300 °C
Pressure Range	0 psi to 2000 psi [0 – 138 bar] higher pressures available on request
Body Material	SS316L standard (SS304, SS316, Hastelloy, Monel, Titanium, and Nickel available on request)
Window Seal	Proprietary gold alloy brazing
Mounting	Swaged fittings, custom flanges
Probe Diameter	0.750 inch [19 mm]; 1.000 inch [25.4 mm] (larger diameter recommended for probes ≥24 inches long)

GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights manufactures and delivers premium sensors, monitors, detectors, analyzers, instrumentation, and software that are mission-critical to keep your operations, personnel, and the environment safe – every day across the globe.

Get the most reliable, precision analytical technologies available on the market today. We will work to match your needs and budget, and provide the optimal, and most stable process analysis solution for your application.

CENTERS OF EXCELLENCE | PROVIDING PROVEN SOLUTIONS

Process Insights is committed to solving our customers' most complex analytical, process, and measurement challenges everyday.

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