MTE Meter Test Equipment

HYDROCAL 1001

Composite Gas-in-Oil Sensor

HYDROCAL 1001 is a permanently-installed composite gas-in-oil sensor for the analysis of following dissolved key fault gases (TDCG = **T**otal **D**issolved **C**ombustible **G**ases):

Fault gas	**TDCG contribution**
Hydrogen (H_2)	approx. 25 %
Carbon Monoxide (CO)	approx. 15 %
Methane (CH_4)	< 5 %
Acetylene (C_2H_2)	approx. 45 %
Ethylene (C_2H_4)	approx. 20 %
Ethane (C_2H_6)	< 5 %

Integration of relevant key gases into a total weighted gas concentration enables the HYDROCAL 1001 to react to most transformer faults.

Hence, the device is an ideal, compact and cost effective tool used in particular for early transformer fault detection and preventative maintenance.

HYDROCAL 1001 is equipped with one analog 4-20 mA output for the gas-in-oil analysis result and 3 digital relay outputs (Hi alert, Hi-Hi alert, malfunction)

Key advantages:

- Composite measurement of Hydrogen (H_2), Carbon Monoxide (CO), Methane (CH_4), Acetylene (C_2H_2), Ethylene (C_2H_4) and Ethane (C_2H_6)
- It provides communication interfaces ETHERNET 10/100Mbit/s (either copper-wired or fibre-optical) and RS 485 to support proprietary communication protocols and to be open / prepared for sub-station communication protocols IEC 61850, MODBUS, DNP3, etc.
- The construction has been significantly simplified and size has been reduced compared to other products in the market

General

Auxiliary supply:	88 VAC_{min} … 276 VAC_{max} Optional: 88 VDC_{min} … 390 VDC_{max}
Power consumption:	max. 200 VA
Housing::	Aluminium
Dimensions:	W 165 x H 165 x D 210 mm
Weight:	approx. 4 kg
Ambient temperature:	-55℃ ... +55℃
Oil temperature:	-20℃ ... +90℃
Oil Pressure:	Up to 800 kpa
Connection to valve:	DIN ISO 228: G 1½ Optional: NPT 1½

Safety

	CE certified
Isolation protection:	IEC 61010-1:2002
Degree of protection:	IP-66

Measurements

Gas-in-Oil Measurement			
Measuring Quantity	**Range**	**Accuracy**	**TDCG-Contribution**
TDCG	0 ... 5.000 ppm	± 15 % ± 20 ppm	
Hydrogen H_2		± 10 % ± 15 ppm	approx. 20 % - 40 %
Carbon Monoxide CO		± 20 % ± 25 ppm	approx. 15 %
Methane CH_4		± 20 % ± 25 ppm	approx. < 5 %
Acetylene C_2H_2		± 20 % ± 25 ppm	approx. 45 %
Ethylene C_2H_4		± 20 % ± 25 ppm	approx. 20 %
Ethane C_2H_6		± 20 % ± 25 ppm	approx. < 5 %
Measurement cycle	20 min		

Analogue and digital outputs

Analogue DC output		
Type	**Range**	**Default function**
Current DC	4 – 20 mADC	TDCG -Concentration

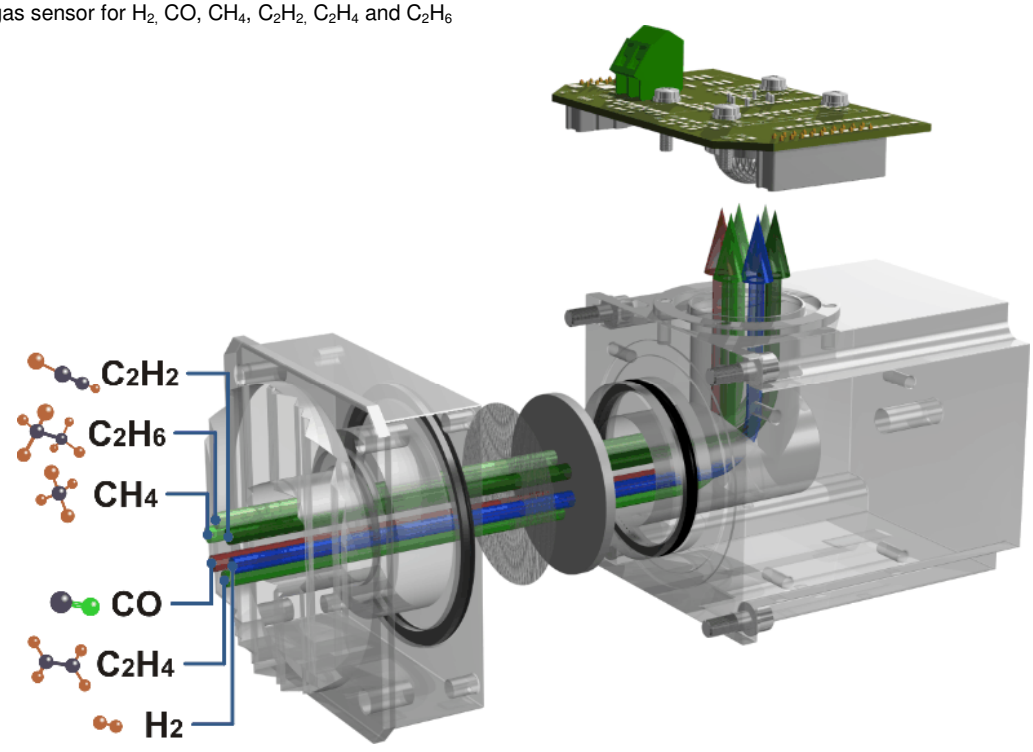
Digital outputs		
Type	**Control voltage**	**Max. switching capacity**
Relais	3 x 12 VDC	220 VDC/VAC / 2 A / 60 W

Communication

- ETHERNET 10/100 Mbit/s (copper-wired or fibre-optical)
- RS 485 (proprietary communication or MODBUS Protocol)

Operation principle

- Fuel cell-gas sensor for H_2, CO, CH_4, C_2H_2, C_2H_4 and C_2H_6



MTE Meter Test Equipment AG
Dammstrasse 16 • P.O. box 4544 • 6304 Zug • Switzerland
Phone +41-41-724 24 48 • Fax +41-41-724 24 25 • Internet www.mte.ch