ZERO AIR GAS GENERATOR

USER MANUAL
UM- Zero Air 19”Rack System

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Contents

Contents	Page No
Document History	3
Warranty Statement	4
Safety Notice to Users	4
Safety Notice	5
Declaration of Conformity	6
Introduction and unpacking	7
Electrical & Air Connection	8
Principle of Operation	9
Commissioning	10
Maintenance Schedule	11
Technical Specifications	12
Pneumatic Diagram	13
Electrical Diagram	14
Maintenance Log	15
Notes	16

History

Rev. No.	Changed	Initials	Date
1	Document Created	BC	12/01/02
2	Digital PID Controller fitted	SGM	25//01/02
3	USA Technical support number updated	FAD	16/11/04
4	New style front added	FAD	30/03/05
5	Technical Support number updated	FAD	10/11/04
6	Weight of unit changed to 13kg	AMcB	02/06/05
7	Document Created on New Format	SK	31/08/09

Warranties & Liabilities

Warranties and Liabilities

1. The Company warrants that it has title to the Goods.

2. Subject to the provisions of this clause the Company warrants that the Goods shall comply in all material respects with any specification referred to in the Order Confirmation (as the same may be amended) and shall, subject thereto, be free from defects in material and workmanship for the lesser of a period of twelve months from the date of delivery or thirteen months from the date of dispatch from the factory.

3. Save as provided in this clause and except where the Goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties, conditions or other terms implied by statute or common law are hereby expressly excluded save to the extent they may not be lawfully excluded. When the Goods are sold to a consumer within the meaning of the Unfair Contract Terms Act 1977 their statutory rights are not affected by the provisions of this clause.

4. In the event of the Customer making a claim in respect of any defect in terms of clause 2 hereof the Customer must:-
   4.1. reasonably satisfy the Company that the Goods have been properly installed, commissioned, stored, serviced and used and without prejudice to the generality of the foregoing that any defect is not the direct or indirect result of lack of repair and/or servicing, incorrect repair and/or servicing, use of wrong materials and/or incorrect spare parts; and
   4.2. allow the company to inspect the Goods and/or any installation and any relevant packaging as and when reasonably required by the Company.

5. Subject to the Company being notified of any defect as is referred to in sub-clause 2 hereof within a reasonable time of it becoming apparent and subject always to the terms of sub-clause 4 hereof, the Company shall, in its option, replace or repair the defective Goods or refund a proportionate part of the Price. The Company shall have no further liability to the Customer (save as mentioned in sub-clause 6 hereof).

6. The Company shall be liable to indemnify the Customer in respect of any claim for death or personal injury to any person in so far as such is attributable to the negligence or breach of duty of the Company or any failure by the Company to comply with the provisions of sub-clause 2 hereof.

7. Save as provided in sub-clause 2 hereof the Company shall not be liable in respect of any claim by the Customer for costs, damages, loss or expenses (whether direct, indirect, consequential or otherwise) or indemnity in any respect howsoever arising including, but not by way of limitation, liability arising in negligence (other than pursuant to clause 6 above) that may be suffered by the Customer or any third party.

⚠ Caution

SAFETY NOTICE TO USERS

These instructions must be read thoroughly and understood before installation and operation of your Peak Scientific Zero Air. Use of the Generator in a manner not specified by Peak Scientific MAY impair the SAFETY provided by the equipment.
When handling, operating or carrying out any maintenance, personnel must employ safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of UK users is drawn to the Health and Safety at Work Act 1974, and the Institute of Electrical Engineers regulations.

Safety Notice

Safety First

It is important that you thoroughly read and understand this manual before operating or servicing this Peak Scientific Instruments Gas Generator.

PLEASE NOTE THE FOLLOWING CAUTIONS AND WARNINGS FOR YOUR OWN SAFETY.

! Caution –
Only authorized persons should operate or service this equipment.

! Warning –
To avoid risk of electrical shock, personal injury, or death disconnect power before removing any cover of this equipment.

! Caution –
To avoid risk of personal injury NEVER disconnect any pipe, fitting, or filter bowl while the system is pressurized. Always allow pressure to dissipate before opening the system.

! Warning –
The Catalytic Process requires very high temperatures. Internal surfaces and copper lines are extremely hot and will cause burns. Always allow the generator to cool before carrying out any servicing.

Declaration of Conformity

Declaration of Conformity

RoHS Statement of Compliance

The European RoHS (Restriction of Hazardous Substances) Directive 2002/95/EC aims to reduce the use of hazardous materials within a certain scope of products – mostly electrical and electronic.

Peak Scientific Instruments Ltd has developed all reasonable 'due diligence' controls, to ensure that our products comply with the principles, and requirements, of this directive. Similar directives in the United States and China, for example, have also been captured within this programme.

Where a specific certificate of compliance is required, this can be requested, on a product serial number basis, from Peak Scientific Instruments Ltd, by contacting us though info@peakscientific.com.

WEEE Statement of Compliance (WEE/FJ0116XU)

The WEEE (Waste of Electrical & Electronic Equipment) Directive 2002/96/EC, issued by the European Union, aims to reduce the impact, upon the environment, from disposal of certain types of equipment. It requires producers to implement controls, to ensure that equipment that they produce, is correctly disposed of, following the end of its useful life.

Peak Scientific Instruments Ltd fully complies with it's obligations towards this important legislation. These obligations refer to all electrical equipment that has been dispatched by us from 1st July, 2007, within the United Kingdom. As part of our compliance towards this, we have placed the management of this disposal with the B2B Compliance scheme. They can be contacted directly on 01691-676124, or by visiting their website on www.b2bcompliance.org.uk.

Ken Brown
Quality Assurance Manager

Introduction

The Peak Scientific Instruments range of Zero Air Gas Generators is designed to produce a constant flow of Zero Grade Air with a Hydrocarbon content (as Methane) of less than 0.1 ppm.

Unpacking and Installation

Please save the product packaging for storage or future shipment of the generator.

Although Peak Scientific take every precaution with safe transit and packaging, it is advisable to fully inspect the unit for any sign of transit damage.

ANY DAMAGE SHOULD BE REPORTED IMMEDIATELY TO THE CARRIER AND PEAK SCIENTIFIC OR THE DISTRIBUTER FROM WHERE THE UNIT WAS PURCHASED.

After unpacking and a visual inspection, the unit should be placed in a ventilated area away from direct sunlight. Care should be taken not to obstruct the ventilation holes on the bottom of the unit nor the fan outlet at the Rear. The generator should be placed on a steady and level base. The generator is designed to be installed inside a standard 19" telecom cabinet. The generator requires 4U space overall. Performance of the generator (like all sophisticated equipment) is affected by ambient temperatures and humidity. Prolonged operation in temperatures exceeding 28°C will shorten the life of the unit. Operation in relative humidity exceeding 70% may result in moisture carry-over. Additional moisture traps should be installed downstream of the generator should ambient regularly exceed 70% Rh. and also if the generator is any distance from the application. Moisture traps or coalescers should be located as close to the application as possible. Note should also be taken of the proximity of Air Conditioning outlets. These can sometimes give rise to "pockets" of air with high relative humidity. Operation of the generator within such a pocket could adversely affect its performance.

CONNECTION

Air Connection

The Zero Air Generator should be connected to a **clean, dry, OIL - FREE** source of compressed air. A minimum pressure of 85 psig (5.86 barg). The inlet and outlet connections are 1/4" BSP female.
The Inlet air should conform to the following specifications:

Minimum Pressure	85 psig
Maximum Pressure	125 psig
Maximum Hydrocarbon Content	100 ppm

The inlet air should be oil free and pre-filtered to remove bulk moisture. Although not essential, an air drier up-stream of the generator will ensure a long and trouble free life.

Note the platinum catalyst within the Zero Air Catalytic Chamber will become poisoned if it comes into contact with any halogenated hydrocarbons, silicone sprays, silicone greases, phosphorous compounds, lead components, high sulphur vapours or other catalyst poisons.

The air supply should be connected to the generator inlet on the back panel left side of the cabinet (looking from the front). The user's application should be connected to the outlet on the right side of the cabinet. To avoid leakage/impurity ingress, use PTFE tape on all fittings.
Slowly, turn on the air supply until the required pressure is attained. There is no physical method of restricting the gas output from the generator. The user should therefore ensure that the application only receives a maximum flow not exceeding the rating for the generator. Demand in excess of the rated capacity of will result in higher levels of hydrocarbons in the delivered gas.

Electrical Connection

Important Electrical Notice

This unit is classified as SAFETY CLASS 1 equipment. THIS UNIT MUST BE EARTHED. Before connecting the unit to the mains supply, please check the information on the serial plate. The mains supply must be of the stated AC voltage and frequency.

EARTH/GROUND (E): -	**Green & Yellow**	**or**	**Green**
LIVE (L): -	**Brown**		**Black**
Neutral (N): -	**Blue**		**White**

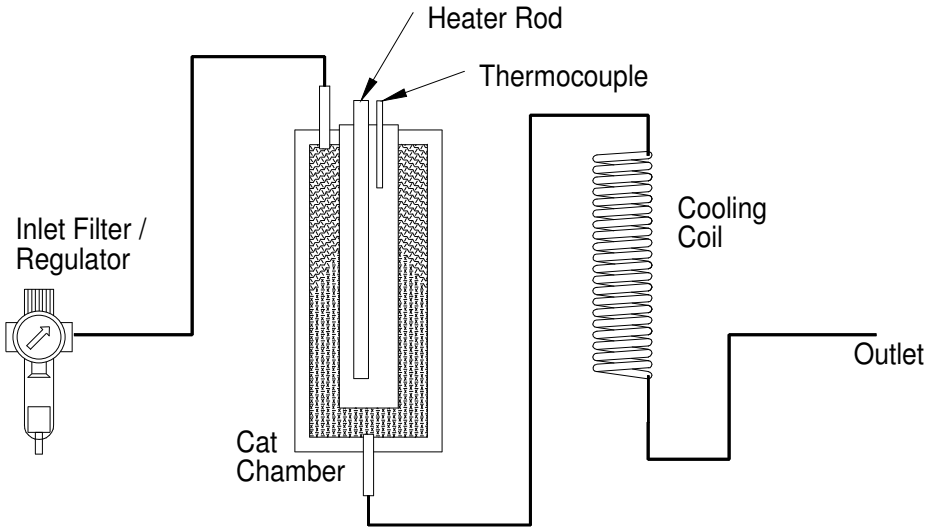
Fuse

The generator protection fuse is located within the bayonet cap panel mounted fuse holder on the front panel. The fuse is rated at 10Amp.

Connect the generator to a single-phase 110 volt supply using the power cord provided.

Principle of Operation

The ZA070-19R Zero Air generator works on the fundamental principle of Catalytic Oxidation as illustrated in the following pneumatic diagram.



ZAxxx Pneumatic Diagram

***Zero Air* Generation**

Inlet air is passed into the Generator via a coalescing filter, which removes bulk moisture and particles down to 0.1 micron. The air is then passed to the 'Zero Air' catalytic combustion chamber. This works on the principle of catalytic oxidation where hydrocarbons from the incoming compressed air supply are *cracked* to carbon dioxide and water. The hydrocarbon level in the form of methane is reduced to <0.1ppm, for this process to work the catalyst requires to be heated to approximately 400 degrees Celsius. The free Carbon and Hydrogen atoms then combine with Oxygen in the air to form Carbon Dioxide and Water. After the catalytic chamber the air passes through a simple cooling coil to reduce its temperature to a safe level. This is assisted by a cooling fan.

Commissioning

This should be undertaken by a technically competent person.

Prior to installing the generator into the Rack Cabinet, remove the lid. Check that all the internal components are securely located and have not moved during transit. Refit the lid.
Open the air supply and switch the Power supply *ON* to unit. Set the regulator on the front panel / Regulator to the desired pressure.
Check that the cooling fan at the rear of the generator is operating and exhausting air out of the generator.
Check the Digital display on the front panel is increasing temperature Maximum 400℃ this can take up to 40minutes from initial switch On.

Maintenance Schedule

WARNING: Servicing and/or repair of the Generator should only be undertaken by a TECHNICALLY COMPETENT PERSON with the Generator in a safely isolated condition.

Routine Maintenance

Due to the simplicity of design and the small number of parts the Peak Zero Air Generator will have a long and trouble free life. However as with all scientific and technical equipment it should be regularly inspected by a competent person and the following points noted.
Inlet Filter Condensed moisture should be periodically drained from the filter.
Check the front panel Digital temperature is cycling between the temperature of 395℃ and 400℃.

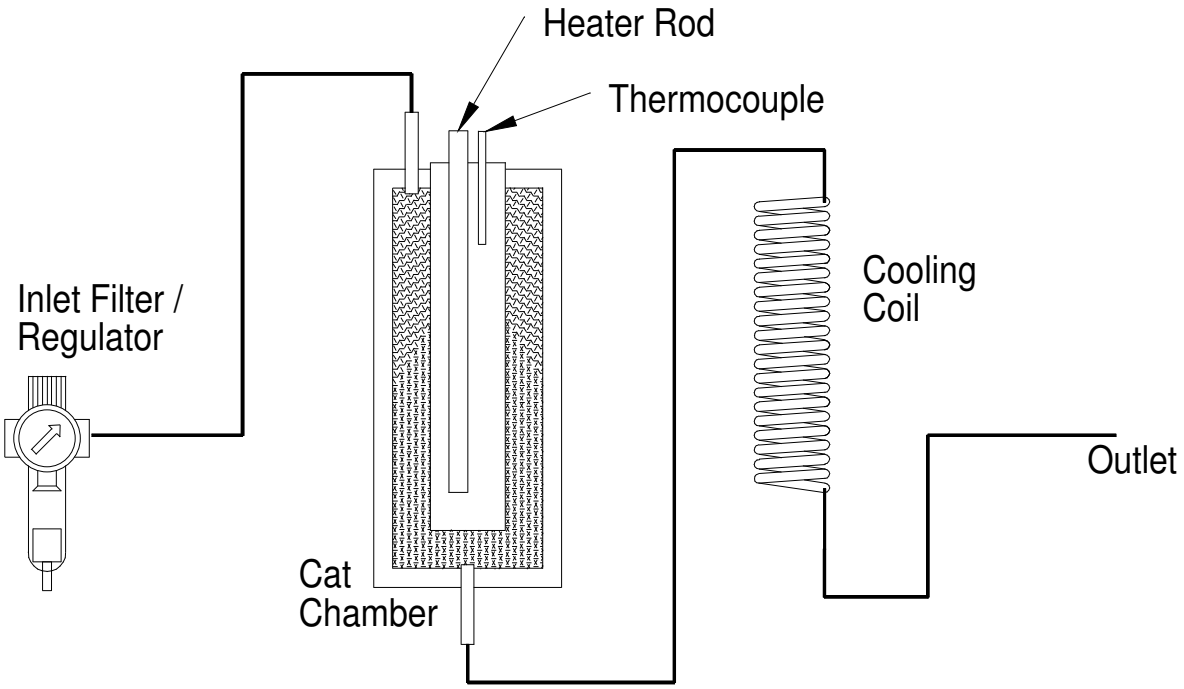
Technical Data

General Details

Minimum Operating Ambient Temperature	5 ºC (41 ºF)
Maximum Operating Ambient Conditions	30 ºC (86 ºF) 70% RH(max)
Inlet Conditions (Free of oil and bulk moisture)	
Minimum Air Inlet Pressure	85 psig (5.86 Barg)
Maximum Air Inlet Pressure	125 psig (8.62 Barg)
Minimum Air Inlet Flow Rate	1.5 l/min - 7 l/min (ATP)
Outlet Gas	
Maximum Pressure Drop (Outlet-Inlet) δP	8 psig
Maximum Gas Outlet Pressure	100 psig
Maximum Outlet Flow	7 Litres/min (ATP)
Electrical Connection IEC Socket	110 Volts
Fuse	10 Amps
Start up time	60 minutes
Particles	0.01um
Serviceable Parts List	**Part No:**
Cat Chamber Heater Rod 450Watts Thermo couple Cooling Fan 110V Solid state Relay Digital Temperature control	06-1075 04-1059 04-1051 04-1022 04-4458 04-4495
Model	**ZA015-ZA070-19" RACK SYSTEM**
DIMS (W x D x H) **cm**	18 x 48 x 43
(Inches)	7 x 19 x 17
Shipping Weight Kg	13
lbs	28.6

Pneumatic

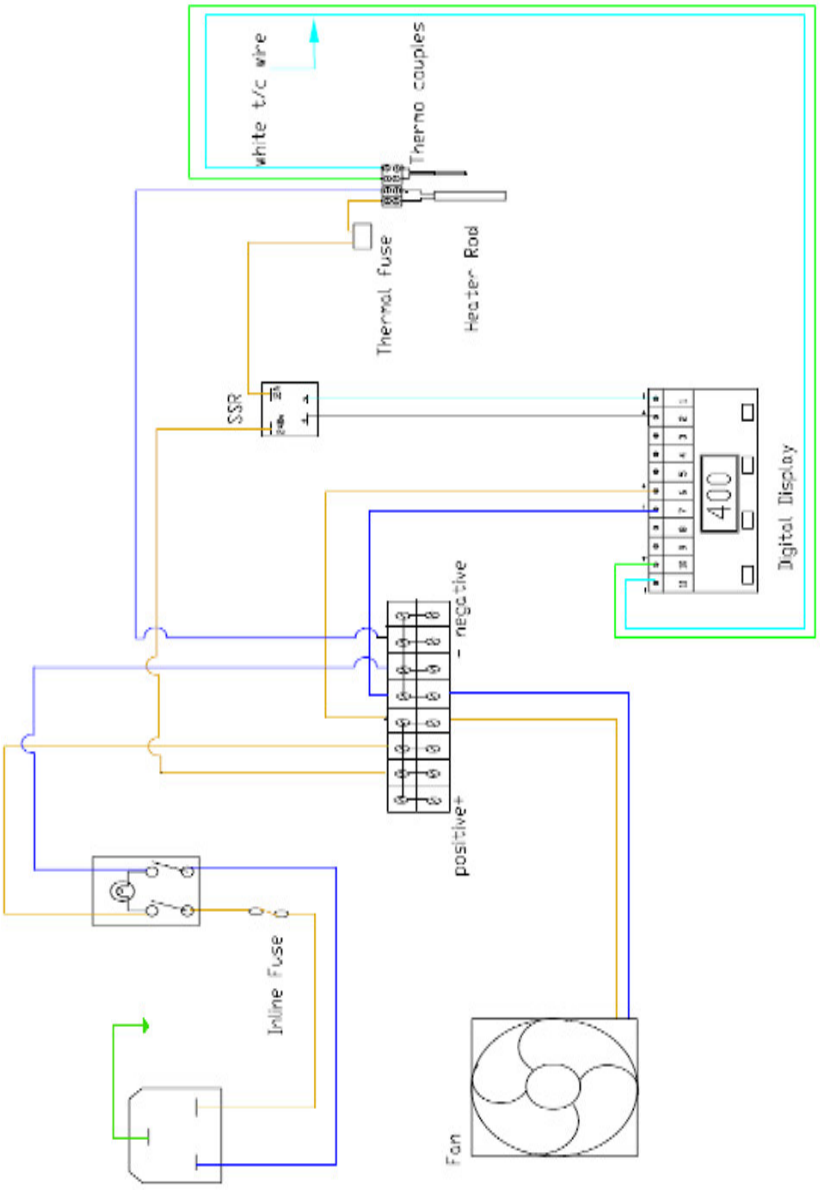
Pneumatic Diagram



ZAxxx Pneumatic Diagram

Electrical Diagram

Electrical Diagram



Maintenance Log

Maintenance log

Model- _____ **Serial number** _____

Work Done	Remarks	Date	Name

Notes