

Kelman TRANSFIX

Full on-line DGA & moisture



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™ TRANSFIX now allows for advanced full diagnostic level gas-in-oil and moisture monitoring on a user schedulable basis.

Key Benefits

- Remote insight into transformer condition
- Faults can be detected in their infancy
- Transformer load and output can be optimised safely
- Discrete measurement of all fault gases facilitates full diagnostics
- Transformer ageing can be calculated
- Fault type can be classified from results
- Aids condition based and predictive maintenance strategies
- Available with AC or AC/DC power supply

Applications

The TRANSFIX offers discrete on-line DGA and moisture monitoring for transformers and other oil insulated filled electrical equipment. Utilizing photo-acoustic spectroscopy (PAS) measurement technology well suited to field application, providing laboratory challenging levels of precision and repeatability. Full 9 gas DGA sampling can be performed as often as every hour including monitoring of the 7 key fault gases employed in all common diagnostic methods and TRANSFIX offers full gas in oil trending, analysis and diagnostic capabilities through its close integration with GE's powerful Perception™ Fleet software suite and/or users own software, historian and SCADA systems. Capable of monitoring all sizes of transformers TRANSFIX is most widely employed for monitoring large, system critical or compromised transformers with a view to extending asset life, preventing unexpected failure and operating on a condition based/predictive maintenance schedule.

- GSU transformers
- Mission critical industrial transformer
- Transmission transformers
- HVDC station transformers
- On load tap changers
- Circuit breakers

Integrated Solution

- Key element of GE's integrated transformer monitoring portfolio
- Operates as a standalone DGA monitor or can be Integrated with bushing monitoring and transformer modelling modules
- Integrated load monitoring allows DGA analysis against transformer loading
- Can be controlled and configured by GE's Perception Fleet software – advanced asset management suite providing sophisticated graphical trending & diagnostics
- Inputs for up to five other analogue sensors

Cutting Edge Technology

- Nine gases plus moisture in a single monitor
- Automated headspace gas extraction
- State of the art photo-acoustic spectroscopy (PAS) measurement technology
- No carrier or calibration gases required
- Long service life with minimal maintenance
- 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 is user-configurable, versatile and flexible
- LCD display provides up to date information

Configurable Alerts

- Two sunlight visible front panel LED arrays (Red & Yellow)
- Six user configurable alarm 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



Communication

- Two separate channels for remote communications, plus local USB connection and Ethernet connection
- 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

Technical Features

- Uses photo-acoustic spectroscopy (PAS) to give highly reliable results. Field proven with over 8,000 Kelman PAS systems deployed in over ninety countries worldwide
- Nine target gases plus moisture measured
- Estimation of nitrogen and total gas content for free breathing transformers
- Fully embedded processor and internal data storage for 10,000 records - over eight years of data at default sampling rates
- Non-volatile memory storage to prevent loss of data
- Discrete sampling gives more rapid response to gas rises. No 'averaging' of DGA results

Alarms

- Two sunlight visible front panel LED arrays (Red & Yellow)
- All alarms can be set or changed locally or remotely using Perception software
- Six alarm setting screens or scenarios are available for each oil circuit, which can set alarms based on the level of any of the nine gases, TDCS and moisture, and rates of change for each gas
- Each alarm setting screen can activate one of six alarm relays, the red or yellow front panel indicator or send an SMS message if equipped with the optional cellular GSM modem
- Six dry contact relay alarms (configurable)
- Caution mode and alarm mode can be used to increase sampling frequency
- The alarm results of each screen are independent of the other circuits and alarm setting screens

Power Supply

- Available with AC or AC/DC power supply

Technical Specifications

PARAMETER (COMPOUND)	ENVIRONMENT
Hydrogen (H ₂)	Operating Ambient Temperature
Carbon Monoxide (CO)	
Carbon Dioxide (CO ₂)	
Methane (CH ₄)	Oil Temperature at valve**
Acetylene (C ₂ H ₂)	Oil Pressure at valve
Ethane (C ₂ H ₆)	Power Requirements AC Version
Ethylene (C ₂ H ₄)	Power Requirements AC/DC version***
Moisture (H ₂ O)	
Accuracy*	Operating Humidity
Oxygen (O ₂)	Enclosure
Nitrogen (N ₂)	Mechanical
	Single Phase Alarm Relays
	Measure Frequency

*Accuracy quoted is the accuracy of the detectors during calibration.

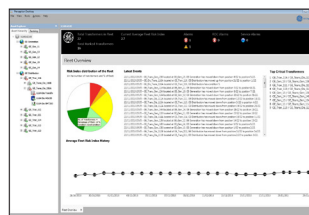
N₂ available on free-breathing transformers only

**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 200ml or less. For oil temperatures colder than -20°C GE recommend the use of heat trace cabling on piping

***Power requirements subject to change

Perception Fleet

Providing critical insight on your transformers condition and overall fleet risk. Perception Fleet features data trending, condition diagnostics, customizable overview reports, wallboard fleet visualization, alarm notification and visualization. The smart and standards based logic used in Perceptions Fleet ranking algorithms deliver a simplified yet concise overview of your transformers condition and risk. The customizable data import and export facility enhances Perceptions interoperability and the expert email notifications ensures the right person receives critical data should a transformers condition change.



Fleet health/risk overview



Transformer health/risk overview

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imagination at work