

KELMAN TRANSPORT X²



Portable Onsite DGA

Dissolved Gas Analysis (DGA) and moisture measurement of insulating fluids are recognized as the most important tests for condition assessment of fluid-insulated transformers. Every year asset owners deploy field crews to take thousands of fluid samples from transformers as part of periodic health checks and for immediate operational decisions, where these samples are sent to offsite laboratories for analysis.

Kelman™ Transport X² is a portable 'lab in a box' delivering detailed analysis with dramatically reduced turnaround times. In critical situations, the ability to perform DGA in less than 30 minutes on the spot, empowers asset owners to determine a transformer's condition onsite and thereby allow operational decisions to be made at the earliest opportunity.

The Transport X² was the first to deliver consumable-free DGA products to the market and now with over a decade of operational experience, making it the class leading Photo-acoustic spectroscopy (PAS) gas measurement technology.

Key Benefits

- Measurement of seven diagnostic gases and moisture content in the oil
- Fast diagnostics in less than 30 minutes
- Intuitive touchscreen interface with step-by-step instructions and Plug and Play connectivity
- Compatible with mineral insulating oils and newer ester-based fluids (natural and synthetic)
- Enables operators to effectively respond to alarms, trip events and supports on-site field decision making
- Ideal companion to GE Vernova's range of single gas online DGA monitors for adding transformer diagnostics

Applications

As the average age of generation, transmission and distribution transformers increases, the risk of rapid deterioration and even catastrophic failures also increases. Transformer changes can occur in between rounds of periodic laboratory DGA analysis and this risk exposure can go unnoticed. The Transport X² offers electric utility and industrial customers accurate, economical diagnostics in a portable machine, applicable for:

- Mission critical industrial transformers
- Distribution transformers
- Buchholz relay gas
- Tap changer tanks
- Instrument transformers
- Oil filled circuit breakers

Fully Portable

- Standalone DGA field instrument capable of measuring seven diagnostic gases and moisture
- Calibration and consumable gas free design for autonomous field operation
- Unit weighs less than 7.6 kg (16.8 lb)

Field Proven Technology

Advanced PAS technology (4th generation) underpinned by decades of DGA experience

- Supports mineral oil and ester fluids
- 5 year warranty as standard

Intuitive Operation

- Graphical touchscreen user interface
- Intuitive on-screen step-by-step instructions
- Seamless integration with Perception software
- Plug and Play download of measurements and log files using standard USB 2.0 memory stick

Built-in Diagnostics

- Built-in internationally recognized DGA diagnostic software tools
- Color graphical display to facilitate visualization
- Storage capacity for >20,000 measurements
- Further diagnostic capabilities through data upload to the Perception software suite

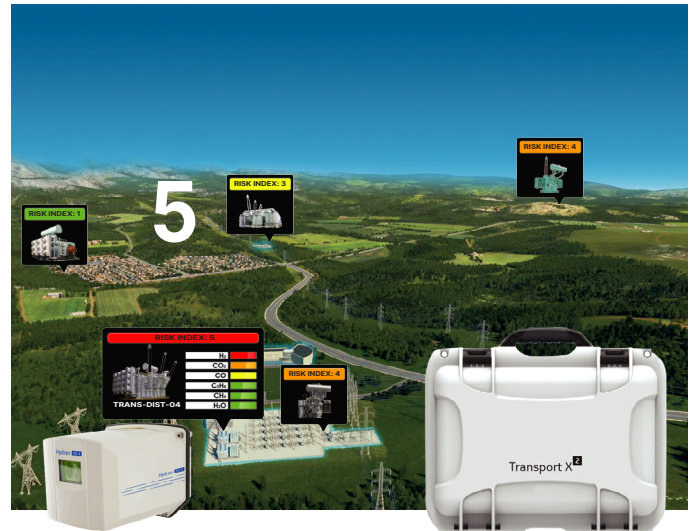


GE VERNOVA

Application Example

The Kelman Transport X² remains your ideal partner for use in conjunction with GE Vernova's range of single gas online DGA monitors. These units (such as Hydran™ 201Ti and Hydran M2-X) monitor the transformer and raise an alarm when an abnormal level of fault gas is reached or when the rate of change of this gas level increases rapidly so that you can take action and protect your transformer early in the process.

Such events often require further investigation before a valid conclusion can be reached. Traditional methods require an oil sample to be sent to a laboratory for analysis. This can be a lengthy process before a diagnosis and related decision can be made. However, with the Transport X², the sample can be taken and analyzed onsite, giving comprehensive diagnostic information in less than 30 minutes. The Transport X² data can then be uploaded and visualized in GE Vernova's powerful Perception software alongside the readings from the online monitor.



Technical Specifications

MEASUREMENT RANGE	ENVIRONMENT	LANGUAGE SUPPORT
Hydrogen (H ₂) 5 – 5,000 ppm	Operating Ambient Temperature 5 – 50 °C (+41 to +122 °F)	European Package English (Default), Czech, German, Spanish, French, Hungarian, Polish, Portuguese, Russian
Carbon Monoxide (CO) 2 – 50,000 ppm	Operating Altitude Maximum 2,000m	Japanese Package English, Japanese
Carbon Dioxide (CO ₂) 40 – 50,000 ppm	Operating Pressure 760 - 1040 millibar	Chinese Package English, Chinese
Methane (CH ₄) 2 - 50,000 ppm	Operating Humidity 10-95% RH non-condensing	
Acetylene (C ₂ H ₂) 0.5 - 50,000 ppm	Power Supply 100-240 VAC 50/60Hz; 1.7A	
Ethane (C ₂ H ₆) 2 - 50,000 ppm	Enclosure IP67 (when closed) IP20 (when operating)	
Ethylene (C ₂ H ₄) 2 - 50,000 ppm	Oil Sample Volume 50 ml (Oil)	
Measurement Accuracy* ±5 % or ±LDL (whichever is greater)	Gas Sample Volume 5 ml (Buchholz Gas)	
Moisture (H ₂ O) 0-100 % relative humidity	Dimensions 429 mm x 328 mm x 236 mm (16.9 in. x 12.9 in. x 9.3 in.)	
Moisture in Oil Accuracy ±3ppm or ±3.5 %RH	Weight 7.56 kg (16.7 lb)	
*Accuracy quoted is the accuracy of the detectors during calibration; gas-in-oil measurement accuracy may be affected by sampling, oil type, environmental conditions and/or product usage cycle.		
Note: For Buchholz gas samples, LDL is 50 ppm, accuracy is ±30 %, for all gases.		
TECHNOLOGY	FEATURES	ADDITIONAL OPTIONS
Automated headspace gas extraction	LCD Size 6.5 inch color touchscreen	Gas check kit for verification of ongoing accuracy
Photo-acoustic spectroscopy (PAS) gas measurements (4th gen.)	LCD Type Resistive touchscreen	Kit for collection and analysis of Buchholz gas samples
Thin film capacitive moisture sensor	Screen Resolution 640 × 480	Transit case provides extra protection during air travel and harsh environment transportation (IP67 rating when closed)
Oil and Buchholz gas injection utilizing syringes	Computer interface USB	Sample cooler box to rapidly cool hot oil samples for immediate analysis, doubles as a secure sample transportation container
Mineral oil and ester fluid (natural & synthetic)	Measurement Download USB 2.0 Memory Stick Direct Perception Sync	
Storage capacity of > 20,000 measurements	Logfile Retrieval USB 2.0 Memory Stick and Perception	
	Output CSV file format and Screen	
	Hardcopy 2 inch thermal printer	
	Onboard Diagnostics Duval's triangle, Rogers' ratio, Key Gas & Japanese ETRA	

For more information, visit
governova.com/grid-solutions

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