

## Proton Energy Systems Gas Generators For Laboratory Instruments

Instrument	Gas Requirements	Gas Purity Requirements	Flow Rates	Generator Recommendation
Atomic Thermal Desorber	Zero air Hydrogen for FID	Clean, dry, HC free Clean, dry, 5x9 pure	1600cc/min 40cc/min per FID	Zero Air 5 l Zero Air 20l HyGen200, 400, 600
Auto-samplers for various instruments	Air for pneumatic controls Nitrogen for sample injector	Clean, dry Ultra high purity	28lpm 550cc/min	NiGen HF-01
GC-FID	Zero air as flame support air Hydrogen as flame fuel gas Hydrogen as capillary carrier gas Nitrogen as packed carrier gas Nitrogen as make up gas	Clean, hydrocarbon free 5x9 pure Ultra high purity Ultra high purity Ultra high purity	150 – 600cc/min 30-40cc/min varies varies 100cc/min	Zero Air 5 l Zero Air 20l HyGen 200, 400, 600 Hogen 300, 600 NiGen Micro
GC-FPD	Zero air as flame support air Hydrogen as flame fuel gas Hydrogen as capillary carrier gas Nitrogen as packed carrier gas	Clean Hydrocarbon free 5x9 pure Ultra high purity Ultra high purity	200cc/min 50-70cc/min varies varies	Zero Air 5 l Zero Air 20l HyGen 200, 400, 600 Hogen 300, 600 NiGen Micro
GC-NPD	Zero to rubidium detector support gas Hydrogen as detector support gas Hydrogen as capillary carrier gas Nitrogen as packed carrier gas	Dry, clean hydrocarbon free Ultra high purity Ultra high purity Ultra high purity	200cc/min 100c/min varies varies	Zero Air 5 l Zero Air 20l HyGen 200, 400, 600 Hogen 300, 600 NiGen Micro
GC-ECD	Nitrogen as carrier gas Nitrogen as make up gas	Ultra high purity, zero grade Ultra high purity, zero grade	varies 100cc/min	NiGen Micro NiGen GC
GC-ECD, HALL	Hydrogen as a reaction gas	Ultra high purity	to 200cc/min	NiGen Micro NiGen GC
GC-TCD	Hydrogen as carrier and ref. Gas	Ultra high purity	varies	Hogen 300 & 600
LC/MS LC.MS-AAPI,APCI,LC/MS/MS, Electro spray	Air for nebulizer gas Nitrogen for curtain, sheath and shield gas	Clean, dry hydrocarbon free 99% or higher	18lpm to 30lpm	NiGen 40.1 NiGen 40.0 NiGen 100
Ozone Generator	Supply air	Clean, dry	To 600lpm	Zero Air 20l
Solvent Evaporators	Nitrogen	Clean, dry	To 150lpm	NiGen 100.0
Total Oxygen Demand (TOD)	Nitrogen carrier gas	Ultra high purity	300cc/min	NiGen Micro
Thermal Gravimetric Analyzer (TGA)	Nitrogen as furnace purge	Clean, dry, inert	100cc/min	NiGen Micro
Differential Scanning Calorimeter (DSC)	Air for air shield	Clean, dry	100cc/min	ZeroAir 5l
Total Hydrocarbon Analyzer (THA)	Zero air for FID Hydrogen for flame gas fuel	Clean, hydrocarbon free 5x9 pure	To 500cc/min to 50cc/min	AirGen TOC
Total Organic Carbon Analyzer (TOC)	Dry air or Nitrogen for carrier	Clean, dry, hydrocarbon free CO2 free Ultra high purity.		AirGen TOC NiGen Micro