

KELMAN MINITRANS

Cost-effective On-line DGA & Moisture for Transformers

Knowledge of the condition of transformers is essential for all electrical networks and on-line monitoring of transformers is an increasingly vital component of successful asset management programs. The information provided by multi-gas on-line DGA allows valuable asset capabilities to be maximized and expensive failures to be avoided.

Dissolved Gas Analysis (DGA) and moisture measurement of the insulation oil are recognized as the most important tests for condition assessment of transformers. Traditionally performed in a laboratory environment, the Kelman™ MINITRANS provides for on-line discrete DGA monitoring of key gases associated with arcing, cellulose degradation and general fault conditions.

Key Benefits

- Cost effective on-line DGA
- Remote insight into transformer condition
- Discrete measurement of 3 key gases: Hydrogen, Carbon Monoxide and Acetylene; plus Moisture
- Faults can be detected in their infancy
- Generic fault type can be classified from results
- Transformer load and output can be optimized safely
- Aids condition based and predictive maintenance strategies
- Available with AC or AC/DC power supply

Applications

The MINITRANS facilitates entry into discrete on-line DGA and moisture monitoring for transformers and other oil insulated filled electrical equipment. The MINITRANS gives insight on developing faults, paper degradation and electrical arcing. It provides trending of gas-in-oil through its close integration with GE Vernova's powerful Perception™ Fleet software suite and/or users own software, historian and SCADA systems.

At a price that facilitates higher volumes of monitor deployment, The MINITRANS can be utilized to monitor any size of transformer, but is most widely employed to expand multi-gas on-line DGA coverage beyond the typical candidates of large, system critical or compromised transformers. It helps asset owners incorporate on-line DGA across a larger portion of their fleet, with a view to extending asset life, preventing unexpected failure and operating on a condition based/predictive maintenance schedule.

- Auxiliary GSU transformers
- Renewable Transformers
- Transmission transformers
- Distribution transformers



Cutting Edge Technology

- Three key fault gases plus moisture
- Automated headspace gas extraction
- State of the art photo-acoustic spectroscopy
- (PAS) measurement technology
- No carrier or calibration gases required
- Sampling frequency up to once per hour

Ease of Use

- Easy installation: no outages required reducing expense and inconvenience for user
- No consumables and minimal maintenance reduces running costs and site visits
- Extensive local and remote communications options available
- Sampling frequency user-configurable, versatile and flexible
- LCD display provides up to date information

Configurable Alerts

- Two sunlight visible front panel LED arrays
- User configurable relay contacts
- Alarms can be set or changed locally or remotely using Perception software
- Caution and alarm modes can be used to automatically increase sampling frequency

Integrated Solution

- Integrated load monitoring allows DGA analysis against transformer loading
- Can be connected to GE Vernova's Perception software for sophisticated graphical trending & diagnostic tools



GE VERNOVA

Perception Fleet Software

Easy to install and configure, GE Vernova's Perception™ Fleet Asset Management Software is the ideal companion to your GE Vernova on-line monitors for both transformers and circuit breakers.

Perception Fleet moves customers from a manual, one-on-one asset assessment process to an automated and continuous fleet management solution.

Perception Fleet automatically downloads data from each GE Vernova online monitor and populates its database. It provides asset experts with comprehensive transformer diagnostic tools and data trending capabilities, as well as providing asset managers with asset fleet ranking based on health and risk indexes.



Technical Specifications

MEASUREMENTS		ENVIRONMENT	
Range (LDL - UDL)		Conditions	
Hydrogen (H ₂)	5 - 5,000 ppm	Operating Ambient Temperature	-35 °C to +55 °C (-40 °F to +131 °F): AC version -17 °C to +55 °C (1 °F to +131 °F): AC/DC version
Carbon Monoxide (CO)	10 - 50,000 ppm	Operating Ambient Humidity	0-95 % RH, non-condensing
Acetylene (C ₂ H ₂)	3 - 50,000 ppm	Oil Temperature at Valve**	-10 °C to +100 °C (14 °F to +212 °F)
Moisture (H ₂ O)	0-100% RS (given in ppm)	**Based on testing carried out using VOLTESSO™ 35 mineral oil, over a ¼" pipe run of 10 metres or less from oil supply or return valve to monitor connection point and on transformer oil supply valve volumes of 200 ml or less. For oil temperatures colder than -10 °C GE Vernova recommend the use of heat trace cabling on piping	
Accuracy*	±10% or ±LDL (whichever is greater)		
*Accuracy quoted is the accuracy of the detectors during calibration.			
Frequency		Enclosure Rating	
Variable - once per hour to once every 4 weeks		IP55 certified	
Technology		304 Stainless Steel (316 option)	
Uses photo-acoustic spectroscopy (PAS) to give highly reliable results. Field proven with over 10,000 Kelman PAS systems deployed in over ninety countries worldwide		Power Requirements	
Fully embedded processor and internal data storage for 10,000 records - over eight years of data at default sampling rate - protected by non-volatile memory		Available with either AC or AC/DC power supply	
FEATURES		AC Version ***	
Alarms		Nom: 115/230 Vac, Range: 103-126/207-253 Vac, 47-63 Hz, 6A max	
Two sunlight visible front panel LED arrays (Red & Green)		AC/DC version	
Single Pole Alarm Relays, NO and NC provided: 1A@250Vac, 200mA@125Vdc, 150mA@300Vdc, 1A@30Vdc		Nom: 100-230 Vac, Range: 90-253 Vac, 45-65Hz, 5A max Nom: 100-220 Vdc, Range: 90-242 Vdc, 5A max	
Six alarm setting screens or scenarios are available, which can set alarms based on the level of the three gasses/moisture, and rates of change for each gas		***AC input auto-switching	
Each alarm setting screen can activate the alarm relays or send an SMS message if equipped with the optional cellular modem		Mechanical	
All alarms can be set or changed locally or remotely using Perception software		Dimensions	
Caution and alarm modes can be used to increase sampling frequency		600 mm x 380 mm x 350 mm 24 " x 15 " x 14 "	
Communications		Weight	
Two separate channels for remote communications, local USB connection and Ethernet connection		Installed weight 31Kg (68lb) Shipping weight 49Kg (108lb)	
Communications protocols supported include MODBUS®, MODBUS/TCP, DNP3.0, IEC®61850			
Modules available for communication via RS232, RS485, Ethernet, Fiber Optic, PSTN and cellular GSM/GPRS modems			

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