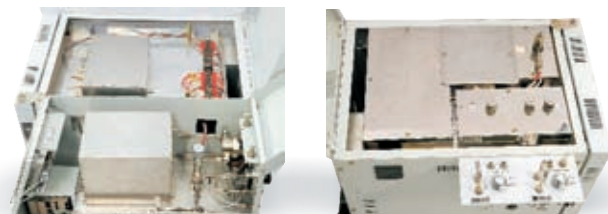




GC - Dhruva with Manual Gas Sampling Valves



Dhruva with Purged Housing for Valves / Ionization Detector  
Top Lid With TCD / FID / 3 Injectors / Valves



Customized Portable GC



On Line GC For Controlled Environments



PEM Based Hydrogen Generator



Nitrogen / Air Generator



High Capacity Zero Air Generator



N/H/A - 3 in 1 Combo Generator



*Dhruva*  
The Truly Indian Advanced GC

Baroda 1972



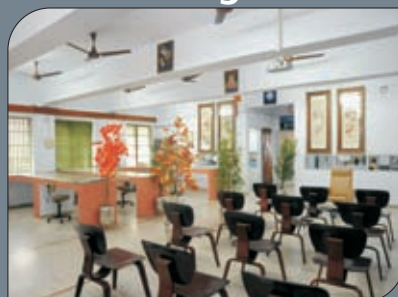
Baroda 1980



Solan



Training Hall



## System Highlights

The DHRUVA, a touch screen based GC system comes with smart features & advanced specifications comparable with the very best. A fully loaded DHRUVA is self sufficient which can be configured to work as an OLGC, TOGA, RGA, NGA & can be coupled with Head Space & Auto Sampler Systems. **Some innovative & advanced features of DHRUVA are :**

- 1/4" VGA Touch screen for complete system control & monitoring with choice of colour or mono touch screens
- Auto tuning PID temperature control for up to 8 channel with 2 programmable zones & 6 isothermal zones
- EPC for up to 8 channel with 2 programmable zones & 6 single set point control with 0.25% FSD controlling accuracy
- Up to 12 auxiliary device control with 4 step programming for control of GSV, Solenoids, Pumps, Trigger, Signals etc.
- Input status for Pressure, Remote start, Door open along with 4 additional spare inputs.
- Extensive Auto diagnostics & user friendly system control with **User settable password protection**. Multi mode screens with 6 pages of current status giving complete GC status with option for continuous looping of the system.

The DHRUVA is an open ended smart system which can be configured as per user requirement & suitability. The user can configure the GC as per their analysis requirement without loading the system un-necessarily with features that will never be used, thus, the user can get an advanced system for the price of a normal GC.



## Specifications

### CONTROL SYSTEM

Controller Action	24 Bit Micro Controller
Controller Type	1/4" VGA Touch Screen
Display & Colours	4000 Colours
Temperature Zones	Up to 8 - 2 Prog. & 6 Iso.
Pressure Zones	Up to 8 - 2 Prog. & 6 Iso.
Auxiliary Control Zones	Up to 12 with 4 Step Prog.
Number of Methods	Unlimited
External Start Pulse	Yes, for GC Start Externally
External System Control	Ethernet/ Modbus RTU-485

### COLUMN OVEN

Inner Volume	+22 Liters
Temperature Range	Ambient to 500°C
Cryogenic Option	Optionally Available
Temperature Read Out	Dual Colour Display - PV & SP
Temperature Accuracy	± 0.5% of Set Temperature
Temperature Stability	± 0.1°C
Overheat Protection	Dual Electronics + s/w
Heating Rate	50°C to 350°C in 7 min.
Programming Steps	32 Segment Ramp & Soak
Temperature Setting	0.1°C / 1.0°C

### DETECTORS

Choice of Detectors*	FID/TCD/ $\mu$ -TCD/PDHID/ECD
Number of Detectors	Any 3
Temperature Read Out	Dual Colour Display - PV & SP
Temperature Accuracy	+ 0.5% of Set Temperature
Temperature Stability	+ 0.1°C
Overheat Protection	Dual Electronics + s/w
*Other Detectors Like NPD, HID, TID, FPD etc. On Request from OEM	

### INJECTORS - INLET SYSTEMS

Choice of Inlet System	All Available
Number of Injectors	Up to 4
Temperature Range	Ambient to 450°C
Temperature Read Out	Dual Colour Display - PV & SP
Temperature Accuracy	± 0.5% of Set Temperature
Temperature Stability	± 0.1°C
Overheat Protection	Dual Electronics + s/w

### ROBOTICS / AUTO MODE

Choice of Head Space Auto Samplers from HTA Srl  
Choice of Liquid Auto Samplers from HTA Srl  
Choice of Thermal Desorbers / Purge & Trap from CDS Inc  
Choice of Pyrolyzers from CDS Inc

### CHOICE OF PNEUMATICS

Pressure & Flow Control	Three Stage
Flow Control Option	EPP/EPC/AFC/DMFC/MMV
EPC Settability	0.1 PSI to 999 PSI
Programmable Steps	Up to 16 Steps

### GENERAL SPECIFICATIONS

Results Re - Transmission	Up to 900 meters Optional
Conversion to OLGC	Yes
Voltage Input	230 VAC ± 10%
Power Requirements	15 Amperes
Operating Temperature	0 ~ 50°C
Humidity	0 ~ 95% NC RH
Weight	Approximately 50 KG

## Choice of Inlets

### PACKED COLUMN INLET SYSTEM

It is used for 1/4" & 1/8" glass or Stainless steel column & wide bore capillary column by inter - changeable individual insert.

### SPLIT - SPLITLESS CAPILLARY COLUMN INLET SYSTEM

It is used for narrow bore & mega bore capillary column in split or split less mode. Enhanced design with graphite ferrule seals & flow septum purge reduces background noise & solvent peak tailing while minimizing sample contact with metal surfaces which lessens the possibility of thermal breakdown. Built in septum purge with precise needle valve control for variable split ratio setting is

### ON COLUMN INLET SYSTEM

It is used for thermal degradable compounds by direct injection onto the capillary or packed column head. It can also be used for samples of very low concentration.

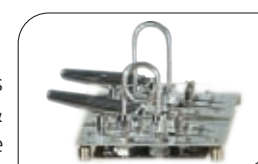


### PROGRAMMED TEMPERATURE VAPORIZER (PTV)

This injection system provides programmable injection temperatures, combining the advantages of a split / split less injection and "Close On - Column" injection techniques. The optimized thermal profile can be viewed on the VDU via RS 232c Serial link provided with PTV controller. This is available optionally on request.

### GAS SAMPLING VALVES

Can be provided for Manual 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 - CO / CO<sub>2</sub> Analysis.

## High Performance Detectors

The GC can handle any application may it be **Environmental, Agriculture, Pharmaceutical, Petrochemical, Food, Flavors, Solvent, Gases or Industrial Chemicals**. The GC's can accommodate multiple ( 2 - 4 ) independently temperature controlled detectors that can be operated either singly or simultaneously as per your requirement :

### FLAME IONIZATION DETECTOR (FID)

Operating Temperature : Ambient to 450°C  
Sensitivity : Hi & Lo ; Amplification : 1/2/4/8/16  
Sensitivity : < 1.8 pg Carbon / Sec (For Tridecane)  
Linear Range :  $1 \times 10^7$   
Noise : Less than 1% / day (< 2  $\mu$ V)  
Drift : Less than 1% / day (< 5  $\mu$  / min)  
Programmable : Up to 16 Steps within a analysis



### THERMAL CONDUCTIVITY DETECTOR (TCD)

Operating Temperature : Ambient to 450°C  
Type : Flow through or semi diffusion  
Current Range : Up to 350 mA (adjustable)  
Sensitivity : 10 ppm of H<sub>2</sub> using Argon Carrier ;  
400 pg / ml (Micro TCD) ; 2.5 ng / ml (Std)  
Electronic Amplifier : Gain 10/30/100



### IONIZATION DETECTOR (PDHID / DID)

The award winning Ionization Detectors can be installed in the system and can be used as an **universal detector** for analysis is low PPM and PPB range. The detector is a non destructive detector which can be configured to work as ECD, NPD, TID, FPD, FID, HID, or TCD depending upon the dopant gas and the carrier gas used...

The Ionization Detectors can be used with all types of capillary columns and/or packed columns, however, the same needs to be specified prior to ordering so that suitable configuration is ordered. A special detector configuration can be used for the trace gas analysis of fixed gases in low PPM and PPB ranges using packed columns.

### 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. Cell volume and geometry are optimized for capillary chromatography and enhanced sensitivity at low flow rates, (Recommended total flow rate : 2 - 10 ml / min.)

### ELECTRON CAPTURE DETECTOR (ECD)

Ideal for electrophilic compounds such as halogenated organic compounds. This detector is suitable for analysis at low PPM / PPB levels routinely and for some compounds in PPT ranges. Temperature up to 350 deg C this detector uses Ni63 as Beta source for deriving the electron source.

