

Nitrogen Analyser



N2A001

S P E C I F I C A T I O N S
I N S T A L L A T I O N S
O P E R A T I O N

*Please read this
manual before use.*

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1.0 Introduction

1.1 This Manual

Congratulations on selecting a PCL Nitrogen Analyser.

Throughout the manual the following symbols will be used, this information is for your safety and to prevent damage to this product.




1.2 Overview of Nitrogen Analyser

Your Nitrogen Analyser is a hand-held instrument for indicating the Nitrogen percentage of the Nitrogen source. It is designed for use for the automotive industry.


The unit is compact and ergonomic in design with easy-to-use, one button operation.


1.3 General Specifications


All product specifications are applicable at standard conditions:
1013 hPa, 25°C dry ambient air.

 **CAUTION**
Do not dip the Nitrogen Analyser into any liquids.

 **CAUTION**
Do not expose the Nitrogen Analyser to excessive heat.

 **CAUTION**
Do not connect the Nitrogen Analyser to closed pressure systems above 175 psi, 1200 kPa or 12bar.

 **DANGER**
Do not open Sensor, it contains caustic.

 **CAUTION**
Use only alkaline batteries

Measurement Range	0 - 100 % Nitrogen
Display Resolution	0.1 vol %
Measurement Cycle	0.5 secs
Response time 90%	Less than 2 seconds
Auto Off time delay	5 mins
Accuracy	± 0.5 vol% from 0 to 50 vol% ± 2 vol% from 50 to 99 vol%
Operating temperature	0 - 50 °C
Storage temperature	
Optimal	5 to 25 °C
Maximum	-5 to 60 °C
Shipping Weight	0.83 kg
Physical dimension	244L x 80W x 43H mm
Construction	Polycarbonate casing with santoprene overmould
Sensor Type	N-33
Sensor Life	24 months
Sensor Cable	0.25 m
Battery Cable	0.15 m

2.0 Assembly

Unpack the carton and identify the components.

DESCRIPTION	QUANTITY
Nitrogen Analyser	1
Sensor, Oxygen Sensor, Class N33	1
Battery, 9V Alkaline	1
Twin Chuck, Open	1
Hose Assembly, 480mm	1

3.0 Installation

3.1 Battery Installation

- 3.1.1 Hold the instrument face down.
- 3.1.2 Remove the screw on the battery cover (refer to Fig 1).
- 3.1.3 Lift cover and pull out.
- 3.1.4 Install one 9V alkaline battery observing proper polarity.

3.2 Sensor Installation

- 3.2.1 Sensor contains caustic, which causes severe burns and may be fatal if swallowed. Refer to Section 10 - Material Safety Data Sheet for correct handling.
- 3.2.2 Remove the sensor from its protective package.
- 3.2.3 Remove the sensor cap by turning it anti-clockwise.
- 3.2.4 Connect the sensor plug to the mating connector on the sensor housing.
- 3.2.5 Install the sensor in the housing and rotate it so the wires are not pinched between the sensor and the housing.
- 3.2.6 Replace the sensor cap.

3.3 Hose Installation

- 3.3.1 Connect the hose assembly to the 1/4" NPT end of the sensor cap.
- 3.3.2 Connect the hose chuck to the hose assembly.

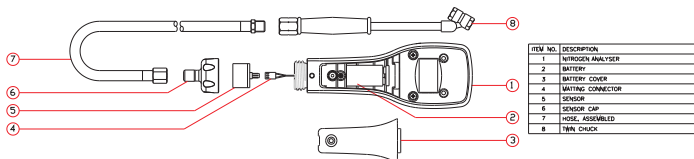


Fig 1

4.0 Calibration

- 4.1 On initial start up with a new sensor, allow the unit to stabilise for about 10 minutes before proceeding to the next step.
- 4.2 With the chuck exposed to air, press and hold (⏻) key down until the LCD starts to count down from 3 to 0. Release the (⏻) key and wait for the LCD to read 79.1 (calibration point) plus or minus 0.1. Excluding factors such as temperature, humidity and traces of other gases, the air we breathe contains 78.084% Nitrogen, 20.946% Oxygen, 0.934% Argon and 0.033% Carbon Dioxide.

Note : Excess Nitrogen in the sensing head during calibration will lead to low readings during sampling. For best results, calibrate the instrument each day before sampling begins. This will ensure the sensing head is exposed to air for accurate calibration. If calibration is needed during normal use, leave the sensing head exposed to air for about 10 minutes or until the readings stabilise before commencing with the calibration.

5.0 Gas Sampling

Press and hold chuck onto the valve stem and allow the gas to flow until a stable reading is achieved. Depending on the tyre pressure, sample time is about 10 seconds. Repeat the sampling process as needed.

Note : It is not necessary for the reading to return to the calibration point (79.1) between samples.

6.0 Turning the unit OFF

To switch off immediately, press and hold the (⏻) key for 1 second, then release the (⏻) key. To extend battery life, the unit has an auto-off function after 5 minutes.

7.0 Freezing of Gas Sampling Reading

To freeze the gas sampling reading, make a quick press and release the (⏻) key. When the reading is put on freeze, the display will flash. To resume the gas sampling, make another quick press and release the (⏻) key. The display will stop flashing, showing the corresponding gas reading.

8.0 Troubleshooting

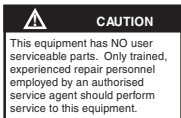
PROBLEM	POSSIBLE CAUSE	SOLUTION
CAL	The unit has not been calibrated.	Press and hold (⏻) key to perform calibration.
ER1	Sensor is not connected or the sensor has reached its end of life.	Check the connection of the sensor and reset unit. If error message persists, replace sensor and reset unit.
ER2	Improper calibration. Calibration was not performed under ambient air.	Press and hold (⏻) key to perform calibration at ambient air and reset unit. If error message persists, replace sensor, perform calibration and reset unit.

9.0 Warranty

The Nitrogen Analyser is covered under warranty for 12 months from the date of invoice which covers defects in material and workmanship; exclude sensor life and is subject to the following conditions:

- 9.1 Except where the product has been damaged by misuse, faulty installation, unauthorised repairs, incorrect maintenance or accidental damage, PCL will at its own discretion repair or replace the defective product (or pay for the cost of repair or replacement).
- 9.2 Warranty does not cover air hoses and twin chucks.

PCL expressly excludes all other warranties expressed or implied, including without limitation the implied warranties of merchantability and fitness for any other purpose. PCL further excludes liability for consequential and incidental losses including but not limited to the loss of profits which may arise out of the breakdown or failure of any product.



10.0 Material Safety Data Sheet**Product Identification**

Product Name : Oxygen Sensor
: Micro-Fuel Cells and Super Cells,
all classes except A-2C, A-3, and A-5
Electrochemical Oxygen Sensors, all classes
except R-19
Mini-Micro-Fuel Cells, all classes

Manufacturer : Teledyne Instruments/Analytical Instruments

Address : 16830 Chestnut Street, City of Industry, CA 91748

Phone : (626) 961-9221

Technical Support : (626) 934-1673

Environment, Health and Safety : (626) 934-1592

Date Prepared : 10/19/99

Revision Date : 6/7/05

Hazardous Ingredients/Composition

Material or Component	C.A.S. #	Quantity	OSHA PEL	ACGIH
Lead (Pb)	7439-92-1	5-20 gms	0.05 mg/m ³	0.15 mg/m ³
Potassium Hydroxide (KOH)	1310-58-3	1-5ml (10%-15% KOH in water)	2 mg/m ³ (ceiling)	2 mg/m ³ (ceiling)

Health Hazard Data

Routes of Entry : **Inhalation** : Highly unlikely.
Ingestion : May be fatal if allowed.
Skin : The electrolyte (potassium hydroxide) is corrosive; skin contact may cause irritation or severe chemical burns.
Eyes : The electrolyte (potassium hydroxide) is corrosive; skin contact may cause irritation or severe chemical burns.

Acute Effects : The electrolyte is harmful if swallowed, inhaled or absorbed through the skin. It is extremely destructive to tissue of the mucous membranes, stomach, mouth, upper respiratory tract, eyes and skin.

Chronic Effects: Prolonged exposure with the electrolyte has a destructive effect on tissue.

Chronic exposure to lead may cause disease of the blood and blood forming organs, kidneys and liver, damage to the reproductive systems and decrease in fertility in men and women, and damage to the fetus of a pregnant woman. Chronic exposure from the lead contained in this product is extremely unlikely.

Signs and Symptoms of Exposure :	Contact of electrolyte with skin or eyes will cause a burning sensation and/or feel soapy or slippery to touch. Other symptoms of exposure to lead include loss of sleep, loss of appetite, metallic taste and fatigue. For additional exposure information, refer to 29 CFR 1910.1025, Appendix A - Substance Data Sheet for Occupational Exposure to Lead.
Carcinogenicity :	Lead is classified by the IARC as a class 2B carcinogen (possibly carcinogenic to humans).
OSHA:	Where airborne lead exposures exceed the OSHA action level, refer to OSHA Lead Standard 1910.1025
NTP	NA
Medical Conditions Generally Aggravated by Exposure :	Lead exposure may aggravate disease of the blood and blood forming organs, hypertension, kidneys, nervous and possibly reproductive systems. Those with pre-existing skin disorders or eye problems may be more susceptible to the effects of the electrolyte.

Emergency First Aid Procedures

In case of contact with the skin or eyes, immediately flush with plenty of water for at least 15 minutes and remove all contaminated clothing. Get medical attention immediately.

If ingested, give large amounts of water and DO NOT INDUCE VOMITING. Obtain medical attention immediately.

If inhaled, remove to fresh air and obtain medical attention immediately.

Fire and Explosion Hazard Data

Flash Point: NA **Flammable Limits:** NA **LEL:** NA **UEL:** NA

Extinguishing Media: Use extinguishing media appropriate to surrounding fire conditions. No specific agents recommended.

Special Fire Fighting Equipment: Wear NIOSH/OSHA approved self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual Fire and Explosion Hazards: Not applicable.

Cleanup Procedures

Wipe down the area several times with a wet paper towel. Use a fresh towel each time. Contaminated paper towels are considered hazardous waste.

Precautions for Safe Handling and Use

Note: The oxygen sensors are sealed and under normal circumstances the contents of the sensors do not present a health hazard. The following information is given as a guide in the event of a cell leaks.

Caution : If you see signs of moisture or liquid in the protective bag, DO NOT OPEN the package

Protective Measures During Cell Replacement: Before opening the bag containing the sensor cell, check the sensor cell for leakage. If the sensor cell leaks, do not open the bag. If there is liquid around the cell while in the instrument, wear eye and hand protection.

Exposure Controls/Personal Protection

Eye Protection: Chemical splash goggles

Hand Protection: Rubber gloves

Other Protective Clothing: Apron, face shield

Ventilation: NA

Physical/Chemical Characteristics

Material or Component	Boiling Point (°C)	Specific Gravity	Vapor Pressure	Melting Point (°C)	Density	Evap. Rate	Solubility in Water	Odour/Appearance Physical State
Lead	1744	11.34	NA	328	NA	NA	Insoluble	Solid, silver gray, odourless
Potassium Hydroxide	1320	2.04	NA	360	NA	NA	Complete	White or slightly yellow. No odour

Stability and Reactivity

Stability: Stable

Incompatibilities: Aluminium, organic materials, acid chlorides, acid anhydrides, magnesium, copper. Avoid contact with acids and hydrogen peroxide >52%

Hazardous Decomposition: Toxic fumes

Hazardous Polymerisation: Will not occur

Toxicological Information

Toxicity to Animals:	Acute oral toxicity (LD50): 2730 mg/kg (Rat) (Calculated value for the KOH solution.)
Mutagenicity:	Lead tested positive as a mutagen in the Ames test.

Ecological Information

Ecotoxicity:	The LC50 of lead for the daphnia magna is 3.6 mg/l, and 5.1 mg/l for the daphnia pulex.
Environmental Fate:	Lead is bio-accumulative in most aquatic life and mammals. It is highly mobile as lead dust or fume, yet forms complexes with organic material which limits its mobility.

Disposal Considerations

Waste must be disposed of in accordance with Federal, State and Local environmental control regulations. If discarded in its purchased form, this product is hazardous by its characteristics of toxicity and corrosivity under RCRA.

EPA Waste Number:	D008, D002
DOT Information:	Corrosive liquid, basic, inorganic, n.o.s. (Potassium hydroxide, lead), 8, UN 3266, II.

Follow all Federal, State and Local regulations.

Transport Information

DOT:	Regulated. Refer to Small Quantity Exceptions: 49 CFR 173.4
IATA:	Regulated. Refer to IATA Dangerous Goods in Excepted Quantities, Sec. 2.7

Regulatory Information

US Federal Regulations

- 1) OSHA - Hazardous by definition of Haz Com Std. 29 CFR 1910.1200
- 2) SAFA TITLE III
- Sec 302 (40 CFR Part 355)

Chemical Name	CAS #	%	TPQ lbs	RQ
None	NA	NA	NA	NA

- Sec 311 & 312

Chemical Name	Acute Health Haz	Chronic Health Haz	Fire Hazard	Sudden Release of Pressure Haz	Reactive
Lead	Yes	Yes	No	No	No
Potassium Hydroxide	Yes	Yes	No	No	No

- Sec 313 (40 CFR Part 372): This product contains the following toxic chemicals subject to the reporting requirements of Section 313, of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372

Chemical Name	CAS #	Lead Content
Lead	7439-92-1	5-20 gms

- 3) TSCA (Toxic Substances Control Act)

Components of this product are listed on the TSCA Inventory.

- 4) CERCLA Section 102(A) (40 CFR Part 302) - Hazardous Substances and Reportable Quantities

Chemical Name	CAS #	RQ
Lead*	7439-92-1	10 lbs.
Potassium Hydroxide (solid)	1310-58-3	1,000 lbs

- No reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

State Regulations

- California Proposition 65: WARNING: This product contains lead, a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.
- Massachusetts: Potassium Hydroxide is a listed chemical.
- Pennsylvania: Potassium Hydroxide is a listed chemical.

International Regulations

- Canada: Canadian Environmental Protection Act (CEPA):
Potassium Hydroxide, liquid, is on the Domestic Substances List (DSL) and is acceptable for use under the provisions of CEPA.
- WHMIS: Potassium Hydroxide (liquid)
- Class D-2A : Material causing other toxic effects
(VERY TOXIC)
- Class E : Corrosive liquid.
- Lead
- Class D-2A
- EEC : Potassium Hydroxide (liquid)
- R35 - Causes severe burns.
R42 - May cause sensitization by inhalation
R36/37/38 - Irritating to eyes, respiratory system
and skin.

Other Information

All chemicals may pose unknown hazards and should be used with caution. While the information contained in this Material Safety Data Sheet is believed to be correct and is offered for your information, consideration and investigation, Teledyne Analytical Instruments assumes no responsibility for the completeness or accuracy of the Information contained herein.

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