



**domnick hunter
scientific**



Laboratory Gas Generators

www.domnickhunter.com/scientific

Generate laboratory gases for all of your analytical applications



Hydrogen

Eliminate high pressure cylinders from the laboratory by generating a continuous source of UHP hydrogen gas.

- GC-FID, NPD, FPD, TCD, ELCD, HALL
- GC-carrier gas
- THA

Nitrogen

Produce nitrogen gas from compressed air simply and cost effectively.

- LC/MS (single and multiple units)
- ICP
- ELSD
- NMR
- GC-FID, ECD, NPD, AED
- GC make-up/carrier gas
- Solvent evaporation
- XRD



Zero Air

Generate a continuous flow of clean dry air with an ultra low residual methane content.

- GC-FID, NPD, FPD
- THA
- ELSD
- Gas sensing

Clean Dry Air

Desiccant dryers provide a constant flow of clean, dry compressed air.

- NMR
- AA
- GC
- ATD
- Rheometry
- Sample preparation
- Auto-samplers



CO₂ free air

Replace high pressure synthetic air cylinders by generating your own CO₂ and moisture free air.

- TOC analyser
- FT-IR purge
- Microscope purge

Increased flexibility, Improved economy, Greater control

- **Performance**
Ultra high purity gas generators will improve your analyses
- **Health & Safety**
Low pressure, minimal stored gas - no cylinder handling
- **Reliability**
Never run out of gas
- **Compact design**
Free up laboratory floor space
- **Cost effective**
Quick paybacks, can be less than one year

domnick hunter gas generators deliver real benefits to the laboratory:

- **Compact design**
 - Can be used anywhere in the laboratory
- **Aesthetic and ergonomic design**
 - Designed to integrate into any laboratory and complement scientific instrumentation
 - Easy to operate and maintain
- **Quiet operation**
 - No disruption to laboratory operations
- **Minimal maintenance**
 - Quick and easy servicing
- **Modular construction**
 - Common design, common spares
- **Peace of mind**
 - Global manufacturing support
 - Service contracts and extended warranties available



Diagnostic Indication
Common Operator Interface



H₂ generator

Using hydrogen as a GC carrier gas increases analysis speed and sensitivity when compared to helium and nitrogen.



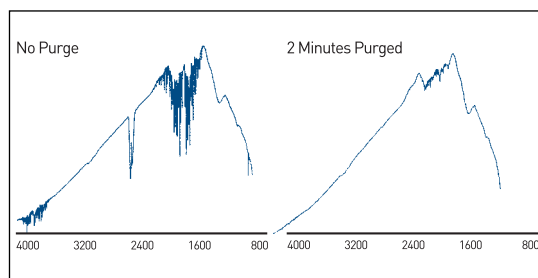
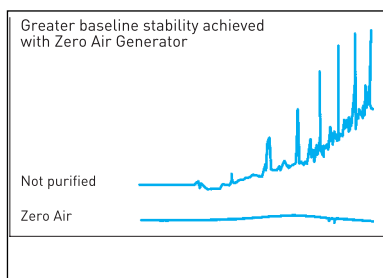
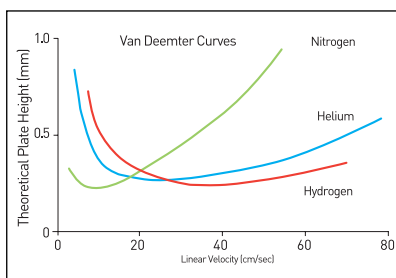
Zero Air

The low and constant hydrocarbon content of zero air helps improve baseline stability of combustion detectors and reduces the frequency of re-calibrations.



CO₂ removal

Purging of FT-IR spectrometer optics with CO₂ free air keeps CO₂ and water levels constantly low thereby minimising changes in spectral absorbances.



Hydrogen Generators



Generate a continuous source of UHP hydrogen gas for applications such as:

- GC-FID, NPD, FPD, TCD, ELCD, HALL
- GC-carrier gas
- THA

Eliminate high pressure hydrogen cylinders from the laboratory by generating a continuous source of UHP hydrogen gas. Dornick Hunter hydrogen generators produce a continuous flow of ultra-pure hydrogen reliably and cost effectively from de-ionised water and electricity. Three models are available with flow rates ranging from 160 cc/min to 500 cc/min.

Dornick Hunter hydrogen generators provide a safe and hassle-free alternative to high pressure gas cylinders. Hydrogen is only generated on demand at low pressure and the volume of stored gas is minimal.

The generators are ideal for supplying fuel gas to all known combustion detectors used routinely in GC and THA, and can also be used to supply hydrogen for GC carrier gas applications and for ELCD reaction gas.

Benefits

- **Ultra safe operation**
Patented seven mode failure protection system
- **High purity, low lifetime costs**
Option of high purity without the worry of costly palladium purifier replacements
- **Convenience**
Gas on demand, no warm-up period
- **Seamless system integration**
Optional remote PC monitoring and control
- **Improved productivity**
Using hydrogen as a carrier gas increases analysis speed and sensitivity when compared to helium. Continuous hydrogen generation means no interruptions to analyses due to cylinder changes
- **Reduced Health and Safety administration**
No high pressure explosive gas storage, manual handling or distribution line management

Features

- Automatic H₂ leak detection
- High capacity water tank
- Water level / quality alarms
- Environmental protection filters
- Compact design
- Simple installation and operation
- Digital interface
- CE and UL approved

How the generator works



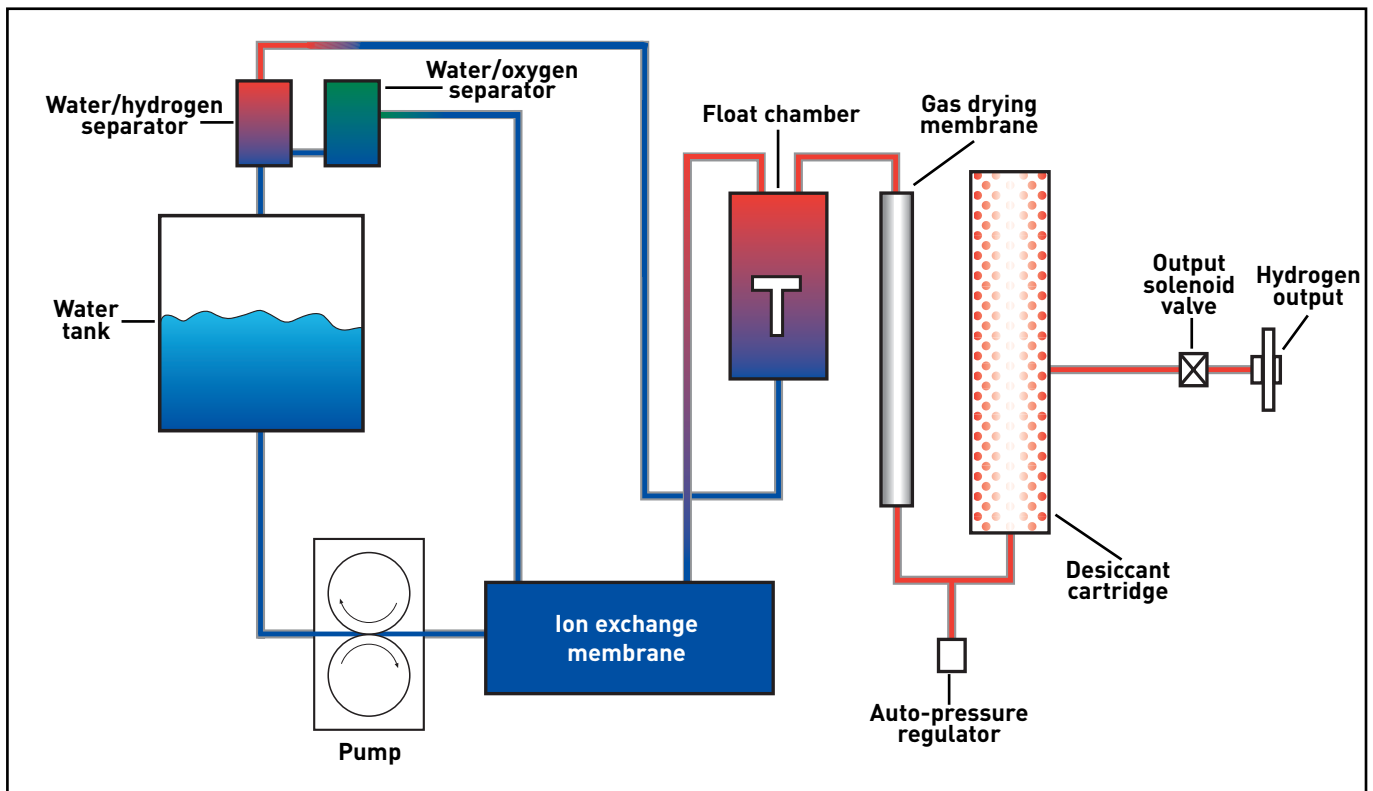
domnick hunter hydrogen generators use a special ion exchange membrane to produce a flow of ultra-pure hydrogen. Use of the electrolytic dissociation process enables water to be broken down into hydrogen and oxygen.

The oxygen is released into the air, while the hydrogen is retained to form the product flow.

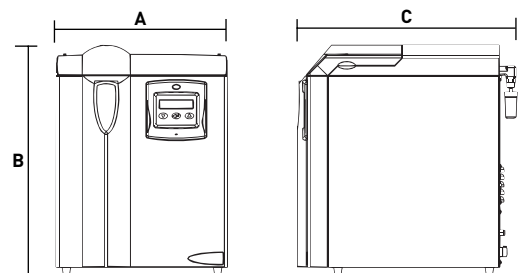
A long-life desiccant cartridge purifies the hydrogen even

further so that it attains the desired grade of purity and ensures constant reproducible results.

Having proved its worth in thousands of systems worldwide, this technology eliminates the need to use liquid electrolytes, such as caustic solutions; since it only uses de-ionised water and electricity, continuous operation is assured.



20H - 60H models



Models	Flowrate cc/min	Purity %	Pressure	Connections BSP H ₂ outlet	Voltage Vac	Electrical Consumption	Dimensions mm			Weight kg
							A	B	C	
20H	160	99.9999%*	0-7 bar (0-100 psi)	1/8" Swagelok	110-230	125w	342	456	437	24
40H	250	99.9999%*	0-7 bar (0-100 psi)	1/8" Swagelok	110-230	185w	342	456	437	24
60H	500	99.9999%*	0-7 bar (0-100 psi)	1/8" Swagelok	110-230	235w	342	456	437	24

*When used with oxygen / moisture trap

LC/MS Nitrogen Generators



domnick hunter LC/MS nitrogen generators are specifically designed to meet the gas flow, purity and pressure requirements of the latest generation of LC/MS instruments.

Features and Benefits

- **Designed in conjunction with instrument manufacturers**
Ideally suited to nebulising, sheath and drying gas applications
- **Wide range of flow rates available**
Total flexibility allowing single or multiple instruments to be supplied
- **Fully regenerative PSA technology**
Reduced risk of gas contamination
- **Guaranteed consistent nitrogen purity**
Improved instrument stability and greater reproducibility of results
- **Integral oil-free compressors**
Fully secure supply – no reliance on existing compressed air supplies
- **Soundproofed compressor box**
Low compressor noise
- **Phthalate-free**
Clean analyses
- **Compact design**
Fits under bench
- **CE, UL and CRN approved**
Peace of mind

The technology used to produce a continuous flow of high purity N₂ is pressure swing adsorption (PSA).

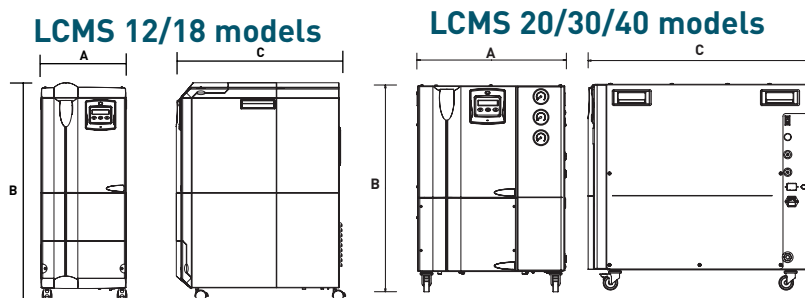
This technology uses a combination of molecular sieves to selectively eliminate O₂ and other contaminants in the ambient air.

The CMS column(s) alternate between the purification and regeneration modes to ensure continuous N₂ production.

The gas generator is designed to take pre-filtered compressed air at 7 or 8.5 barg (102 or 123 psi g) (depending on model) from the existing laboratory supply or via the integrated oil-free compressor.

This flow of filtered compressed air then passes through the CMS column which is in the purification mode. At this point, the O₂, CO₂, humidity and hydrocarbons are removed from the compressed air stream, leaving a flow of clean and dry nitrogen.

For Zero N₂ generators, a heated catalyst oxidises additional hydrocarbons from the N₂ gas flow providing zero grade N₂ with a remaining hydrocarbon content of <0.1ppm



Technical Specifications

Models	Flowrate L/min	Purity % O ₂	Connections BSP		Voltage Vac	Dimensions mm			Weight kg
			air inlet	gas outlet		A	B	C	
LCMS 12*	12	0.5	–	1/8"	110/230	345	873	663	90
LCMS 18	18	0.5	1/4"	1/8"	110/230	345	873	663	77
LCMS 20-0	20	1	1/4"	1/8"	110/230	510	705	559	89
LCMS 20-1*	20	1	–	1/8"	110/230	510	705	826	129
LCMS 30-0	30	1	1/4"	1/8"	110/230	510	705	760	135
LCMS 30-1*	30	2	–	1/8"	110/230	510	705	826	129
LCMS 40	40	1	1/4"	1/8"	110/230	510	705	760	135

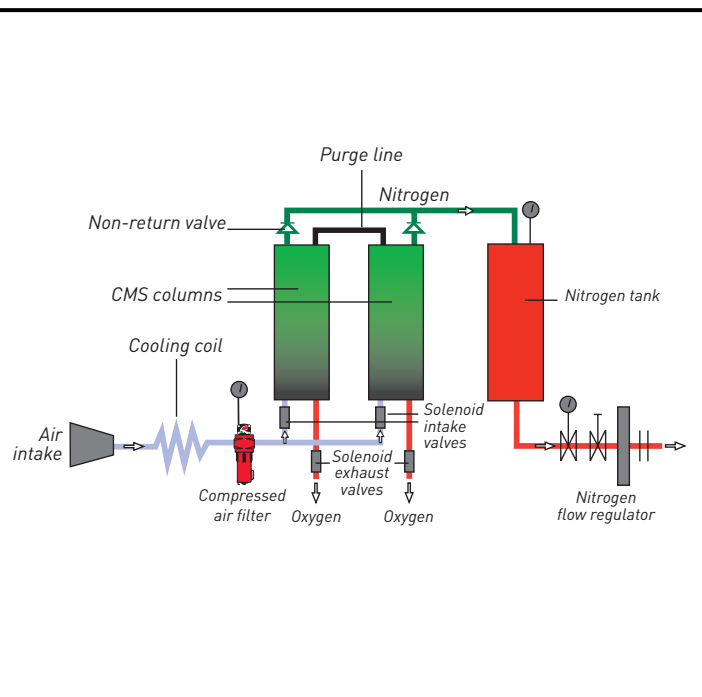
* with integral compressor

Nitrogen Generators



Increase the efficiency of your laboratory by replacing nitrogen gas cylinders for applications such as:

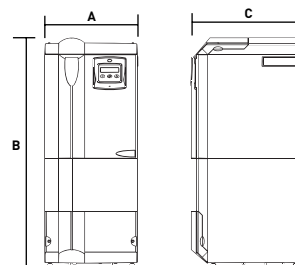
- GC make-up/carrier gas
- ICP
- ELSD
- Solvent evaporation
- XRD
- NMR



Features and Benefits

- **Proven durability PSA technology**
Best in class life expectancy, no need for secondary purification
- **Constant and guaranteed flow of instrument grade nitrogen**
Improved consistency and reproducibility of results
- **Economy mode option**
Reduced operating costs
- **Simple Installation**
Only one set up operation required for reliable service

G1-G4 models



Technical Specifications

Models	Flowrate L/min	Purity % O ₂	Connections BSP		Voltage Vac	Dimensions mm			Weight kg	
			air inlet	gas outlet		A	B	C	without compressor	with compressor
G1	0.55	10 ppm	1/8"	1/8"	110/230	345	842	842	52	56
	0.75	10 ppm								
G2	1.5	10 ppm	1/8"	1/8"	110/230	345	873	663	77	90
	3.0	10 ppm								
G3	2.5	100 ppm	1/8"	1/8"	110/230	345	873	663	71	83
	4.0	0.1								
	5.0	0.5								
	7.0	1								
G4	8.0	2	1/8"	1/8"	110/230	345	873	663	77	90
	5.0	100 ppm								
	6.0	0.1								
	10.0	0.5								
	12.5	1								
14.0	2									

Nitrogen Generators

(for higher flowrates)

To complement the smaller bench top laboratory nitrogen generators, domnick hunter also manufactures comprehensive ranges of MIDIGAS and MAXIGAS nitrogen generators. These provide flowrates from 10 l/min to 882 l/min at purities from 10ppm to 2% oxygen content. Even higher flowrate generators can be provided if required.

The larger flow rates afforded by the domnick hunter MAXIGAS range means the generators are ideally suited for use as the basis of centralised laboratory nitrogen supply systems capable of supplying multiple instruments and applications. System modularity allows the capacity of the system to be easily increased as laboratory operations expand.

For more detailed information about this range, please request MAXIGAS leaflet Ref 791 (stock no. 17 400 4791)



MIDIGAS nitrogen generator



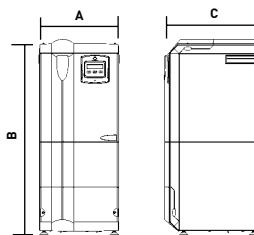
MAXIGAS nitrogen generator

Zero N₂ and Dry Air Generators

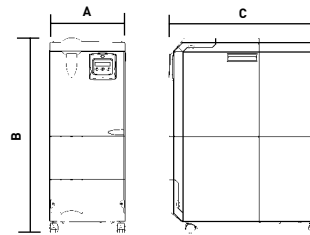
In addition to the stand-alone nitrogen generators, domnick hunter also manufactures Zero nitrogen, dry air and combined nitrogen and dry air generators for the following applications:

- GC-FID
- THA

G5/G6/G8/G9 models



G7 model



Technical Specifications

Models	Flowrate L/min	Purity % O ₂	Connections BSP		Voltage Vac	Dimensions mm			Weight kg	
			air inlet	air/gas outlet		A	B	C	without compressor	with compressor
Zero Nitrogen										
G5	1.0	10 ppm	1/8"	1/8"	110/230	345	842	413	51	55
N₂ & Dry Air										
G6	N ₂ : 0.6	10 ppm	1/8"	1/8"	110/230	345	842	413	54	58
	Air: 1.5	-55 °c adp		1/8"						
G7	N ₂ : 3.0	10 ppm	1/8"	1/8"	110/230	345	873	663	80	93
	Air: 3.0	-55 °c adp		1/8"						
Dry Air										
G8	3.0	-55 °c adp	1/8"	1/8"	110/230	345	842	413	50	54
G9	6.0	-55 °c adp	1/8"	1/8"	110/230	345	842	413	50	54

Zero Air Generators



domnick hunter zero air generators produce a continuous flow of clean, dry air with an ultra low residual methane content of less than 0.1 ppm from an existing compressed air supply.

An interchangeable top panel allows for direct mounting of a domnick hunter UHP hydrogen generator.

The generators can be used to supply zero air to the following applications:

- GC-FID, FPD, NPD
- LC/MS
- THA
- Gas sensing



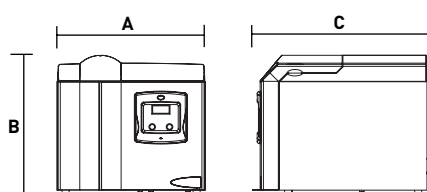
Features

- High performance catalyst
- OIL-X EVOLUTION pre-and after filtration
- Compact, modular design for easy mounting of a domnick hunter UHP hydrogen generator
- Simple operation
- Digital temperature display
- Minimal maintenance
- CE, UL and CRN approved

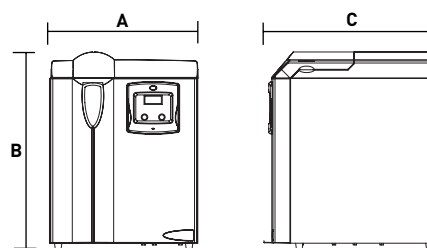
Benefits

- **Gas quality assured**
Catalyst air temperature monitoring and display gives reliable indication of gas purity. High performance OIL-X EVOLUTION filtration effectively removes contamination
- **Improved instrument performance**
Guaranteed consistent purity reduces baseline noise and improves stability
- **Maximised uptime, maximised productivity**
No cylinder changes mean no interruptions to analyses and no instrument re-calibration. Cleaner air reduces frequency of instrument cleaning
- **Economy**
Quick return on investment typically 12 months. No cylinder rental charges and no price inflation

UHP-10ZA to UHP-35ZA models



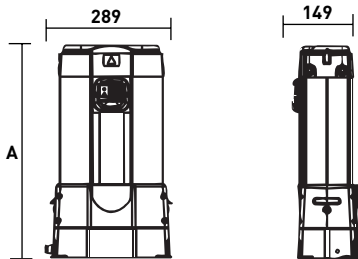
UHP-50ZA to UHP-200ZA models



Models	Flowrate L/min	Purity/total hydrocarbon content	Connections		Voltage Vac	Dimensions mm			Weight kg
			air inlet	air outlet		A	B	C	
UHP - 10ZA	1.0	<0.1ppm	1/8" Swagelok	1/8" Swagelok	110/230	342	325	400	9.5
UHP - 35ZA	3.5	<0.1ppm	1/8" Swagelok	1/8" Swagelok	110/230	342	325	400	9.5
UHP - 50ZA	5.0	<0.1ppm	1/8" Swagelok	1/8" Swagelok	110/230	342	455	400	13.5
UHP - 75ZA	7.5	<0.1ppm	1/4" Swagelok	1/4" Swagelok	110/230	342	455	400	13.5
UHP - 150ZA	15.0	<0.1ppm	1/4" Swagelok	1/4" Swagelok	110/230	342	455	400	13.5
UHP - 200ZA	20.0	<0.1ppm	1/4" Swagelok	1/4" Swagelok	110/230	342	455	400	13.5

Clean dry air

domnick hunter desiccant dryers are ideal for laboratory use, providing a constant flow of clean, dry compressed air.



- NMR
- AA
- GC
- ATD
- Rheometry
- Sample preparation
- Auto-samplers



Benefits

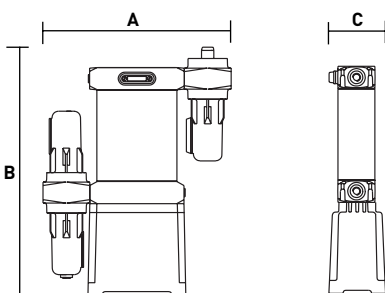
- Point of use installation provides clean and dry air where you need it
- Compact and lightweight
- Can be bench or wall mounted
- Larger flowrate models available

Models	Output Air Flow L/min	Dimension A mm	Weight Kg
DAS 1	70	422	11
DAS 2	115	500	13
DAS 3	182	616	16
DAS 4	227	692	18
DAS 5	295	847	20
DAS 6	340	906	23
DAS 7	453	1098	28

Max. Working pressure: 12 bar g (175 psi g)
Pressure dewpoint: -40°C (-40°F)
Purity: Non-methane HC's <0.01 ppm
 particles <0.1 micron
 oil <0.01mg/m³

CO₂ free air

Replace high pressure synthetic air cylinders by generating your own CO₂ and moisture free air.



- TOC analyser
- FT-IR purge
- Microscope purge



Benefits

- Reduced signal to noise ratio improves instrument performance
- Protects sensitive optics and air bearings from moisture
- Constant, guaranteed purity supply increases laboratory efficiency
- Tested and approved by TOC and FT-IR instrument manufacturers
- Compact design frees up floor space

Models	Output Air Flow L/min	Dimensions mm			Weight Kg
		A	B	C	
C02RP015	1.5	310	380	90	8
C02RP140	14	310	470	90	10
C02RP280	28	310	710	90	12
C02RP850	85	420	1020	150	36

Max. Working pressure: 10.5 bar g (152 psi g)
CO₂ Content: <1ppm
Pressure dewpoint: -70°C (-100°F)
Purity : Non-methane HC's <0.003 ppm
 particles <0.1 micron

Applications Guide

Instrument	Gas Requirement	Purity	Flow Rate	Generator Recommendation
Products for Gas Chromatography				
GC-FID	Hydrogen for fuel gas Zero Air for flame gas Hydrogen for capillary carrier gas Nitrogen for packed carrier gas Nitrogen for make-up gas	UHP Hydrocarbon-free UHP UHP, zero grade UHP, zero grade	30-50 cc/min 300-500 cc/min up to 10 cc/min 20-50 cc/min 30-50 cc/min	Hydrogen Zero Air Hydrogen Zero Nitrogen Zero Nitrogen
GC-FPD	Hydrogen for fuel gas Zero Air for flame gas	UHP Hydrocarbon free	60-90 cc/min 90-120 cc/min	Hydrogen Zero Air
GC-NPD	Hydrogen for capillary gas Nitrogen for make up gas	UHP UHP, zero grade	up to 50 cc/min up to 30 cc/min	Hydrogen Zero Nitrogen
GC-ECD	Nitrogen for carrier gas Nitrogen for make up gas	UHP, zero grade UHP, zero grade	up to 60 cc/min up to 100 cc/min	Zero Nitrogen Zero Nitrogen
GC-TCD	Hydrogen as carrier gas	UHP	up to 50 cc/min	Hydrogen
GC-ATD	Dry air purge	Clean and dry air	less than 2L/min	Clean Dry Air
GC-AED	Nitrogen for carrier gas	UHP, zero grade	less than 1L/min	Zero Nitrogen
GC-ELCD,HALL	Hydrogen as reaction gas	UHP	70 to 200 cc/min	Hydrogen
Products for LCMS Instruments				
LCMS API/ LCMS APCI, Electrospray, LCMS/MS, TOF	Air for nebuliser gas Nitrogen for curtain and sheath shield gas	Clean and dry air, hydrocarbon free 99%	18L/min 5 to 40L/min	Clean Dry Air or Zero Air Nitrogen
Products for Spectroscopy				
FT-IR Spectrometer	Purge gas for sample compartment, optics, air bearing and microscope	Clean dry, CO ₂ free	14 to 85L/min	CO₂ free air
NMR Spectrometer	Air for lifting spinning and ejecting	Clean and dry air	up to 300L/min	Clean Dry Air & Nitrogen
ICP Spectrometer	Nitrogen or Zero Nitrogen for purge gas	≥ 99.99 %	up to 9L/min	Nitrogen or Zero Nitrogen
AA Spectrometer	Air for oxidant gas	Clean and dry air	28 to 200L/min	Clean Dry Air
Products for Analyzers				
TOC	Dry air or Nitrogen for carrier gas or combustion gas	Clean dry, CO ₂ free/ hydrocarbon free UHP	100-500 cc/min 50-700 cc/min	CO₂ free air/ Zero Air Zero Nitrogen
THA	Zero Air for FID Hydrogen for fuel gas	Hydrocarbon free UHP	50 to 500 cc/min 5 to 50 cc/min	Zero Air Hydrogen
DSC	Air for air shield	Clean and dry	100cc/min	Clean Dry Air
TGA	Nitrogen or dry air as furnace gas	Clean and dry air or high purity N ₂	100cc/min	Clean Dry Air or Nitrogen
TOD	Nitrogen carrier gas	UHP, Zero grade	300cc/min	Zero Nitrogen
CO ₂ analyzer	Calibration air	Clean dry, CO ₂ free hydrocarbon free	550 to 1000cc/min	CO₂ free air
Other laboratory applications				
Sample Prep Autosamplers	Nitrogen for solvent evaporation Air for pneumatic controls Nitrogen for sample injector	95% to 99% Clean and dry UHP, zero grade	up to 130L/min 28L/min 550cc/min	Nitrogen Clean Dry Air Zero Nitrogen
Circular Dichroism	Nitrogen	UHP, zero grade		Zero Nitrogen
ELSD Detector	Nitrogen or Zero Air for nebulisation	98%/zero grade	2-8 L/min	Nitrogen or Zero Air
Particle sizing by Laser Diffraction	Clean and dry air for nebulising gas	Clean and dry air		Clean Dry Air



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