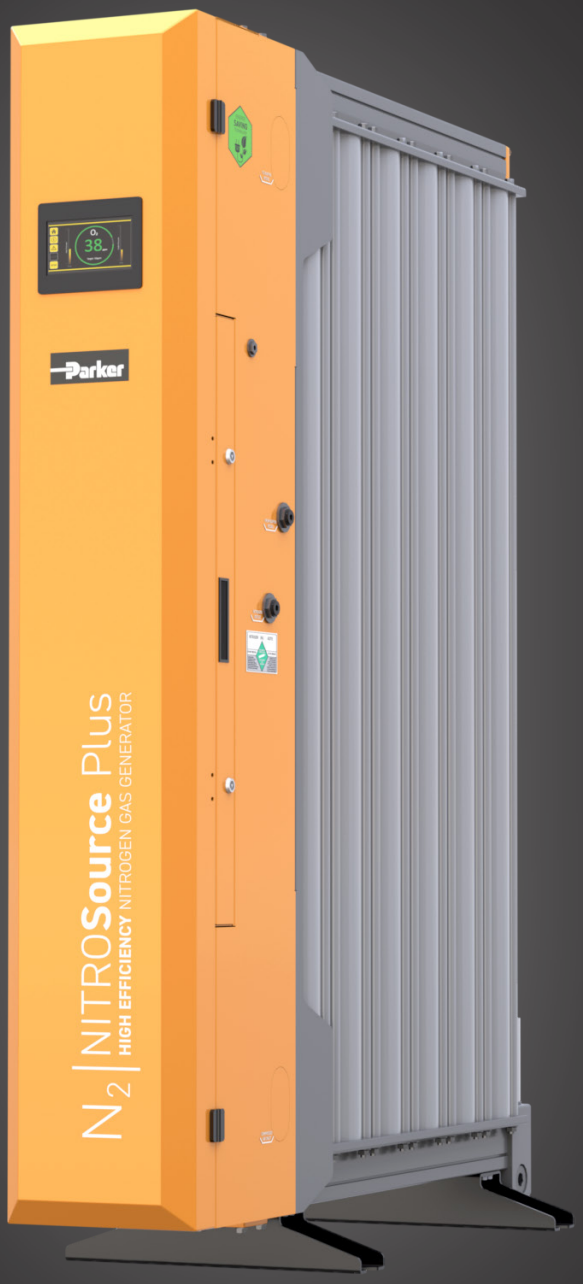
IOMI: 176500210 05/25 Rev - B

NITROSource Plus

NSP-020 to 120
High Efficiency PSA
Nitrogen Gas Generators



USER GUIDE

(EN)

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SAFETY & INSPECTION

SAFETY INFORMATION

Do not operate this equipment until the safety information and instructions in this user guide have been read and understood by all personnel concerned.

USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorised distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyse all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalogue and in any other materials provided from Parker or its subsidiaries or authorised distributors.

To the extent that Parker or its subsidiaries or authorised distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

The pressure envelope of the equipment must not be breached under any circumstances. Failure to comply may result in an unplanned release of pressure, and may cause serious personal injury or death. All maintenance procedures that require the pressure envelope to breached must only be performed by competent personnel trained, qualified, and approved by Parker.

Use of the equipment in a manner not specified within this user guide may result in an unplanned release of pressure, which may cause serious personal injury or damage.

When handling, installing or operating this equipment, personnel must employ safe engineering practices and observe all related regulations, health & safety procedures, and legal requirements for safety.

Ensure that the equipment is depressurised and electrically isolated, prior to carrying out any of the scheduled maintenance instructions specified within this user guide.

Only competent personnel trained, qualified, and approved by Parker should perform installation, commissioning, service and repair procedures.

Parker can not anticipate every possible circumstance which may represent a potential hazard. The warnings in this manual cover the most known potential hazards, but by definition can not be all-inclusive. If the user employs an operating procedure, item of equipment or a method of working which is not specifically recommended by Parker the user must ensure that the equipment will not be damaged or become hazardous to persons or property.

Most accidents that occur during the operation and maintenance of machinery are the result of failure to observe basic safety rules and procedures. Accidents can be avoided by recognising that any machinery is potentially hazardous.

Details of your nearest Parker sales office can be found at www.parker.com/gsfe

Retain this user guide for future reference.

MARKINGS AND SYMBOLS

The following markings and international symbols are used on the equipment or within this user guide:

	Caution, Read the User Guide.		Wear ear protection.
	Risk of electric shock.		Pressurised components on the system.
 Warning	Highlights actions or procedures which, if not performed correctly, may lead to personal injury or death.		Remote control. Dryer may start automatically without warning.
 Caution	Highlights actions or procedures which, if not performed correctly, may lead to damage to this product.	CE	Conformité Européenne
 Warning	Highlights actions or procedures which, if not performed correctly, could lead to electric shock.		Waste electrical and electronic equipment should not be disposed of with municipal waste.
	Read the User Guide.		Safety gloves to be worn
	NITROGEN (N2) NITROX DO NOT BREATHE Asphyxiant in high concentrations. No odour. Slightly lighter than air. Ensure adequate ventilation. Breathing 100% nitrogen will produce immediate unconsciousness and death due to lack of oxygen. NON-FLAMMABLE COMPRESSED GAS		Use a forklift truck to move the product

IDENTIFICATION

The NITROSource Plus Modular PSA Nitrogen gas generator range consists of 11 models which can operating at various purities, pressures and temperatures. All the critical operating parameters including operating specification can be identified via the products rating plate.

PART NUMBER CONFIGURATION

Example	N	S	P	-	□	□	□	-	□	□	□	□	□	-	0	0	A

Model	Prefix
NSP-020	0 2 0
NSP-030	0 3 0
NSP-040	0 4 0
NSP-050	0 5 0
NSP-060	0 6 0
NSP-070	0 7 0
NSP-080	0 8 0
NSP-090	0 9 0
NSP-100	1 0 0
NSP-110	1 1 0
NSP-120	1 2 0

Purity	Prefix
5ppm / 10ppm / 50ppm	U
100ppm / 250ppm / 500ppm / 0.1%	H
0.5% / 1.0% / 2.0% / 3.0%	L

Oxygen Analyser Technology	Prefix
Electrochemical	E
Zirconia	Z

Energy Saving Technology [1]	Prefix
Not Fitted	N
Fitted	Y

Nitrogen Outlet Flow Range [2]	Prefix
High Flow	H
Low Flow	L

Dew point Monitoring	Prefix
Not Fitted	N
Inlet PDP Protection	I
Outlet PDP Monitoring	O
Both Inlet & Outlet Monitoring	B

[1] Energy Saving Technology not available on 50ppm, 10ppm or 5ppm generators.
[2] See 'Mass Flow Controller Flow Breaks' chart for sizing information.

Mass Flow Controller Flow Breaks									
Outlet Pressure	bar(g)	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
	psi(g)	72.5	87.0	101.5	116.0	130.5	145.0	159.5	174.0	188.5
High Flow	m^3/hr	190.0	205.0	219.0	232.0	245.0	257.0	268.0	279.0	290.0
	scfh	111.8	120.6	128.8	136.5	144.2	151.2	157.7	164.2	170.6
Low Flow	m^3/hr	61.0	66.0	70.0	74.0	78.0	82.0	86.0	89.0	93.0
	scfh	35.9	38.8	41.2	43.5	45.9	48.2	50.6	52.3	54.7

RECEIVING AND INSPECTING THE EQUIPMENT

The NITROSource Plus Nitrogen gas generator is supplied in a sturdy wooden crate designed to be moved using a forklift or pallet truck. On delivery of the equipment check the crate and its contents for damage. If there are any signs of damage to the crate, or there are any parts missing please inform the delivery company immediately and contact your equipment supplier or local Parker sales company.

Contents

Every NITROSource Plus model includes an OIL-X dry particulate filter and a variety of balls valves and fittings to aid in the correct installation of the generator.

NSP-020, 030, 040, 050, 060, 070, 080 & 090		
Ref	**Description**	**Qty**
1	NITROSource Plus Unit	1
2	OIL-X A0 Grade Dry Particulate Filter	1
3	G1" Ball Valve and Fittings	4
4	G1" 3 way ball valve	1

NSP-100, 110 & 120		
Ref	**Description**	**Qty**
1	NITROSource Plus Unit	1
2	OIL-X A0 Grade Dry Particulate Filter	1
3	G1" Ball Valve and Fittings	2
4	G1½" Ball Valve and Fittings	2
5	G1" 3 way ball valve	1

Storage

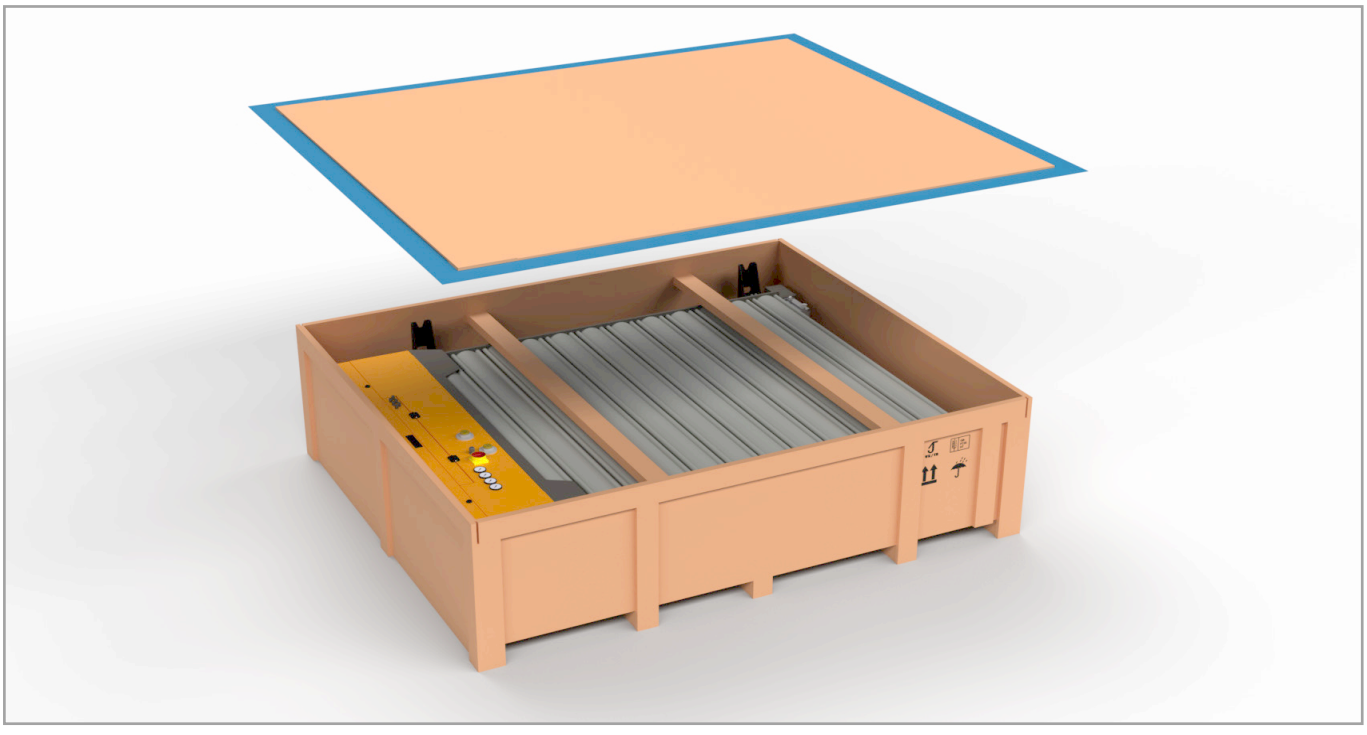
The equipment should be stored, within the packing crate, in a clean dry environment. If the crate is stored in an area where the environmental conditions fall outside of those specified in the technical specification, it should be moved to it's final location (installation site) and left to climatise prior to unpacking. Failure to do this could cause condensing humidity and potential failure of the equipment.

Unpacking

Remove the lid and all four sides of the packing crate. Lift the generator on to its feet using suitable slings and an overhead crane. Carefully move the generator to its final location, using a forklift or pallet truck.

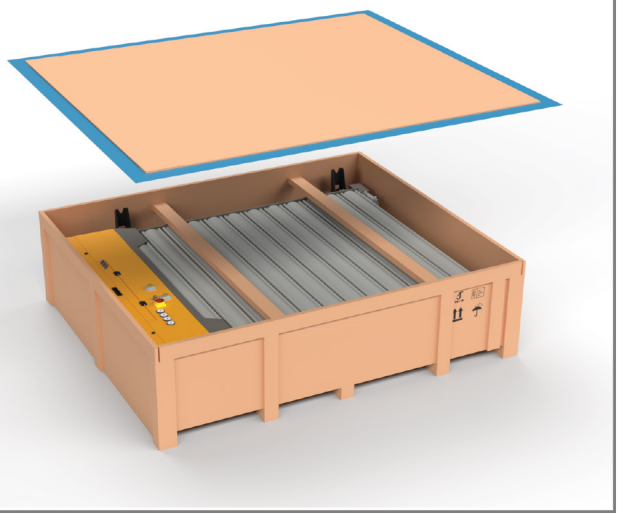
Warning

An additional support is fitted to the NSP-020 stand to ensure complete stability of the product. This in conjunction with the location of the products stands mean that it is impossible to move the product with the use of a pallet truck. In this instance the product should be moved with use of appropriate slings and a overhead crane or forklift truck.



UNPACKING THE PRODUCT

A



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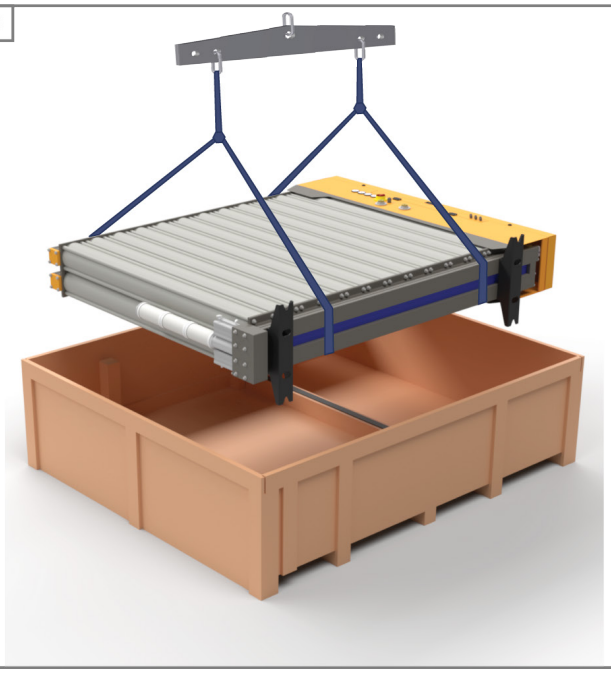

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COMPONENT IDENTIFICATION

Ref	Description	Ref	Description
1	Compressed Air Inlet	8	Modbus TCP/IP Connection
2	To Buffer Vessel	9	Webserver Connection
3	From Buffer Vessel	10	Digital/Analogue Inputs & Outputs
4	Nitrogen Outlet	11	Column 1 Pressure Gauge
5	Mains Supply Input	12	Column 2 Pressure Gauge
6	Electrical Supply Isolator/Emergency Shut Off	13	Compressed Air Inlet Pressure Gauge
7	Touchscreen Interface	14	Nitrogen Outlet Pressure Gauge

RANGE OVERVIEW

MODULAR CONSTRUCTION

The NITROSource Plus Nitrogen gas generator range are designed as a modular aluminium construction, utilising high tensile aluminium extrusions for inlet distribution manifolds, columns, outlet distribution manifolds and associated valve assemblies. All distribution manifolds and columns have an internal diameter of 150 mm (6”) or less.

Large modular aluminium constructions such as those used on NITROSource Plus models use multiple extruded columns of equal length which are snow-storm filled with carbon molecular sieve (CMS). For compactness, each single column extrusion consists of two separate chambers. When compressed air is flowed through these chambers in parallel, there is sufficient CMS to provide the required Nitrogen gas flow rate of the system the generator was sized for.

A typical modular aluminium construction consists of:

- A lower inlet distribution manifold
- Multiple columns of equal length
- An upper outlet distribution manifold

To ensure the generator has enough CMS to deliver the desired Nitrogen gas flow rates and achieve the selected outlet purity, the NITROSource Plus range has eleven models with various capacities.

Range	Model	No. of Columns	No. of Chambers
NITROSource Plus	NSP-020	2	4
	NSP-030	3	6
	NSP-040	4	8
	NSP-050	5	10
	NSP-060	6	12
	NSP-070	7	14
	NSP-080	8	16
	NSP-090	9	18
	NSP-100	10	20
	NSP-110	11	22
	NSP-120	12	24

As inlet flow capacity increases, the number of columns required to generate the gas also increases, up to the maximum length of the manifolds. NSP-120 has 12 columns, this is the maximum number of columns available for Nitrogen gas generation applications.

Referencing Columns During Operation
Although modular aluminium construction generators have multiple columns and chambers, the multiple columns are in fact, flowed in parallel to increase capacity. Additionally, the distribution manifolds separate the air flow longitudinally, effectively creating two large separate chambers, with 50% of the CMS being used for generation of the Nitrogen gas, whilst the other 50% is being regenerated or kept in stand-by.

Therefore, during operation the two large (parallel flow) chambers simply are referred to as Column 1 and Column 2 or Side 1 and Side 2.

Example: NSP-120...1 Generator Bank

PRINCIPLE OF OPERATION

What are PSA Nitrogen gas generators and how do they work?
A Pressure Swing Adsorption (PSA) nitrogen gas generator is a system used to produce high-purity nitrogen gas from atmospheric air. It operates based on the principles of adsorption, where certain gases adhere to the surface of a solid material, and pressure manipulation to selectively adsorb and desorb gases. Here's a step-by-step breakdown of how a PSA nitrogen gas generator works:

Air Compression and Pre-Treatment
Atmospheric air is drawn into the system and compressed using an air compressor. The compressed air is then passed through pre-treatment filters to remove oil, moisture, and other impurities. This ensures that the air entering the PSA unit is clean and dry.

Adsorption
The clean, dry air is directed into one of the adsorption towers (typically there are two or more towers working in cycles). Each tower contains an adsorbent material, usually Carbon Molecular Sieves (CMS), that selectively adsorbs oxygen, carbon dioxide, and water vapor, while allowing nitrogen to pass through. The air is introduced into the tower at high pressure (typically 5-10 bar). At this pressure, oxygen, carbon dioxide, and water vapor molecules adhere to the surface of the adsorbent, while nitrogen molecules pass through and are collected as the product gas.

Desorption (Regeneration)
Once the adsorbent material in the tower becomes saturated with oxygen and other adsorbed gases, the tower is depressurized. This is called the desorption phase. The reduction in pressure causes the adsorbed gases to desorb (detach) from the adsorbent material and be vented out of the system. The adsorbent material is regenerated and ready for another cycle of adsorption.

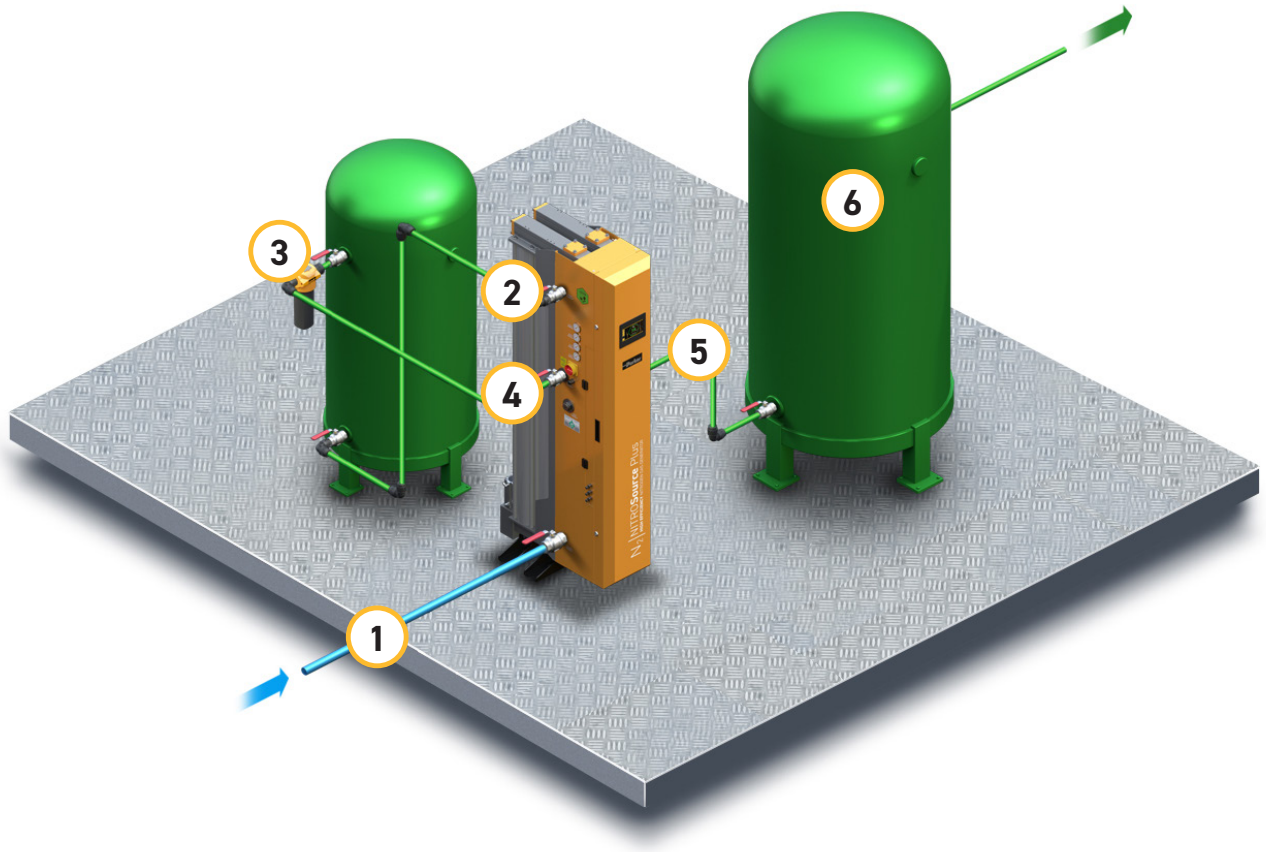
Switching Between Towers
The PSA system typically uses two or more adsorption towers that operate in alternating cycles. While one tower is in the adsorption phase, the other is in the desorption (regeneration) phase. An automatic control system manages the switching between towers, ensuring a continuous flow of nitrogen gas.

Nitrogen Collection and Delivery
The purified nitrogen gas is collected in a buffer tank to ensure a steady supply and consistent pressure. The nitrogen gas can then be delivered to the point of use, such as for industrial applications, food packaging, or other processes requiring high-purity nitrogen.

Overall, a PSA nitrogen gas generator is an efficient and reliable method for producing high-purity nitrogen gas from compressed air, using the principles of pressure swing adsorption to separate nitrogen from other components in the air.

SYSTEM OVERVIEW

Parker NITROSource Plus Nitrogen gas generators operate using the Pressure Swing Adsorption (PSA) principle to produce a reliable and continous flow of Nitrogen gas at various purities, pressures and flow rates depending on the speification of the application the generator is sized for. The nitrogen generation process is a



1 **Compressed Air Inlet**
ISO 8573-1:2010 Class 2.4.1

2 **Connection To Buffer Vessel**

3 **Buffer Vessel Dry Particulate Filter**

4 **Connection From Buffer Vessel**

5 **Nitrogen Outlet Connection**

6 **Nitrogen Storage Vessel**

*** Important Note**

Every NITROSource Plus model has a recommended buffer vessel size, this buffer vessel should be sized correctly based on manufacturers recomendations. Use of a smaller vessel my result in reduction in outlet pressure or deviations in outlet gas purity.

MODEL NUMBERS

NSP-020

NSP-030

NSP-040

NSP-050

NSP-060

NSP-070

NSP-080

NSP-090

NSP-100

NSP-110

NSP-120

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATION

Operating Parameters		
Minimum Inlet Air Quality	ISO 8573-1: 2010 Class 2.4.1	
Minimum Operating Pressure	5.0 bar(g)	72.5 psi(g)
Maximum Operating Pressure	13.0 bar(g)	188.5 psi(g)
Design Pressire	15.0 bar(g)	217.5 psi(g)
Minimum Operating Temperature	5.0˚C	41.0˚F
Maximum Operating Temperature	50.0˚C	122.0˚F

Electrical Parameters	
Supply Voltage	100-240V AC (±10%) 50/60Hz
Power Consumption	100W
Overvoltage Category	II

Environmental Parameters		
Humidity	50% @ 40^{0}C (80% @ Max ≤31^{0}C)	
Pollution Degree *	2	
Altitude	< 2000 m	< 6562 ft
IP Rating	IP32	NEMA 2
Peak Noise Level (@7.0bar(g))	~105 dB (C)	
Average Noise Level (@7.0bar(g))	~80 dB (A)	

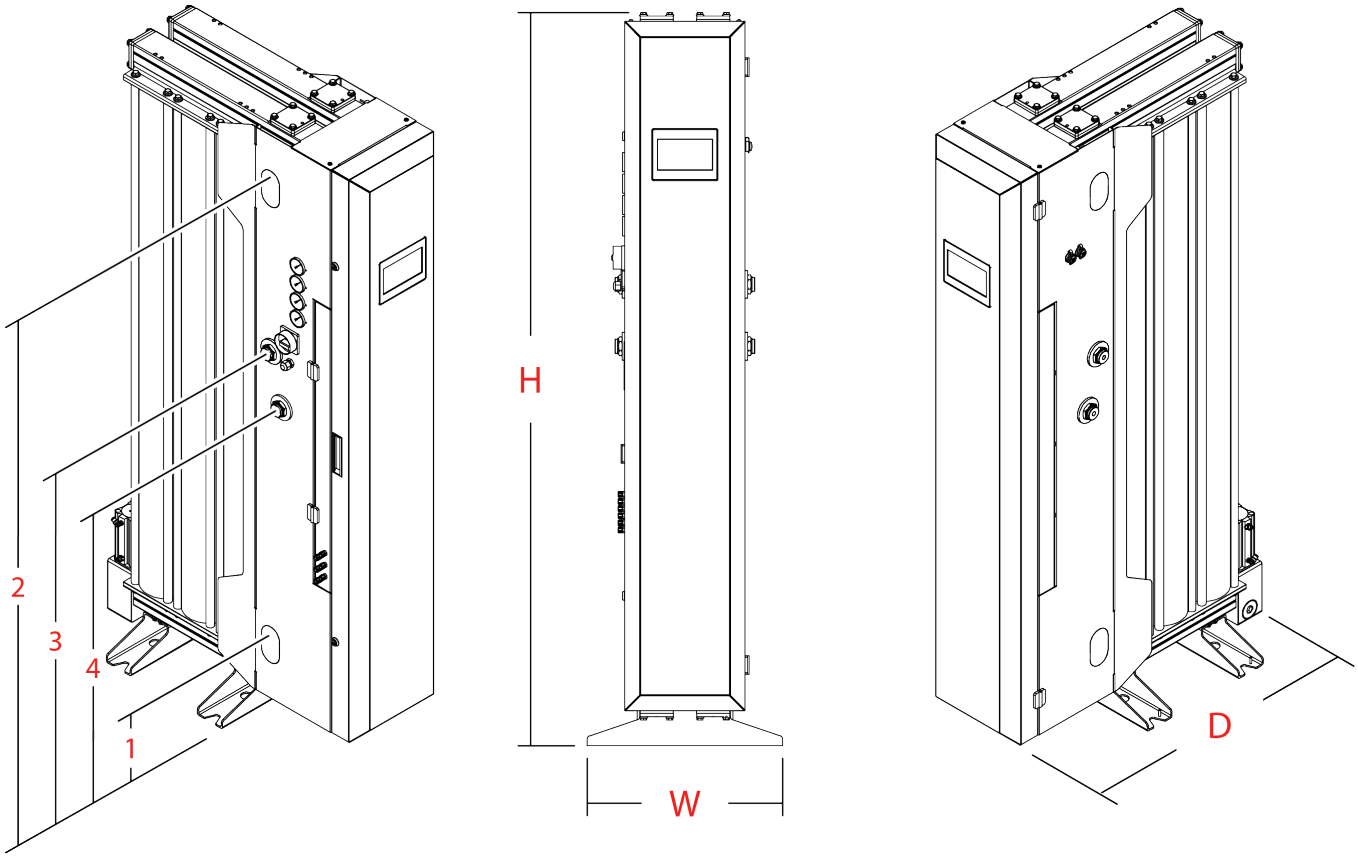
* Pollution Degree 2 indicates that in order for this equipment to operate safely, only non-conductive pollution (i.e. solids, liquids or ionised gases) or temporary condensation may be present within the environment.

Purity Ranges	
Ultra High Purity	5ppm, 10ppm & 50ppm
High Purity	100ppm, 250ppm, 500ppm & 1000ppm (0.1%)
Low Purity	0.5%, 1.0%, 2.0% & 3.0%

Recommended Buffer Bessel Sizes		
NSP-020	270 Litres	71 Gallon
NSP-030	500 Litres	132 Gallon
NSP-040	500 Litres	132 Gallon
NSP-050	1000 Litres	264 Gallon
NSP-060	1000 Litres	264 Gallon
NSP-070	1000 Litres	264 Gallon
NSP-080	1500 Litres	396 Gallon
NSP-090	1500 Litres	396 Gallon
NSP-100	1500 Litres	396 Gallon
NSP-110	1500 Litres	396 Gallon
NSP-120	2000 Litres	528 Gallon

Filtration Performance	
Filter Included	AOPX030GGMX
Filtration Type	Dry Particulate
Particle Reduction	Down to 1 micron
Filtration Efficiency	99.925%

WEIGHTS AND DIMENSIONS



Model	Height (H)		Width (W)		Depth (D)		Air Inlet (1)		To Buffer (2)		From Buffer (3)		N_2 Outlet (4)		Weight	
	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	kg	lbs
NSP-020	2063	81.2	550	21.6	883	34.7	256	10.1	1878	73.9	1298	51.1	1124	44.3	335	738
NSP-030	2063	81.2	550	21.6	1052	41.4	256	10.1	1878	73.9	1298	51.1	1124	44.3	429	945
NSP-040	2063	81.2	550	21.6	1221	48.1	256	10.1	1878	73.9	1298	51.1	1124	44.3	522	1150
NSP-050	2063	81.2	550	21.6	1390	54.7	256	10.1	1878	73.9	1298	51.1	1124	44.3	615	1355
NSP-060	2063	81.2	550	21.6	1559	61.3	256	10.1	1878	73.9	1298	51.1	1124	44.3	710	1565
NSP-070	2063	81.2	550	21.6	1728	68.0	256	10.1	1878	73.9	1298	51.1	1124	44.3	805	1774
NSP-080	2063	81.2	550	21.6	1897	74.6	256	10.1	1878	73.9	1298	51.1	1124	44.3	897	1977
NSP-090	2063	81.2	550	21.6	2028	79.8	256	10.1	1878	73.9	1298	51.1	1124	44.3	988	2178
NSP-100	2063	81.2	550	21.6	2194	86.3	307	12.1	1827	71.9	1298	51.1	1124	44.3	1104	2433
NSP-110	2063	81.2	550	21.6	2360	92.9	307	12.1	1827	71.9	1298	51.1	1124	44.3	1197	2638
NSP-120	2063	81.2	550	21.6	2526	99.4	307	12.1	1827	71.9	1298	51.1	1124	44.3	1292	2848

PRODUCT APPROVALS COMPLIANCE AND EXEMPTIONS

Region / Country	Directive	Standards Used	Additional Information
United Kingdom & Europe	PED 2014/68/EU	Generally in accordance with ASME VIII Div 1 : 2010 + 2011a Addenda.	PED Modules Used Module B + D
			PED Certificate Number 50351
			PED Number: 0525 -PED-DE-50351/1-Mod-D-1 LRQA Deutschland GmbH, Curienstrabe 1, D-20095 Hamburg, Deutschland
	LVD 2014/35/EU	EN 61010-1 : 2010	
	EMC 2014/30/EU	EN IEC 61326-1:2021 & EN 61326-1:2013	
		EN 61000-3-2:2019 +A1:2021	
		EN 61000-3-3:2013 +A1:2019 +A2:2021	
	RoHS 2011/65/EU		
Australia	Australian Standard	AS1210:2010	
	RCM	EN 61326-1 accepted by AMCA as meeting EMC requirement	
Singapore	MOM	Generally in accordance with ASME VIII Div 1 : 2023.	
United States of America	ASME	Generally in accordance with ASME VIII Div 1 : 2023.	
	UL		
	FCC	CFR 47 Part 15B	

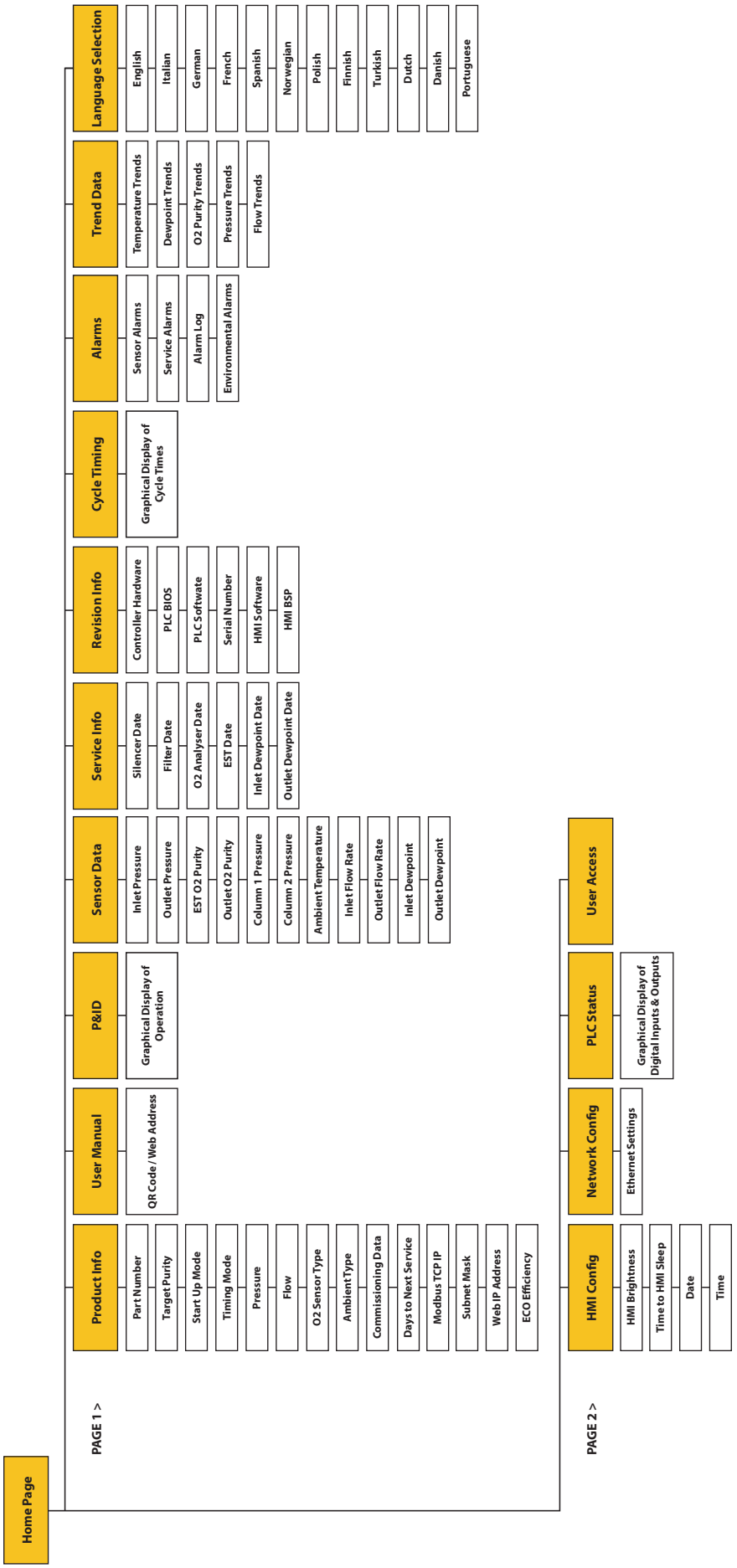
Safety and Electromagnetic Compatibility
This equipment has been tested and complies with the following Standards:

EN 61010_1:2010 + A1:2019
Safety requirements for electrical equipment for measurement, control and laboratory use.

APPROVALS, ACCREDITATIONS AND ASSOCIATIONS

HMI MENUS & SCREENS (USER LEVEL ACCESS)

USER ACCESS SOFTWARE MENU MAP



MENU MAP BREAKDOWN

Power on Splash Screen

Upon power up, the splashscreen will be displayed for 30 seconds before showing the **HOMEPAGE**

HOMEPAGE

Standby Screen

The buttons on the HOMEPAGE are identified below:

HOME Button

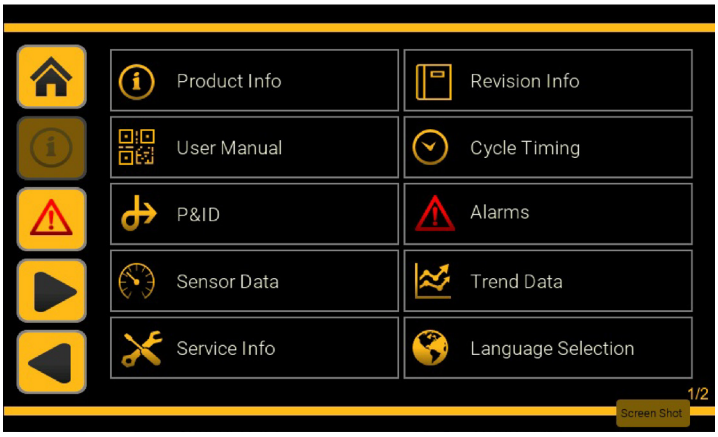
INFORMATION Button

ALARMS Button

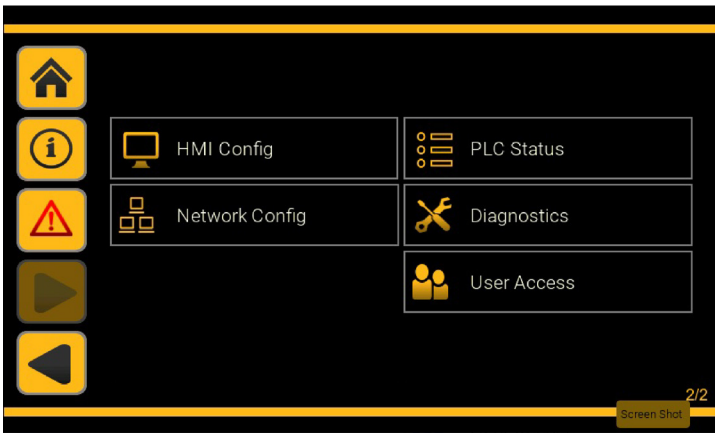
START Button

STOP Button

Pressing the **INFORMATION** button will bring up the following menu page.



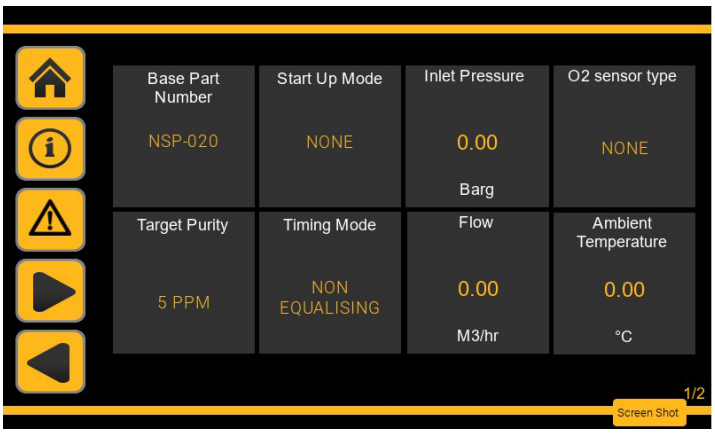
Pressing the **RIGHT** button will move you to the next page



Pressing the **LEFT** button will return you to the previous page, in this case back to Page 1

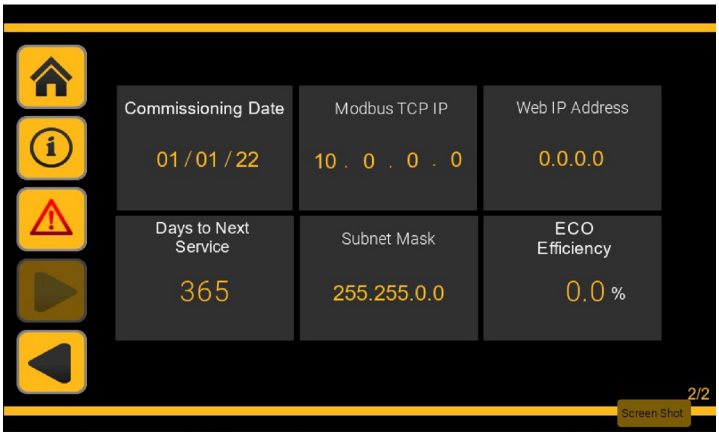
Pressing the **PRODUCT INFO** button will bring up the following menu page.

Product Info Page 1 (Read Only)
This page contains information regarding the configuration of the product.



Pressing the **RIGHT** button will move you to the next page

Product Info Page 2 (Read Only)
This page contains information regarding the commisioning, service and communications.



Pressing the **LEFT** button once will return you to the previous page, pressing twice will return you to the main menu.

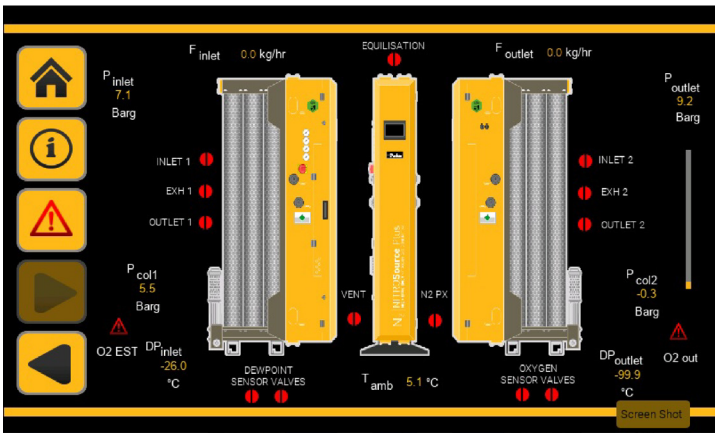
Pressing the **USER MANUAL** button will bring up the following menu page.

User Manual Page 1 (Read Only)
This page contains the product QR code which can be scanned with a smart phone and will direct you to the correct product page on Parker.com containing the user manual.

Pressing the **LEFT** button once will return you to the previous page, pressing twice will return you to the main menu.

Pressing the **P&ID** button will bring up the following menu page.

P&ID Page 1 (Read Only)
This page contains a graphical representation showing real-time operation and sensor data.



Pressing the **LEFT** button once will return you to the main menu.

Important Notes:

- The image above has all the optional sensors enabled
- If an optional sesnor is not fitted/enabled within the software then it will not be displayed on this page.
- Depending on the configuration of your generator, some sensor data may not be displayed depending on what is enabled/disabled.

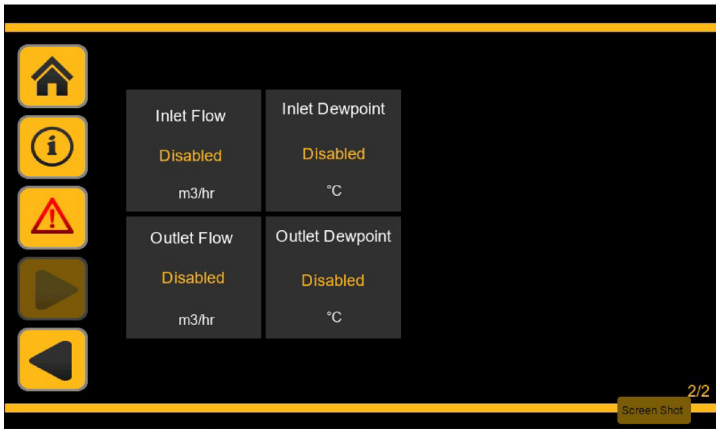
Pressing the **SENSOR DATA** button will bring up the following menu page.

Sensor Data Page 1 (Read Only)
This page contains real-time data fromall the factory fitted sensors. If an optional sensor such as EST is not fitted/enabled then no reading will be displayed and "Disabled" will appear under that section.

Pressing the **RIGHT** button will move you to the next page

Important Note: Each section can be toggled to display the reading in different units such as bar(g) and psi(g) or °C and °F.

Sensor Data Page 2 (Read Only)
This page contains real-time data from both inlet and oultet flow meters and inlet and outlet dewpoint sensors. If any of the optional sensors are not fitted/ enabled then no reading will be displayed and "Disabled" will appear under each section.



Pressing the **LEFT** button once will return you to the previous page, pressing twice will return you to the main menu.

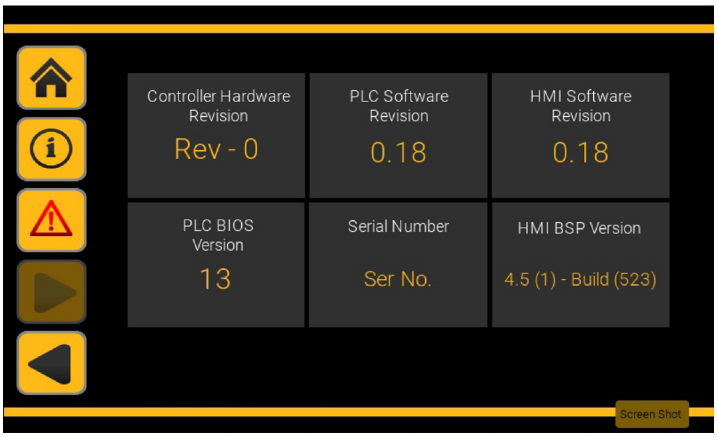
Pressing the **SERVICE INFO** button will bring up the following menu page.

Service Info Page 1 (Read Only)
This page contains service countdown for each servicable part. Each section can show last service date or days remaining to next service.

Pressing the **LEFT** button once will return you to the main menu.

Pressing the **REVISION INFO** button will bring up the following menu page.

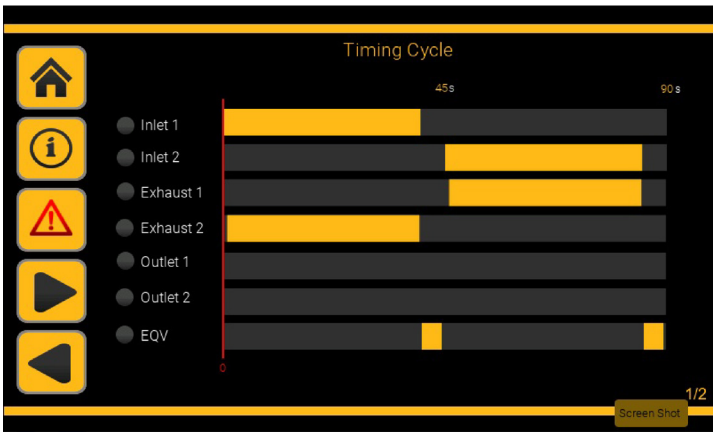
Revision Info Page 1 (Read Only)
This page contains the PLC and HMI software revision information as well as the generator serial number.



Pressing the **LEFT** button once will return you to the main menu.

Pressing the **CYCLE TIMING** button will bring up the following menu page.

Cycle Timing Page 1 (Read Only)
This page contains a graphical overview of the cycle timing process and which valves are directly actived/ deactived

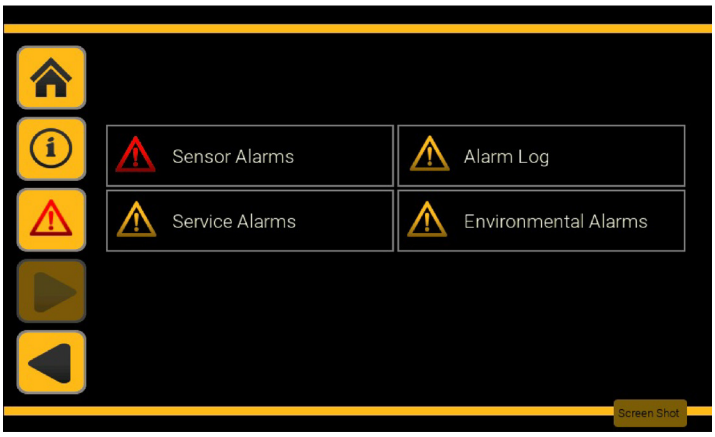


Pressing the **LEFT** button once will return you to the main menu.

Pressing the **ALARMS** button will bring up the following menu page.

Alarms Sub Menu (Read Only)

Important: An active alarm is indicated by a red warning triangle



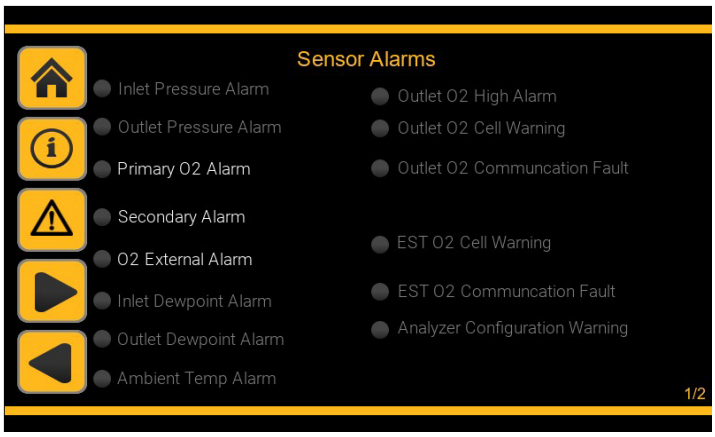
Pressing the **LEFT** button once will return you to the main menu.

Pressing the **SENSOR ALARMS** button will bring up the following menu page.

Sensor Alarms (Read Only)
This page contains real-time display of all the sensor alarms.

Yellow = Alarm Low Limit
Red = Alarm High Limit

Pressing the **LEFT** button once will return you to the Alarms sub menu.

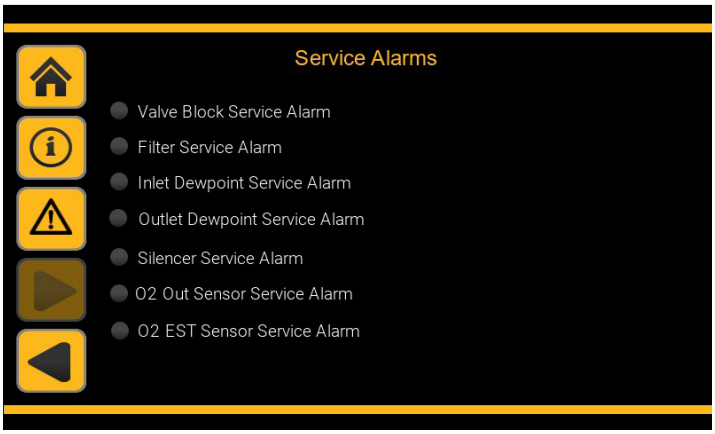


Pressing the **SERVICE ALARMS** button will bring up the following menu page.

Service Alarms (Read Only)
This page contains real-time display of all the service alarms.

Yellow = Service Imminent
Red = Service Overdue

Pressing the **LEFT** button once will return you to the Alarms sub menu.



Pressing the **ALARM LOG** button will bring up the following menu page.

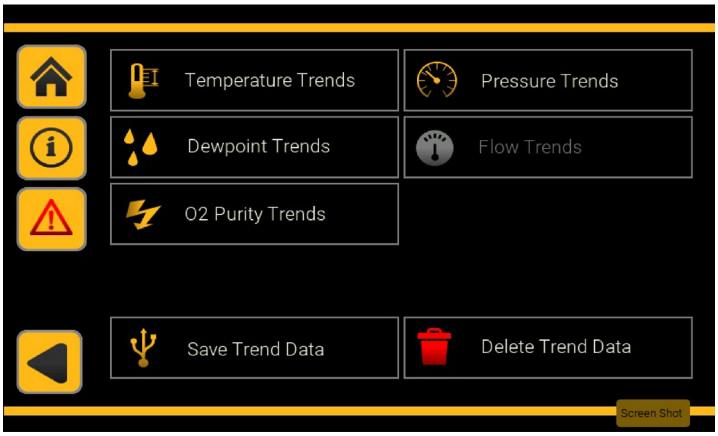
Alarm Log
This page contains a history of all alarm events. These can be reviewed by the user on the HMI or saved to a USB drive and then viewed on a PC.

Alarm logs are saved to USB in .csv format.

Pressing the **LEFT** button once will return you to the Alarms sub menu.

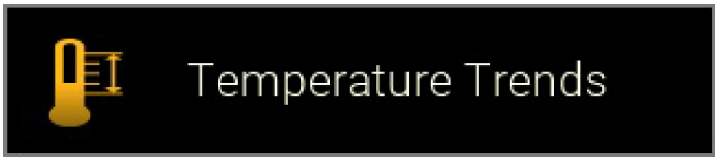
Pressing the **TREND DATA** button will bring up the following menu page.

Trend Data Sub Menu

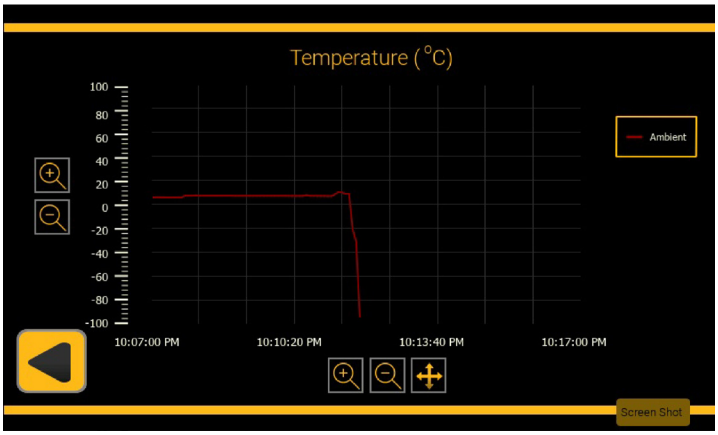


Pressing the **LEFT** button once will return you to the main menu.

Pressing the **TEMPERATURE TRENDS** button will bring up the following menu page.



Temperature Trends
This page contains the real-time and historical ambient temperature trend data.



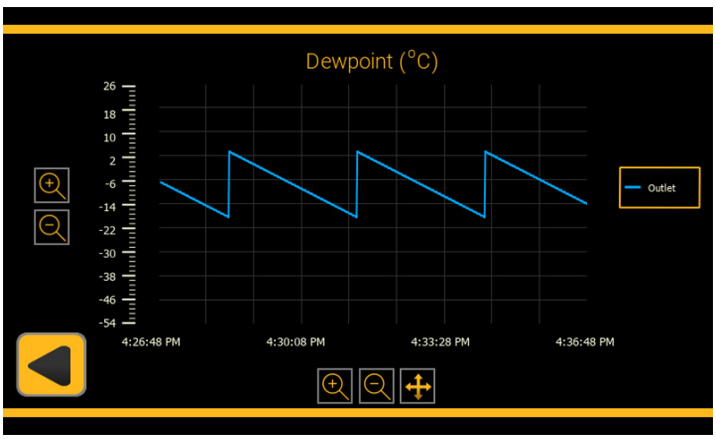
Pressing the **LEFT** button once will return you to the main menu.

Pressing the **DEWPOINT TRENDS** button will bring up the following menu page.

Dewpoint Trends
This page contains the real-time and historical inlet and/or outlet dewpoint trend data.

Important Note: If the Inlet or Outlet Dewpoint Sensor option(s) are not fitted/enabled you will not be able to access the dewpoint trends.

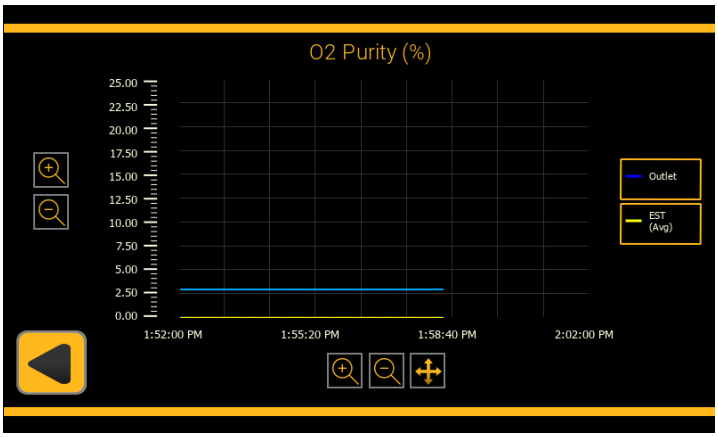
Pressing the **LEFT** button once will return you to the main menu.



Pressing the **O2 PURITY TRENDS** button will bring up the following menu page.

O2 Purity Trends
This page contains the real-time and historical O2 purity trend data for both outlet and EST (If option is fitted).

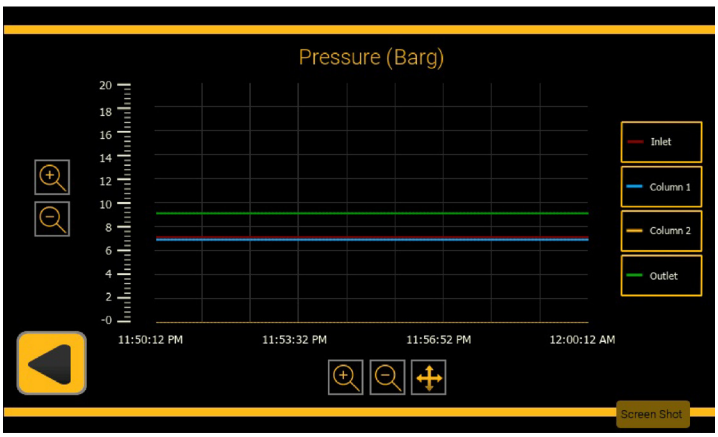
IMPORTANT NOTE: If the generator is fitted with a Zirconia sensor, you may see some sporadic readings due to low end sensitivity of the sensor.
(See page 22 for manufacturers recommendation)



Pressing the **LEFT** button once will return you to the main menu.

Pressing the **PRESSURE TRENDS** button will bring up the following menu page.

Pressure Trends
This page contains the real-time and historical inlet, outlet and column pressure trend data.

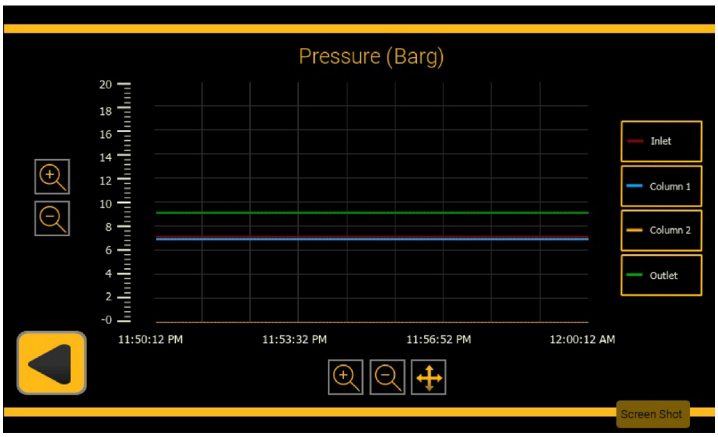


Pressing the **LEFT** button once will return you to the main menu.

Pressing the **FLOW TRENDS** button will bring up the following menu page.

Flow Trends
This page contains the real-time and historical inlet and outlet flow trend data.

Important Note: If the Inlet or Outlet flow Sensor option(s) are not fitted/enabled you will not be able to access the flow trends.

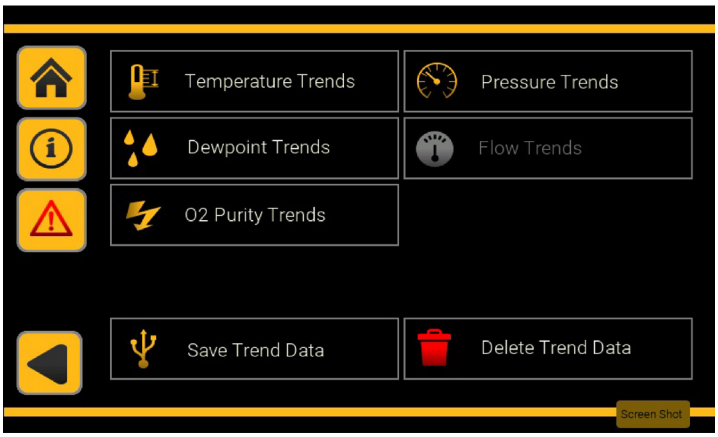


Pressing the **LEFT** button once will return you to the main menu.

Pressing the **INSERT USB DRIVE** button will have no effect until a USB drive is inserted.

Inserting a USB drive will change the **INSERT USB DRIVE** to **SAVE TREND DATA**.

Pressing the **SAVE TREND DATA** button will save all trend data to the USB drive.

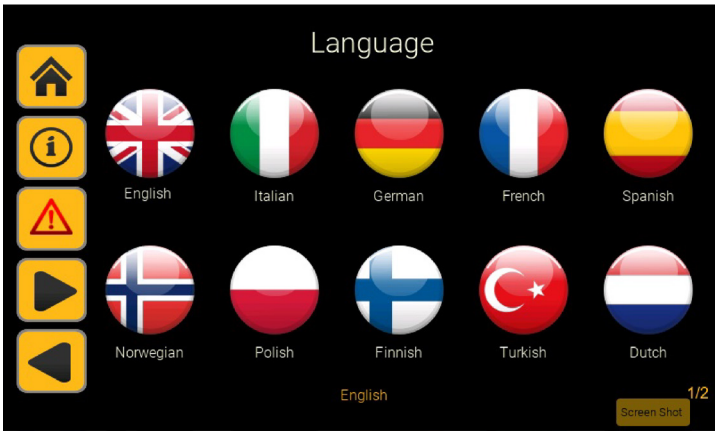


Pressing the **LEFT** button once will return you to the main menu.

Pressing the **DELETE TREND DATA** button will illuminate the button whilst all stored data is deleted.

Pressing the **LANGUAGE SELECTION** button will bring up the following menu page.

Language Selection Page 1
This page contains the various languages which can be selected.



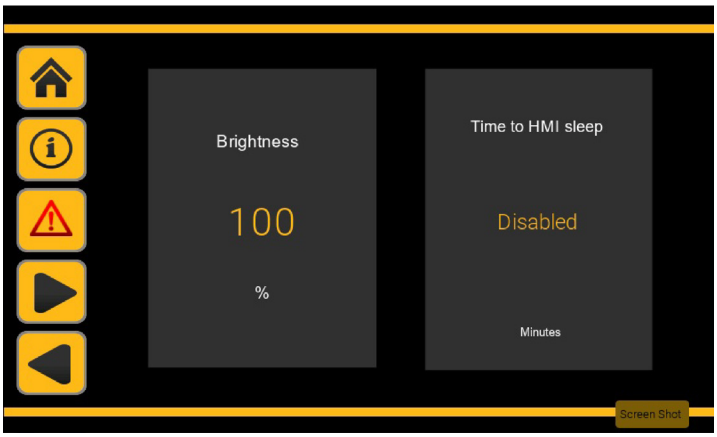
Pressing the **LEFT** button once will return you to the main menu.

Language Selection Page 2
This page contains the various languages which can be selected.

Pressing the **LEFT** button once will return you to the previous page, pressing twice will return you to the main menu.

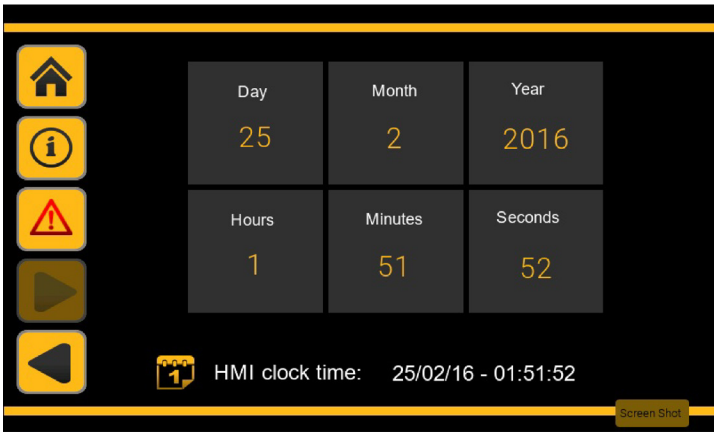
Pressing the **HMI CONFIG** button will bring up the following menu page.

HMI Config Page 1
This page contains the adjustment for HMI brightness and the time before the HMI screen goes to sleep.



Pressing the **LEFT** button once will return you to the main menu.

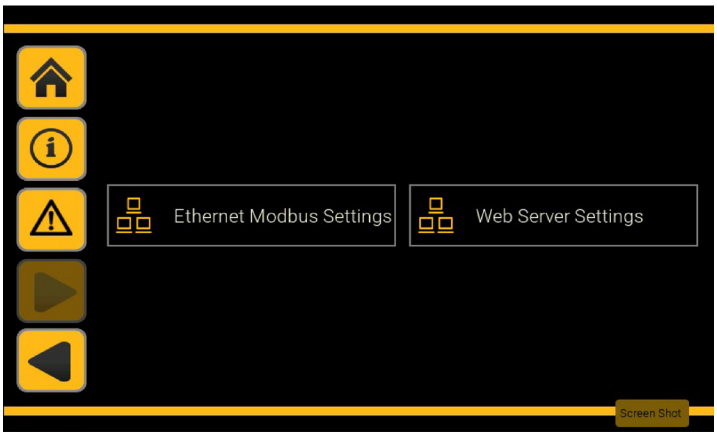
HMI Config Page 2
This page contains the date and time settings used in the HMI.



Pressing the **LEFT** button once will return you to the previous page, pressing twice will return you to the main menu.

Pressing the **NETWORK CONFIG** button will bring up the following menu page.

Network Config Page 1
This page contains the Ethernet settings. From here you can adjust the Modbus TCP/IP settings and network adapter aparameters.

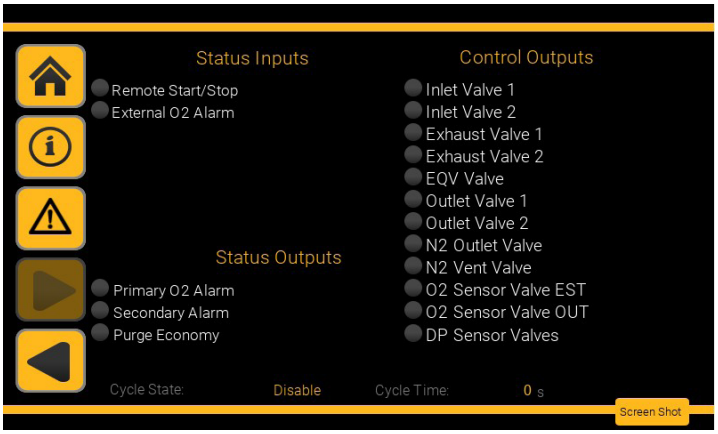


Pressing the **LEFT** button once will return you to the main menu.

Pressing the **PLC STATUS** button will bring up the following menu page.

PLC Status
This page contains a visual representation of each digital input and output from the PLC.

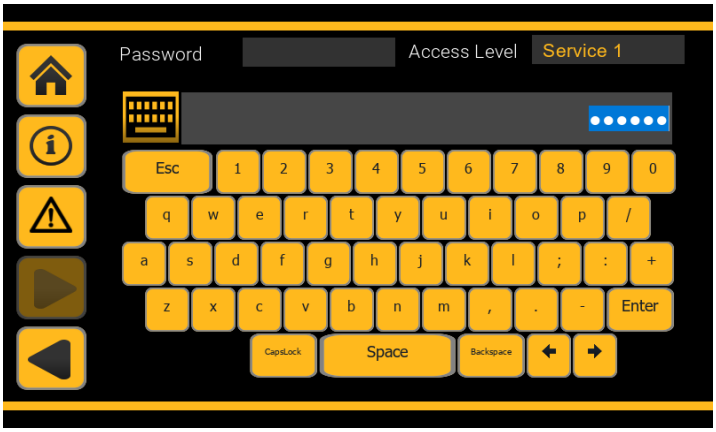
An active input is represented by a solid green light.



Pressing the **LEFT** button once will return you to the main menu.

Pressing the **USER ACCESS** button will bring up the following menu page.

User Access
This page provides a service engineer with access to commissioning & setup sub menus and is not required by an end user. Access to these menus requires a service level password.



Pressing the **LEFT** button once will return you to the main menu.

Important Note: This level provides access to menus that can have a direct impact on the operation and performance. Only trained service personnel should access this level

Home Page - Standby

Generator in standby mode and not cycling.

Pressing the 'Start' button will activate the gas generation cycle. On the first start-up you must complete the commissioning checklist to be able to start the machine.

Pressing the **LEFT** button once will return you to the main menu.

Home Page - Standard Cycling

Generator operating normally

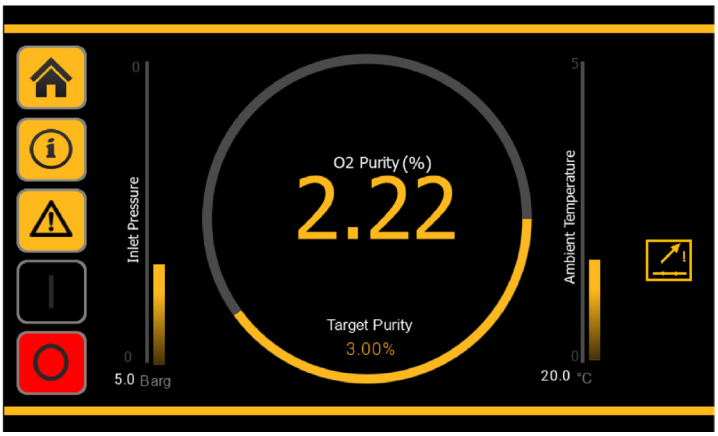
Yellow circle highlights position in gas generation cycle

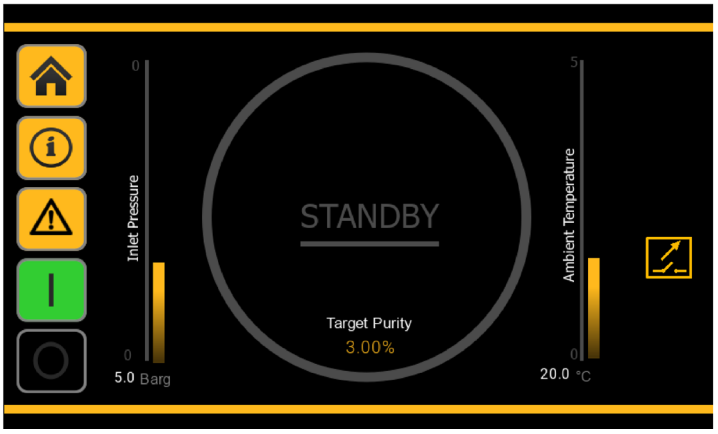
Remote Start/Stop

The symbol below can be shown in two states, open circuit which denotes the generator has been remotely stopped and is in standby.

Alternatively the symbol shows a closed circuit which denoted the generator is remotely started and is under normal operation.

All generators have the ability to start and stop their operation remotely. This requires a remote connection, either by a dedicated hard wired connection to the start / stop connections or via RJ45 MODBUS TCP/IP connection.

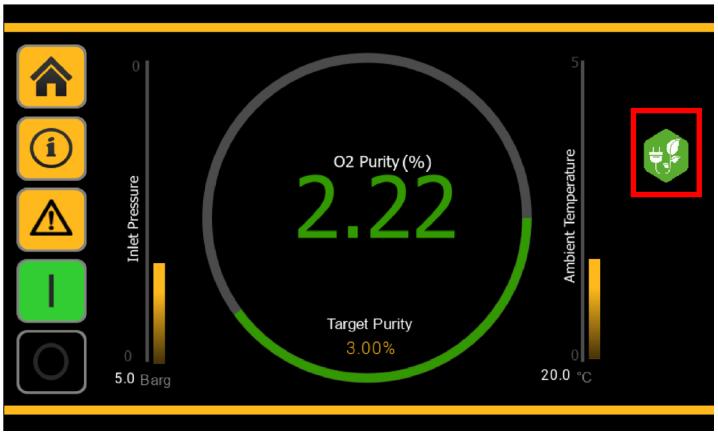




Optional - Energy Saving Technology (EST)

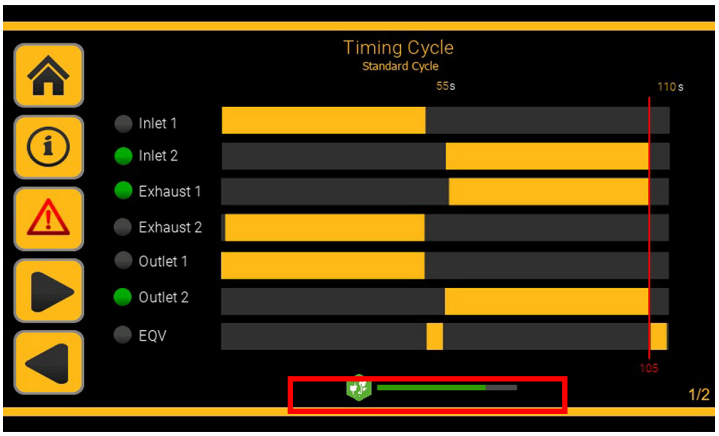
STATUS: Generator Operating Normally, EST Energy Saving Mode Active

When the above symbol is shown on the screen, the generator is operating in an extended cycle. During this period, less energy is consumed.



Note: The green circle (Cycle Position Indicator) denotes generator in EST energy saving mode and highlights position in extended cycle.

Pressing the INFORMATION button then CYCLE TIMING button will show position in cycle and status of valves.



Once EST is active, the generator will remain in Energy Saving Mode until either the outlet Purity or EST purity reaches the pre-determined set point at which point the columns will change over. Other fetures such as Economy do have priority over EST and will result in EST deactivation if active.

Important Notes:

- When the EST is active, the cycle can be extended from 55 seconds up to 250 seconds (depending on purity).
- When in EST Extended cycle, the timing bars for Inlet 1 / Inlet 2 will show green.

Economy

Generator In Standby, Economy Shutdown Mode Active

The symbol above can be shown in two colours, amber and green. Amber denotes the generator is still online, operating,but the outlet/process valve is closed due to no demand (high outlet pressure). Green denotes the generator is offline, in standby due to no demand (high outlet pressure)

If the generator is online and under normal operation, the outlet pressure is continuously measured to determine demand from the generator. If the pressure remains less than the setpoint the generator will continue to operate under normal operating parameters. If the outlet pressure is equal too or greater than the setpiont, this denotes low or no demand on the system. The Advanced Controller will then begin a countdown and providing the outlet pressure remains equal too or greater than the setpoint for 5 minutes, the outlet/process valve will close to preserve energy and gas, this is classified as Economy Stage 1. If at any point during this first 5 minute period should the outlet pressure drop below the setpoint, the timer will reset to 0 and the outlet/process valve will open.

Once Economy Stage 1 is complete, an additional countdown begins and providing the outlet pressure remains equal too or greater than the setpoint for a further 5 minutes, the generator will shutdown and enter standby to reduce energy/air consumption, this is classified as Economy Stage 2 or Economy Shutdown. If at any point during this second 5 minute period should the outlet pressure drop below the setpoint, both timers will reset to 0 and the outlet/process valve will open. If the generator has entered Economy Shutdown and the outlet pressure were to drop below the setpoint, then the generator will will automatically re-start.

EXTERNAL CONNECTIVITY

WEBSERVER CONNECTION

The NITROSource Plus units have the ability to provide simultaneous remote communications via a Webserver and / or MODBUS TCP/IP.

The Webserver connection is provided by the HMI touch screen and requires connection to a Local Area Network (LAN) using an RJ45 Ethernet connection located on the side of the generator.

Connecting to the Generator

Located on the left side of the process enclosure you can find two RJ45 Ethernet ports, one dedicated to Webserver and the other for Modbus TCP/IP communications.

- Connect a suitable Ethernet to Local Area Network
- Route the Ethernet cable to the generator
- Connect the Ethernet cable into the RJ45 port on the right of the process enclosure (circled in picture)
- The generator HMI touch screen is now electrically connected for the Webserver function
- A static IP address should be applied to the MODBUS communication channel in the controller software

Network Configuration

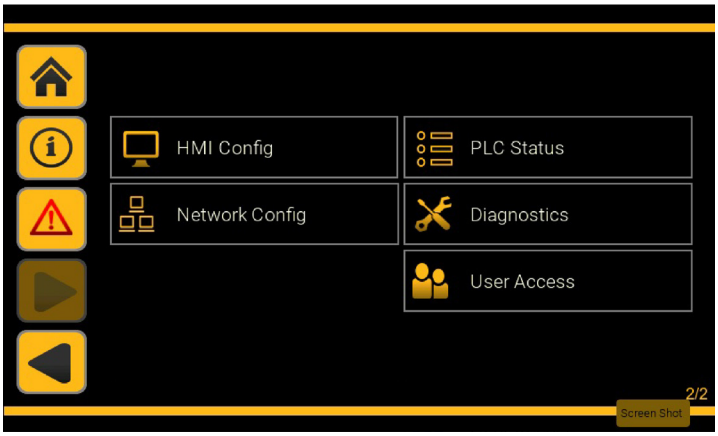
Access Level: User
Menu: Network Config
Sub Menu: Web Sever Settings

Software Activation

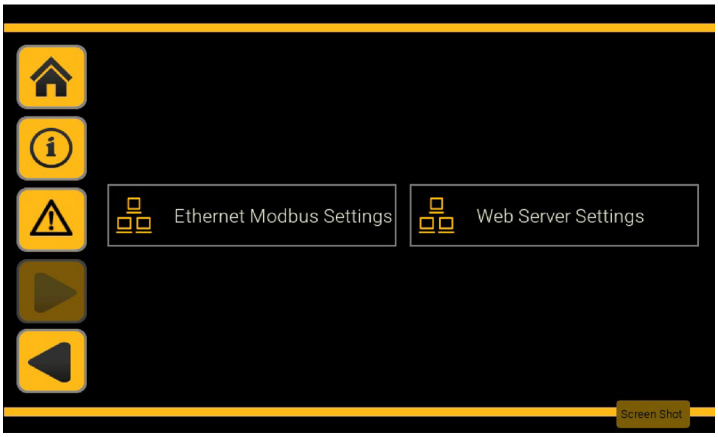
Access Level: User
Menu: Network Config
Sub Menu: Web Sever Settings

Enable the Inlet, Outlet Flow Rate Sensor or both. (Button toggles between Enabled and Disabled)

Once the sensor(s) has been enabled, the 4…20mA scaling must be set.



Press **Webserver Settings** button



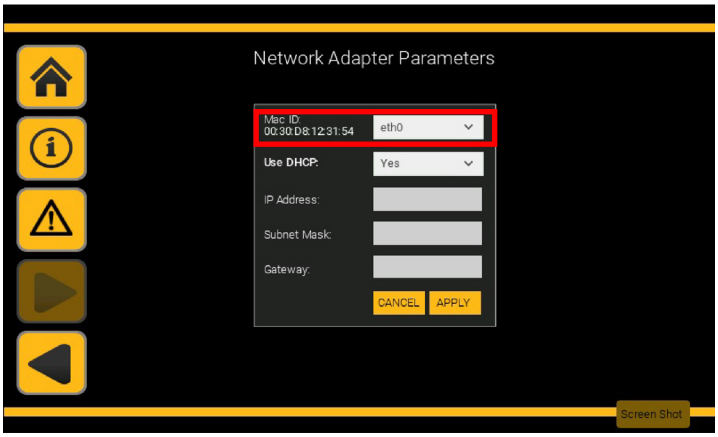
If you wish to use automatically generated settings, press **the drop down** button next to **Mac ID.**

Select **Auto** from the drop down menu.

The IP address, Subnet Mask and Gateway address will automatically populate itself.

Press **Apply**.

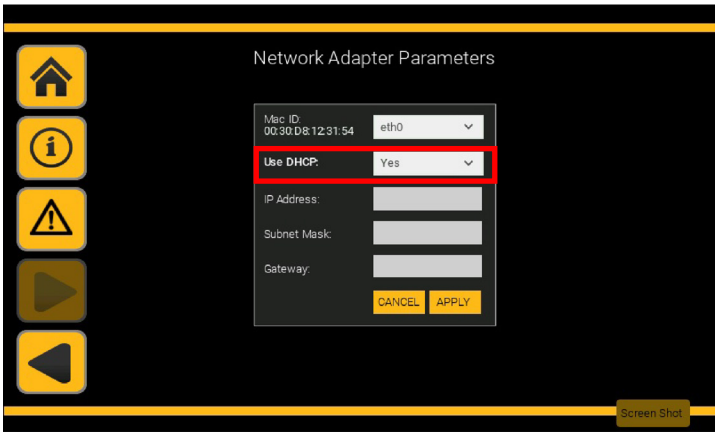
Note: You will need the IP Address to access Webserver.



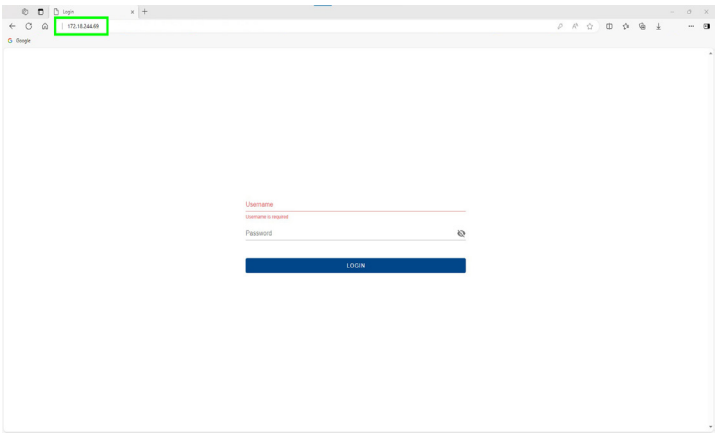
If you wish to manually enter your own settings, press **the drop down** button next to **Use DHCP.**

Select **No** from the drop down menu.

Enter your own IP address, Subnet Mask and Gateway address and press Apply.



ACCESSING WEBSERVER



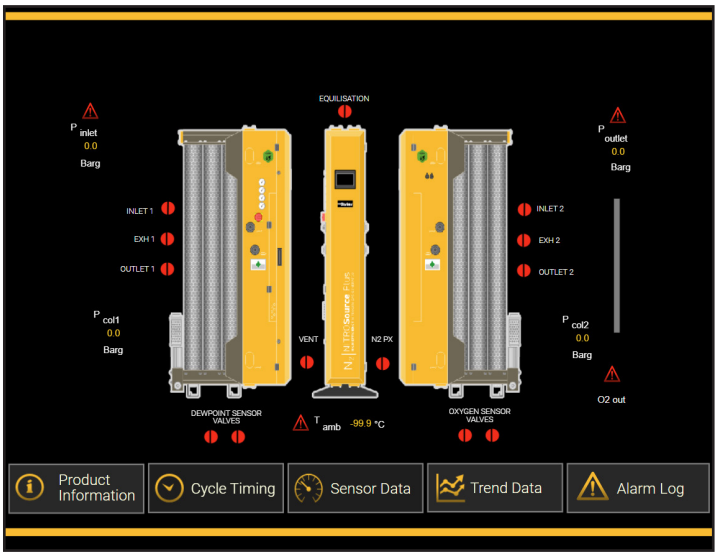
On a PC connected to the same LAN, open a web browser.

Enter the generators IP address into the browser bar

When prompted enter the username and password

Username: user

Password: PARKER-User24



Once connected to the Webserver, the P&ID will be displayed.

The P&ID will allow the user to view the current status of the generator including sensor data and valve position (open / closed).

The 5 tabs below the P&ID image will provide further information.

Clicking the **Product Info** tab will open the generator info Page 1.

This page will display:
Part Number
Start-up Mode
Operating Pressure
O2 Sensor Type
Target Purity
Timing Mode
Flow Rate
EST Efficiency
Controller Harware Revision
PLC Software Revision
HMI Software Revision
Serial Number

Clicking the Right Arrow will take the user to Dryer Info Page 2

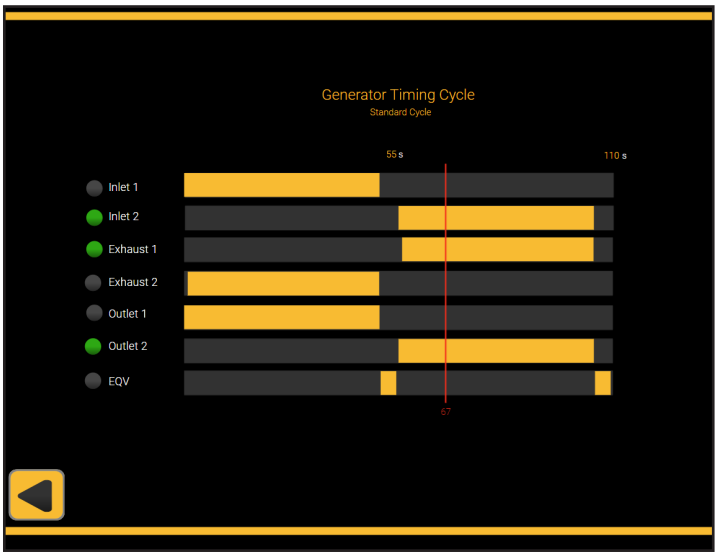
This page will display the service timers for each individual service requirement.

Note: Clicking on a box showing temperature will toggle between ˚C and ˚F and Clicking on a box showing pressure will toggle between bar(g) and psi(g).

Clicking the **Cycle Timing** tab will open the Cycle Timing page.

This page will display the position in the nitrogen generation cycle and indicate if a valve is open or closed.

The image shows the cycle timing page when in standard cycle.



Clicking the **Sensor Data** tab will open the Sensor Data page.

This page will display the real time values of any sensors fitted to the generator system.

As Standard, the nitrogen generators are fitted with:

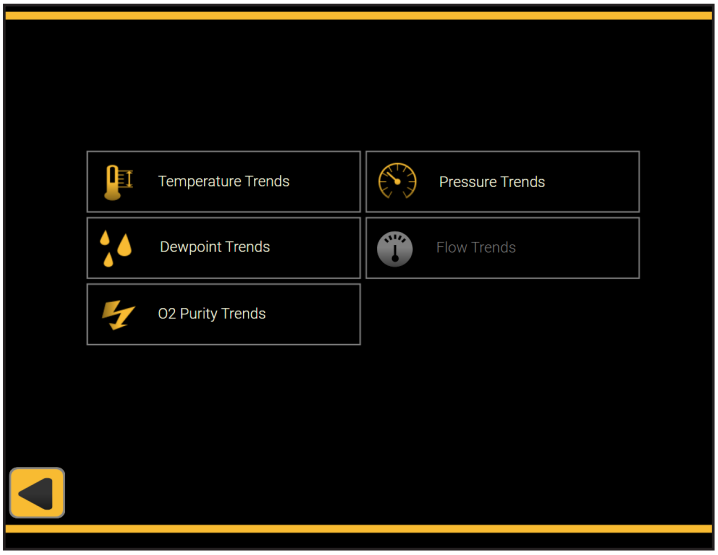
- Ambient Temperature Sensor
- Inlet Pressure Sensor
- Outlet Pressure Sensor
- Column 1 Pressure Sensor
- Column 2 Pressure Sensor
- Outlet O2 Sensor

Clicking the **Trend Data** tab will open the Trend Data page.

The trend data logs are available for:

- Temperature
- Pressure
- Dewpoint
- Flow
- O2 Purity

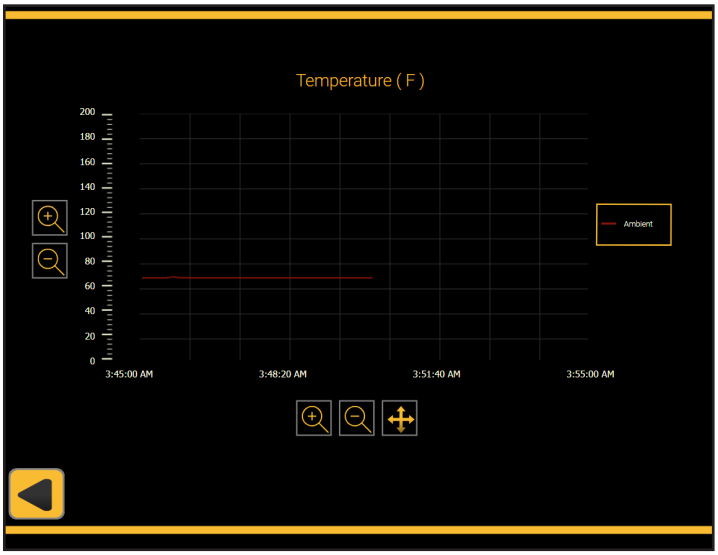
These can be viewed by clicking the required tab.



The Temperature Trends Tab will display a graph for all connected temperature sensors.

Standard Sensors

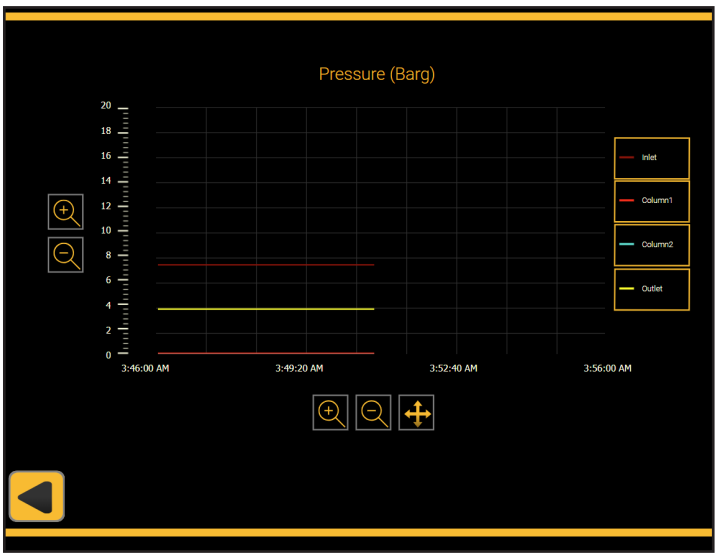
- Ambient Temperature



The Pressure Trends Tab will display a graph for all connected pressure sensors.

Standard Sensors

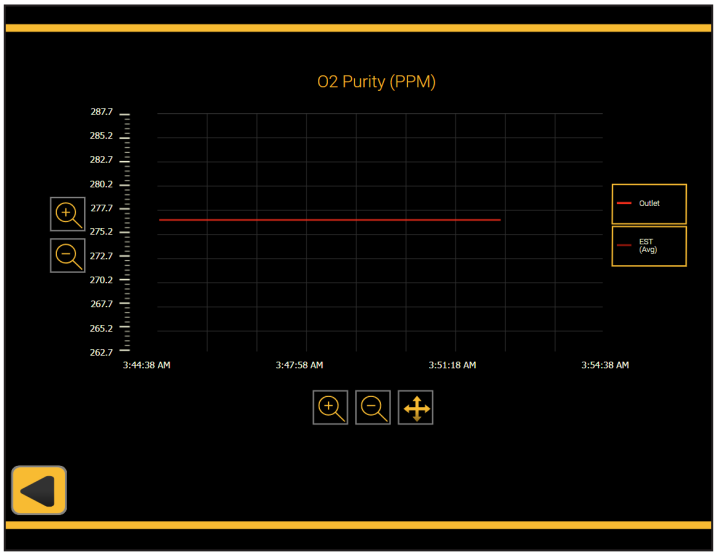
- Inlet Pressure
- Outlet Pressure
- Column 1 Pressure
- Column 2 Pressure



The Dewpoint Trends Tab will display a graph for the optional dewpoint sensors.

Optional Sensors

- Inlet Dewpoint
- Outlet Dewpoint



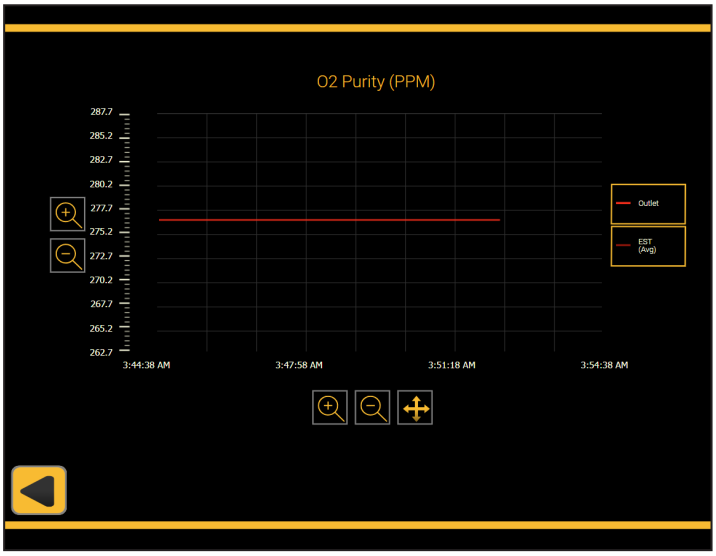
The O2 Purity Trends Tab will display a graph for the O2 Purity sensors.

Standard Sensor

- Outlet O2 Purity

Optional Sensors

- Energy Saving Technology (EST)



Clicking the Alarm Log Tab will open the Alarm Log page.

This page allows the user to view and download the generators alarm log.

MODBUS TCP/IP CONNECTION

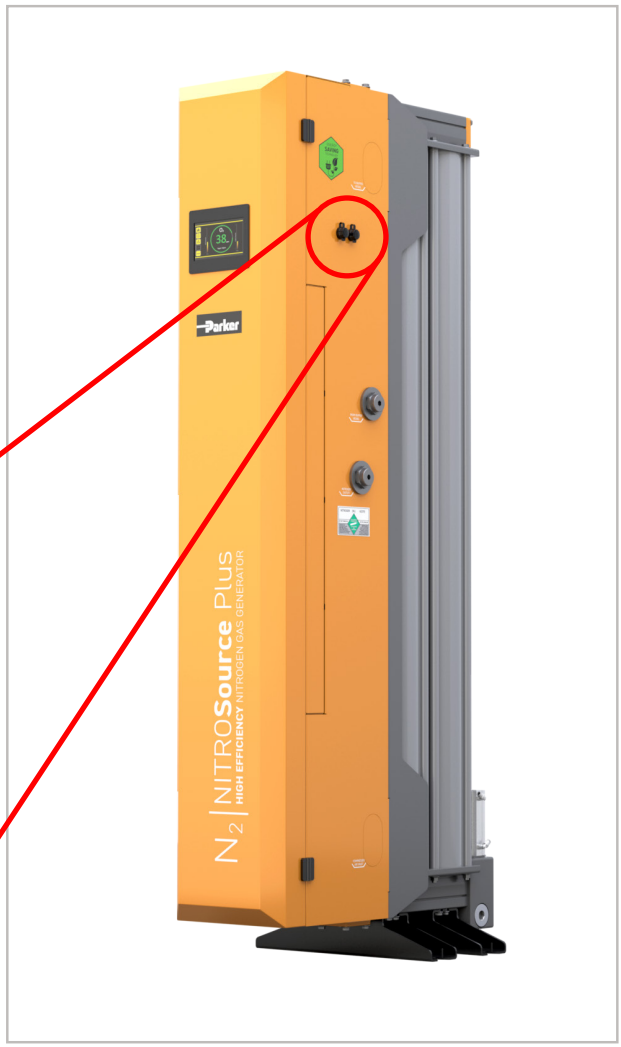
The NITROSource Plus units have the ability to provide simultaneous remote communications via a Webserver and / or MODBUS TCP/IP.

The Webserver connection is provided by the HMI touch screen and requires connection to a Local Area Network (LAN) using an RJ45 Ethernet connection located on the side of the generator.

Connecting to the Generator

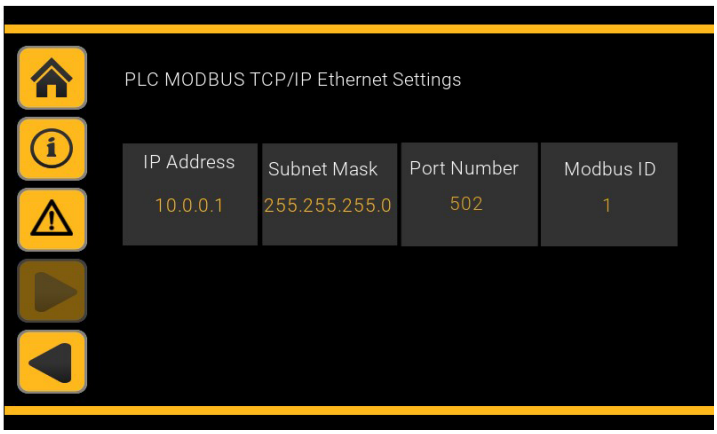
Located on the left side of the process enclosure you can find two RJ45 Ethernet ports, one dedicated to Webserver and the other for Modbus TCP/IP communications.

- Connect a suitable Ethernet to Local Area Network
- Route the Ethernet cable to the generator
- Connect the Ethernet cable into the RJ45 port on the right of the process enclosure (circled in picture)
- The generator HMI touch screen is now electrically connected for the Modbus TCP/IP function
- A static IP address should be applied to the MODBUS communication channel in the controller software



Network Configuration

Access Level: User
Menu: Network Config
Sub Menu: Web Sever Settings



Default MODBUS Settings - Software V1.0

Each unit (master & slaves) on the MODBUS network must have matching communication settings and a unique unit identification (ID). The default MODBUS settings for the NITROSource Plus controller are shown below.

MODBUS STRINGS			
Available via Controller Screen	**Variable Type**	**Read / Write Type**	**Modbus Address**
Machine Status	Boolean	Read Only	0896
Inlet Valve 1 Status	Boolean	Read Only	9158
Inlet Valve 2 Status	Boolean	Read Only	9159
Exhaust Valve 1 Status	Boolean	Read Only	9160
Exhaust Valve 2 Status	Boolean	Read Only	9161
Vent Valve Status	Boolean	Read Only	9166
Process / Outlet Valve Status	Boolean	Read Only	9165
Primary 02 Alarm Status	Boolean	Read Only	9171
Secondary General Alarm Staus	Boolean	Read Only	9172
Purge Economy Status	Boolean	Read Only	9173
External 02 Alarm Input Status	Boolean	Read Only	9153
EST Activation Status	Boolean	Read Only	9268
Economy Activation Status	Boolean	Read Only	9259
Inlet Pressure Reading	Real / Float	Read Only	9014
Outlet Pressure Reading	Real / Float	Read Only	9020
Column 1 Pressure Reading	Real / Float	Read Only	9016
Column 2 Pressure Reading	Real / Float	Read Only	9018
Ambient Temperature Reading	Real / Float	Read Only	9002
Inlet Dewpoint Reading	Real / Float	Read Only	9026
Outlet Dewpoint Reading	Real / Float	Read Only	9028
Inlet Flow Rate Reading	Real / Float	Read Only	9032
Outlet Flow Rate Reading	Real / Float	Read Only	9034
Outlet 02 Reading	Real / Float	Read Only	9000
EST 02 Reading	Real / Float	Read Only	8998
Model	String	Read Only	16384
Serial Number	String	Read Only	16395
Software Revision	String	Read Only	16385
Remote Start / Stop	Boolean	Write	9150

Default MODBUS Settings - Software V2.0

Each unit (master & slaves) on the MODBUS network must have matching communication settings and a unique unit identification (ID). The default MODBUS settings for the NITROSource Plus controller are shown below.

MODBUS STRINGS				
Available via Controller Screen	**Variable Type**	**Read / Write Type**	**Description**	**Modbus Address**
Unit Status	unsigned integer 16 bit	Read	Initialization (0 and 1), Standby (2 and 3), Startup (4 to 7), Running (8), Shut down (9 and 10), Fault (11)	8964
Generator O2 EST Purity	Float	Read	Generator O2 EST Purity in %	8994
Generator O2 Outlet Purity	Float	Read	Generator O2 Outlet Purity in %	9000
Generator Ambient temperature	Float	Read	Generator Ambient temperature (°C)	9002
Generator Inlet Pressure	Float	Read	Generator Inlet Pressure (barg)	9014
Column 1 Pressure	Float	Read	Column 1 Pressure Sensor (barg)	9016
Column 2 Pressure	Float	Read	Column 2 Pressure Sensor (barg)	9018
Generator Outlet Pressure	Float	Read	Generator Outlet Pressure (barg)	9020
Inlet Dewpoint	Float	Read	Inlet Dewpoint (°C)	9026
Outlet Dewpoint	Float	Read	Outlet Dewpoint (°C)	9028
Inlet Flow	Float	Read	Inlet Flow (m3/hr)	9032
Outlet Flow	Float	Read	Outlet Flow (m3/hr)	9034
EST O2 Cell Warning	unsigned integer 16 bit	Read	0 no fault, 2 EST O2 Cell Warning,1 EST O2 Communication Fault	9074
Outlet O2 High alarm	unsigned integer 16 bit	Read	0 no fault, 2 Outlet O2 High alarm	9075
Ambient Temp Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Low Ambient Temp Alarm, 2 high Ambient Temp Alarm	9076
Inlet Air Pressure Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Low inlet pressure alarm, 2 high inlet pressure alarm	9082
Outlet pressure alarm	unsigned integer 16 bit	Read	0 no fault, 1 Low outlet pressure alarm, 2 high outlet pressure alarm	9085
Inlet Dewpoint Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Inlet Dewpoint Alarm	9088
Outlet Dewpoint Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Low Outlet Dewpoint Alarm, 2 high Outlet Dewpoint Alarm	9089
Service Days	Float	Read	Days to next service	9093
Valve Block Service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Valve Block Service Warning, 2 Valve Block Service Fault	9105
Silencer Service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Silencer Service Warning, 2 Silencer Service Fault	9106
Filter Service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Filter Service Warning, 2 Filter Service Fault	9108
O2 Out Sensor Service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 O2 Out Sensor Service Warning, 2 O2 Out Sensor Service Fault	9109
Power On Time	Float	Read	Power On - Hours	9110
Operating Time	Float	Read	Operating Time - Hours	9112

MODBUS STRINGS				
Available via Controller Screen	**Variable Type**	**Read / Write Type**	**Description**	**Modbus Address**
Column 1 Regenerating Time	Float	Read	Column 1 Regenerating Hours	9114
Column 2 Regenerating Time	Float	Read	Column 2 Regenerating Hours	9116
Hours N2 Vent Register	Float	Read	Total Time Spent in Vent Mode Hours	9132
Time Spent in ECO Mode	Float	Read	Total Time Spent in ECO Mode Hours	9136
Time Spent in EST Mode	Float	Read	Total Time Spent in EST Mode Hours	9138
Remote start stop hardwire	Boolean	Read	0 stop, 1 start	9150
External O2 alarm	Boolean	Read	0 no alarm, 1 External O2 alarm active	9153
Inlet A valve status	Boolean	Read	Inlet A Valve 1 Open, 0 Closed	9158
Inlet B valve status	Boolean	Read	Inlet B Valve 1 Open, 0 Closed	9159
Exhaust A valve status	Boolean	Read	Exhaust A Valve 1 Open, 0 Closed	9160
Exhaust B valve status	Boolean	Read	Exhaust B Valve 1 Open, 0 Closed	9161
Equalisation valve status	Boolean	Read	Equalisation Valve 1 Open, 0 Closed	9162
N2 Outlet A valve status	Boolean	Read	N2 Outlet A Valve 1 Open, 0 Closed	9163
N2 Outlet B valve status	Boolean	Read	N2 Outlet B Valve 1 Open, 0 Closed	9164
Process Valve Status	Boolean	Read	Process Valve 1 Open, 0 Closed	9165
Vent Valve Status	Boolean	Read	Vent Valve 1 Open, 0 Closed	9166
Outlet O2 Cell valve status	Boolean	Read	Outlet O2 Cell Valve 1 Open, 0 Closed	9168
Primary alarm status	unsigned integer 16 bit	Read	0 no alarm, 1 Primary alarm active	9171
Secondary alarm status	unsigned integer 16 bit	Read	0 no alarm, 1 Secondary alarm active	9172
Purge Economy status	Boolean	Read	Purge Economy Valve 1 Open, 0 Closed	9173
Economy Status	Boolean	Read	0 Eco inactive, 1 ECO active	9259
EST Status	Boolean	Read	0 EST inactive, 1 EST active	9268
O2 EST Sensor Service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 O2 EST Sensor Service Warning, 2 O2 EST Sensor Service Fault	9379
Inlet dew point service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Inlet dew point service Warning, 2 Inlet dew point Service Fault	9380
Outlet dew point service Alarm	unsigned integer 16 bit	Read	0 no fault, 1 Outlet dew point service Warning, 2 Outlet dew point Service Fault	9381
Serial Number	String	Read	Unit Serial Number	9401
Outlet O2 Cell Warning	unsigned integer 16 bit	Read	0 no fault, 2 Outlet O2 Cell Warning	9421
Wrong O2 sensor type fitted	Boolean	Read	0 no fault, 1 EST O2 sensor type is different from the Outlet sensor	9422
Outlet O2 Communication alarm	unsigned integer 16 bit	Read	0 no fault, 2 Outlet O2 Communication Fault	9424
Inlet pressure sensor connection alarm	Boolean	Read	0 no alarm, 1 Inlet pressure sensor connection alarm active	9444
Remote start/stop	unsigned integer 16 bit	Write	Remote start stop (0 stop) (1 start)	16840

COMMISSIONING

During the commissioning, features will need to be Enabled / Disabled / Configured to suit the installation. Incorrect set up can lead to damage of the product, therefore this product must only be installed and commissioned by a Parker trained engineer.

IMPORTANT NOTES:

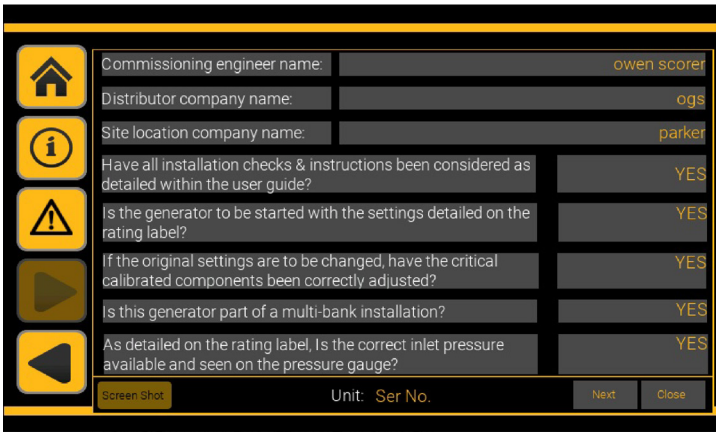
- Parker will not be held responsible for any damages relating to incorrect configuration by non-trained personnel.
- Incorrect set up will invalidate warranty.

To set up the product, the commissioning engineer must be familiar with the software menu structure and operation. Commissioning set up requires service access level 1.

Service Level Passwords are provided to trained engineers following completion of service training and are provided via the Parker GSFE TechNet site. Contact Parker GSFE Technical Support Group for further information.

Prior to being able to start the generator for the first time, the commissioning engineer will need to review and answer select questions which pop up on the generator touch screen.

During the first Start-up of the generator, the commissioning engineer will be prompted with various questions before enabling the Start button.



The questions asked are:

1. Commissioning Engineer Name
2. Distributor Company Name
3. Site Location Company Name
4. Have all installation checks and instructions been considered as detailed within the user guide?
5. Is the generator tobe be started with the settings detailed on the rating label?
6. If the original settings are to be changed, have the critical calibrated components been correctly adjusted?
7. Is the generator part of a multi-bank installation?
8. As detailed on the rating label, is the correct inlet pressure abailable and seen on the pressure guage?
9. Is the O2 purity alarm being changed, if yes to what value?
10. Is the remote start/stop feature being used?
11. Is the purge economy feature being used?
12. are any external alarm signals being used which may affect the performance of the generator?
13. Is Modbus TCP/IP being used?
14. Is Webserver being used?
15. Have you discussed the preventative maintenance schedules with the end user as detailed within the user guide?
16. Have you discussed the daily, weekly & monthly checks that are required as detailed within the user guide?

START UP & SHUTDOWN PROCEDURE

START UP PROCEDURE

Warning

Only competent personnel trained, qualified, and approved by Parker Hannifin should perform installation, commissioning, service and repair procedures.

1. Inspect all of the system connection points and verify that they are secure.

2. With both the inlet and outlet ball valves of the buffer vessel closed, open the ball valve on the air inlet port to allow the compressed air into the generator.

3. Switch the electrical power on to the generator and wait whilst it runs through the controller initialisation routine.

4. If the generator was in standby mode when the electrical power was removed it will default to standby mode on completion of the initialisation routine.

5. Press to initiate the start up routine.

If the start clean up option is enabled the generator will run through the Rapid Cycle before opening the buffer valve and the N2 outlet valve. The clean up cycle, which takes approximately 160 seconds, is designed to clean the CMS bed of impurities, bring the generator up to production purity more rapidly, and prevent poor quality gas flowing into the buffer.

IMPORTANT NOTE: Any nitrogen generator operating at 5ppm, 10ppm or 50ppm may require a longer duration of operation before the outlet purity falls within desired specification.

If the generator was running when the electrical power was removed (e.g. power failure) it will automatically run through a start up cycle (if enabled) and then commence normal operation. Wait until this cycle is complete and the menu displays “Running”. This may take several minutes for high purity generators.

6. Partially open the ball valve on the inlet to the buffer vessel to allow it to pressurise slowly. When the pressure gauge on the buffer vessel reads within 0.5 barg (7psig) of the inlet pressure, check for leaks in the buffer vessel inlet piping and then fully open the ball valve.

7. Open the ball valve on the outlet of the buffer vessel and check for leaks in the piping between the vessel and the generator.

8. Open the ball valve on the Nitrogen outlet.

If the purity of the gas is not within specification it will be vented to atmosphere through a vent solenoid within the generator and not delivered to the application. When the required purity is achieved the vent valve will close and the process valve will open delivering gas to the application.

SHUTDOWN PROCEDURE

Warning

Only competent personnel trained, qualified, and approved by Parker Hannifin should perform installation, commissioning, service and repair procedures.

1. Close the ball valve on the N2 Outlet port.
2. Press the Stop button on the HMI touch screen.
3. The generator will complete the current cycle and then exhaust both beds, this will take approximately 40 seconds.
4. When the generator is depressurised it will revert to standby mode.

Important Note:

A small amount of air may be trapped between the inlet isolation valve and the dryer inlet.

Emergency Shut-down

In the event of an emergency the system can be shut-down using the electrical isolator switch located on the side of the dryer control enclosure.

Activating this switch disconnects the electrical power to the dryer and the pump.

PREVENTATIVE MAINTENANCE

SERVICE INTERVALS

Description of Service Required		Service Recommended Every:									
No.	Operation	Daily	Weekly	Monthly	3 Months	6 Months	12 Months	24 Months	36 Months	48 Months	60 Months
1.0	Check POWER ON and STATUS / FAULT indicators.	✓									
2.0	Check for air leaks.		✓								
3.0	Check the pressure gauges during purging for excessive back pressure.			✓							
4.0	Check the condition of electrical supply cables and conduits.			✓							
5.0	Check cyclic operation.					✓					
6.0	**Calibrate Electrochemical Oxygen Analyser (if fitted)**				🔧						
7.0	**Replace Electrochemical Oxygen Analyser Cell (if fitted)**							🔧			
8.0	**Calibrate Zirconia oxygen analyser**						🔧				
9.0	**Replace Zirconia oxygen analyser (if fitted)**										🔧
10.0	**Replace exhaust silencer element(s)**						🔧				
11.0	**Replace buffer vessel filter element and float drain.**						🔧				
12.0	**Replace Inlet Dewpoint Hygrometer transmitter (if fitted)**						🔧				
13.0	**Replace Outlet Dewpoint Hygrometer transmitter (if fitted)**						🔧				
14.0	Check Operation of 5/2 Valves & Replace if Required								✓	✓	
15.0	**Replace control valves, cylinders and sealing discs**										🔧

Key

✓	Check
🔧	Recommended Service

CLEANING

Clean the equipment with a damp cloth only and avoid excessive moisture around any electrical sockets. If required you may use a mild detergent, however do not use abrasives or solvents as they may damage the warning labels on the equipment.

Service Kits

CATALOGUE NUMBER	DESCRIPTION	TO SUIT MODELS	12	24	36	48	60	QTY
M12.EXH.0001	Exhaust Silencer & Filter Element Replacement	NSP-020 to 090	✔	✔	✔	✔	✔	1
M12.EXH.0002	Exhaust Silencers & Filter Element Replacement	NSP-100 to 120	✔	✔	✔	✔	✔	1
M12.EXH.EST.0001	Exhaust Silencer, Filter Element & EST Filter Replacement	NSP 020 to 090	✔	✔	✔	✔	✔	1
M12.EXH.EST.0002	Exhaust Silencer, Filter Element & EST Filter Replacement	NSP-100 to 120	✔	✔	✔	✔	✔	1
M12.PDP.0001	Inlet/Outlet Dewpoint Replacement	NSP-020 to 120	✔	✔	✔	✔	✔	1
M24.EPPM.0001	Electrochemical PPM Cell Replacement	NSP-020 to 120		✔		✔		1
M60.VOH.0001	Pilot & Control Valves Overhaul	NSP-020 to 090					✔	1
M60.VOH.0002	Pilot & Control Valves Overhaul	NSP-100 to 120					✔	1
M60.ZPPM.0001	Mini-Zirconia PPM Analyser Replacement	NSP-020 to 120					✔	1
M60.ZPCT.0001	Mini-Zirconia PCT Analyser Replacement	NSP-020 to 120					✔	1

Catalogue Number	Description	To Suit Model	Kit Contents	Qty
M12.EXH.0001	Exhaust Silencer & Filter Element Replacement	NSP-020 to 090	Exhaust Silencer Core	1
			Dry Particulate Filter Eelement	1
M12.EXH.0002	Exhaust Silencers & Filter Element Replacement	NSP-100 to 120	Exhaust Silencer Core	3
			Dry Particulate Filter Eelement	1
M12.EXH.EST.0001	Exhaust Silencer, Filter Element & EST Filter Replacement	NSP-020 to 090	Exhaust Silencer Core	1
			Dry Particulate Filter Eelement	1
			EST In-line Filter	1
M12.EXH.EST.0001	Exhaust Silencers, Filter Element & EST Filter Replacement	NSP-100 to 120	Exhaust Silencer Core	3
			Dry Particulate Filter Eelement	1
			EST In-line Filter	1
M12.PDP.0001	Inlet/Outlet Dewpoint Replacement	NSP-020 to 120	Dewpoint Hygrometer	1
M24.EPPM.0001	Electrochemical PPM Cell Replacement	NSP-020 to 120	Electrochemical PPM Cell	1
M60.VOH.0001	Pilot & Control Valve Overhaul	NSP-020 to 090	5/2 Pilot Valves	7
			Inlet/Outlet Cylinders and Seals	4
			Exhaust Cylinders and Seals	2
			Process Control Valves	2
			Equalisation Valve	2
M60.VOH.0002	Pilot & Control Valve Overhaul	NSP-100 to 120	5/2 Pilot Valves	7
			Inlet/Outlet Cylinders and Seals	4
			Exhaust Cylinders and Seals	2
			Process Control Valves	2
			Equalisation Valve and seals	2
M60.ZPPM.0001	Mini-Zirconia PPM Analyser Replacement	NSP-020 to 120	Mini-Zirconia ppm Oxygen Analyser	1
M60.ZPCT.0001	Mini-Zirconia PCT Analyser Replacement	NSP-020 to 120	Mini-Zirconia PCT Oxygen Analyser	1

EU **EN**

Parker Hannifin Manufacturing Limited GSFE
Dukesway,Team Valley Trading Estate,Gateshead, Tyne & Wear,NE11 0PZ, UK

Nitrosource N2 Nitrogen Generator

NSP-20 to NSP-120

Directives	PED	2014/68/EU
	LVD	2014/35/EU
	EMC	2014/30/EU
	PED	Generally in accordance with ASME VIII Division 1 : 2023
Standards used	LVD	EN 61010-1 : 2010 / A1:2019 .
	EMC	EN 61326-1 : 2013

PED Assessment Route: Module B + D

PED Certificate Number 0525-PED-DE-50351/1-Mod-D-1

Notified body for PED: Notified Body Number: 0525
LRQA Deutschland GmbH
Curienstraße 1,
D-20095 Hamburg, Deutschland

Authorised Representative Steven Rohan
Division Engineering Manager,
Parker Hannifin Manufacturing Limited GSFE

Declaration

This declaration of conformity issued under the sole responsibility of the manufacturer and the essential safety requirements have been demonstrated and fulfilled as set out in Annex 1

Signature:

Date: 16 October 2024

Declaration Number:
00331 / 16.10.24

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