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high-purity membrane nitrogen generators

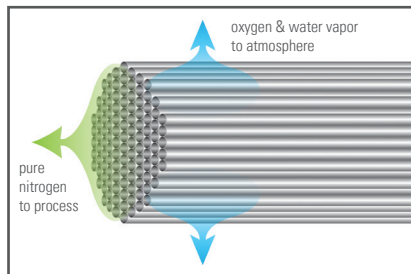
FEATURES

- produces nitrogen in-house simply and inexpensively requiring only a pre-treated compressed air system
- uses proven membrane technology
- rapid return on investment
- 5 models with rated flows from 8 to 2500 scfh
- purities from 95 to 99.9%
- all-in-one package includes F¹ centrifugal water separator, NMD magnetic condensate drain, F¹ 1.0 and 0.01 micron coalescing filters, F¹ AC activated carbon filter
- adjustable purity control regulator (optional)
- no moving parts and no electricity required
- compact and lightweight design provides horizontal or vertical placement in tight spaces with wall mounting brackets included as standard
- lower air consumption and refined controls provide greater energy efficiency
- applications include food packaging, plastics, chemicals, pharmaceuticals and atmosphere blanketing



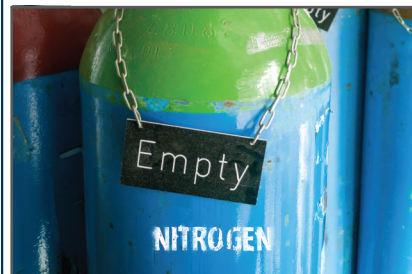
membrane technology

hundreds of thousands of hollow fibers separate nitrogen from air through a process known as selective permeation



safe & reliable

eliminates the safety hazards of transporting and storing pressurized gas cylinders or liquid nitrogen



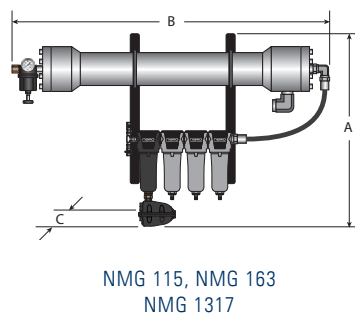
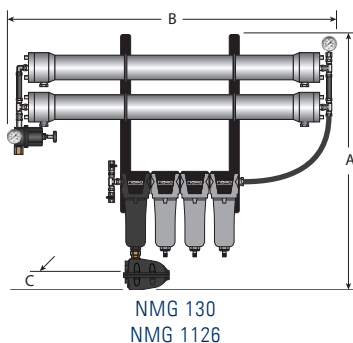
SPECIFICATIONS

generator model	inlet air pressure psig	air inlet requirement and nitrogen flow by model scfh nitrogen (scfm feed air)							dimensions (inches)			approx. weight lbs
		99.9% (0.1%)	99.5% (0.5%)	99% (1%)	98% (2%)	97% (3%)	96% (4%)	95% (5%)	A	B	C	
NMG 115	100	8 (1)	15 (1)	23 (1)	29 (1)	38 (2)	49 (2)	56 (2)	26	29	12	25
	125	12 (2)	21 (2)	32 (2)	42 (2)	56 (2)	67 (3)	77 (3)	26	29	12	25
	150	13 (2)	24 (2)	35 (2)	45 (2)	63 (3)	77 (3)	91 (3)	26	29	12	25
	200	20 (3)	35 (3)	56 (3)	70 (3)	95 (4)	113 (4)	134 (4)	26	29	12	25
NMG 130	100	16 (2)	30 (2)	46 (2)	58 (2)	76 (4)	98 (4)	112 (4)	26	29	12	30
	125	24 (4)	42 (4)	64 (4)	84 (4)	112 (4)	134 (6)	154 (6)	26	29	12	30
	150	26 (4)	48 (4)	70 (4)	90 (4)	126 (6)	154 (6)	182 (6)	26	29	12	30
	200	40 (6)	70 (6)	112 (6)	140 (6)	190 (8)	226 (8)	268 (8)	26	29	12	30
NMG 163	100	32 (5)	63 (5)	84 (5)	130 (6)	165 (7)	204 (8)	243 (9)	40	48	12	40
	125	44 (7)	87 (7)	116 (7)	176 (8)	226 (9)	278 (11)	328 (11)	40	48	12	40
	150	50 (8)	101 (8)	134 (8)	197 (9)	257 (10)	314 (12)	388 (13)	40	48	12	40
	200	73 (12)	146 (12)	194 (12)	293 (13)	388 (15)	459 (17)	529 (18)	40	48	12	40
NMG 1126	100	64 (10)	126 (10)	168 (10)	260 (12)	330 (14)	408 (16)	486 (18)	40	48	12	51
	125	88 (14)	174 (14)	232 (14)	352 (16)	452 (18)	556 (22)	656 (22)	40	48	12	51
	150	100 (16)	202 (16)	268 (16)	394 (18)	514 (20)	628 (24)	776 (26)	40	48	12	51
	200	146 (24)	292 (24)	388 (24)	586 (26)	776 (30)	918 (34)	1058 (36)	40	48	12	51
NMG 1317	100	159 (26)	317 (26)	423 (26)	600 (29)	776 (32)	953 (36)	1130 (39)	34	53	12	69
	125	212 (35)	424 (35)	565 (34)	812 (38)	1059 (43)	1306 (48)	1518 (52)	34	53	12	69
	150	238 (40)	476 (40)	635 (38)	918 (41)	1200 (48)	1447 (52)	1730 (58)	34	53	12	69
	200	357 (60)	715 (60)	953 (57)	1341 (60)	1765 (70)	2154 (78)	2542 (85)	34	53	12	69

specifications

inlet & outlet connections	½" NPT
design operating pressure range	100 to 200 psig
design operating temperature range	41 to 113°F
pressure drop	7 to 10 psig

- (1) the amount of compressed air (scfm feed air) required at the inlet as a function of the nitrogen flow at the outlet. Values are approximate. Contact us for detailed compressed air inlet requirements. At 100 psig inlet. For feed air required at different inlet pressure, contact support@n-psi.com
- (2) technical specifications subject to change without notice. Direct inquiries to support@n-psi.com or contact 704.897.2182



above drawings are for representation purposes only

nitrogen gas generators for wine production

FEATURES

- designed and developed specific for wineries
- significant cost savings per cylinder or liquid supply provides a typical return on investment of less than 24 months
- unique design and energy saving function offer significant advantages over delivered gas options as well as traditional generator designs
- compact plug and play system can be installed easily with minimal cost and requires only a compressed air system to start production
- 100% function and performance tested at our factory with a 2 year warranty
- lower air consumption and refined controls provide greater energy efficiency and reduces carbon footprint
- manufactured in an ISO 9001 approved facility
- applications include blanketing tanks, sparging, transferring and bottling product



easy to install

the compact design allows installation in spaces too small for twin tower generator systems



safe & reliable

eliminates the safety hazards of transporting and storing pressurized gas cylinders or liquid nitrogen



SPECIFICATIONS

generator model	rated outlet flow ⁽¹⁾	nitrogen purity at the outlet (maximum oxygen content)			
		99.9% (0.1%)	99.5% (0.5%)	99% (1%)	98% (2%)
VIN2 090	scfh	49.0	77.0	95.0	130.0
VIN2 110	scfh	84.0	120.0	151.0	204.0
VIN2 130	scfh	141.0	197.0	250.0	339.0

specifications

design operating pressure range	87 - 145 psig (6 - 10 barg)
design operating temperature range	41 - 122°F (5 - 50°C)
maximum inlet particulate	0.1 micron
maximum inlet dew point	38°F (3°C) PDP ⁽²⁾
maximum inlet oil content	0.01 ppm ⁽³⁾
supply voltage	100 - 240 VAC (50 or 60Hz) or 24 VDC

pressure correction factors⁽⁴⁾

operating pressure psig	90	100	115	130 -145
operating pressure barg	6	7	8	9 - 10
correction factor	0.90	1.00	1.10	1.20

temperature correction factors⁽⁴⁾

inlet temperature °F	41	50	59	68	77	86	95	104	113	122
inlet temperature °C	5	10	15	20	25	30	35	40	45	50
correction factor	0.8	0.9	0.94	1.00	1.00	0.98	0.95	0.90	0.85	0.72

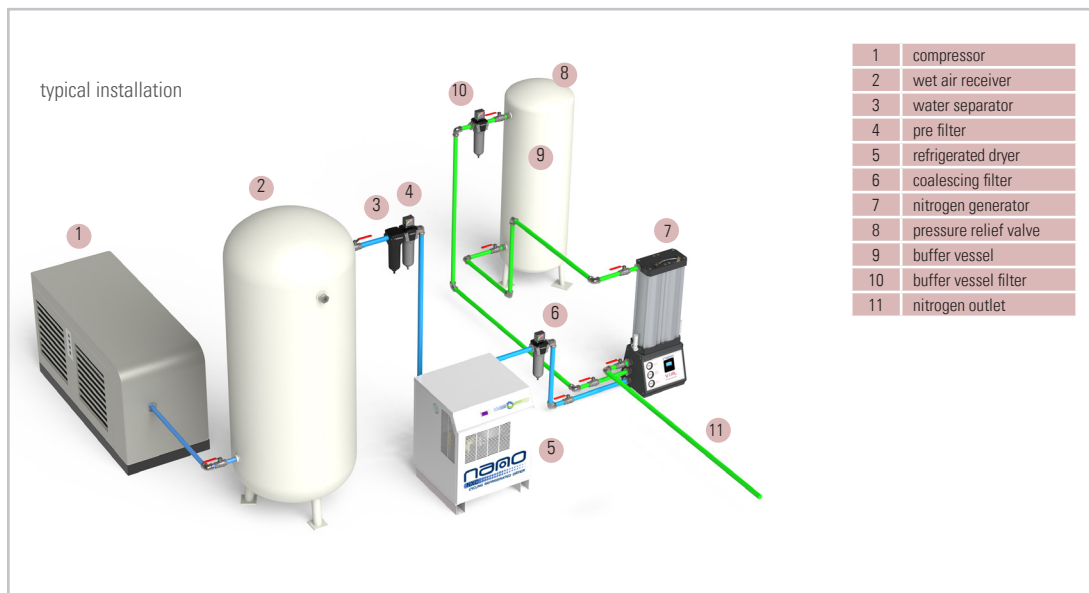
(1) at 100 psig (7 barg) inlet pressure and 68 - 77°F (20 - 25°C) inlet temperature. For outlet flow at all other conditions refer to the correction factors above or contact support@n-psi.com

(2) requires an upstream dryer. Contact nano for assistance selecting the optimum dryer for your application

(3) including oil vapor

(4) to be used as a rough guide only. All applications should be confirmed by nano. Contact nano for sizing assistance

(5) technical specifications subject to change without notice. Direct inquiries to support@n-psi.com or contact 704.897.2182



nitrogen generators for small flow applications

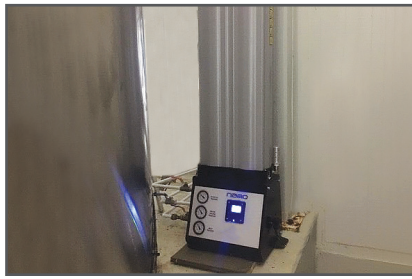
FEATURES

- produces nitrogen in-house simply and inexpensively requiring only a pre-treated compressed air system using proven PSA technology
- 3 models with rated flows from 49.4 to 547.4 scfh
- purities from 95 to 99.9%
- typical payback between 6 to 24 months
- plug and play system can be installed easily with minimum cost and disruption
- compact design allows installation in spaces too small for twin tower generator systems
- 100% function and performance tested at factory with 2 year warranty
- lower air consumption and refined controls provide greater energy efficiency
- optional mass flow controller to ensure a consistent nitrogen outlet flow rate removing any fluctuations caused by changes in pressure
- optional oxygen analyzer to allow outlet nitrogen purity to be monitored and displayed on PLC screen
- applications include wine production, food packaging and atmosphere blanketing



easy to install

the compact design allows installation in spaces too small for twin tower generator systems



safe & reliable

eliminates the safety hazards of transporting and storing pressurized gas cylinders or liquid nitrogen



SPECIFICATIONS

model	rated outlet flow ⁽¹⁾	99.9% (0.10%)	99.5% (0.50%)	99% (1%)	98% (2%)	97% (3%)	96% (4%)	95% (5%)	dimensions (inches)			approx. weight lbs
									A	B	C	
ECOGEN2 090	scfh	49.4	77.7	95.4	130.7	162.5	187.2	208.4	42	17	14	119
ECOGEN2 110	scfh	84.8	120.1	151.9	204.8	254.3	296.6	332.0	54	17	14	172
ECOGEN2 130	scfh	141.3	197.8	250.7	339.0	423.8	490.9	547.4	79	17	14	262

specifications

design operating pressure range	87 to 145 psig
design operating temperature range	41 to 122°F
maximum inlet particulate	0.1 micron
maximum inlet oil content	0.01 micron ⁽²⁾
maximum inlet dew point	38°F PDP ⁽³⁾
supply voltage	100 - 240 VAC (50 or 60Hz)

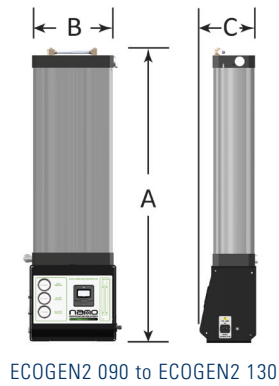
pressure correction factors⁽⁴⁾

operating pressure (psig)	90	100	115	130	145
operating pressure (barg)	6	7	8	9	10
correction factor	0.90	1.00	1.10	1.20	1.30

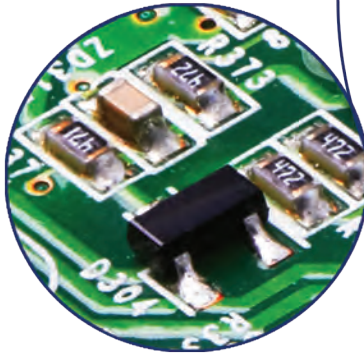
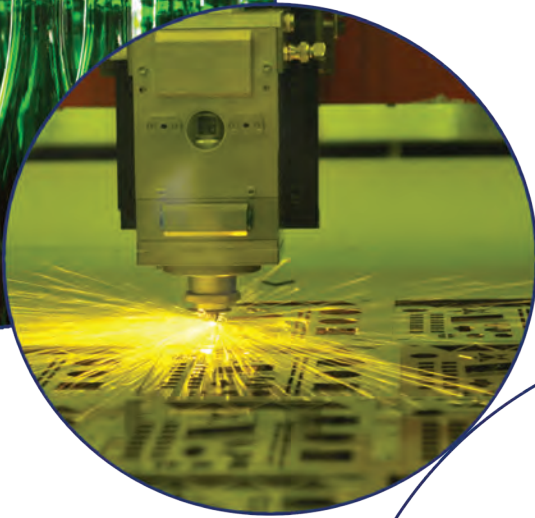
temperature correction factors⁽⁴⁾

inlet temperature (°F)	41	50	59	68	77	86	95	104	113	122
inlet temperature (°C)	5	10	15	20	25	30	35	40	45	50
correction factor	0.8	0.9	0.94	1.00	1.00	0.98	0.95	0.90	0.85	0.72

- (1) at 100 psig (7 barg) inlet pressure and 68 - 77°F (20 - 25°C) inlet temperature. For outlet flow at all other conditions refer to the correction factors above or contact support@n-psi.com
- (2) including oil vapor
- (3) requires an upstream dryer. Contact nano for assistance selecting the optimum dryer for your application
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nano



ultra-high purity nitrogen generators

nitrogen purity: 95% to 99.999%

“We are so impressed with the operation and performance of the nano GEN₂ i4.0 nitrogen gas generators we are looking to add additional modules next year.”

major peanut & snack food packager - southeastern US

Nitrogen is a dry, inert gas which is used in many commercial and industrial applications to improve quality or where oxygen may be harmful to the product or processes.

With traditional methods of gas supply such as liquid or bottled nitrogen, users are oftentimes responsible for hidden costs such as rental fees, refill and delivery surcharges, order processing charges as well as environmental fees.

Nitrogen generators begin with clean, dry compressed air to create a continuous supply of high purity nitrogen. Generating nitrogen in-house is a cost-effective and reliable alternative to the use of cylinder or liquid nitrogen across a wide range of applications.

nano GEN₂ i4.0 nitrogen gas generators

- payback typically between 6 to 24 months
- easy installation with minimum cost and disruption
- user has complete control fulfilling nitrogen gas demand
- generate as little or as much nitrogen gas as needed at a fraction of delivered gas cost

multi-bank design

The unique multi-bank design (GEN2 1110 to GEN2 12130) enables additional generators to be added in the future as demand increases and provides redundancy for ease of maintenance. Your GEN₂ i4.0 nitrogen generator can grow with your company.



BENEFITS

guaranteed performance

- 100% function and performance tested at our factory
- 2 YEAR WARRANTY

rapid return on investment

- significant cost savings over cylinder or liquid supply provides a typical return on investment of less than 24 months
- ecomode energy savings control reduces energy consumption during periods of low demand



fits any application

- maximum design operating pressure of 232 psig available

design quality

- mass flow controller - ensures correct application pressure and flow
- integral oxygen analyzer - continuously measures and guarantees gas quality
- purity guarantee valve - automatically ensures gas meets desired specifications
- remote monitoring - enables connection to proprietary remote management and generator control systems

easy to install

- the compact design allows installation in spaces too small for twin tower generator systems

safe & reliable

- eliminates the safety hazards of transporting and storing pressurized gas cylinders or liquid nitrogen

easy to maintain

- innovative piston valves significantly reduce maintenance schedules and minimize downtime

environmentally friendly

- reduces carbon footprint by eliminating gas delivery to your facility



HOW IT WORKS

The technologically advanced nano GEN₂ i4.0 nitrogen generator operates on the Pressure Swing Adsorption (PSA) principle to produce a continuous uninterrupted stream of nitrogen gas from clean dry compressed air. Dual chamber extruded aluminum columns are filled with Carbon Molecular Sieve (CMS). Joined via an upper and lower manifold, the high density filled columns produce a dual bed system. After a preset time the control system automatically switches the beds. One bed is always online generating nitrogen while the other is being regenerated.

During regeneration, the oxygen that has been collected in the CMS stage and the moisture that has been collected in the optional integrated dryer stage are exhausted to atmosphere. A small portion of the outlet nitrogen gas is expanded into the bed to accelerate the regeneration process.



A clean compressed air enters the inlet into GEN₂ unit where the inlet valves direct the flow to either the left or right column sets

B after passing through the inlet valve, the compressed air enters one side of the manifold under the extruded columns

C the compressed air then flows up through the Carbon Molecular Sieve (CMS) beds where oxygen and other trace gases are preferentially adsorbed and allows the nitrogen to pass through

D the nitrogen gas then passes through the supporting bed layer with integrated filter into the outlet manifold before exiting through the outlet valves

E the N₂ gas continues to the buffer vessel and nano F¹ buffer vessel filter before returning to the GEN₂ unit for purity monitoring, flow & purity regulation

FEATURES

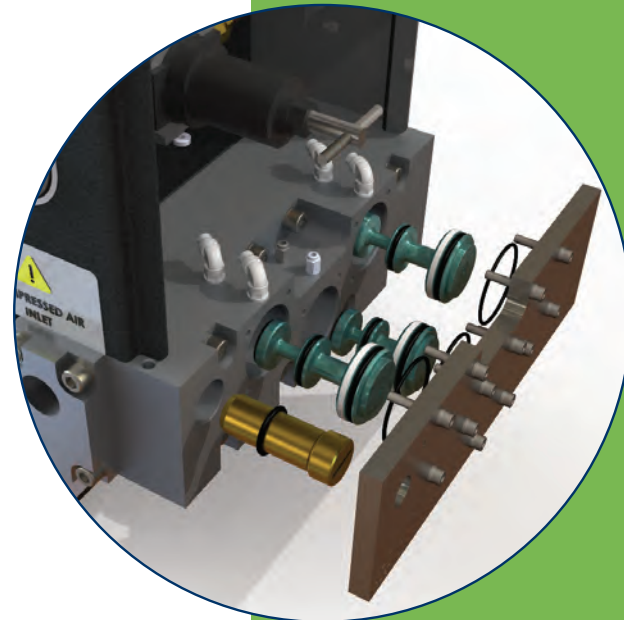
PLC/HMI controlled operation **i4.0**

- operated by a reliable PLC control system with digital and optional analog outputs for remote monitoring and alarm capabilities
- provides the operator with continuous indication of column A, column B, Inlet air & N₂ outlet pressures and features an easy-to-operate touch screen graphical human-machine interface (HMI) which offers valuable information including:
 - power on/off
 - inlet & outlet pressure
 - service required
 - O₂ purity
 - online column
 - run hours



reliable high performance valves

- inlet, outlet and exhaust are managed through unique integrated nano piston valves, which are designed for reliability, long service life and ease of maintenance
- incorporates adjustable equalization valves which smooth the column switch over, improve air/ N₂ ratios and extend CMS life

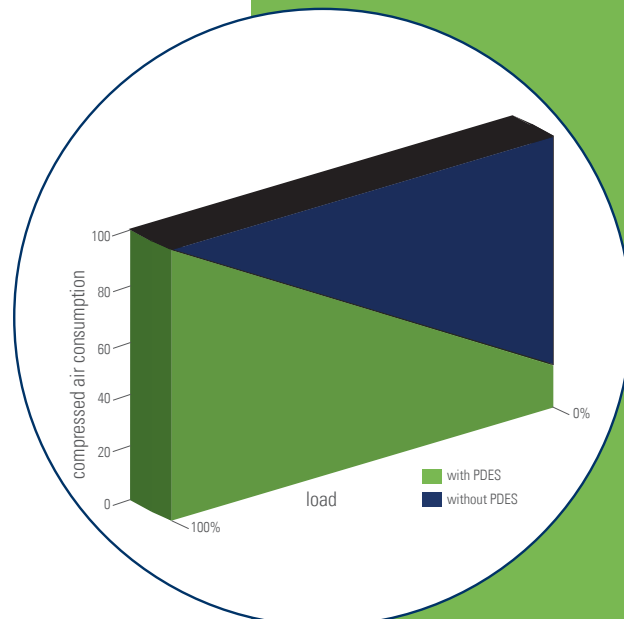


communication

- standard communication protocols include modbus TCP communications via RJ45 ethernet port and 4-20 mA signal to monitor nitrogen purity
- an upgradable SD card records the performance of the generator and data that can be downloaded to any PC for analysis

purity dependent energy saving (PDES)

- with the optional employment of 2 oxygen analyzers, the PDES option allows additional energy saving to be attained by keeping the purity within a narrow band of the required value
- achieved by elongating the adsorption cycle and consequently saving valuable compressed air and nitrogen consumed by the generator during column changeover



SPECIFICATIONS

generator model	rated outlet flow ⁽¹⁾	nitrogen purity* at the outlet (maximum oxygen content)**												dimensions (inches)			approx. weight (lbs)
		99.999% (10 ppm)	99.995% (50 ppm)	99.99% (100 ppm)	99.975% (250 ppm)	99.95% (500 ppm)	99.9% (0.10%)	99.5% (0.50%)	99% (1%)	98% (2%)	97% (3%)	96% (4%)	95% (5%)	A	B	C	
GEN2 i4.0-1110	scfh	32	60	71	88	106	127	184	205	258	293	335	364	48.15	15.7	23.82	214
GEN2 i4.0-2110	scfh	64	120	141	177	212	254	367	410	516	586	671	727	48.15	15.7	30.43	394
GEN2 i4.0-3110	scfh	95	180	212	265	318	381	551	614	773	879	1006	1091	48.15	15.7	37.05	575
GEN2 i4.0-2130	scfh	180	254	297	353	403	466	667	742	932	1070	1218	1324	71.77	15.7	30.43	548
GEN2 i4.0-3130	scfh	270	381	445	529	604	699	1001	1112	1398	1605	1828	1986	71.77	15.7	37.05	729
GEN2 i4.0-4130	scfh	360	509	593	706	805	932	1335	1483	1865	2140	2437	2649	71.77	15.7	43.66	967
GEN2 i4.0-6130	scfh	540	763	890	1058	1208	1398	2002	2225	2797	3210	3655	3973	71.77	15.7	56.89	1373
GEN2 i4.0-8130	scfh	720	1017	1187	1411	1610	1865	2670	2966	3729	4280	4873	5297	71.77	15.7	70.12	1739
GEN2 i4.0-10130	scfh	828	1170	1365	1623	1852	2144	3070	3411	4289	4922	5604	6092	71.77	15.7	83.34	1946
GEN2 i4.0-12130	scfh	962	1358	1584	1884	2150	2489	3564	3960	4979	5714	6506	7072	71.77	15.7	96.57	2447

*nitrogen purity relative to oxygen content
**without integrated dryer system

specifications

design operating pressure range	87 - 174 psig (6 - 12 barg) ⁽²⁾
design operating temperature range	41 - 122°F (5 - 50°C)
recommended operating temperature range	41 - 86°F (5 - 30°C)
maximum inlet particulate	0.1 micron
maximum inlet dew point	+38°F (3.3°C) PDP ⁽³⁾
recommended inlet dew point	-40°F (-40°C) PDP
maximum inlet oil content	0.01 ppm ⁽⁴⁾
supply voltage	100 - 240 VAC (50 or 60Hz)

pressure correction factors⁽⁵⁾

operating pressure (psig)	90	100	115	130	145	160	174	>174
operating pressure (barg)	6	7	8	9	10	11	12	>12
correction factor	0.88	1.00	1.10	1.20	1.30	1.40	1.50	CF

temperature correction factors⁽⁵⁾

inlet temperature (°F)	41	50	59	68	77	86	95	104	113	122
inlet temperature (°C)	5	10	15	20	25	30	35	40	45	50
correction factor	0.8	0.9	0.94	1.00	1.00	0.98	0.95	0.90	0.85	0.72

(1) at 100 psig (7 barg) inlet pressure and 68 - 77°F (20 - 25°C) inlet temperature. For outlet flow at all other conditions refer to the correction factors above or contact support@n-psi.com

(2) 232 psig (16 barg) option available in USA. 210 psig (14.5 barg) option available in Canada. Consult factory

(3) for low purity applications only

(4) including oil vapor

(5) to be used as a rough guide only. All applications should be confirmed by nano. Contact nano for sizing assistance

(6) technical specifications subject to change without notice. Direct inquiries to support@n-psi.com or contact 704.897.2182

