

PrevEx FTA Analyzer Series 670

Flammability Analyzers for LEL Monitoring of Combustible Gases and Vapors in Industrial Processes

The PrevEx flammability analyzers employing the flame temperature analysis (FTA) consist of a whole series of models for the continuous monitoring of the concentration of combustible gases and vapors as a percentage of the lower explosive limit (LEL, LFL). The superior qualities of the detector and the sampling system assure the most accurate readings and highest reliability in the most demanding applications. The rugged, industry-grade design allows the installation and operation of the analyzers even in harsh environments.

Applications

PrevEx FTA analyzers are used in all industrial processes where combustible gases or vapors are released. Typical applications range from flexo to coil-coating (even ceramic

kilns) to the monitoring of exhaust ducts before thermal or catalytic oxidizers in the chemical and pharmaceutical industry.

Measuring principle

The PrevEx analyzers employ the principle of Flame Temperature Analysis (FTA). They contain a carefully metered pilot, or sensing flame. The sample gas is drawn into the flame cell and any combustible components are incinerated by the flame. The temperature rise of the flame is directly translated into a reading expressed as a percentage of the lower explosive limit (% LEL/LFL). This measuring principle is unique in its uniform response towards different solvents. Only this quality assures accurate readings for complex or variable mixtures of solvent vapors.

In addition this detector cannot be poisoned by halogenated hydrocarbons or silicones.

Direct mounting at the sample location

The design of the analyzers allows to the direct mounting on the process wall or duct. This leads to short sample lines, resulting in a quick response, and avoids problems with external sampling systems.

A concentric sample probe provides an easy way to heat the sample line even into the process, by using the hot analyzer exhaust, thus removing every possible cold spot. The analyzers can sample gas at temperatures of up to 700°C. If the temperature is higher, a ceramic probe must be employed.

Heated sampling system

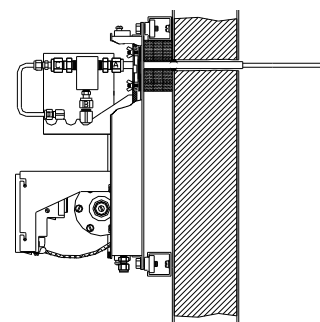
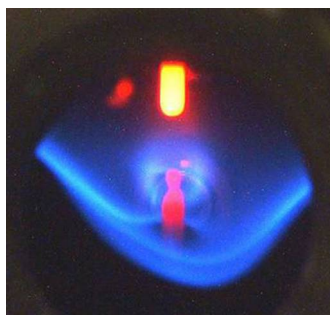
All sample wetted parts are heated to avoid condensation. The temperature must be chosen to be at least as high as the dew points or flash points of the com-

ponents of the sample, thus preventing condensation.

This ensures accurate readings and avoids excessive maintenance due to condensation and clogging.

Two integrated sample filters (filter elements and sinter metal filters) effectively remove particles from the sample gas. In addition, the sample train of the analyzers uses relatively large internal diameters so that slight deposits do not immediately lead to sampling problems.

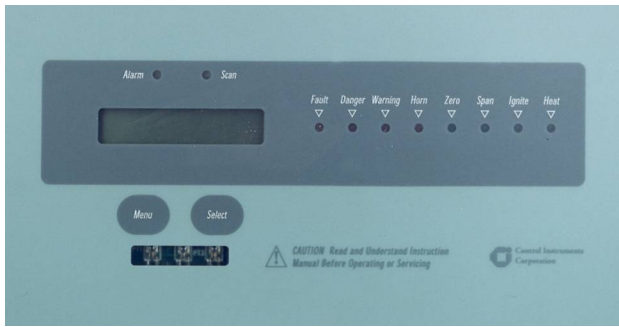
The sample is drawn from the process using an aspirator, driven by compressed air. Therefore there are no moving parts in the sampling system which could fail.



At a Glance

- Uniform response to many different solvents
- Fast response
- No poisoning of the detector
- Direct mounting on process wall or duct
- Heated sample train (up to 250°C)
- Air-driven aspirator: no mechanical pump, no moving parts
- Highest reliability, minimal maintenance
- Complete set of outputs: fault and alarm relays, 4-20mA reading output, serial RS-485 interface with Modbus RTU protocol
- optional corrosion-resistant outdoor housing
- ATEX Type Examination Certificate including approval of the measurement function (EN 60079-29-1)
- Functional Safety levels SIL1 (low/high demand), SIL2/SIL3 (low demand) and PL d available





Efficient Operation

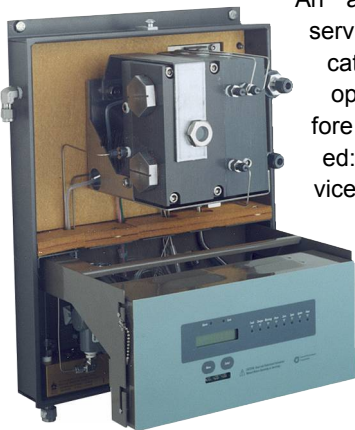
There are many ways to operate the PreVEx analyzers:

- using the push-buttons directly on the integrated front panel with the LCD display and LED indicators
- remote action commands (e.g. calibration) using two configurable digital inputs.
- complete remote control via the serial interface with Modbus protocol, e.g. via the optional color touch operator panel FTA Monitor 670 CT.

After a calibration is initiated the analyzer microprocessor controls the calibration by opening the integrated calibration gas solenoid valves and storing the new calibration parameter after a plausibility check before the analyzer resumes normal operation.

Detailed Internal Diagnostics

The analyzer continuously monitors the most important operating conditions. A fault (e.g. memory failure, loss of power, loss of temperature, flame out, loss of sample flow) is displayed in the display, indicated by an LED and signaled via a relay.



An additional relay signals service requests which indicate changes in important operating parameters before a fault might be generated: The reason for the service request is indicated in the display. This can be used to schedule preventative maintenance at a convenient time without risking a malfunction.

Approvals for various functional safety levels (SIL/PLd) are available.

Easy maintenance

Due to the highly reliable operation of the analyzers only minimal maintenance is necessary. The analyzer design ensures easy accessibility of all parts for quick and simple maintenance procedures. Typically, all maintenance is performed on the unit in the field, there is usually no need to move the analyzer to a workshop.



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Specifications

Models	SNR671-T6, SNR672-T4, SNR672-T3, SNR674-T3, SNR674-T2, SNR675-T2		
Measuring range	0-80% LEL/LFL		
Operating temperature	SNR671-T6: 60°C SNR672-T4: 100°C (T3: up to 150°C) SNR674-T3: 100°C to 180°C (T2: up to 210°C) SNR675-T2: 100°C to 270°C (standard 250°C)		
Accuracy	± 3% fullscale or 10% of reading		
Repeatability	± 1% fullscale		
Zero stability	± 1% in 30 days		
Span stability	± 5% per year		
Response time	Model	T ₅₀	T ₉₀
	SNR671/672	≤ 2 s	≤ 3 s
	SNR674/675	≤ 2 s	≤ 2,5 s
	Plus sample transport time in external sample lines: approx. 0.5 sec/m		
Humidity range	0-100% RF, non-condensing		
Ambient temperature range	SNR671, SNR672:	-10°C to +60°C	
	SNR674:	-20°C to +60°C	
	SNR675:	-20°C to +55°C	
Relay functions	Six relays for: warning, danger, fault, horn, calibration-in-progress, service needed		
Alarm functions	Two adjustable alarm levels, 10% to 60% LEL		
Power requirement	120 VAC +10%-15% 50/60 Hertz or 230 VAC +10%-15% 50/60 Hertz Max. 400 Watts		
Analog output	4-20mA, non-isolated, max. 275 Ohm non-inductive, including line length		
Serial interface	RS-485, two-wire, half-duplex, Modbus protocol		
Sample train material	Hard-coat aluminium, stainless steel, FKM/Kalrez		
Enclosure rating	IP 54 (without purge air vent outlet)		
Dimensions	406mm Height x 307mm Width x 216mm Depth		
Sample gas	Dew and flash point < operating temperature. O ₂ concentration: 12%-21% Vol. (optionally 0%-21% with sample dilution system, please inquire). Sampling location up to zone 1.		
Sample flow	2,5 ±0,5 NI/min typical		
Sample pressure	Reading increase of 0,4% to 0,8% LFL per 10 mbar pressure drop since calibration		
Fuel gas	Pure Hydrogen, min. 99,99% pure Inlet pressure 2,8-3,1 barg Consumption: typical 40ml/min		
Compressed air	Clean, dry instrument air Inlet pressure 1,4 barg Consumption typical 21 l/min, max. 28 l/min		
Calibration gas	1,15% Vol. Ethylene (Ethene) in synthetic air (alternatively 9100ppm Propane in air) Inlet pressure 1,4 barg Consumption: approx. 4 l/min during calibration		
Options	<ul style="list-style-type: none"> • Purge and pressurization control system for installations in hazardous zone 1 or 2 • Corrosion-resistant outdoor housing (IP 65) • Sample dilution for sample gases with low oxygen concentrations (please inquire) • separate, central touch screen operator interface for remote control and long-term records 		
Conformity	ATEX Type Examination Certificate DMT 03 ATEX G 001 X: <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> Ⓢ II 2/- G IIC T2/T3/T4/T6 Gb/- Ⓢ II 2G Ex pxb IIC T2/T3/T4/T6 Gb </div> </div> including measurement function according to EN 60079-29-1 and EN 50271. Substances tested: propane, acetone, benzene, methyl ethyl ketone, ethyl alcohol, ethyl acetate, n-hexan, isopropyl alcohol, n-heptane, o-xylene, toluene and Shellsol 60/95.		
Functional Safety	<ul style="list-style-type: none"> • EN 50270 • SIL1 (low/high demand) • SIL2 (HFT=0, low demand) • SIL3 (HFT=1, low demand) • PL d according to EN ISO 13849-1 available 		