

nano



# Modbus TCP and Ethernet IP Communications

## GEN<sub>2</sub> i4.0 nitrogen gas generator

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[www.n-psi.co.uk](http://www.n-psi.co.uk)



## Experience.

Our team is comprised of and supported by individuals spanning all disciplines from research & development, engineering & manufacturing, marketing & sales and service & support. Our backgrounds are in air and gas purification and our experience in this field spans a wide range of industries. We combine this knowledge and experience to ensure our products and services are designed and provided to meet the objectives and expectations of you - our Customer



## Customer.

We recognise that our Customers are not only our valuable distribution partners who sell and support our products or the machine builders who depend on them as protection for their equipment. They are the contractors who install them, the manufacturers who use them in their processes and the service people who maintain them. At nano we have developed our products, packaging and support materials to ensure they exceed all of our Customers' expectations.



## Service.

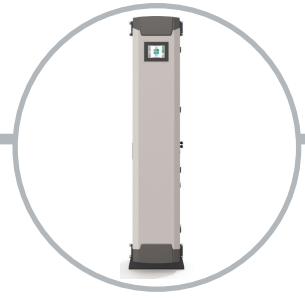
At nano we recognise that world-class customer service is the most important component to any successful business. Your business needs to exceed your customers' expectations to stand out from your competitors and our service must positively impact your business so you can be successful in doing so. Our commitment is simple... we will stand behind our products and ensure that our customer service is unrivaled in the industry.



# Experience. Customer. Service.

# GEN<sub>2</sub> i4.0

## nitrogen gas generator



### 1.1 general information

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**range:** GEN<sub>2</sub> i4.0 PSA nitrogen gas generators  
**models:** GEN<sub>2</sub> i4.0 -1110, 2110, 3110, 2130, 3130, 4130, 6130, 8130, 10130 & 12130  
**doc no:** 17-100-0138  
**issue:** 003

### 1.2 manufacturers details and support

#### nano-purification solutions

**address:** Dukesway  
Team Valley Trading Estate  
Gateshead  
NE11 0PZ  
United Kingdom  
**telephone:** +44 (0) 191 497 7700  
**internet:** [www.n-psi.co.uk](http://www.n-psi.co.uk)  
**e-mail:** [sales@n-psi.co.uk](mailto:sales@n-psi.co.uk)

#### nano-purification solutions

**address:** 5509 David Cox Road  
Charlotte, NC 28269  
USA  
**telephone:** +1 (704) 897-2182  
**internet:** [www.n-psi.com](http://www.n-psi.com)  
**e-mail:** [support@n-psi.com](mailto:support@n-psi.com)

#### nano-purification solutions

**address:** 7 Petrie Street  
St. Catharines,  
Ontario L2P 3J6  
Canada  
**telephone:** +1 (905) 684-6266  
**internet:** [www.n-psi.com](http://www.n-psi.com)  
**e-mail:** [support@n-psi.com](mailto:support@n-psi.com)

#### nano-purification solutions

**address:** Erkelenz  
Germany  
**telephone:** +49 2151 4828 418  
**internet:** [www.n-psi.de](http://www.n-psi.de)  
**e-mail:** [sales@n-psi.de](mailto:sales@n-psi.de)



### annotations



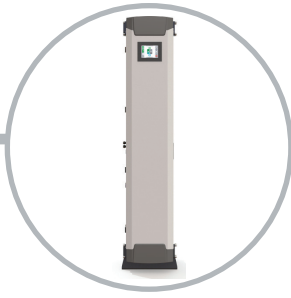
**CAUTIONS:** indicate any situation or operation that may result in potential damage to the product, injury to the user, or render the product unsafe.



**NOTES:** highlight important sections of information where particular care and attention should be paid.



**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and/or birth defects or other reproductive harm. For more information, go to [www.P65Warning.ca.gov](http://www.P65Warning.ca.gov).



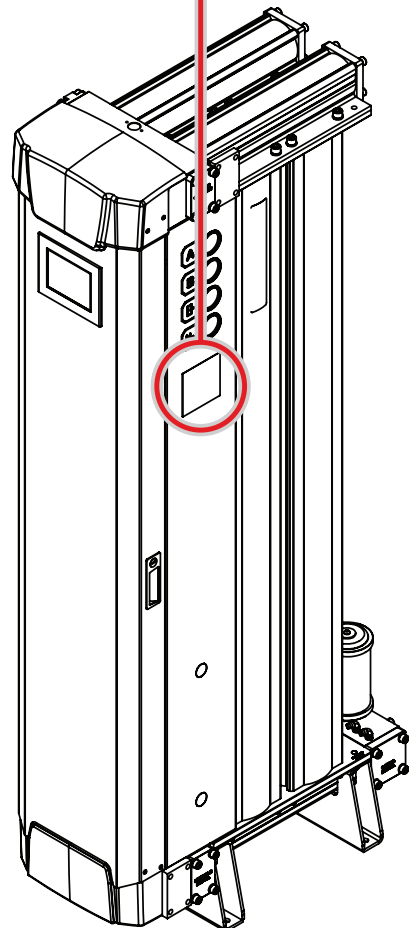
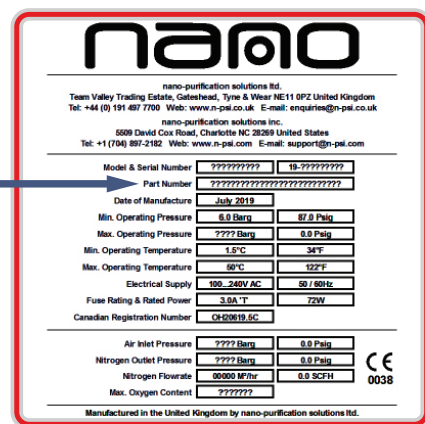
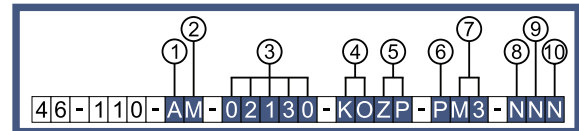
# GEN<sub>2</sub> i4.0

## nitrogen gas generator



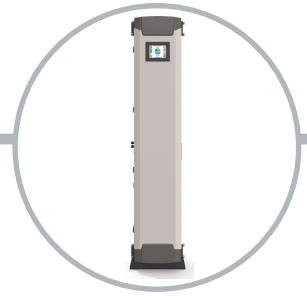
This information can be found on the product rating label as shown.

|  |                              |                                   |
|--|------------------------------|-----------------------------------|
| <b>1. Connection</b>   |                              |                                   |
| G  |                              | BSP                               |
| A  |                              | NPT                               |
| C  |                              | (CRN) NPT                         |
| <b>2. Pressure Rating</b>                                      |                              |                                   |
| M  | 0...12barg                   | 0...174psig                       |
| S  | 0...16barg                   | 0...262psig                       |
| <b>3. Model Code</b>   |                              |                                   |
| 01110  |                              | 1x 110 Column                     |
| 02110  |                              | 2x 110 Column                     |
| 03110  |                              | 3x 110 Column                     |
| 02130  |                              | 2x 130 Column                     |
| 03130  |                              | 3x 130 Column                     |
| 04130  |                              | 4x 130 Column                     |
| 06130  |                              | 6x 130 Column                     |
| 08130  |                              | 8x 130 Column                     |
| 10130  |                              | 10x 130 Column                    |
| 12130  |                              | 12x 130 Column                    |
| <b>4. Internal Dryer (option)</b>                              |                              |                                   |
| K O  |                              | Not Fitted                        |
| K S  |                              | Fitted                            |
| <b>5. Oxygen Purity</b>  |                              |                                   |
| Z C  |                              | 5% to 0.5%                        |
| Z P  |                              | 1000ppm to 10ppm                  |
| <b>6. Purity Dependant Energy Saving Technology (Optional)</b> |                              |                                   |
| N  |                              | Not Fitted                        |
| P  |                              | Fitted                            |
| <b>7. Flow Rating</b>  |                              |                                   |
| M 2  | 0...60 M <sup>3</sup> /hr    | 0...2119 SCFH                     |
| M 3  | 61...120 M <sup>3</sup> /hr  | 2154...4237 SCFH                  |
| M 4  | 121...300 M <sup>3</sup> /hr | 4273...10594 SCFH                 |
| <b>8. Dewpoint Sensor Technology (Optional)</b>                |                              |                                   |
| N  |                              | Not Fitted                        |
| I  |                              | Inlet Dew-point Monitoring        |
| O  |                              | Outlet Dew-point Monitoring       |
| <b>9. Additional Options</b>                                   |                              |                                   |
| N  |                              | Not Fitted                        |
| C  |                              | Column Pressure Monitoring        |
| F  |                              | External Flow Measurement         |
| B  |                              | Both                              |
| <b>10. Communication Options</b>                               |                              |                                   |
| N  |                              | Not Fitted                        |
| M  |                              | Modbus Communication Package      |
| E  |                              | Ethernet IP Communication Package |

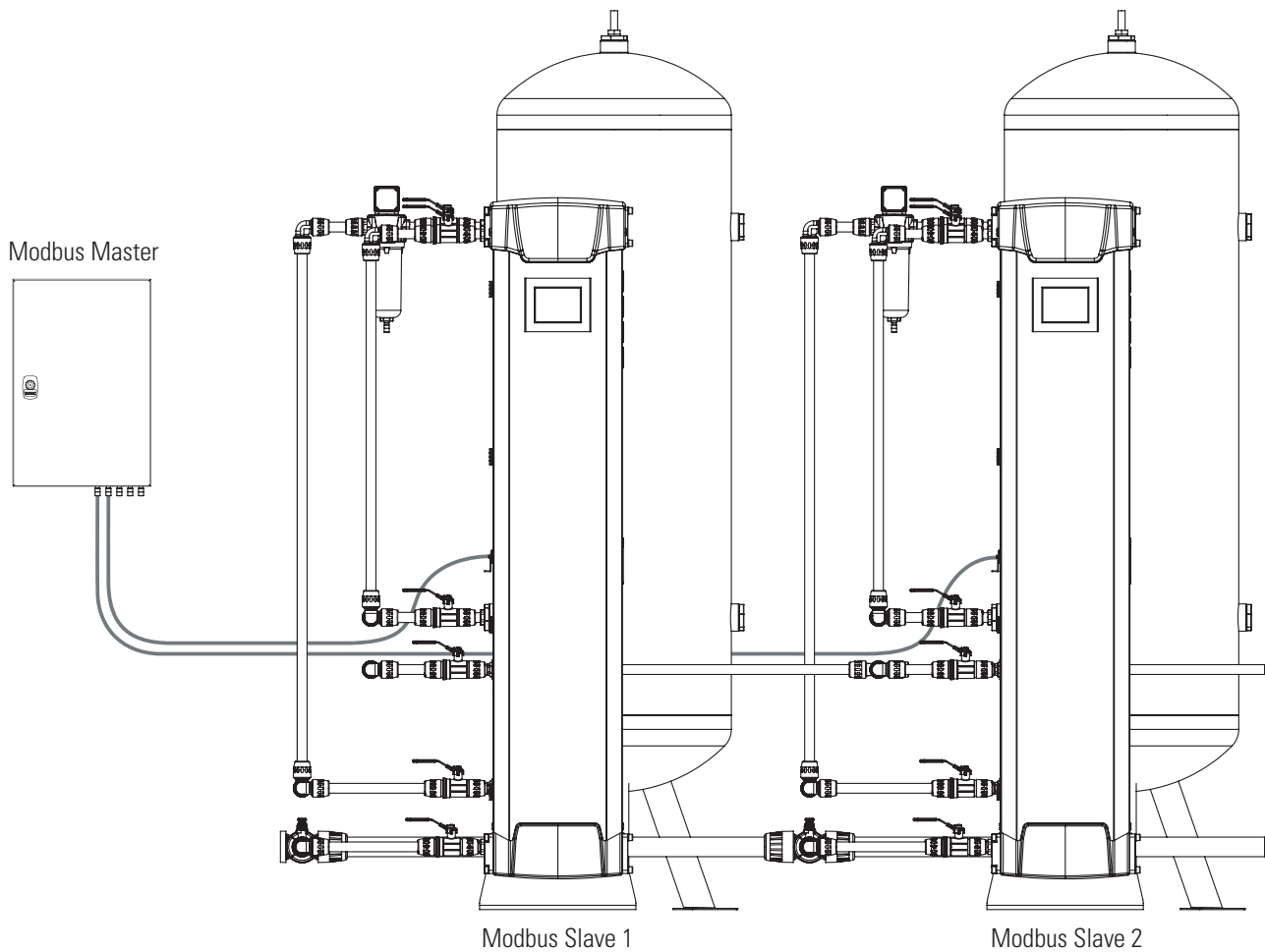


# GEN<sub>2</sub> i4.0

## nitrogen gas generator



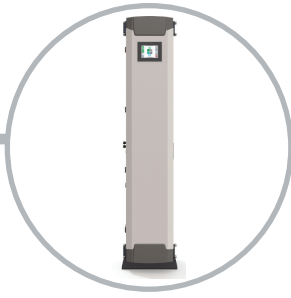
### 2.0 modbus TCP and EtherNet IP communication



If the generator is fitted with the optional Modbus or EtherNet communication package there will be a panel mounted RJ45 connector located on the left side of the generator. This can be used to connect each nitrogen generator back to the master panel in the form of a SCADA, PLC or PC system.

Each nitrogen generator can be configured with its own unique IP address which can allow multiple generators to be connected to an existing network.

a Modbus master can be used to retrieve information from each nitrogen generator, this will require someone with the ability and knowledge to program the SCADA, PLC or PC system.



# GEN<sub>2</sub> i4.0

## nitrogen gas generator

Applicable to generator with serial number beginning with 19, 20 or 21.

| variable type | address | r/w type  | description                               |
|---------------|---------|-----------|---|
| float         | %MF600  | read only | inlet pressure reading (0...16barg)       |
| float         | %MF602  | read only | inlet pressure reading (0...232psig)      |
| float         | %MF604  | read only | only outlet pressure reading (0...16barg) |
| float         | %MF606  | read only | outlet pressure reading (0...232psig)     |
| float         | %MF608  | read only | nitrogen outlet purity (percentage)       |



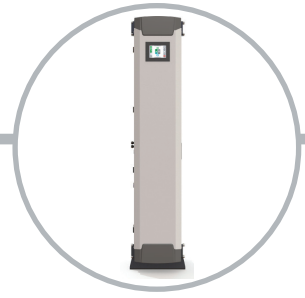
*Nitrogen outlet purity is always shown as a percentage, i.e;  
5.00000 equates to the oxygen content 5.0%  
0.05000 equates to the oxygen content being 0.05% or 500ppm*

| variable type | address | r/w type  | description                         |
|---------------|---------|-----------|-------------------------------------|
| integer       | %mw680  | read only | total hours run                     |
| integer       | %mw681  | read only | hours run since last service        |
| integer       | %mw682  | read only | total hours in economy              |
| integer       | %mw683  | read only | hours in economy since last service |

| variable type | address | r/w type  | description   |
|---------------|---------|-----------|---|
| coil (on/off) | %M400   | read only | machine status - low inlet pressure                   |
| coil (on/off) | %M401   | read only | machine status - low outlet pressure                  |
| coil (on/off) | %M402   | read only | machine status - high nitrogen outlet purity          |
| coil (on/off) | %M403   | read only | machine status - low internal battery                 |
| coil (on/off) | %M404   | read only | machine status - service reminder                     |
| coil (on/off) | %M405   | read only | machine status - service required                     |
| coil (on/off) | %M406   | read only | machine status - economy stage 1 (system at pressure) |
| coil (on/off) | %M407   | read only | machine status - nitrogen outlet purity out of range  |
| coil (on/off) | %M408   | read only | machine status - column a online                      |
| coil (on/off) | %M409   | read only | machine status - column b online                      |
| coil (on/off) | %M410   | read only | machine status - running                              |
| coil (on/off) | %M412   | read only | machine status - shutdown                             |
| coil (on/off) | %M413   | read only | machine status - economy mode active                  |
| coil (on/off) | %M414   | read only | machine status - low inlet pressure shutdown          |
| coil (on/off) | %M415   | read only | machine status - standby                              |

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## nitrogen gas generator



Applicable to generator with serial number beginning with 22 onwards.

| variable type | word | HMI modbus address | HMI program address | r/w type  | description                               |
|---------------|------|--------------------|---------------------|-----------|---|
| float         | low  | 400601             | %MF600              | read only | inlet pressure reading (0...16barg)       |
|               | high | 400602             |                     |           |   |
| float         | low  | 400603             | %MF602              | read only | inlet pressure reading (0...232psig)      |
|               | high | 400604             |                     |           |   |
| float         | low  | 400605             | %MF604              | read only | only outlet pressure reading (0...16barg) |
|               | high | 400606             |                     |           |   |
| float         | low  | 400607             | %MF606              | read only | outlet pressure reading (0...232psig)     |
|               | high | 400608             |                     |           |   |
| float         | low  | 400609             | %MF608              | read only | nitrogen outlet purity (percentage)       |
|               | high | 400610             |                     |           |   |

| variable type | word | HMI modbus address | HMI program address | r/w type  | description                         |
|---------------|------|--------------------|---------------------|-----------|-------------------------------------|
| integer       | low  | 400691             | %md690              | read only | total hours run                     |
|               | high | 400692             |                     |           |                                     |
| integer       | -    | 400682             | %mw681              | read only | hours run since last service        |
| integer       | low  | 400695             | %md694              | read only | total hours in economy              |
|               | high | 400696             |                     |           |                                     |
| integer       | -    | 400684             | %mw683              | read only | hours in economy since last service |

| variable type | HMI modbus address | IEC address | r/w type  | description   |
|---------------|--------------------|-------------|-----------|---|
| coil (on/off) | 000401             | 400         | read only | machine status - low inlet pressure                   |
| coil (on/off) | 000402             | 401         | read only | machine status - low outlet pressure                  |
| coil (on/off) | 000403             | 402         | read only | machine status - high nitrogen outlet purity          |
| coil (on/off) | 000404             | 403         | read only | machine status - low internal battery                 |
| coil (on/off) | 000405             | 404         | read only | machine status - service reminder                     |
| coil (on/off) | 000406             | 405         | read only | machine status - service required                     |
| coil (on/off) | 000407             | 406         | read only | machine status - economy stage 1 (system at pressure) |
| coil (on/off) | 000408             | 407         | read only | machine status - nitrogen outlet purity out of range  |
| coil (on/off) | 000409             | 408         | read only | machine status - column A online                      |
| coil (on/off) | 000410             | 409         | read only | machine status - column B online                      |
| coil (on/off) | 000411             | 410         | read only | machine status - running                              |
| coil (on/off) | 000413             | 412         | read only | machine status - shutdown                             |
| coil (on/off) | 000414             | 413         | read only | machine status - economy mode active                  |
| coil (on/off) | 000415             | 414         | read only | machine status - low inlet pressure shutdown          |
| coil (on/off) | 000416             | 415         | read only | machine status - standby                              |



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