Technical Datasheet

MGT Series – Thermal Conductivity (TCD) Multi-Gas Transmitter with Base Range 0-100%

Product Features

- ✓ Corrosion protection
- ✓ Condensation and dust protection
- ✓ Multiple gas measurement modes
- ✓ High corrosion resistance Optional
- ✓ Sensor is be used at higher temperatures up to 180°C (on request)
- ✓ ATEX on request

Applications

- ✓ Measurement of hydrogen (H2) content in synthesis gas of ammonia plant
- ✓ Purity measurement of hydrogen (H2) in hydrogenation unit
- ✓ Measurement of oxygen (O2) in pure hydrogen (H2) and hydrogen (H2) in pure oxygen (O2) in the process of producing hydrogen by electrolysis of water and oxygen
- ✓ Hydrogen (H2) content measurement in hydrocarbon gas
- ✓ Monitoring of hydrogen (H2) and carbon dioxide (CO2) content in hydrogen-cooled generator sets
- ✓ Measurement of hydrogen (H2) in chlorine (Cl2) in the chlorine production process
- ✓ Measurement of chlorine (Cl2) in the chlorine production process
- ✓ Measurement of carbon dioxide (CO2) content in flue gas of furnace combustion
- ✓ Argon (Ar) content measurement in air separation plant
- ✓ Monitoring in the production of pure gases, such as helium (He) in nitrogen (N2) and argon (Ar) in oxygen (O2)
- ✓ Sulfur dioxide (SO2) content measurement in the production process of sulfuric acid and phosphate fertilizer

Radeberger Straße 21 - **D**-01900 Großröhrsdorf
E-Mail: info@dks-engineering.de - **Telefon:** +49 35952 / 429465
www.dks-engineering.com

Engineering & Vertrieb

MGT Series – Thermal Conductivity (TCD) Multi-Gas Transmitter with Base Range 0-100%

Overview

Thermal conductivity gas analyzer is an effective method to measure one of two components in a gas mixture (the thermal conductivities differ a lot). Mainly used to measure the content of hydrogen (H2), carbon dioxide (CO2), argon (Ar), etc. **Suitable for binary or quasi-binary gas mixtures.**

Principle

When the sample gas enters the thermal conductivity cell which is heated at a constant temperature of 63° C, and a thermistor is used above the film to maintain a constant temperature of 135° C. In this way, a small cavity is formed below and above the membrane. The measurement gas can diffuse into it. Hense, the heat loss caused by the thermal conductivity of the sample gas is compensated by heating, and the voltage required to maintain a constant temperature of the membrane is a measurement of the thermal conductivity of the measured gas.

Features

- ✓ **Corrosion protection**

  Sensor surface is coated with Polymer layer (4µm) which will not affect the excellent measurement performance of the sensor unit.

- ✓ **Condensation and dust protection**

  The sintered glass with µm-sized holes is used to protect the sensor so that gas molecules can pass through, but liquid water molecules are not permeable.

- ✓ **Multiple gas measurement modes**

  The analyzer has 16 built-in binary mixed gas measurement modes and calibration curve.

- ✓ **High corrosion resistance Optional**

  Sensor is made from Al2O3, glass and SiO2 coated Pt filaments, and Gas connections in PTFE, PFA

- ✓ **High temperature Optional**

  Sensor is be used at higher temperatures up to 180°c

Technical Datasheet

Measurement components and ranges

DKS GmbH Engineering & Vertrieb

Measuring Gas	Carrier Gas	Basis Range	Smallest Range	Smallest Suppressed Zero Range
Hydrogen (H_2)	Nitrogen (N_2) or Air	0% – 100%	0% – 0.5%	98% – 100%
Oxygen (O_2)	Nitrogen (N_2)	0% – 100%	0% – 15%	85% – 100%
Helium (He)	Nitrogen (N_2) or Air	0% – 100%	0% – 0.8%	97% – 100%
Carbon dioxide (CO_2)	Nitrogen (N_2) or Air	0% – 100%	0% – 3%	96% – 100%
Nitrogen (N_2)	Argon (Ar)	0% – 100%	0% – 3%	97% – 100%
Oxygen (O_2)	Argon (Ar)	0% – 100%	0% – 2%	97% – 100%
Hydrogen (H_2)	Argon (Ar)	0% – 100%	0% – 0.4%	99% – 100%
Helium (He)	Argon (Ar)	0% – 100%	0% – 0.5%	98% – 100%
Carbon dioxide (CO_2)	Argon (Ar)	0% – 60%	0% – 10%	—
Argon (Ar)	Carbon dioxide (CO_2)	40% – 100%	—	80% – 100%
Methane (CH_4)	Nitrogen (N_2) or Air	0% – 100%	0% – 2%	96% – 100%
Methane (CH_4)	Argon (Ar)	0% – 100%	0% – 1.5%	97% – 100%
Argon (Ar)	Oxygen (O_2)	0% – 100%	0% – 3%	96% – 100%
Nitrogen (N_2)	Hydrogen (H_2)	0% – 100%	0% – 2%	99.5% – 100%
Oxygen (O_2)	Carbon dioxide (CO_2)	0% – 100%	0% – 3%	96% – 100%
Hydrogen (H_2)	Helium (He)	20% – 100%	20% – 40%	85% – 100%
Hydrogen (H_2)	Methane (CH_4)	0% – 100%	0% – 0.5%	98% – 100%
Hydrogen (H_2)	Carbon dioxide (CO_2)	0% – 100%	0% – 0.5%	98% – 100%
Sulfur hexafluoride (SF_6)	Nitrogen (N_2) or Air	0% – 100%	0% – 2%	96% – 100%
Nitrogen dioxide (NO_2)	Nitrogen (N_2) or Air	0% – 100%	0% – 5%	96% – 100%
Hydrogen (H_2)	Oxygen (O_2)	0% – 100%	0% – 0.8%	97% – 100%
Argon (Ar)	Xenon (Xe)	0% – 100%	0% – 3%	99% – 100%
Neon (Ne)	Argon (Ar)	0% – 100%	0% – 1.5%	99% – 100%
Krypton (Kr)	Argon (Ar)	0% – 100%	0% – 2%	96% – 100%
Extinguishing gas (R125)	Nitrogen (N_2) or Air	0% – 100%	0% – 5%	98% – 100%
Deuterium (D_2)	Nitrogen (N_2) or Air	0% – 100%	0% – 0.7%	96% – 100%
Deuterium (D_2)	Helium (He)	0% – 100%	0% – 5%	70% – 100%

Overview

The thermal conductivity gas transmitter (analyzer) has integrated temperature and humidity measurement and compensation. This is cost-effective and is suitable, for example, for stable and continuous measurement of the hydrogen (H2) content.

Applications

- Water electrolysis to produce hydrogen
- Hydrogenation unit
- Hydrogen-cooled generator
- University and research
- Metal heat treatment/welding
- Chemicals/Pharmaceuticals
- Air Separation Unit

Specifications

Measuring principle	Thermal conductivity (TCD)
Display	1.8" industrial color LCD, 160*128Pixel
LED Light	Status LED Light
Linearity	< 1% of range
Repeatability	< 1% of range
Sensitivity	0.02%
T90-time	<1sec at flow rate higher 60l/h
Power	D—19 ~ 28V DC Power
Analog Output	4~20mA
Relay Output	3 Relays, NO, 5A 250VAC/30VDC
Communication	RS485, MODBUS RTU
Electrical protection	EMI / RFI CEI-EN55011 – 05/99
Flow rate	40l/h to 150l/h; 60l/h -80l/h recommended
Process Pressure(Max.)	10Bar
Temperature Range	-40 ~ 85℃
Humidity Range	0~95%RH (non-condensing)
Process Connection	G3/8 screw or 6mm tube
Ambient Temperature	-15 ~ 60℃
Housing Material	Aluminum and Stainless steel
Explosion-proof	Exd IICT4 Controller optional