

ULTRA HIGH PURE GAS GENERATORS

For Analytical Instrument





PCI Analytics, an ISO 9001:2015 / 45000 : 2018 certified company has long history of manufacturing Laboratory Ultrapure Gas Generators for Gas Chromatography, LCMS/MS & other Laboratory Analytical Applications LCMS/MS in India with installation base of over 4500 Gas Generators PAN India & Worldwide.



Zero Air Generator for GC/TOC (Online/Offline)



Model : ZAG-02/03

- Zero Air Generator produces a continuous flow of high purity Zero Air at selected pressure
- For TOC Analyzer, compressor takes the air from atmosphere, the hot air is then passed through copper cooling coil
- The cool air is then passed through furnace where hydrocarbons are cracked at high temperature (temp. range 300°C to 400°C) in presence of catalyst. The furnace reaction at higher temperature breaks the hydrocarbon into CO & H₂O
- Water is drained away through 5μ & 0.01μ filter
- The modular pressure swing adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Air flows under pressure through the reaction towers containing molecular sieve adsorber.
- Moisture, CO, CO₂, HC and other unwanted components in the air are adsorbed, leaving Zero Air Gas.

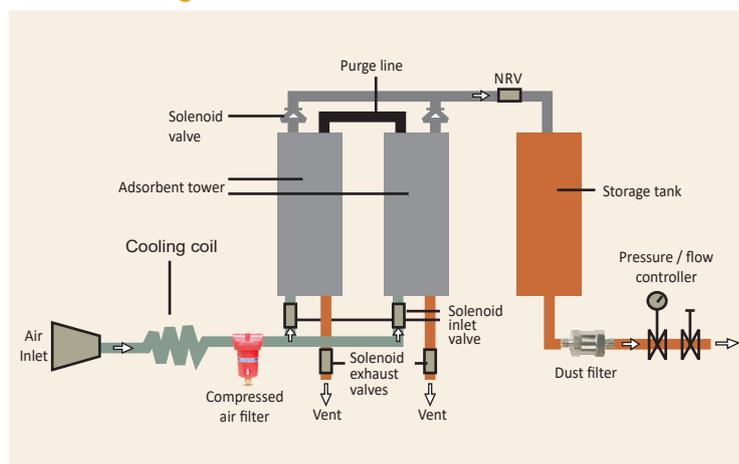
Salient Features

- Micro controller digital display
- Deliver constant pressure & flow
- Fully Automatic System
- Easy Maintenance and space saving
- Effortless and easy operation
- Improves instrument performance
- Fully regenerative, durability with PSA technology

Applications

- GC-FID, FPD, NPD, AED
- GC-MS, LC-MS-MS, ICP / NMR
- FTIR / IR, ELSD detector
- Purging, Ampule Filling
- Thermal instruments
- Analytical & Laboratory Instruments

Schematic Diagram of Zero Air Generator



Technical Specification for Zero Air Generator

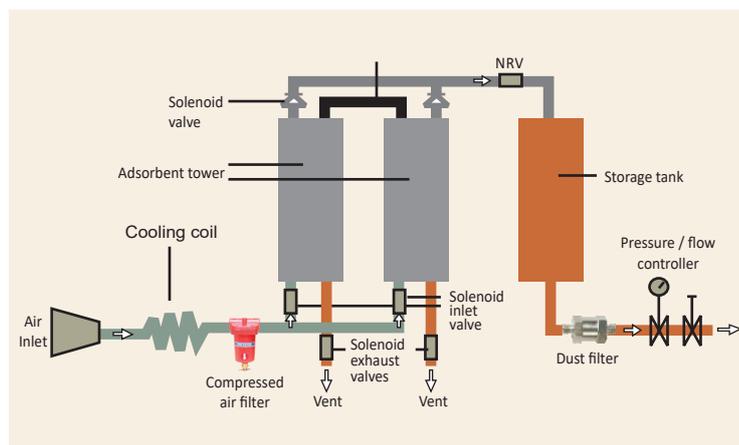
PRINCIPLE SPECIFICATIONS	ZAG02 (for max. 5 GC's)	ZAG03 (for TOC Analyser)
Moisture	< 2 ppm	< 0.3 ppm
Total Hydro Carbon	< 0.3 ppm	< 0.5 ppm
CO & CO	< 2 ppm	< 0.2 ppm
Purity	99.999% (GC grade)	99.999% (TOC/XL grade)
Micro Particulates	< 0.01μ	< 0.01μ
Capacity of ZAG	upto 4 LPM at 80 Psi	500ml/min at 80 Psi
Method of purification	Pressure Swing Adsorption (PSA)	Pressure Swing Adsorption (PSA) & HC Cracking furnace
Room temperature	20 °C to 30°C	20 °C to 30°C
Start up time	5 minutes	30 minutes
Electrical requirements for ZAG	230 VAC, 50 Hz, 1 ph	230 VAC, 50 Hz, 1 ph, 5 Amp
Dimension (in mm)	750H x 220W x 800D	750H x 220W x 800D
Net weight	60 kg. (approx)	60 kg. (approx)
Gas Outlet Port	1/8" OD	1/8" OD
Dew Point	-65 °C	-65 °C

Nitrogen Generator for GC Model : NG-02/NG-02(A) / NG-02(M)



Model : NG-02 / NG-02(A) / NG-02(M)

Schematic Diagram of Nitrogen Generator



- Nitrogen Generator produces a continuous flow of high purity Nitrogen at selected pressure.
- The modular Pressure Swing Adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Untreated air flows under pressure through the reaction towers containing carbon molecular sieves adsorber. Moisture, CO, CO₂, THC, O₂ and other unwanted components in the air are adsorbed, leaving Nitrogen Gas of required purity.
- During the desorption cycle, the trapped substances adsorbed are released again at low pressure and the adsorber is ready for next cycle.

Salient Features

- Generator with PSA Technologies with auto generation
- Generator with all digital control for precise pressure control
- Generator has in built pressure switch which shuts off the generator in case of over pressure built up
- Generator with programming facility to save power consumption & user friendly parameters
- Flow rate from 200 ml/min 2000 ml/min.
- CE certified

Applications

- GC-FID, FPD, NPD, TCD, AED
- GC-MS, LC-MS-MS, ICP / NMR
- FTIR / IR, ELSD detector, CAD detector
- All Analytical Instruments

Technical Specification for Nitrogen Generator

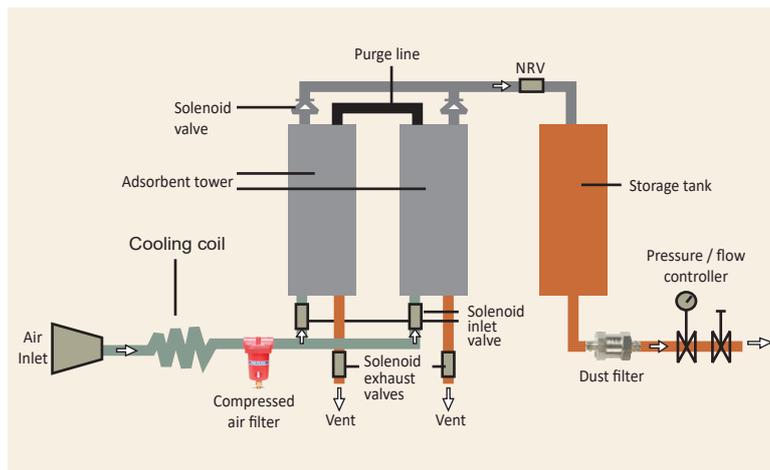
PRINCIPLE SPECIFICATIONS	N ₂ Specification: NG-02 (A) for 2 GC	N ₂ Specification: NG-02 for 5 GC
Moisture	< 2 ppm	< 2 ppm
Oxygen	< 5 ppm	< 5 ppm
Total Hydrocarbon	< 0.5 ppm	< 0.5 ppm
Purity	99.999% (GC grade)	99.999% (GC grade)
Micron particulates	0.01 μ	0.01 μ
CO & CO ₂	< 2 ppm	< 2 ppm
Capacity	200 ml/min at 80 psi	500 ml/min at 80 psi
Method of purity	Pressure Swing Adsorption (PSA)	Pressure Swing Adsorption (PSA)
Room temperature	20 °C to 30°C	20 °C to 30°C
Startup time	1 hr / programmable by Timer	1 hr / programmable by Timer
Electrical requirement	230 V AC, 50 Hz, 1 ph	230 V AC, 50 Hz, 1 ph
Dimension (in mm)	750H x 220W x 800D	750H x 220W x 800D
Weight	60 kg (approx)	60 kg (approx)
Gas Outlet Port	1/8" OD	1/8" OD
Dew Point	-65 °C	-65 °C

Nitrogen-Air Combination Generator for GC Model: NAG-01/NAG-01(A)/NAG-01(M)



Model : NAG-01 / NAG-01(A) / NAG-01(M)

Schematic Diagram of Nitrogen Generator & Zero Air Generator

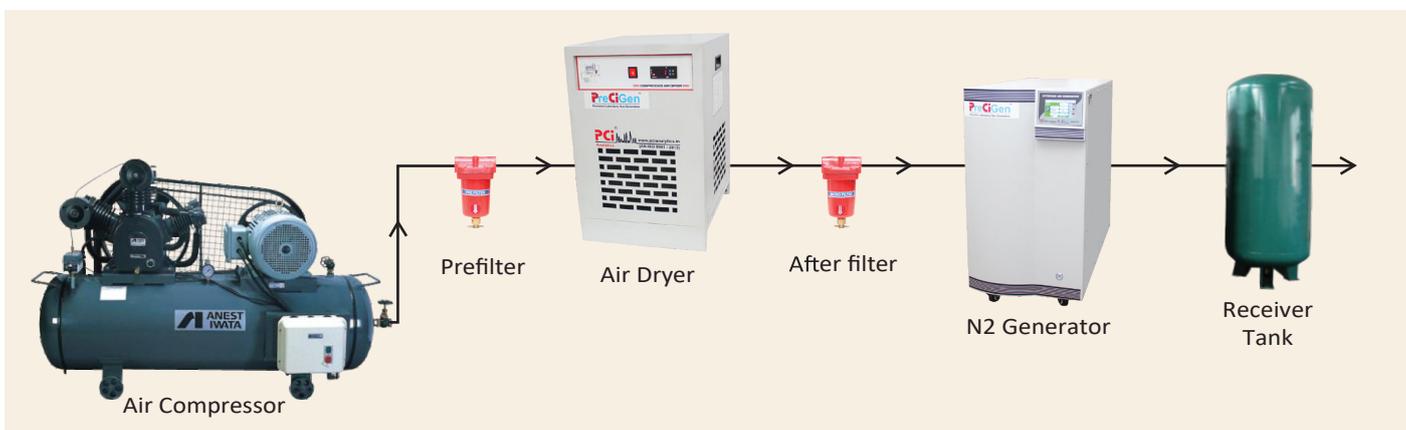


- Nitrogen & Air Generator produces a continuous flow of high purity Nitrogen & Zero Air at selected pressure.
- The modular Pressure Swing Adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Air flows under pressure through the reaction towers containing molecular sieve adsorber.
- Moisture, CO, CO₂, HC, Oxygen and other unwanted components in the air are adsorbed, leaving Nitrogen Gas of required purity & in another set of towers Moisture, CO, CO₂, HC and other unwanted components in the air are adsorbed, leaving Zero Air Gas.
- Nitrogen & Air combination generator is compact (2 in 1) & also cost effective and the compressor for generating both the gases is common.

Nitrogen-Air Combination Generator for 2 GC & 5 GC Model

PRINCIPLE SPECIFICATION	For 2 GC model NAG - 01(A)		For 5 GC model NAG - 01	
	N2 Specification	Zero Air Specification	N2 Specification	Zero Air Specification
Moisture	< 2 ppm	< 2 ppm	< 2 ppm	< 2 ppm
Oxygen	< 5 ppm	-	< 5 ppm	-
Total Hydrocarbon	0.5 ppm	0.3 ppm	0.5 ppm	0.3 ppm
Purity	99.999% UHP (GC grade)			
CO & Co2	< 2 ppm	< 2 ppm	< 2 ppm	< 2 ppm
Micron Particulates	0.01 μ	0.01 μ	0.01 μ	0.01 μ
Capacity	200 ml/min at 80 Psi	1500 ml/min at 80 psi	500 ml/min at 80 psi	4000 ml/min at 80 Psi
Method of purity	Pressure Swing Adsorption (PSA)			
Air Compressor	Inbuilt		External	
Start-up time	1 hr / programmable by Timer	10 min	1 hr / programmable by Timer	10 min
Electrical requirement	230 V AC, 50 Hz, 1 ph		230 V AC, 50 Hz, 1 ph	
Dimension (in mm)	750H x 220W x 800D		750H x 220W x 800D	
Weight	60 kg (approx)		75 kg (approx)	
Gas Outlet Port	1/8" OD	1/8" OD	1/8" OD	1/8" OD
Dew Point	-65 °C	-65 °C	-65 °C	-65 °C

Installation Diagram for Nitrogen Generator for 5 GC & above with External Compressor



Hydrogen Gas Generator



Technical Specification

	PGH-300	PGH-500	PGH-1000
Max Hydrogen Flowrate	300 ml/min	500 ml/min	1000 ml/min
Delivery Pressure	0-60 psig (0-0.4 Mpa)		
% purity	99.999%		
Power	198-242V (AC); 50Hz, 1 Phase		
Min/max Temperature	5-40°C		
Suitable Environment	non-corrosive and dust-free		
Dimensions	420 x 210 x 350mm (LxWxH)		
Weight	20 kg (approx)		
Fluid Tank Capacity	3 Ltr.		
Gas Outlet Port	1/8" OD		

* Higher capacity model also available like 2 LPM & 3 LPM

Salient Features

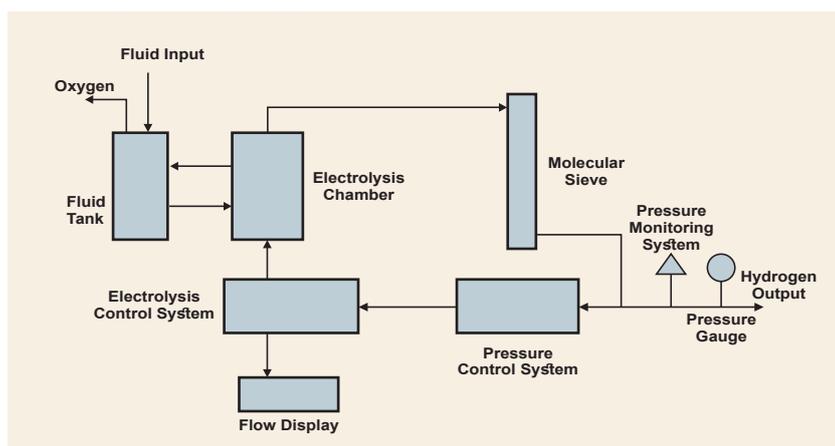
- Low working pressure & continuous UHP grade flow (99.999%)
- Generate hydrogen with PEM technology
- Generator has in built pressure switch which shuts off the generator in case of Over pressure built up.
- Sleep mode in case no use of H₂ gas.
- Hydrogen leak detection facility inside the generator. (Optional)
- Any leak detected will shut the system and hydrogen production is halted. (Optional)
- Low Water Level Alarm (Optional)

Applications

- GC-FID

- Hydrogen is produced in the PGH Series Hydrogen Generators by the most advanced electrolytic membrane technology.
- The application of voltage across the electrolyte results in hydrolysis, breaking down the water molecule into hydrogen and oxygen gas, which are separated by the gas permeable membrane.
- Once separated, the hydrogen gas goes through a series of purification and moisture removal systems to achieve the desired level of purity while the oxygen gas is being discharged into the atmosphere.
- Electrolytic membrane technology has its advantages over alternative hydrogen generating techniques as it is clean, requires less maintenance and there is no need to store chemicals to maintain operation.
- Only pure double distilled water (initially some KOH), is required to provide trouble free long term operation.
- Membrane separation is also less time consuming as only water is needed for routine maintenance.
- Another model with no acid and alkaline solution (KOH & NaOH) is also available.
- Separate model of Hydrogen Generator (without KOH) with pressure upto 7 bar also available.

Flow Diagram of Hydrogen Generator



3 IN 1 Combination Gas Generator for N2, ZA & H2

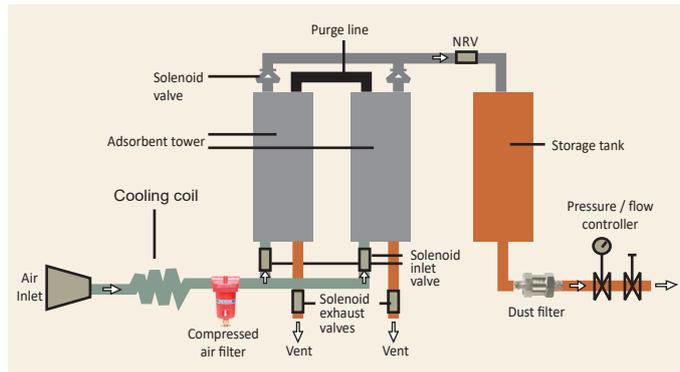
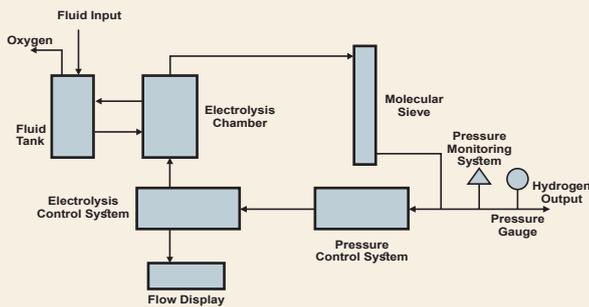
Model : NHZA-03 (Modular & Stackable)

- Combination Gas Generator for UHP Nitrogen, Zero Air & Hydrogen.
- Nitrogen & Air Generator produces a continuous flow of high purity Nitrogen at selected pressure.
- The modular Pressure Swing Adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Air flows under pressure through the reaction towers containing molecular sieve adsorber.
- Moisture, CO, CO₂, HC, Oxygen and other unwanted components in the air are adsorbed, leaving Nitrogen Gas of required purity & in another set of towers Moisture, CO, CO₂, HC and other unwanted components in the air are adsorbed, leaving Zero Air Gas.
- High Purity Hydrogen Gas Generator.
- Hydrogen is produced in the PGH Series Hydrogen Generators by the most advanced electrolytic membrane technology.
- The application of voltage across the electrolyte results in hydrolysis, breaking down the water molecule into hydrogen and oxygen gas, which are separated by the gas permeable membrane.
- Modular & Stackable, Floor Space Saving design with small footprint.



Model
NHZA-03 / NHZA-05 / NHZA-10

Flow Diagram of Hydrogen Generator



Principle of 3 in1 Gas Generator Model-NHZA-03 for 2 to 3 GC / Model-NHZA-05 for 5 GC / Model-NHZA-10 for 10 GC

Principle	N2 Gas	Zero Air	H2 Gas
Moisture	< 2 ppm	< 2 ppm	< 2 ppm
Oxygen	< 5 ppm	-	< 5 ppm
Total Hydrocarbon	0.5ppm	0.3ppm	0.3ppm
CO & CO2	< 2 ppm	< 2 ppm	< 2 ppm
Purity	99.999% UHP (GC grade)	99.999% UHP (GC grade)	99.999% UHP (GC grade)
Micron particles	0.01μ	0.01μ	0.01μ
Capacity of NHZA-03 / NHZA-05	200ml/min at 5kg/cm ² / 500 ml/min at 5 kg/cm ²	1500ml/min at 5kg/cm ² / 4000 ml/min at 5 kg/cm ²	300ml/min at 4kg/cm ² / 500 ml/min at 4 kg/cm ²
NHZA-10	1000 ml/min at 5 kg/cm ²	8000 ml/min at 5 kg/cm ²	1000 ml/min at 4 kg/cm ²
Air Compressor	Inbuilt	Inbuilt	NA
Method of Purification	Pressure Swing Adsorption and Depressurization	Catalytic conversion Filtration	PEM Technology
Room Temperature		20°C to 30°C	
Start uptime	1hr/programmable by timer	10 min	30min
Electrical Supply		230 V AC, 50Hz, 1ph, 5 amp	
Size of the 3 in1 Generator			
NHZA-03/05		1220H X 400W X 600D mm	
NHZA-10		1400H X 400W X 900D mm	
Weight (approx.)	For NHZA - 03 (90 kg)	For NHZA - 05 (90 kg)	For NHZA-10 (150 kg)
Power Consumption		600W	
Gas Outlet Port	1/8" OD	1/8" OD	1/8" OD

Nitrogen Gas Generator for ELSD and CAD



Model : NG-02 (M) for ELSD & CAD

- Nitrogen Generator produces a continuous flow of high purity Nitrogen at selected pressure.
- The modular pressure swing adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Untreated air flows under pressure through the reaction towers containing carbon molecular sieves adsorber. Moisture, CO, CO₂, THC, O₂ and other unwanted components in the air are adsorbed, leaving Nitrogen Gas of required purity.
- During the desorption cycle, the trapped substances adsorbed are released again at low pressure and the adsorber is ready for next cycle.

Salient Features

- No external compressor required.
- Inbuilt silent oil free air compressor.
- Automatic heatless air dryer timer based operation.
- Microcontroller based Nitrogen Generator with 2 Channel Analog Sensors for pressure and with four relay output.
- Designed as plug & play system.

Principle Specification / Model	Model for ELSD	Model for CAD
Technology	PSA	PSA
Inbuilt Air Compressor	Silent Oil Free Air Compressor	Silent Oil Free Air Compressor
Oxygen	0.1 %	0.1 %
Nitrogen/ Outlet Purity	99.9 % N ₂ and other inert Gases	99.9 % N ₂ and other inert Gases
Max Flow	5 LPM	5 LPM
Max Pressure	5 kg/cm ²	5 kg/cm ²
Particles	< 0.01µm	< 0.01µm
Room Temperature	20 °C to 30 °C	20 °C to 30 °C
Gas Outlet Connection	6mm PU or 1/8" OD Connection	6mm PU or 1/8" OD Connection
Electrical Requirements	220 V AC 50 HZ, 4 A	220 V AC 50 HZ, 4 A
Dimensions (mm)	750H x 220W x 800D	750H x 220W x 800D
Weight (kg)	70 (Approx)	70 (Approx)

Nitrogen Generator for Nitrogen Concentrator / Turbo Evaporator

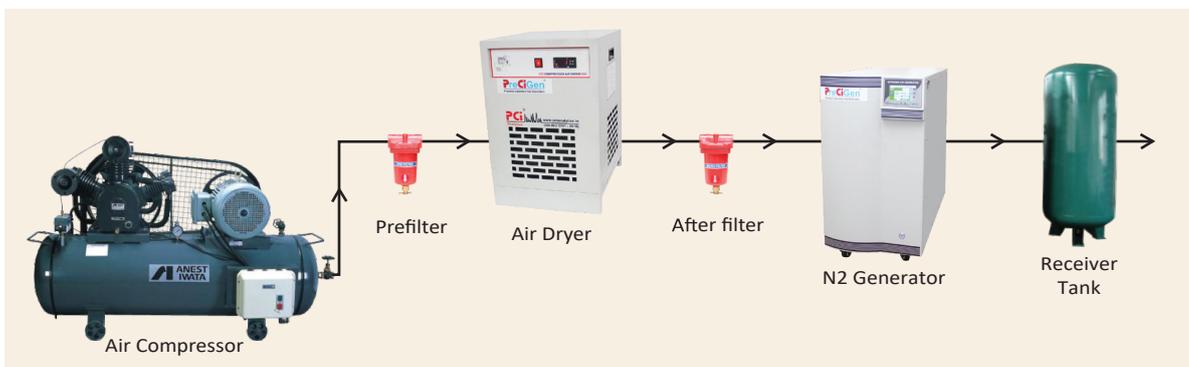


Model : NG-02T

Technical Specification

PRINCIPLE SPECIFICATIONS	NG-02T
Moisture	50-200 ppm
Total Hydro Carbon	< 10 ppm
CO & CO ₂	< 10 ppm
Purity	95%
Micro Particulates	< 0.01μ
Capacity of N ₂ Generator	50 LPM to 300 LPM at 60 psig (as per selection of model)
Method of purification	Pressure Swing Adsorption (PSA)
Room temperature	15 °C to 25 °C
Start up time	1 hrs
Electrical requirements	230 V AC, 50 Hz, 1 Phase for Generator & Air Compressor 440 V AC, 50Hz, 3 Phase
Dimension of N ₂ Generators in mm.	800H X 400W X 800D (for 50 LPM) 800H X 400W X 900D (for 100 LPM) 800H X 400W X 900D (for 140 LPM) 1200H X 900W X 900D (for 200 LPM) 1400H X 900W X 900D (for 300 LPM)
Net Weight	100 kg - 300kg (as per selection of model)

Installation Diagram for Nitrogen Generator for Nitrogen Concentrator / Turbo Evaporator

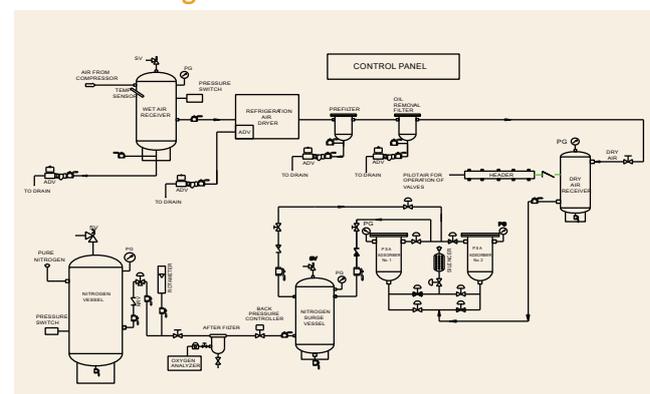


High Capacity Nitrogen Generator



- Nitrogen Generator High Capacity for Plant / Production / Purging / Reactors etc.
- Complete system Skid Mounting with Inter Connection Piping.
- Complete System with Compressor, Dryer, Receiver, Analyzer, Automatic Change Over System from Generator v/s Cylinder etc.
- Flow Range from 10 Nm³ to 100 Nm³ as per selection of model
- Purity ranging from 95% to 99.99% as per selection of model.
- Higher capacity other than mentioned are also available.

Schematic Diagram of Gas Generator



Nitrogen Generator for LC-MS / LC-MS-MS (PSA Technology)



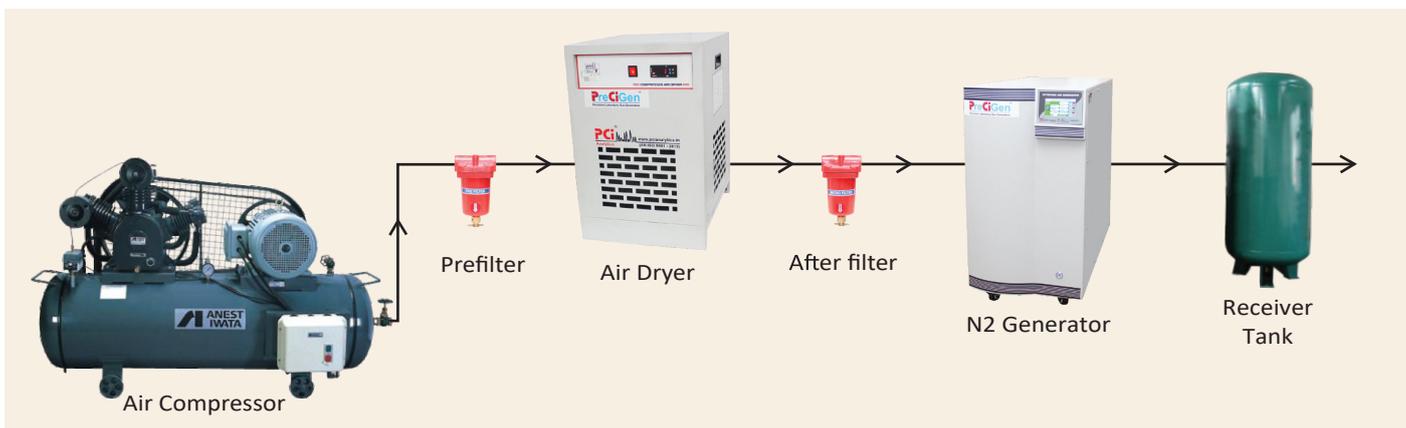
- Nitrogen Generator produces a continuous flow of high purity Nitrogen at selected pressure.
- The modular pressure swing adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Untreated air flows under pressure through the reaction towers containing carbon molecular sieves adsorber. Moisture, CO, CO₂, HC, Oxygen and other unwanted components in the air are adsorbed, leaving Nitrogen Gas of required purity.
- During the desorption cycle, the trapped substances adsorbed are released again at low pressure and the adsorber is ready for next cycle.
- Flow range available from 10 LPM to 100 LPM.
- Microcontroller digital display.



NG02L / NG02L (PSA Based)

Principle Specification	For LC-MS (NG-02L)	For LC-MS-MS (NG-02LS (for Sciex model))
Moisture	2 ppm	2 ppm
Total Hydro Carbon	< 0.5 ppm	< 0.5 ppm
CO & CO ₂	< 2 ppm	< 2 ppm
Purity	99.9%	99.9%
Micro Particulates	< 0.01μ	< 0.01μ
Capacity of N ₂ Generator	35 LPM at 100 psig (as per selection of model)	12 LPM at 60 psig (pure nitrogen) 18 LPM at 100 psig (filtered zero air) 18 LPM at 60 psig (purified dry air)
Method of purification	Pressure Swing Adsorption (PSA)	Pressure Swing Adsorption (PSA)
Room temperature	20 °C to 30 °C	20 °C to 30 °C
Start up time	1 hrs / programmable timer	1 hrs/ programmable timer
Electrical requirements without Compressor	230 V AC, 50 Hz, 1 Ph, 2 Amp	230 V AC, 50 Hz, 1 Ph, 2 Am p
Dimension of N ₂ Generators in mtr.mm (without compressor) (approx.)	800H X 400W X 900D	1000H X 400W X 1000D
Net Weight (without compressor) (approx.)	100 kg (as per selection of model)	150 kg (as per selection of model)
Gas Outlet Port	6 mm PU	6 mm PU

Installation Diagram for Nitrogen Generator for LCMS / LCMSMS (PSA Technology)



Gas Generator for LCMS / LC-MS-MS (Membrane Technology)



Model : NGLC - 35A
(Nitrogen for LCMS)
with Inbuilt Compressor



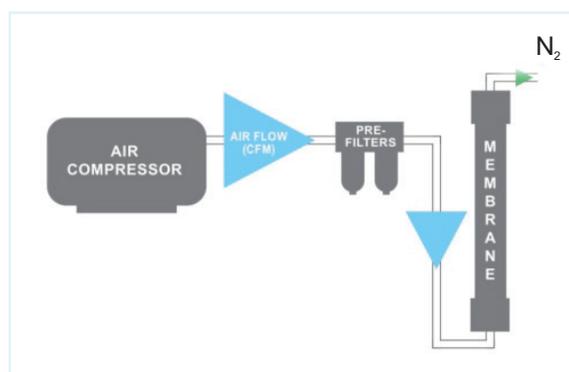
Model : NAG - LCSPA
For Perkin Elmer
Q- Sight / Shimadzu
with Inbuilt Compressor



Model : NAG - LCSA
For Sciex LCMS
with Inbuilt Compressor

Features & Benefits

- Inbuilt Silent oil free air compressor.
- Inbuilt Air Storage tank for inbuilt compressor.
- Designed as plug & play system.
- Cost effective & Economical compared to imported generators.
- Gas on demand, no health hazards, no need to worry about running out of gas.
- Suitable for all Climatic conditions.
- Exstock / Fast service / Spares readily available.
- Customised gas generators also available on request.
- Floor mounted model with caster wheel.



Technical Specifications	Model : NGLC - 35A (Nitrogen for LCMS)	Model : NAG - LCSPA For Perkin Elmer Q- Sight & Shimadzu	Model : NAG - LCSA For Sciex LCMS
Maximum Flow Rate	N2 35 LPM @100 psig	1) N2 32 LPM @100 psig for Perkin Q Sight 2) N2 32 LPM @100 psig for Shimadzu 3) Dry Air 70 LPM @60 psig for Perkin Q Sight 4) Dry Air 25 LPM @60 psig for Shimadzu	1) N2 (Curtain Gas) 12 LPM @100 psig 2) Exhaust Gas 18 LPM @ 100 psig 3) Source Gas (Dry Air) 18 LPM @ 60 psig
Inbuilt Air Compressor	Yes	Yes	Yes
Nitrogen Outlet Purity	95% - 99.9% (Depends on flow)	95% - 99.9% (Depends on flow)	95% - 99.9% (Depends on flow)
Particulates	<0.01µm	<0.01µm	<0.01µm
Phthalates	None	None	None
Suspended Liquids	None	None	None
Gas Outlet Connection	1/4" OD	1/4" OD	1/4" OD
Electrical Requirements	230 V 50 Hz, 8.5 A	230 V 50 Hz, 12.5 A	230 V 50 Hz, 12.5 A
Power Consumption	2500 Watts	3400 Watts	3400 Watts
Suitable for	Agilent, Waters, Thermofisher LCMS	Perkin Elmer QSight, Shimadzu	AB Sciex
Dimensions	620H X 620W X 640D	620H X 620W X 640D	620H X 620W X 640D
Weight (Kg)	120	150	150
Gas Outlet Port	6 mm PU	6 mm PU	6 mm PU

Pyrolyzer for LCMS

(Pyro = Fire, Lysis = Breakdown)

- Pyrolyzer is Hydrocarbon removal instrument in which heating is done at a high temperature above 150 DegC in absence of Oxygen rich atmosphere for reducing Hydrocarbon impurity
- Pyrolyzer is essential for Quantitative analysis of nitrosamine impurities by LCMS because such samples are sensitive to Hydrocarbon content.



Wall Mounting Generator for LCMS (Membrane Technology)



Model: NGLC 35
(Wall mounted Nitrogen for LCMS)



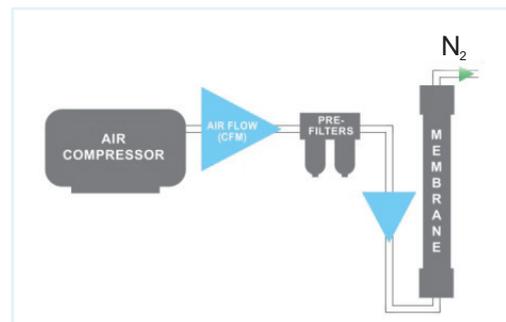
Model: NAGLCSP
(Wall mounted Generator for Perkin Elmer QSight/Shimadzu)



Model: NAGLCS
(Wall mounted Generator for Sciex LCMS)

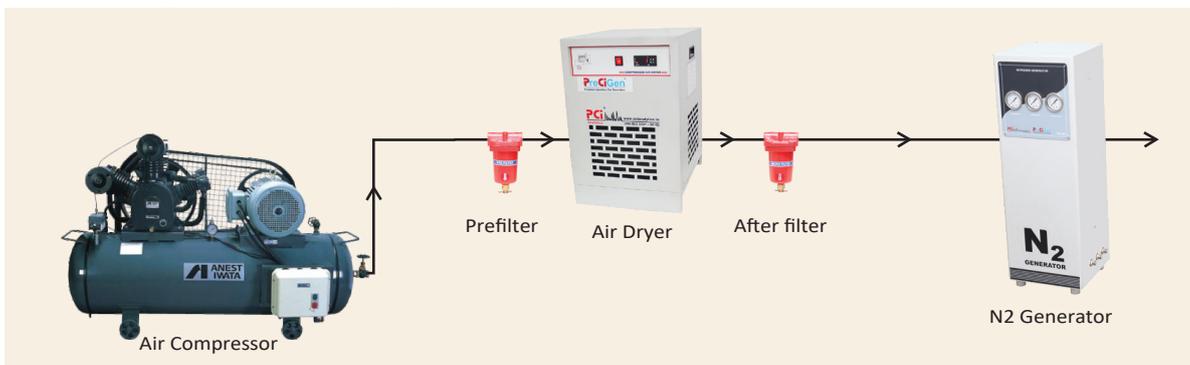
Features & Benefits

- Compact Design
- Cost effective & Economical compared to imported generators.
- External air dryer and Oil free Air compressor to be provided by customer.
- Gas on demand, no health hazards, no need to worry about running out of gas.
- Suitable for all Climatic conditions.
- Fast service / Spares readily available.
- Customised gas generators also available on request.



Technical Specifications	Model : NGLC - 35 (Nitrogen for LCMS)	Model : NAG - LCSP For Perkin Elmer Q- Sight & Shimadzu	Model : NAG - LCS For Sciex LCMS
Maximum Flow Rate	N2 35 LPM @100 psig	1) N2 32 LPM @100 psig for Perkin Q Sight 2) N2 32 LPM @100 psig for Shimadzu 3) Dry Air 70 LPM @60 psig for Perkin Q Sight 4) Dry Air 25 LPM @60 psig for Shimadzu	1) N2 (Curtain Gas) 12 LPM @100 psig 2) Exhaust Gas 18 LPM @ 100 psig 3) Source Gas (Dry Air) 18 LPM @ 60 psig
Oil free Air Compressor	External	External	External
Nitrogen Outlet Purity	95% - 99.9%	95% - 99.9%	95% - 99.9%
Particulates	(Depends on flow)	(Depends on flow)	(Depends on flow)
Phthalates	<0.01µm	<0.01µm	<0.01µm
Suspended Liquids	None	None	None
Power Consumption	None	None	None
Gas Outlet Connection	1/4" OD	1/4" OD	1/4" OD
Electrical Requirements	NA	NA	NA
Power Consumption	NA	NA	NA
Suitable for	Agilent, Waters, Thermofisher LCMS	Perkin Elmer QSight, Shimadzu	AB Sciex
Dimensions	750H X 250W X 250D	750H X 250W X 250D	750H X 250W X 250D
Weight (Kg)	15	15	15
Gas Outlet Port	6 mm PU	6 mm PU	6 mm PU

Installation Diagram for Wall Mounting Generator for LCMS



PCI Analytics Pvt. Ltd.

A-71, Road No.22, Wagle Industrial Estate, Opp. Lodha Grandezza, Adjacent Oriana Business Park, (Tata Motors Bus Stop), Thane (W), Maharashtra, India. 400604.

Tel.: +91 22 6831 9393 | Mob.: +91 93237 00351 | Email : info@pcianalytics.in | Web : www.pcianalytics.in

Regd. Office : 3/14, Bhandup Industrial Estate, Pannalal Compound, L.B.S Marg, Bhandup (W), Mumbai - 400078.

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