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H2scan
ADVANCED HYDROGEN SENSING

HVAssets

Early Warning

Condition-Based Maintenance (CBM)

PROTECT CRITICAL ASSETS

The Early Warning sensor measures hydrogen in oil and extend the life of your assets.

The sensor combines an integrated circuit with a solid-state hydrogen sensor. This system is designed to provide precise hydrogen measurement for monitoring solutions. No calibration or maintenance is required, offering excellent cost versus benefit, a truly disruptive solution for the transformer monitoring market.

It is recognized in the industry as the “gold standard” and carries an exclusive 10-year warranty. It provides true set-and-forget monitoring (no more monitoring the monitor), allowing maintenance teams to focus on distressed assets identified by the sensors and reducing OPEX while extending the life of critical assets.

H2scan, our partner, is the only company in the industry that can attest to the sale of over 15,000 sensors worldwide, without calibrations or after-sales services performed since 2012.

HV Assets offers flexible solutions, enabling the monitoring of virtually your entire fleet of transformers.

Application

This solution is number one in the industry due to its solid-state hydrogen sensor technology in a robust and compact housing. Suitable for a wide temperature range and marine exposure, the sensor is installed directly on the transformer and can withstand the most severe industrial applications. Due to its low operational cost, it can be applied to transformers of virtually any power and voltage that use mineral or vegetable oil.

Key Features

- Accurate specific hydrogen measurements
- Detection device immersed directly in oil for hydrogen measurement
- Meets a wide temperature range
- High rating for electromagnetic and radio-frequency interference (EMI/RFI)
- Meets IP68 protection degree
- Ideal for an IoT sensor deployment strategy across the entire fleet of transformers
- **10-year warranty on the hydrogen, standard 3-year warranty on the product**

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Protect transformers, critical assets, without worrying about sensor maintenance or calibration. The Early Warning sensor provides a precise, reliable, and affordable hydrogen gas measurement solution, for both the oil and gas phases of power transformers.

Certifications: The Early Warning sensor meets all relevant global monitoring standards for transformer installations and is CE approved for safe general use.

Hydrogen Sensor Specifications	
Measurement Range	Oil Phase: 25–5,000 ppm Gas Phase: 25–5,000 ppm
Accuracy[1]	±20% of reading or 25 ppm (500 ppm gas)[4]
Repeatability[2]	±10% of reading or 15 ppm (300 ppm gas)[4]
Response Time	<60 minutes (transformer location)
Operating Temperature	-40° C to +70° C
Storage Temperature	-40° C to +85° C
Oil Temperature	Oil Phase: -40°C to +105°C
Data Storage	1 year
Cross Sensitivity	<2% (other gases)
Serial Communication	2-wire RS485, Modbus RTU, DNP3.0
Power Supply	12-30 VCC, 10W
Environment	IP68 (7.62 m of water for 14 days)
Supported Liquids	Mineral oil, silicone, natural ester, synthetic ester
Designed life Expectancy	10+ years

Physical Specifications	
Wetted Materials and Internal Sealing	316SS, 40% mineral filled nylon, polyimide, viton (fluoropolymer elastomer), hermetic glass-to-metal feedthrough
External Housing and Sealing	Hard anodized 6061 aluminum, 40% mineral filled nylon, viton (fluoropolymer elastomer), nickel-plated zinc (4-wire connector)
Humidity and Corrosion Resistance	Class C5M marine equivalent; salt-water condensing (IEC60068-2-11 & DIN EN ISO 12944)
Certifications	FM Approved - FM 6520:2022 (In Oil Phase), CE Mark, ROHS 2011/65/EU compliant, EMC/RFI and Other Electrical Certification, IEC 55022 IFCC Part 15, IEC 55011, IEC 61000-4-2 through 61000-4-4, 61000-4-6, and 61000-4-8, IEC 61010-1, IEC 61326, IEC 60068-2-30
Vibration	3-axis Sinusoidal, Wideband and Random [Simulated Long-Life] (IEC 60068-2-6 table C.2, IEC 60068-2-64 paragraph A.2, category no. 2)
Shock	30 g, shock duration 18 ms (IEC 60068-2-27)

1 Sensor accuracy in the field
2 For consecutive measurements to an identical hydrogen concentration
3 Main tank bulk oil temperature
4 Whichever is greater