General Specifications

COLUMN & METHANIZER

Inner Volume	16 Liters
Temperature Range	Ambient to 220°C
Temperature Read out	4 digit LED
Temperature Accuracy	± 1 % of Range
Temperature stability	± 0.1°C
Overheat protection	Electronics for Oven & Meth.
Temperature setting	0.1°C

INJECTORS - INLET SYSTEMS

Choice of Inlet system	On Column / Methanizer
Number of Injectors	Up to 2 (On Column Type)
Operating Temperature	Ambient

DETECTORS

Choice of Detectors	FID/TCD/HID/ Micro TCD
Number of Detectors	Any 2

CHOICE OF PNEUMATICS

Pressure Control	Two Stage
Flow control Option	FCV / DFC / Micro FCV / EPC
Control	From Front Panel

GENERAL SPECIFICATIONS

Upgrade ability	Yes
Voltage Input	230 VAC ± 10%
Power Requirements	4 Amperes
Operating Temperature	0 ~ 50°C
Humidity	0 ~ 90 % NC RH
Weight	Approximately 16 KG

DGA / TOGA

With Head Space Auto Sampler conforming to IEC 60567 : 7.5

Based on Dhruva S2TS

Extraction Method 7.3 of IEC 60567

GC -2010 configured as LC-TOGA

Baroda 1972

Baroda 1980

Solan

Training Hall

A Company of Technocrats Since 1972

DISSOLVED GAS ANALYZER

Pμ - DGA / TOGA

TÜV NABCB QMS 002
An ISO 9001 Certified Company

Chromatography and Instruments Company

A Company of Technocrats
Since 1972

DISSOLVED GAS ANALYZER Pμ - DGA / TOGA

121, 122 GIDC Makarpura, Vadodara - 390 010. Gujarat.
Tel : 0265 - 2633926, 2631830 • Fax : 0265 - 2638273
Email : info@chromatographyinst.com / cicpltd@gmail.com
Web. : www.chromatographyinst.com

DGA - Dissolved Gas Analysis & Analyzer

Dissolved Gas Analysis of transformer oil is done to detect the incipient fault in the Power Transformers in power stations or electric Locos to arrest deterioration/damage to the transformer by analyzing gases dissolved in the transformer oil. The quantities of gases dissolved in transformer oil vary depending upon the type & severity of fault condition such as Arcing, Partial Discharge, Overheating, Low/High Temperature Hot Spot etc.

The analysis of dissolved gases in electrical insulating oil is an efficient diagnostic tool for condition monitoring of power system equipments. The DGA / TOGA can be configured using any of our GC Model as main frame to analyse the complete spectrum of gases namely H2, O2, N2, CO2, C2H4, C2H6, C2H2, CO & CH4 in a SINGLE/MULTIPLE INJECTION. While systems are normally configured for analysis of the key fault gases (Hydrogen / Methane / Ethane / Ethylene / Acetylene / CO / Co2) routinely, they can be configured for analyzing other gases like Oxygen (O2), Nitrogen (N2) & Propane + Propylene (C3+).

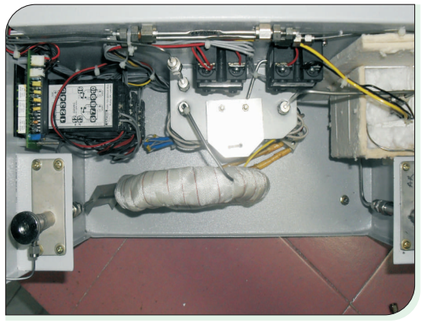
The Pμ - DGA/TOGA is capable to detect PPM & Sub PPM gases in transformer oil with respect to the national/international specification / standards, for example IS-10593 : 1992 or IEC 60567 Section 7.3 or ASTM D3612- Method A. The lower limit of detection of the P-Micro DGA / TOGA for the gases is: Hydrogen 1ppm, Hydrocarbon 0.1ppm, Carbon monoxide 5 ppm & Carbon dioxide 5 ppm for dissolved gases in oil.

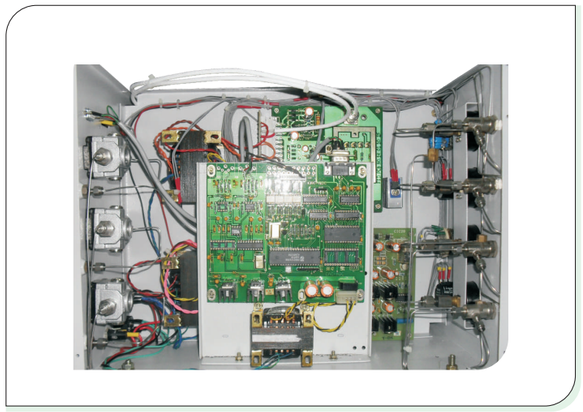
When the Pμ - DGA / TOGA is coupled with our DGA interpretation software the system becomes truly an engineer's delight. With continuos R & D in developing more efficient gas extraction systems we provide customers with cutting edge technology to safeguard their assets.

About the Pμ - DGA System

The Pμ - DGA system is a microprocessor based system with no moving parts specially designed for mobile labs & easy portability. The system utilizes proprietary heating technique for the column with an up-front PID achieving control accuracy desired by the analyst.

- **Conforms to IEC 60567, 7.3 / ASTM D3612, Section A / IS 10593**
- **Special variant for mobile labs with welded pneumatic joints**
- **Compact System**
- **No moving parts**
- **Configurable as single injection TOGA system or 2 Injection system**





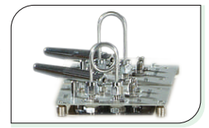
The system is power packed with advanced features and is priced very competitively. The simple and rugged construction of the system will ensure that the system will be very economical for industries & institutions in the long run as the system will require very little or no servicing at all. The Pμ - DGA system can be configured as TOGA for single injection application or as a 2 channel online DGA system. For mobile vans and export systems all the plumbing joints, valves etc are welded so that there is no chance of any leakage.

Choice of Inlets

ON COLUMN INLET SYSTEM

These are specially designed for the Pμ Dissolved Gas Analyzer System having minimal dead volume and direct injection on the column for lesser diffusion and greater sensitivity.

GAS SAMPLING VALVES



Can be provided for Manul as well as Automatic operation. Four, Six, Eight & Ten port valve configurations are available in manual as well as pneumatically or electrically operated automatic models which when coupled with the valve sequence programmer can make the GC automatic (semi).

METHANIZER - CATALYTIC CONVERTER

The choice of a Methanizer connected in series with the injector and column is an ideal proposition for low-level analysis of Carbon Monoxide (CO) & Carbon Dioxide (CO2).

High Performance Detectors

FLAME IONIZATION DETECTOR (FID)

Operating Temperature : Ambient
Amplifier Gain : X1, X10, X100
Sensitivity : 0.1 PPM Methane as DG
Linear Range : 1×10^7
Noise : Less then 1% / day (< 2 μV)
Drift : Less then 1% / day (< 5u μ / min)
Zero Balance : Multi turn potentiometer.
Attenuator : Rotary type from X1 to X1024
Output : To recorder 1mV or 10 mV or 1VDC to PC

THERMAL CONDUCTIVITY DETECTOR (TCD)

Operating Temperature : Ambient
Type : Flow through or semi diffusion
Current Range : Up to 220 mA (adjustable)
Sensitivity : 1PPM DG Hydrogen using Argon
Zero Balance : Multi turn potentiometer.
Attenuator : Rotary type from X1 to X1024
Current monitoring : By four digits LED
Electronic Amplifier : included in the design with gain of 10 or 100

MICRO THERMAL CONDUCTIVITY DETECTOR (MTCD)

Our dual filament TCD is a stand alone unit consisting of the detector housing & a controller with electrometer & temperature controls. The detector coil includes two separate nickel / Iron filaments capable of independent or referenced (differential) operation. Cell volume and geometry are optimized for capillary chromatography and enhanced sensitivity at low flow rates, (Recommended total flow rate : 2 - 10 ml / min.)

HELIUM IONIZATION DETECTOR (HID / DID / PDHID)

offer better sensitivities as compared to the conventional detectors but are not only expensive but also require greater operator skill. More ever, as the detectors are not as such approved by the regulatory bodies it can be matter of concern when reporting the data.

Dissolved Gas (DGA) Interpretation Software

Specialized software is available for the interpretation of the data as per IS 10593 : 1992, IEC Cubic Ratio & Duvall Triangle Method using the faults established as per the ratio of the different gases. Besides the faults and their diagnostics the software also gives the result in PPM for all the gases obtained after the analysis on the DGA. The software is user friendly and can be used for data calculation as per the IEC standard for Partial Degassing & Head Space Sampling methods. For Partial Degassing method the customer can select between calculation as the IS 10593 or the IEC. The report option is user programmable and the customer can put his name on the report to be generated and can save and retrieve the data at any later date if required.