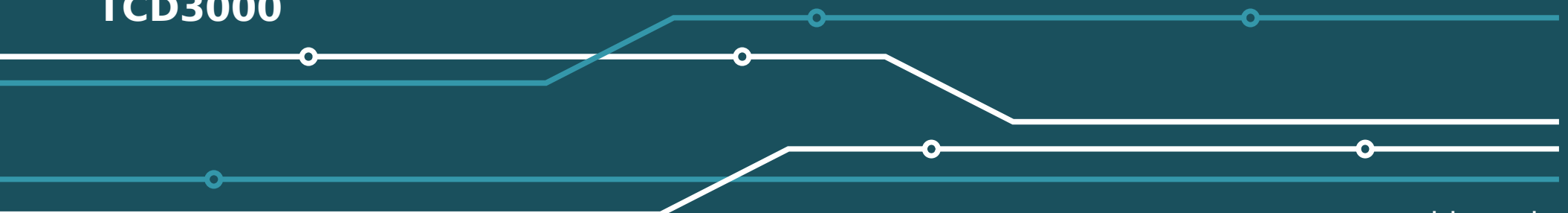


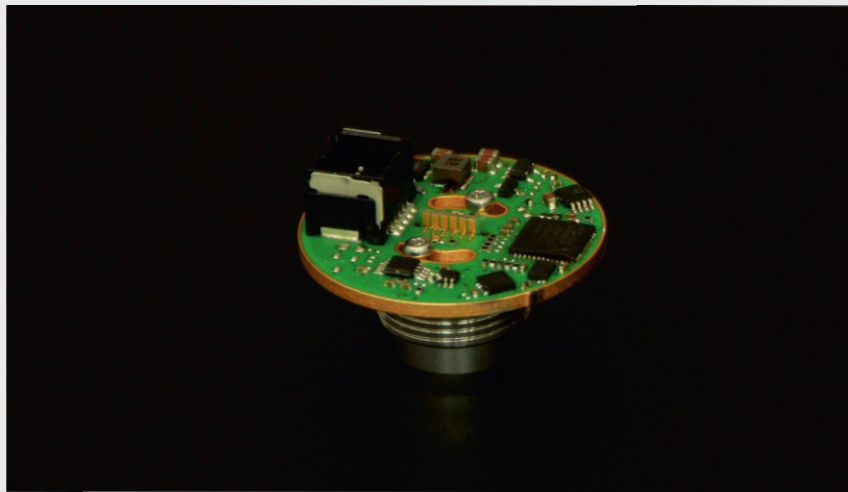


Experts in hydrogen measurement

TCD3000



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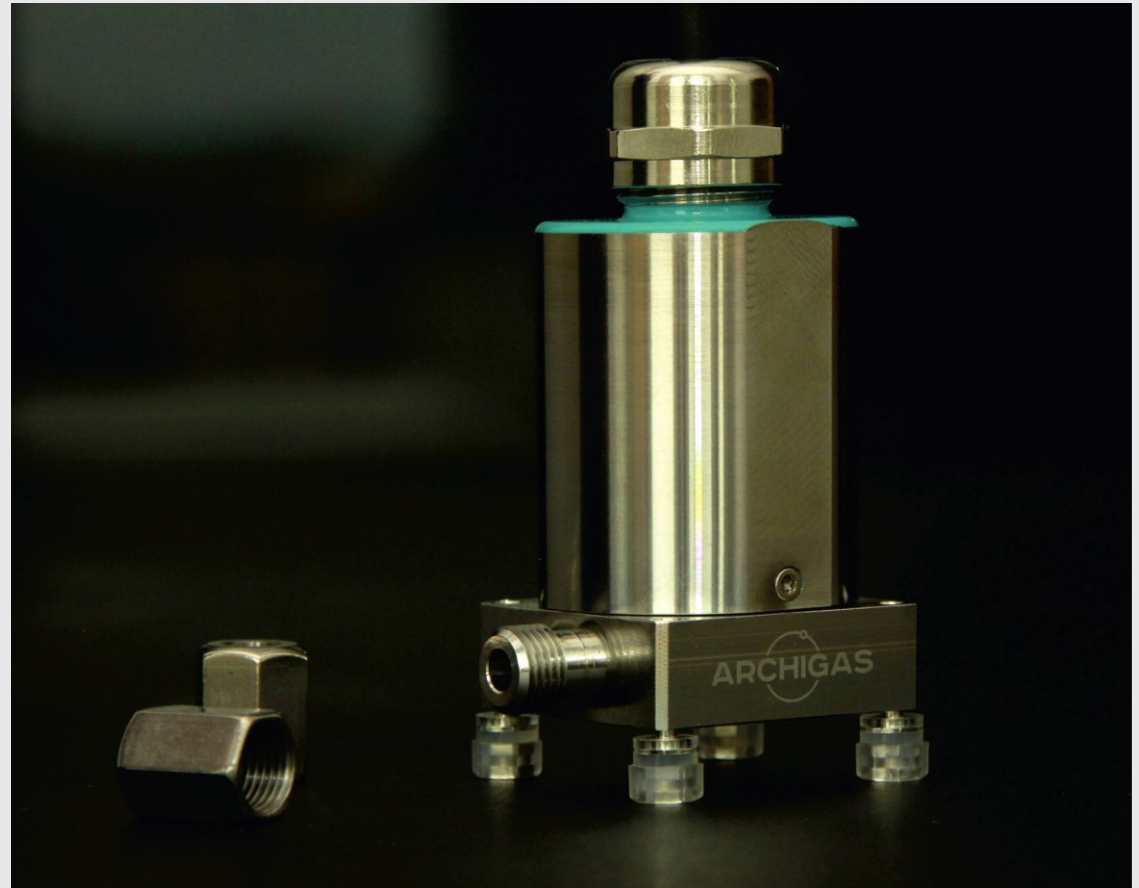


The compact and robust transmitter TCD3000 is recommended for precise, fast and sensitive measurement of (quasi-) binary gas mixtures.

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

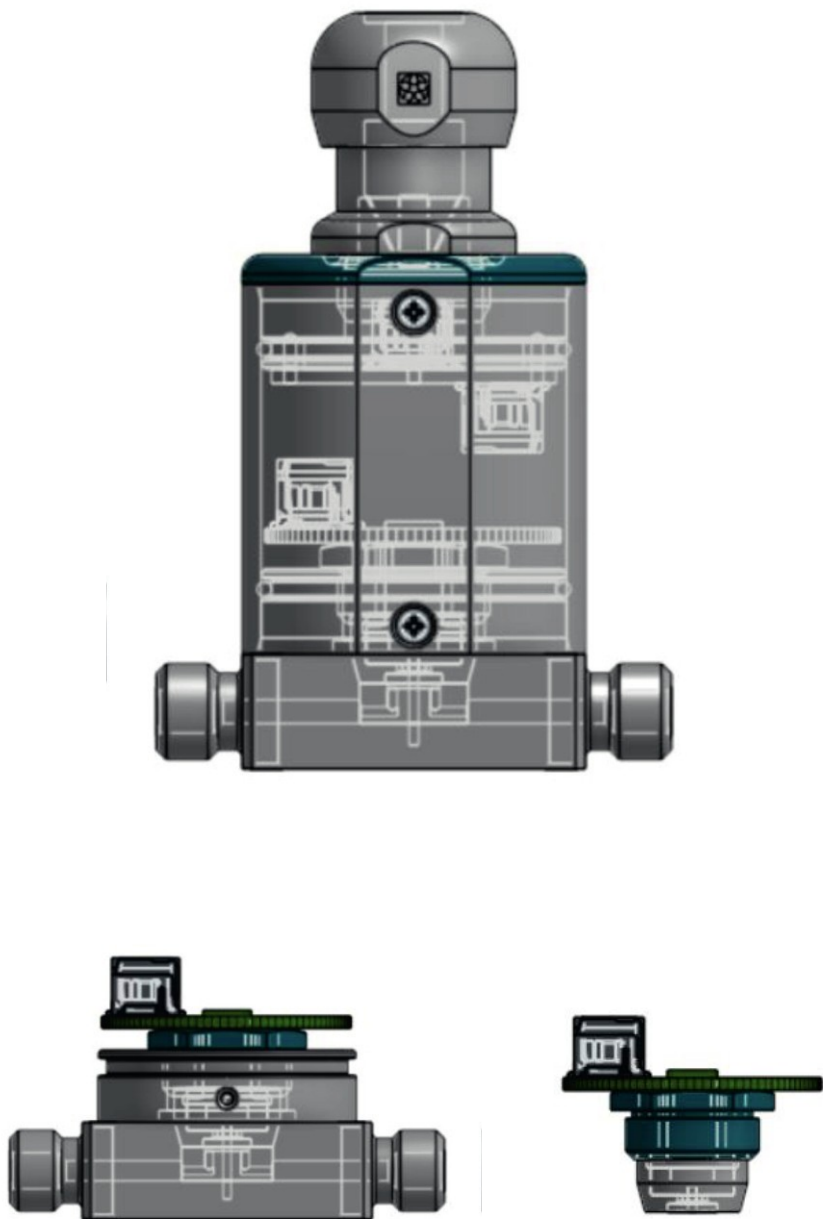
The unit is completely equipped with metal-to-metal connections, so that a high degree of tightness and pressure resistance over 200 bars can be guaranteed.

TCD3000 TRANSMITTER



The gas-carrying parts and the sensor are corrosion-resistant: The gas path is made of high-grade 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. 10min
Flow rate	10l/h-120l/h
T90-time	< 1s
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 70l/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 0,5 vol% H2 in N2

MEASUREMENT COMPONENTS AND RANGES

Measuring Gas	Carrier Gas	Basis Range	Smallest Range
Hydrogen (H ₂)	Nitrogen (N ₂) or Air	0% - 100%	0% - 0,5%
Oxygen (O ₂)	Nitrogen (N ₂)	0% - 100%	0% - 15%
Helium (He)	Nitrogen (N ₂) or Air	0% - 100%	0% - 0,8%
Carbon dioxide (CO ₂)	Nitrogen (N ₂) or Air	0% - 100%	0% - 3%
Nitrogen (N ₂)	Argon (Ar)	0% - 100%	0% - 3%
Oxygen (O ₂)	Argon (Ar)	0% - 100%	0% - 2%
Hydrogen (H ₂)	Argon (Ar)	0% - 100%	0% - 0,1%
Helium (He)	Argon (Ar)	0% - 100%	0% - 0,5%
Carbon dioxide (CO ₂)	Argon (Ar)	0% - 60%	0% - 10%
Argon (Ar)	Carbon dioxide (CO ₂)	40% - 100%	-
Methane (CH ₄)	Nitrogen (N ₂) or Air	0% - 100%	0% - 2%
Methane (CH ₄)	Argon (Ar)	0% - 100%	0% - 1,5%
Argon (Ar)	Oxygen (O ₂)	0% - 100%	0% - 3%
Nitrogen (N ₂)	Hydrogen (H ₂)	0% - 100%	0% - 2%
Oxygen (O ₂)	Carbon dioxide (CO ₂)	0% - 100%	0% - 3%
Hydrogen (H ₂)	Helium (He)	20% - 100%	-
Hydrogen (H ₂)	Methane (CH ₄)	0% - 100%	0% - 0,5%
Hydrogen (H ₂)	Carbon dioxide (CO ₂)	0% - 100%	0% - 0,5%
Sulfur hexafluoride (SF ₆)	Nitrogen (N ₂) or Air	0% - 100%	0% - 2%
Nitrogen dioxide (NO ₂)	Nitrogen (N ₂) or Air	0% - 100%	0% - 5%
Hydrogen (H ₂)	Oxygen (O ₂)	0% - 100%	0% - 0,2%
Argon (Ar)	Xenon (Xe)	0% - 100%	0% - 3%
Neon (Ne)	Argon (Ar)	0% - 100%	0% - 1,5%
Krypton (Kr)	Argon (Ar)	0% - 100%	0% - 2%
Extinguishing gas (R125)	Nitrogen (N ₂) or Air	0% - 100%	0% - 5%
Deuterium (D ₂)	Nitrogen (N ₂) or Air	0% - 100%	0% - 0,5%
Deuterium (D ₂)	Helium (He)	0% - 100%	0% - 5%

GENERAL APPLICATION SECTORS

APPLICATION SECTORS - EXTENDED INFORMATION



Oil & gas, petrochemicals,
chemicals and synthetics



Gas chromatographs



Air separators and pure gas production



Detection of gas leakages



Pharmacy



Food industry



Metals, minerals, pulp and paper



Power generation



Environmental technology

Hydrogen as an impurity	H ₂	0-0,5Vol.%
Impurities in Hydrogen (ring lines)	H ₂	99-100Vol.%
Input to Argon refining process	H ₂	Lower explosion level (LEL) upper explosion level (UEL)
Hydrogen production via electrolysis	H ₂	
Annealing furnace	H ₂	
Blast furnace pig iron production "top gas" hot reducing atmosphere	H ₂	0-20Vol.%
Basic oxygen furnace (BOF) top blown furnace oxidation of carbon in molten pig iron using high purity O ₂ and flux	H ₂	0-10Vol.%
Direct reduced iron in steel plants	% H ₂	
Heat Treating H ₂ , N ₂ blanketing for hardness	H ₂	0-5Vol.% ; 10Vol.% ; 20Vol.%
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		
Nuclear power, monitoring deuterium (D ₂) 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 full 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 (Ç HF)	
Analysis of spread of hydrogen in plants and buildings	He	0-100Vol.%
Plants and buildings, propagation analysis of hydrogen in order to avoid an ignitable atmosphere	H ₂	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	





Experts in hydrogen measurement

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