









TCD3000 TRANSMITTER

The compact and robust transmitter TCD3000 is recommended for precise, fast and sensitive measurement of (quasi-) binary gas mixtures.

Due to the stainless-steel housing and the IP67 protection class, the unit can be used safely in harsh environments.

The unit is completely equipped with metal-to-metal connections, so that a high degree of tightness and pressure resistance over 200 bars can be guaranteed.

The gas-carrying parts and the sensor are corrosion-resistant: The gas path is made of highgrade stainless steel 1.4404, The sensor on the gas side is completely glazed. In addition, the sensor is protected against condensation and dust.

The internal memory can store the curves for up to 99 gas pairs, so that the device can be easily adapted to changing measurement requirements. The unit is connected to the process via axial pneumatic connections M10. Such a system makes assembly and disassembly in existing installations easier. At the customer's request, the wide range of adapters is available.







SPECIFICATIONS				
Dimensions with connectors; weight	B=54 mm, H=80 mm, D=34 mm; ~500g			
Power supply	12 – 36 V DC , 24 W			
Digital Output	RS485 or TTL, Baud rate 19200 / Data 8bit			
Analog Output	4-20 mA, 3-wire connection			
Ambient temperature range	-10°C to 50°C			
Warm up time	Approx. 1 min			
Flow rate	10I/h-120I/h			
T90-time	<]s			
Noise	< 50 ppm			
Drift at zero point	< 100 ppm per week			
Repeatability	< 50 ppm			
Error due to change of ambient temperature	< 50 ppm per 10°C			
Error due to change of flow at 701/h	< 50 ppm per 10l/h			
Gas pressure (absolute)	0,8 - 200 bara / 700 bara on request			
Error due to change of pressure (above 800hPa)	< 50 ppm per 10hPa			
All data refer to 0 E vally H in N				

All data refer to 0,5 vol% H₂ in N₂

MOST REQUESTED MEASUREMENT COMPONENTS AND RANGES				
Measuring gas	Carrier gas	Basis range	Smallest range	
Hydrogen (H2)	Oxygen (O2)	0 – 100 % *	0 – 0,5 %	
Oxygen (O ₂)	Hydrogen (H ₂)	0 – 100 % *	0 – 1,0 %	
Hydrogen (H2)	Nitrogen (N2) or air	0 – 100 %	0 – 0,5 %	
Nitrogen (N2)	Hydrogen (H2)	0 – 100 %	0 – 2,0 %	
Hydrogen (H ₂)	Argon (Ar)	0 – 100 %	0 – 0,1 %	
Hydrogen (H ₂)	Helium (He)	20 – 100 %	-	
Hydrogen (H ₂)	Methane (CH4)	0 – 100 %	0 – 0,5 %	
Hydrogen (H ₂)	Carbon dioxide (CO ₂)	0 – 100 %	0 – 0,5 %	
Helium (He)	Nitrogen (N2) or air	0 – 100 %	0 – 0,8 %	
Helium (He)	Argon (Ar)	0 – 100 %	0 – 0,5 %	
Methane (CH4)	Nitrogen (N2) or air	0 – 100 %	0 – 2,0 %	
Methane (CH4)	Argon (Ar)	0 – 100 %	0 – 1,5 %	
Oxygen (O ₂)	Nitrogen (N2)	0 – 100 %	0 – 15,0 %	
Oxygen (O2)	Argon (Ar)	0 – 100 %	0 – 2,0 %	
Oxygen (O ₂)	Carbon dioxide (CO ₂)	0 – 100 %	0 – 3,0 %	
Nitrogen (N2)	Argon (Ar)	0 – 100 %	0 – 3,0 %	
Carbon dioxide (CO2)	Nitrogen (N2) or air	0 – 100 %	0 – 3,0 %	
Carbon dioxide (CO ₂)	Argon (Ar)	0 - 60 %	0 – 10,0 %	
Argon (Ar)	Carbon dioxide (CO ₂)	40 – 100 %	_	
Argon (Ar)	Oxygen (O ₂)	0 – 100 %	0 – 3,0 %	
TCD technology also allows to perform the measurements of the following industrial gases: SF ₆ , NO ₂ , Neon, Krypton, Xenon, Deuterium etc.				
* correspondent safety measures must be taken by the client in the application with explosive gas mixtures				

GENERAL APPLICATION SECTORS

APPLICATION SECTORS - EXTENDED INFORMATION

			Hydrogen as an impurity	H ₂	0-0,5 vol.%
Ŷ		Oil & gas, petrochemicals, chemicals and synthetics	Impurities in Hydrogen	H ₂	99-100 vol.%
Ŷ	<u>٢</u>	Gas chromatographs	Input to Argon refining process	H ₂	Lower explosion level (LEL) upper explosion level (UEL)
ķ	G G	Air separators and pure gas production	Hydrogen production via electrolysis	H ₂	
	$\mathcal{O}_{\mathbf{x}}$	Detection of gas leakages	Annealing furnace	H ₂	
	្វីរ		Blast furnace pig iron production "top gas"		
¢		Pharmacy	hot reducing atmosphere	H ₂	0-20 vol.%
þ		Food industry	Basic oxygen furnace (BOF) top blown furnace		
ļ	œB	Metals, minerals, pulp and paper	high purity O and flux	H ₂	0-10 vol.%
ļ	樹	Power generation	Direct reduced iron in steel plants	% H ₂	
			Heat Treating H ₂ , N ₂ blanketing for hardness	H ₂	0-5 vol.% ; 10 vol.%; 20 vol.%
•	Ŷ	Environmental technology	Shielding Gas	H ₂	
			Shielding Gas	Ar	
			Shielding Gas	CO ₂	

APPLICATION SECTORS - EXTENDED INFORMATION

Turbo generator, monitoring of removal and filling of H_2 to prevent Exatmosphere	H ₂	0-100vol.%
Turbo generator, monitoring of removal and filling of H_2 to prevent Exatmosphere	Air	0-100vol.%
Turbo generator, operation, to assure optimum efficiency	H ₂	90-100vol.%
Turbo generator, cooling gas control over expensive purge gases, minimize maintenance downtime, troubleshooting contamination problems	H ₂	90-100vol.%
Turbo generator, alert to any upset air contamination of H_2 cooling gas to avoid potential for explosion	H ₂	
Nuclear power, monitoring deuterium (D2) in air	D_2	0-5vol.%
Nuclear power plant, vacuum drag recombiner after condenser	H ₂	0-5vol.%
Nuclear powerplant, propagation analysis of hydrogen in order to avoid an ignitable atmosphere	H ₂	0-20vol.%
Determination of the hydrogen content in natural gas	H ₂	
Ammonia (NH ₃) production	H ₂	
Hydrogen production, steam reforming, hydrogen content	H ₂	
Hydrogen production, Pressure swing adsorption, impurities	H ₂	
Methanol / MTBE production purge gas to reformer	H ₂	70-100vol%
H ₂ in fuel cell exhaust	H ₂	0-5 vol.%
Fuel cells, development and test	H ₂	0-100 vol.%
Dispersion of gas in car body	H ₂	0-10 vol.%

APPLICATION SECTORS - EXTENDED INFORMATION

Analysis of quenching gas spread in the locomotive	R 125 (C ₂ HF ₅)	
Analysis of spread of hydrogen in plants and buildings	Не	0-100vol.%
Plants and buildings, propagation analysis of hydrogen in order to avoid an ignitable atmosphere	H₂	0-20vol.%
Incoming goods inspection, identification and quality of delivered gases, quality insurance impurity	Impurity	
SF_6 for discharge arc protection (GIS, gas insulated switcher)	SF ₆	0-100vol.%
Soldering processes, monitoring of forming gas	H ₂	

ARCHIGAS

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