Siegrist GmbH

Info

Wir bringen Sicherheit auf den Punkt

MECCOS® EVH IR 3 Yeast Spectrophotometer

I.2. Applications

Continuous determination and registration of ethanol vapours in the exhaust air of yeast fermentation plants.

Bacterial fermentation processes in the production of baker's yeast, brewer's yeast, or yeast extract not only produce carbon dioxide but also ethanol. This fermentation process is accelerated or stopped by a targeted addition of the raw materials for fermentation.
In the fermentation process the concentration of the resulting ethanol content in the fermenter's exhaust air is proportional. Thus it is possible to control the fermentation process by continuously feeding the exhaust air to the concentration measuring instrument MECCOS® EVH IR 3 Yeast to trigger control functions depending on the determined analysis data.

Features

- Continuous Measurement of Ethanol
- Fast Response to Concentration Changes of Ethanol
- High Selectivity
- High Reproducability
- Long Term Stability
- Datalogging
- Multi Point Detection

Method of Operation

The MECCOS® EVH IR 3 Yeast spectrophotometer uses the DIR (dispersive infrared absorption) measuring principle.

This measuring principle is based on the characteristic of polyatomic, non-elemental gases to absorb radiation in the infrared spectrum range. The modulated infrared radiation emitted in a wide band by an emitter reaches a detector by passing through a cuvette. This wide band radiation is filtered for the gas component to be measured by first passing through a narrow band interference filter. The gas to be measured is led through the cuvette.

The IR radiation reaches the detector in a more or less weak form, depending on the changed concentration of the measured component within the cuvette. The energy difference caused by absorbing energy by the molecules of the measured gas is registered by the detector and processed electronically.

The electronics convert this measured value into a linear output signal proportional to the concentration of the measured component. This signal is available for display and control.

TECHNICAL DATA SPECTROPHOTOMETER MECCOS® EVH IR 3 YEAST

Measuring principle	:	single beam infrared spectrophotometer
Measurable gases	:	Ethanol and all IR active gases
Light source	:	NiCr element
Detector	:	pyroelectrical LiTa element
Optical path length	:	250 mm
Optical windows	:	CaFl
Volume of measuring distance	:	63 ml
Measuring ranges	:	0-0,4 Vol%;0-1; 0-1,2 Vol% Ethanol
Detection limit	:	<1% end of the measuring range
Accurancy	:	+-5% of the displayed value
Response period	:	< 30 sec. (90% time)
Reproducibility	:	> 10 (in acc. with VDI 2449 sheet 1)
Zero line drift	:	<+/- 1% per week
Control signals[1] to the system	:	availability (make contact potential-free) fault (make contact potential-free) zeroing, mainten. (make contact pot.-free) limit value 1 (break contact potential-free) limit value 2 (break contact potential-free)
Option 1	:	external PTC temperature sensor
Option 2	:	flow control (break contact potential-free)
Control signals[2] from the system	:	channel selection: channel1, channel2 (**IN1**, **IN2**)
Operating state indicator	:	"Ready" through green LED in front "Fault" through red LED in front
LC display	:	2 lines, 16 characters each
Keyboard	:	5 keys
Interfaces	:	6 potential-free contacts (control signals to system) RS 232 interface 2x analogue 0/4-20mA (max. 500 Ohm burden)
Connection	:	90-264 VAC / 47-63 Hz
Power consumption	:	50VA max.
Degree of protection	:	IP 52
Size	:	360mm x 260mm x 145mm (incl. connections)
Weight	:	3.5 kg max.
Service environment	:	temperature 10 - 40°C, humidity not condensing ambient air free from acidic and alkaline vapours
Gas connections	:	4 hose stems nominal width 4 mm
Sampling	:	pump integrated, capacity approx. 40 - 60 l/h Filter accessible externally
Sample	:	dust-free, non-condensing, free from acidic and alkaline vapours
Sample temperature	:	10 - 50°C

1) 1 switching voltage 60V, switching current 0.3 A
2) 24 VDC or VAC/+10 %, 25 mA

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