

Product Overview

Knowledge of the condition of transformers is essential for all electrical networks and on-line monitoring of critical transformers is becoming increasingly vital. This information allows valuable asset capabilities to be maximised and expensive failures to be avoided.

Dissolved Gas Analysis (DGA) and moisture measurement of the insulation oil are recognised as the most important tests for condition assessment of transformers.

Features & Benefits

The MULTITRANS is designed for large transformers with three single phase tanks or for three adjacent transformers.

The system has three separate oil supply channels allowing complete DGA for three individual transformer main tanks.

Extensive field use proves that MULTITRANS provides reliable information and represents a valuable tool for Asset Management:

- Avoid costly unplanned outages.
- Transformer faults detected in their infancy.
- Transformer output optimized safely.
- Transformer ageing can be calculated.
- Type of fault can be classified from results.

DGA & Water

Eight gases plus moisture and nitrogen.

Multiple Tanks

Monitor up to three individual transformer tanks with one MULTITRANS unit. Maximum single tube length between MULTITRANS and transformer valve is 30m.

Cutting Edge Technology

Kelman equipment brings DGA to a new level.

No Consumables

No carrier gases or calibration gases required.

Kelman PERCEPTION*

Advanced asset management software providing sophisticated graphical trending & diagnostic analysis of results.



Comms Options

Extensive local and remote communications options.

Alarm Settings

Sophisticated programmable alarm system.

Easy Installation & Minimal Maintenance

No outages required; reduces expense and inconvenience for user.

Local Display

LCD Display provides up to date information on site.

Sampling Rate

MULTITRANS will sample all three tanks in turn. Tank sequence and sampling rate frequency programmable to increase if caution or alarm levels are exceeded. Circuits with higher alarm status will have priority in scheduling.

Load Monitoring

Allows results to be analysed against the loading of the transformer.

External Sensors

Additional inputs for up to five sensors. Three 12 to 30 VDC digital inputs can be used for special applications.

Reliable Gas Extraction

Internal modified head space gas extraction.

Technical Specifications

PARAMETER (compound)	VALUE/MEETS (measurement range)
Hydrogen (H ₂)	5 - 5,000 ppm
Carbon Monoxide (CO)	2 - 50,000 ppm
Carbon Dioxide (CO ₂)	20 - 50,000 ppm
Methane (CH ₄)	2 - 50,000 ppm
Acetylene (C ₂ H ₂)	0.5 - 50,000 ppm
Ethane (C ₂ H ₆)	2 - 50,000 ppm
Ethylene (C ₂ H ₄)	2 - 50,000 ppm
Water (H ₂ O)	0-100% RS (given in ppm)
Oxygen (O ₂)	150 - 50,000 ppm, accuracy ±10%
Nitrogen (N ₂)	10 - 130,000 ppm, accuracy ±15%
Accuracy	± 5% or ± LDL (whichever is greater)

ENVIRONMENTAL

Temperature Range	-40 to 55°C (-40 to 131 °F)
Oil Temperature Range	-40 to 120°C (-40 to 248°F)
Power Supply	90 - 250 VAC; 47 - 63Hz; 150W; 8A max
Operating Humidity	10 - 95% RH non-condensing
Enclosure	IP55
Weight	Less than 70 kg (154 lbs)
Single Phase Alarm Relays	NO and NC provided, 5A 250 VAC, 5A 30 VDC.
Measurement Frequency	Variable - 1 per hour to 1 every 4 weeks



Technical Features

- Uses photo-acoustic spectroscopy to give highly reliable results. Field proven in over ninety countries worldwide.
- Eight target gases plus moisture measured.
- Estimation of nitrogen and total gas content for free breathing transformers.
- Full embedded processor – over two years of data at a default sampling rate of one sample taken every six hours, stored internally on non-volatile memory 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) and six Alarm Relay contacts, each user configurable.
- All alarms can be set or changed locally or remotely using Kelman **PERCEPTION** PC Software.
- Six alarm setting screens or scenarios are available for each oil circuit, which can set alarms based on the level of eight gasses, TDCG 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 a SMS message if equipped with the optional cellular GSM or CDMA modem.
- Six dry alarm relay contacts (configurable). NO and NC provided; 5A 250 VAC, 5A 30 VDC.
- 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.

Communications

- Two separate channels for remote communications, plus local USB connection and Ethernet connection.
- Communications protocols supported include MODBUS®, MODBUS/TCP, DNP3.0, IEC61850®.
- Modules available for connection via RS232, RS485, Ethernet, PSTN modem, GSM or CDMA wireless modems.

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