Grid Solutions

HYDRAN 201TI

Essential DGA Monitoring for Transformers

Transformers are key and expensive components of the electrical grid and knowledge of their health condition is essential to having a reliable network. When a transformer's insulation system is overstressed, gases are produced that dissolve in the oil. Dissolved Gas-in-oil Analysis (DGA) is recognized as the best indicator of developing faults.

The Hydran 201Ti is a compact and user-friendly continuous Dissolved Gas-in-oil Analysis (DGA) monitor. It offers essential data that serves as a critical first-line defense for your transformers. By providing advance warning of potential failure conditions, it helps minimize the risk of unplanned outages.

The 201Ti utilizes fuel cell technology. It comes standard with it's globally recognized and field proven Hydran "Composite Sensor", which responds 100% to Hydrogen gas and is also responsive to Carbon Monoxide, Acetylene and Ethylene, and alternatively a "Hydrogen Only' sensor, which exclusively monitors Hydrogen gas generation.

Key Benefits

- Continuous measurement of key fault gases, offering valuable insights into transformers' condition
- Choice of gas sensor - "Composite Gas" sensor, detects Hydrogen, Carbon Monoxide, Acetylene, and Ethylene, or "Hydrogen Only" sensor for Hydrogen gas only
- Remote communications, eliminating the need for site visits and enabling remote supervision over Modbus

Applications

Power Utilities
- Simple and effective solution for less-critical transformers
- Focuses and prioritizes asset replacement strategy

Industrial Plants
- Reduces the risk of process interruption due to power failure
- Minimizes costly production downtime

Easy Asset Supervision

- Permanently mounts on a single transformer oil valve. No moving parts, no additional hardware required
- "Composite Gas" sensor responds 100% to Hydrogen (general fault gas) and is also sensitive to Carbon Monoxide (overheated paper)Acetylene (arcing) and Ethylene (overheated oil) thus covering main failure root causes
- "Hydrogen only" gas sensor is simpler and responds 100% to Hydrogen gas only, the general fault gas
- Digital output of registers using Modbus® protocol communication over isolated RS-485

Configurable Alarms

- Two alarm levels (one for Alert and one for Alarm) can be set to show increasing severity
- Alarms can be set on gas ppm levels or on gas rate of change (ROC) over an hour or a day
- Automatic self-test every 15 days will trigger service alarm if it detects a fault, including power failure, oil valve closed, sensor or battery needing replacement

Intuitive

- Integrated display and keypad for simplified local user interaction and data visualization.
- Compatibility with GE Vernova's acclaimed Perception™ software to download, trend and analyze transformer data
- Local USB port for local connection to a laptop
- Digital output of registers using Modbus® protocol communication over isolated RS-485

GE VERNOVA

Technical Specifications

MEASUREMENTS

Fuel cell type sensor behind a gas permeable membrane in contact with transformer insulating oil

Range	25-2000 ppm (volume / volume H_2 equivalent)
Accuracy	±10 % of reading ±25 ppm (H_2 equivalent)
Response Time	10 minutes (90 % of step change)

"Composite Gas" Sensor

Relative Sensitivity	H_2: 100 % of concentration CO: 15 ± 4 % of concentration C_2H_2: 8 ± 2 % of concentration C_2H_4: 1.5 ± 0.5 % of concentration
Repeatability	Highest of ±5 % of reading or ±5 ppm

"H2 Only" Gas Sensor

Relative Sensitivity	H_2: 100 % of concentration Interference from CO, C_2H_2 and C_2H_4 less than 3 % of concentration
Repeatability	Highest of ±5 % of reading or ±10 ppm

FEATURES

Display

Backlit LCD, 2 lines x 16 characters

Keypad to setup unit and acknowledge alarms

Digital Communications

USB port (type B connector) for local connection to laptop computer for configuring the system

RS-485 (terminal block), isolated to 2000 Vac RMS, for supervisory link connection to optional controllers and for remote communication

Gas level (ppm) and gas rate of change (hourly or daily ppm) outputs using Modbus® or Hydran Protocols over RS-485

Analog Communications

Gas level ppm output using 4-20mA for 25-2000 ppm range, 10V load maximum, isolated to 2000 Vac RMS

Alarms

3 different alarms: Gas Alert (Hi), Gas Alarm (HiHi) and Service Alarm (battery, sensor, temp)

Gas alarms can be set on gas level reached or on hourly or daily trend (gas level rate of change)

3 dry contact relays (type C, SPDT), NO/NC, 3A@250Vac resistive load, 3A@30Vdc resistive load

Manual Sampling

Easily accessible external oil sampling port, for use with glass syringe with Luer stopcock

ENVIRONMENT

Conditions

Operating Ambient Temperature	-40 °C to +55 °C (-40 °F to +131 °F)
Operating Ambient Humidity	0-95 % RH, non-condensing
Oil Temperature at Valve	-40 °C to +105 °C (-40 °F to +221 °F) with finned heat sink adapter option
Oil Pressure at Valve	0-700KPa (0-100psi) Vacuum resistant sensor

Enclosure Rating

NEMA Type 4X certified, meets requirements of IP56

Power Requirements

90–132 Vac or 180–264 Vac switchable, 47–63 Hz, 475VA max

Mechanical

Cylindrical shape, mounts on either 1", 1.5" or 2" female NPT valve

Dimensions	Diameter 178mm (7") x length 180mm (7-1/8")
Installed Weight	5.6Kg (12lb)
Shipping Weight	6.9Kg (15lb)

OPTIONS

Adapters for non NPT valves

Finned heat sink adapter (1.5"), for use when ambient temperature is above 40 °C (104 °F) or oil temperature is above 90 °C (194 °F)

Special tube wrench for sensor installation and removal

Product Ordering Part Numbers		Mineral Oil	Natural Ester Oil	Synthetic Ester Oil
HYDRAN 201Ti	"Composite gas" sensor	H201Ti_CE	Possible, on special request, for substantial quantities	
	"Hydrogen only" sensor	H201Ti_CE-H2	✖	✖

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