ABE_1500
BIOGAS ANALYSER

User Manual

TABLE OF CONTENTS

Kind costumer,

Before to use analyser, we maintain you to attentively read this manual!
It contains warnings and important data, that, if you will observe, you will assure the instruments availability and some savings on costs. In this way, the use of this instrument will be easier and more durable.

Note

We advise you to contact our factory after to use the instrument for new application, for example in research and development.

1.1 General warnings

The device descripts in this manual, has left the factory in a good and secures condition. It must be use in the way descript by producer. Then, the secure working of this product, presuppose that it has an appropriate transport, that the store and the install have made whit accuracy.

This manual contains information for a conformable use to employment estimated. It applies qualified staffs, which has received specific training.

If you wish others information, or if you have particular problems, that there isn't in this manual, you'll have to ask necessary explanations to our factory.

1.2 Instructions to use this manual

In this manual there is the description how of put in service, use and make preservation of this instrument.

We recommend to observe with particular attention the **warnings and notes.**

1.3 Warnings

Warnings pertinent to security help to avoid risks for user's life and health or to avoid materials damages. In this manual this warnings are distinguished by signal's conception uninterruptedly definite. Then, they are marked by warnings symbols in the point that they are.

Danger

It mean that will verify death, heavy wounds to people and/or considerable damages to things, if don't take the right precaution.

Warning

It mean that can verify death, heavy wounds to people and/or considerable damages to things, if don't take the right precaution.

Attention

With triangular advise, it means that can happen light wounds if don't take the right precaution.

Attention

Without triangular advice. It means that can happen materials damages if don't take the right precaution.

Advise

It means that can happen unexpected problems if you don't observe correspondent advise.

1.4 Conformable utilization to estimated engagement

Product describe in this manual it was made, tested and documented whit observance to security laws now in use. If you'll respect manipulation rules, security, installation and preservation warnings, you won't have any problems. This instrument is made in way to guarantee secure isolation between primary and secondary electrical circuit.

Secure workings, without errors, ask accurate transport and professional store, and also accurate preservation.

Advise

This instrument is electric. Before open case, some parts of this instrument are accessible, but that are parts in electrical voltage. So, only qualified staff can make some interventions on this instrument.

1.5 Qualified staff

Can verify in case of interventions not qualified on analyser or not observance of the warnings of this manual, heavy wounds to people and/or considerable damages to things. So, only qualified staff is authorized to make interventions on this instrument.

For qualified staff, in sense of security we intend:

- People that have familiarity with security concept in the automation's technique.
- People that were trained to use device of automation's technique and that know the contents of this manual.

- People who have a formation for repair this type of device.

1.6 Guarantee' s note

The content of this manual don't establish part of an agreement, promise or a juridical relation. All obligations by A.B. Energy S.r.l. resulted by buying and selling contract, witch contains also complete guarantee's discipline. These contractual arrangements for guarantee are not extended or limited by exposition of this manual.

1.7 Note

The respective dotation is report, conformed to valid buying and selling contract, on shipment documents enclosed to supply.

During the packing opening, we ask to observe the pertinent learning and warning reported on packing. Please, verify the integrity of supply.

Conserve packing for possible re-shipping.

1.8 Laws and arrangements

Where possible, for specification and production of this instrument, it was based on European laws.

In case of use of this product outside application sphere of this laws and arrangements, it must observe laws and arrangements of customer's Country.

1.9 Conformity declaration

Biogas analyser ABE_1500 is conforming to following CE arrangements.

Biogas analyser ABE_1500 is conforming to request of CE 89/336/CEE direction "electro-magnetic compatibility".

Biogas analyser ABE_1500 is conforming to request of CE 89/336/CEE direction "low voltage".

According to the above-cited CE direction, the CE conformity declaration is conserved for competent authority in:

AB ENERGY S.R.L.
VIA AMENDOLA 340
13836 COSSATO (BI)
ITALY

2.1 Security warnings

Warning

Some this instrument's parts are down dangerous voltage. After instrument's insertion the case must be closed and connected to the ground.

Warning

The product mustn't work in a place with risk of explosion. Mixture of explosive gas mustn't be collected.

If the sample gas inside the instrument contains inflammable components above their explosion limit, it must be take security measures with expert person.

Warning

During collecting of poisonous or aggressive gas, can happen that, for a defect of gas conducts, quantity of sample gas amass in the instrument. To anticipate an explosion or poisonous warning, the instrument must be wash with inactive gas.

2.3 Gas connections to internal flux scheme

As gas connection is present Rislan tube of 6/4 mm.

For flexes or external rigid tubes, must be choose right material for the sample gas.

3.1 Principal characteristics

- **ABE_1500** analyser for methane (CH4), Carbon oxide (CO2), Carbon monoxide (CO), and oxygen in biogas.
  Measure camps 0-100% in volume for CH4, 0-100% in volume for CO2, 0-20000 ppm for CO, 0-25% in volume for O2.

3.2 Oxygen sensor

Utilized sensor (max_250) of electrochemical type; utilize an alkaline material insensible to carbon anhydride (gas who poison traditional electrochemical sensory, reducing theirs during). Operative life of sensory change favourably of percentage of oxygen measured (whit air to 20,93% of oxygen, standard during of sensory is of 2 years), whit percentage of oxygen less of 5%, it augments until 4/5 years (in case of clean and not damp gas).

3.3 Methane Sensor, Carbon Anhydride, Carbon Monoxide

The sensory utilize a source of impulsive emission of infrared to low temperature. Methane, Carbon Anhydride and Carbon Monoxide, presents an high coefficient of absorbition of infrared light, the sensory read this attenuation when inside of measures room, are the gas in question and it's possible draw the concentration of respective gas.

3.4 Options

Code	Describing
ABE_1500	Analyser for oxygen, methane, carbon anhydride, carbon monoxide
ABE_550	Gas speed velocity measure for flow reading 0 - 42 m/sec
ABE_553	Software for configuration and dates reading on PC
ABE_570	Analyzer case
ABE_580	Sensor H2S 0-500 ppm
ABE_581	Sensor NH3 0-1000 ppm
ABE_582	Sensor CO 0-1000 ppm

- **ABE_550** Anemometer to read the gas flow inside pipe (diameter 16 mm) into the range 0.3 to 42 m/sec, from witch you can compute the gas flow into the pipe.

- **ABE_553** Software for Microsoft Windows 2000, XP for controller configuration and transfer dates compatibles Microsoft Excel.

- **ABE_570** Case for ABE_1500.

- **ABE_580** Catalitic sensor for the measure of the concentration of hidrogen sulphide in the concentration from 0 to 500 ppm.

- **ABE_581** Catalitic sensor for the measure of the concentration of ammonia in the concentration from 0 to 1000 ppm.

- **ABE_582** Catalitic sensor for the measure of the concentration of carbon monoxide in the concentration from 0 to 1000 ppm.

3.5 Supervision software (ABE_553)

Possibility of direct connector between analyser and PC for configuration, transfer or memorized data. The software is realized for Windows 2000 or XP, with ".net" technology.
For more information of pack, make referred to software manual.

Configuration software

The software permits reading and configuration of function parameters of instrument and the visualization of reading.

Analyser has one serial com 232 standard port galvanic insulated. The isolation permits the connection with external instruments that can be in a different potential.
On this port you can connected the supervision system, installable on a personal computer (ABE_553).

3.6 Case (ABE_570)

Plastic case for transport and protect the gas analyzer ABE_1500, it has transparent membrane for visualize the screen.

Case ABE_570

Sensor for H2S (ABE_580)

Sensor for H2S

Range	0 – 500 ppm
Repond on time	<30 sec. (H2S: 10 ppm)
Gap on long period	< 5% / anno
Sensor life	More than 2 years
Operating Temperature	-20°C / +50°C
Operating Humidity	15 – 90 % RH
Operating Pressure	1 atm +/- 10 %

Table of the sensitivity of the sensor compared to other gas

Gas	Concentration (ppm)	Concentration equals of H (ppm)
H2S	100	100
CO	100	<5
CO2	5000	0
H	1000	-7 / +15
S	30	<7
C2H4	100	-0.3 / +2
CL	10	0
CH4	5000	0
N	10	< - 0.3
N2	10	< -3
NH3	100	0
CH3CH2OH	100	-7 / +3

Sensor for NH3 (ABE_581)

Sensor for NH3

Range	0 – 1000 ppm
Repond on time	<120 sec.
Gap on long period	< 2% / mese
Sensor life	More than 2 years
Operating Temperature	-30°C / +50°C
Operating Humidity	15 – 90 % RH
Operating Pressure	1 atm +/- 10 %

Table of the sensitivity of the sensor compared to other gas

Gas	Concentration (ppm)	Concentration equals of H (ppm)
NH3	100	100
H2S	10	<30
H	1000	0
CH4	5000	0
CO2	5000	0
SO2	10	<15
N2O	20	0
NO2	20	<2
CO	200	0
C2H5OH	100	0
C2H4O	1000	0
CL	10	0

3.7 Structure and characteristic

Analyser

- **SCREEN**

LCD display has big dimension ¼ VGA (320*240 pixel) with inverse visual (lighter written), of blue colour. Best luminosity level. Possibility to change contrast.
It permits to see at the same time all measures made by analyser in numerical form.

In the main page you can change the display contrast with the up and down arrows.

- **KEYBOARD**

Web keyboard, numerical, with more special functions (taste in relief, pressure squash a “boll” of steel, witch produce taste sensation). By that it’s possible local direction of all functionalities of instrument.

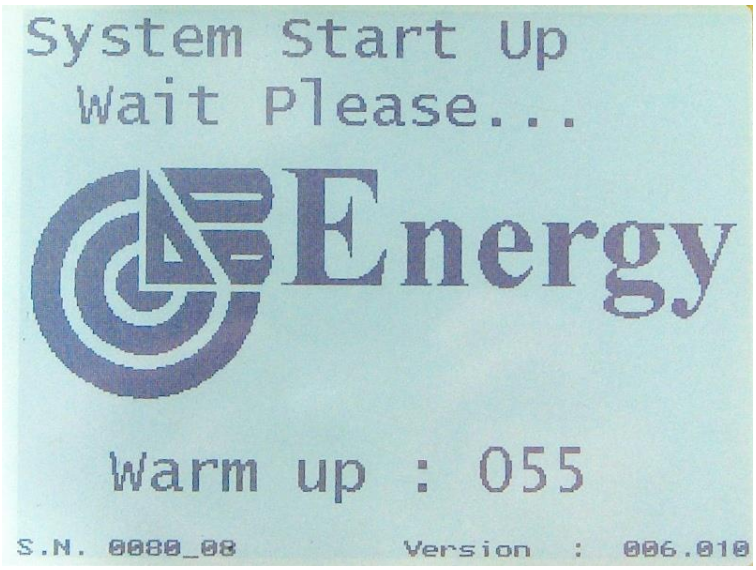
High protection grade that permit the use of analyser outside and presence of water.

POWER ON / OFF

To turn on the analyzer press the secrete key below the word biotecnogas for more than 3 second.

The following page will apper for 60 seconds during that the analyzer warm up the sensors and inizialise the system. At the end of this fase the system will move automatically to the main page.
If the battery is too low the system will turn off immediately. If last calibration was done more than two months ago a warning will appear.

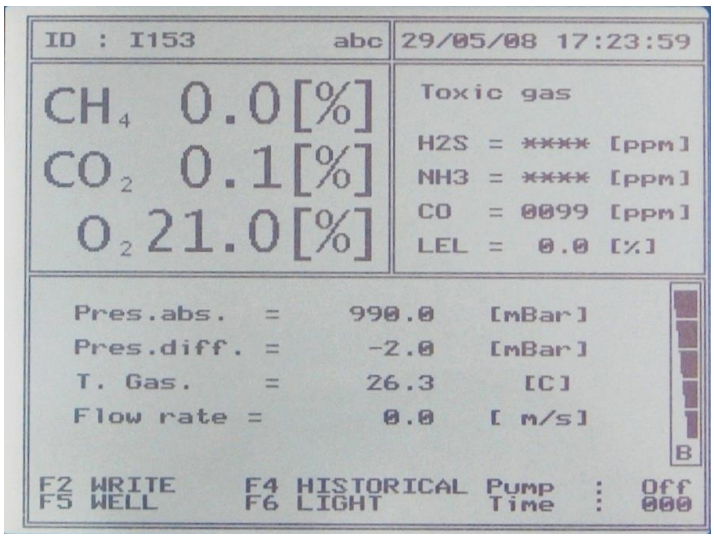
To turn off the analyzer you have to press the segrete key below the biotecnogas name for more than 3 seconds.



Warm up

3.8 Numeric visualization

It's the main window on witch you can read all the sensor reading by system. More important values (Oxygen, Carbon Anhydride, and Methane) are showed with large characters for long distance easy reading.



Main window

- On first line on the left it appear the ID of the well.
- On first line on the right are showed date and time, the internal watch work also when the analyser is off.
- The percentage value of concentration of methane, oxygen, dioxide carbon, read by analyser.
- The value of monoxide of carbon, ammonia, hydrogen sulfide read by instrument.
- The percentage of LEL (low explosiviti level)
- Atmospheric pressure, differential pressure and temperature of gas.
- The bar graf with the charge battery indicatin.
- The pump state (if the pump is working the write is on, if the pump is not working the write is off).
- The working time of the pump in seconds.
- Flow rate

Function key

Press F1 key to view the main screen.

Press F2 key to edit the well ID.

Press key from 0 to 9 to insert character and numbers.

Press the key up and down to set the lower or upper case character.

Push more times a numeric key from 0 to 9 untill the desiderated key is not show.

If the next character is on the same key wait two seconds before push the same key.

In error case push the DEL key to clean last character.

Push the esc key to exit form the insert mode.

KEY	CHARACTERS
0	0 – SPACE
1	1 @ _
2	2 A B C
3	3 D E F
4	4 G H I
5	5 J K L
6	6 M N O
7	7 P Q R S
8	8 T U V
9	9 W X Y Z
,	.
DEL	DELETE LAST CHART
ESC	EXIT FROM INSERT MODE
↑ ↓	UPPER CASE LOWER CASE
ENTER	CONFERM INPUT DATA

Press F3 key to show the input password page (the password is 123456).
As soon as you write the right password the system move automatically to the configuration pages.

Press F1 key to go on the system configuration page.
Press F2 key to go on the IR sensor configuration page.
Press F3 key to go on the catalitic sensor configuration page.
Press ESC key to exit from configuration pages and come back to the main page.

Press F4 key to go on the log page where you can see the data save on the instrument.
In this page you can move between the memorize data using the left and right arrow.


Press F5 key to go on the ID wells name page, where you can see the list of the well ID.

You can chose the right well ID moving beween the ID using arrows, when the cursor in on the right name you can confirm it with enter key .
If the ID memorize on the instrument are more than the number that is possible to show in one page with the arrorws you can move from one page to the other automatically.




In this page is possible to change one ID name, to do that press F2 key and using the halfanumeric keyboard insert the new ID, at the end confirm it with enter key.
If you want to insert a new weel ID press F3 key a new ID line is show, insert the name and confirm with enter. The new ID will be add and the ned of the list into the instrument.

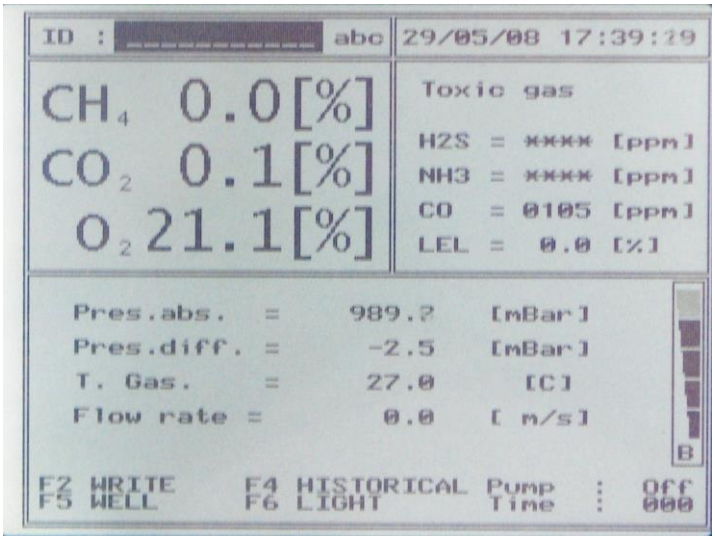
Press the F6 key to turn on or turn off the back ligh of the display

Press the pump key to turn on the vacum pump inside the analizer. When the pump is stop the presure is read, the presure value is freezing as soon as the pomp start. When the pump is on the gas is absorb from the pipe and send into the sensors, the analyzer show the readings.
If you dont want to memorize the readind just stop the pump with another push on the pump key.

If you want to memorize the reading push the enter key, the reading will write on the static memory of the instrument (to accept the enter key the system want an ID name).

3.9 Insert well ID name

In the main page press the key F2 to show the following page.



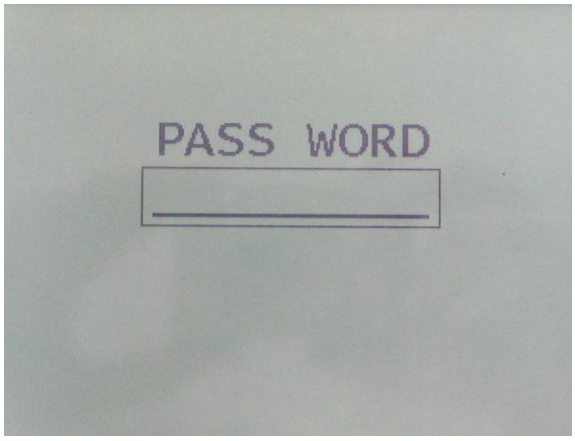
Main page

Write the ID name with the alfanumeric keyboard of the analyzer.

Push enter key to confirm the ID name.

Now in the main page the ID just write will be show in the ID name location.

4.1 Window password



Password

The key F3, move the visualization on password window.

Pushing the right code (123456), pass directly in the first configuration window.
Are present more or less configuration pages favourably of versions.

When you are inside of configuration, you can move form one page to another page by tastes F1, F2, F3.

For exit of configuration and come back on visualization pages, you must push taste ESC.

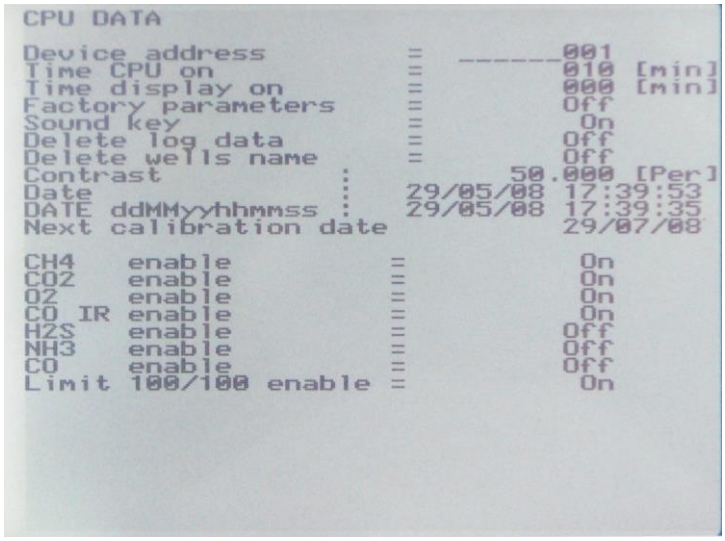
4.2 Data salvage

Inside configuration pages, all modification is saved only in the temporary memory that is loose with the extinguishment.

To make permanent salvage of new values, push taste PUMP, in this way, all modifications are registered

Pump

4.3 CPU data configuration



System configuration

- Device address: If more than one analyzer are connect on the same serial line each one must have a different address. (not use in ABE_1500 analyzer).

- Time CPU ON: show (in minutes) for how time the CPU rest active without that is made any operation, in the end the analyser turn out itself automatically (0 for disability function). Function valid only for portable analyser.

- Time display ON: show (in minutes) for how time the display rest lighted up without that come made any operation (0 for disability function), the light turn out itself automatically when one press any taste.

- Contrast: show the value of video contrast (value between 0% and 100%).

- Sound key: show if the “bip” generated by pressure of tastes is active or not, for modify this parameter select the voice “key sound” and insert 1(ON) for active the “bip” or 0(OFF) to inactive it.

- Factory parameters: permit the renewal of all factory analyser parameters that if not saved, will be maintained until analyser off.

- Date: sow date and time laid; selecting the voice “DATA” it’s possible impost the date and the time correct writing the new data in the formed (ddMMyyhhmmss). Then press “ENTER”.

- Delete log data:
  Chosing the parameter DELETE LOG DATA and writing the value one (on) the system start the deleting of the readings on the static memory, as soon as the system finished the deleting operation the parameter will be set 0 (OFF).

- Delete Well name: is possible to delete all the well ID name memorize on the instrument.
  Chosing the parameter DELETE WELL NAMES and writing the value one (on) the system start the deleting of the ID names on the static memory, as soon as the system finished the deleting operation the parameter will be set 0 (OFF).

- Next calibration:
  This date means the last time before the calibration of the instrument must be perform. If today follow this date at the warm up a warning message will appear.

When the calibration is performed the next calibration date will set 60 days in advance.

- CH4 enabled:
  If set to one (ON) the metano sensor reading is enabled if set to 0 (OFF) the reading is disable.

- CO2 enabled:
  if set to one (ON) the carbon dioxide sensor reading is enabled if set to 0 (OFF) the reading is disable.

- O2 enabled:
  If set to one (ON) the oxigen sensor reading is enabled if set to 0 (OFF) the reading is disable.

- CO IR enabled:
  if set to one (ON) the carbon monoxide IR sensor reading is enabled if set to 0 (OFF) the reading is disable.

- H2S enabled:
  If set to one (ON) the H2S sensor reading is enabled if set to 0 (OFF) the reading is disable.

- NH3 enabled:
  If set to one (ON) the NH3 sensor reading is enabled if set to 0 (OFF) the reading is disable.

- CO enabled:
  Ab set to one (ON) the carbon monoxide catalitic sensor reading is enabled if set to 0 (OFF) the reading is disable.

- Limit 100/100:
  Enable the error of limiting for the max concentration of 100%, Insert one (ON) to enable zero (OFF) to disable the error.

4.4 Analogic input

Card has 8 Analogic input managing by a high resolution converted (24 Bit) and a programmer gain between 1 and 64. Firsts 2 canals have input buffer realized with an amplifier with a high isolation and gain, six next canals have simple input buffer with negative input link to mass.

4.5 Analogic input calibration

Calibration of sensors must be repeat each 60 days for guarantee declared precision.

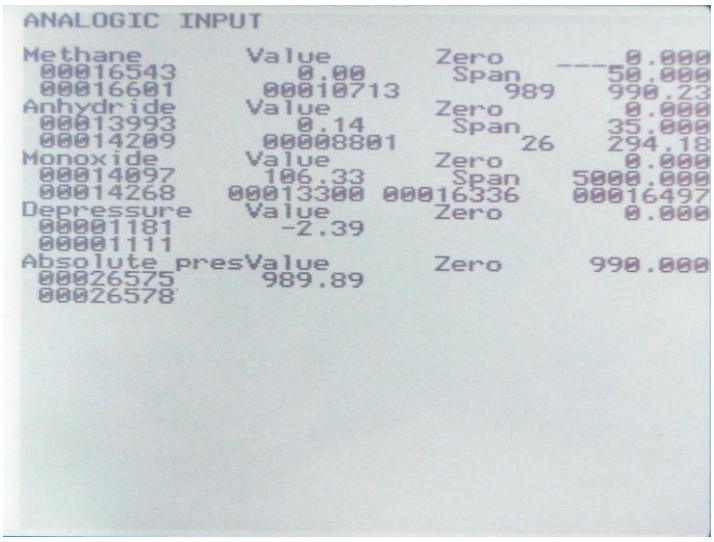
Instrumentation necessary for analogic input calibration:

1. Cylinder with zero sample gas (Nitrogen)
2. Cylinder with span gas (5% oxygen rest nitrogen).
3. Cylinder with span gas (44% carbon anhydride, 1% carbon monoxide, 55% methane).

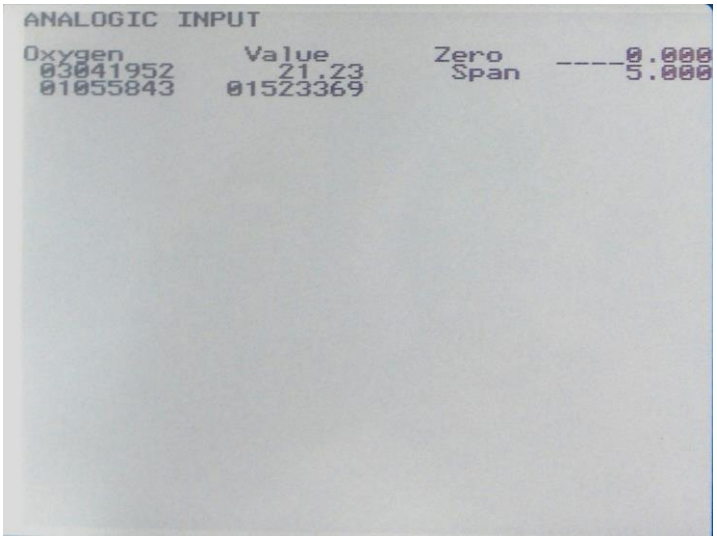
2) Necessary for calibration of oxygen sensory.
3) Necessary for calibration of infrared sensory.

By first screen, push F3 and entry in the password page.

Insert password (123456) and push again F2 or F3, appear this screen :



Analogic IR sensor input (push F2 key)



Analogic catalitic sensor input (push F3 key)

By arrows “UP” “DOWN”, to place on value that on want modified, number disappear and it is changed by some dashes. Now, on write a new value and push “Enter”, new value is confirmed.

The meaning of camps is the following:

- Low value: show zero value (in engineering terms) of desiderate measure camp for channel (oxygen value)
- High value: show span value (in engineering terms) of desiderate measure camp for channel (oxygen value)
- Reading value: show value reading at moment (variable only in reading)

4.6 Calibration pass Analogic input

For calibration of each channel:

1. Connect zero signals on entry of analogic input, go on channel zero value and write zero value.
2. Press left arrow to take and associate value reading by converter with introducing value.
3. Connect span signal on entry of analogic input, go on channel span value and write span value.
4. Press left arrow to take and associate value reading by converter with introducing span value.
5. Press fan arrow for memorizes changes in the not volatile memory.

4.7 Calibration analogic input example

Oxygen from 0% to 5% For example for calibration of oxygen sensory:

1. Write: Channel 1 low value = 0
2. Connect nitrogen cylinder to instrument whit a flux of 5 litres, then wait at least 5 minutes for sensory stabilization.
3. Press left arrow taste, so the analyser read converter value and connect 0% to oxygen value.
4. Write Channel 1 high value = 5
5. Connect cylinder whit 5% of oxygen and rest of nitrogen to instrument whit a flux of 5 litres. Then wait at least 5 minutes for sensory stabilization.
6. Press left arrow taste and analyser read converter value and connects to 5% oxygen value.
7. Press fan arrow for memorise changes in memory.

Infrared sensory calibration For example for calibration of infrared sensory:

1. Write: Zero Value CH4 = 0
2. Write: Zero Value CO2 = 0
3. Write: Zero Value CO = 0
4. Connect nitrogen cylinder to instrument whit a flux of 5 litres, then wait at least 2 minutes for sensory stabilization.
5. Press left arrow taste, so the analyser read converter value and connect 0% to methane value.
6. Press left arrow taste, so the analyser read converter value and connect 0% to carbon anhydride value.
7. Press left arrow taste, so the analyser read converter value and connect 0% to carbon monoxide value.
8. Connect cylinder whit 55% of methane, 44% of carbon anhydride and 1% of carbon monoxide, to instrument whit a flux of 5 litres. Then wait at least 2 minutes for sensory stabilization.
9. Write: Zero Value CH4 = 55
10. Write: Zero Value CO2 = 44
11. Write: Zero Value CO = 10000
12. Press left arrow taste and analyser read converter value and connects it at value of 55% of methane.
13. Press left arrow taste and analyser read converter value and connects it at value of 44% of carbon anhydride.
14. Press left arrow taste and analyser read converter value and connects it at value of 10000 of carbon monoxide.
15. Press fan arrow for memorise changes in memory.

Presure sensor calibration

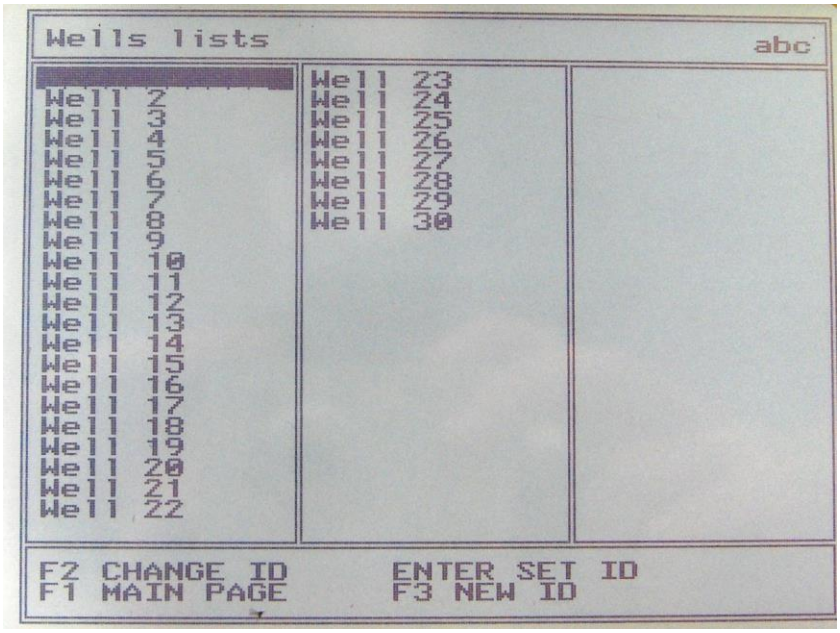
Connect the pipe to the plug and leave it free (not connect to anything, but in free air). From the main page push F3 key and go to the password page, write the password and then F2 key.
With arrow down go to presure zero line, write 0 and press enter, confirm it with enter .
Now push the left arrow and conferm with enter.
To save the new calibration in static memory press the pump key and confirm with enter.
Is possible do the same pushing the +/- key in the main page.

Absolute presure sensor calibration

Connect the pipe to the plug and leave it free (not connect to anything, but in free air). From the main page push F3 key and go to the password page, write the password and then F2 key.
With arrow down go to absolute presure zero line, write the value of the absolute presion in the place you are doing the calibration in that moment and press enter, confirm it with enter .
Now push the left arrow and conferm with enter.
To save the new calibration in static memory press the pump key and confirm with enter.

4.8 Well ID list

If you push the F5 key in the main page the following screen will appear.



Well ID name list

In this page you can chose the well ID name.

You can chose the right well ID moving beween the ID using arrows, when the cursor in on the right name you can confirm it with enter key .
If the ID memorize on the instrument are more than the number that is possible to show in one page with the arrorws you can move from one page to the other automatically.

In this page is possible to change one ID name, to do that press F2 key and using the halfanumeric keyboard insert the new ID, at the end confirm it with enter key.
If you want to insert a new weel ID press F3 key a new ID line is show, insert the name and confirm with enter. The new ID will be add and the ned of the list into the instrument.

Press F1 key to return to the main screen

Gas Analisys mesure example

1. Connect the pipe with the filter between the well and the right plug of the analyser (the arrow on the plastic case follow the gas flow).
2. Insert the well ID name by pressing F2 key and writing it by the alfanumeric keyboard, confirm it with enter key or insert the well ID name choosing amoung the list memorize into the analyser pushing the F5 key. In this page is possible chose moving with arrows amoung the list and confirm it with enter.
3. Push the pump key. The gas start to flow inside the sensor, when the reading value are stable save them with enter key, the readind will save into static memory.

5.0 Battery recharger

Battery rechargers

The analyser is powered by a litium battery, this kind of battery is very powerfull, light and not present memory effect.

With battery fully charge the analyser can work for till 10 hours before need a new recharge.

To recharged the battery connect the recharger to the case tru the plug and push the red button on the recharger the yellow led will turn on and stay so till the bactery is fully recharged.

When the bactery are completely down the recharded time is at least 2 hours.

The analyser control at any time the state of the bactery and turn itself off the the battery are too low, before do that advise the operator with beep and a writing warning.

ADVISE:

Never leave the analyser with battery not full charge, as soon as you finish to use recharge it. If the instrument is not use recharge the bactery every three months.

6.0 Technical note

Operative temperature	-5°C / 50°C
Weight	3 Kg
Dimension	206*197*70 mm

6.1 Measures range

Model	Operative range	Resolution
O2	0 — 25% Volum.	+/- 1%
Ch4	0 — 100% Volum	+/- 1.5%
CO2	0 — 100% Volum	+/- 1.5%
CO	0 — 20000 ppm	+/- 1.5%
NH3	0 – 1000 ppm	+/- 3%
H2S	0 – 500 ppm	+/- 3%
Absolute pressure	100 — 1200 mBar	+/- 2%
Relative pressure	-200 — 0 mBar	+/- 2%
Temperature Sensor	-10 — 100°C	0,5 °C
Flow sensor	0,6 — 40 m/s	
Vacum pump	0 – 2000 cm^3/min	
Vacum pump	+100 — -450 mBar	

6.2 Memory

The analyzer con memorize till 800 well ID names, and 2349 log record acquisition.
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6.3 Preservation works

Warning

Working with poison gas must be assured that in the working place cannot be concentration hurtful for health. In case of not appropriate gas lacing can be verify warning of accident due to poison gas, fuels or explosives.

Attention

Components and electrical modules inside this instrument must be protected against electric discharges. For this one must take many protective measures anywhere they were made, tested, shipped and installed.

6.4 Re-shipping

Biogas analyser must be ship in the original packing. If you don't have the original packing, the instrument must be wrapping up in a plastic film and then packing in a case dressed with anti-collision material.

In case of maritime transport, the instrument must be warp up in a polystyrene film 0,02mm thick. For this shipping mode, the case must be dressed with tarpaper.

6.5 Address for re-shipping

Technical assistance

for technical assistance:

Tel: +39 015 9842253
Fax: +39 015 9233243
info@abenergy.it

Repairs

For a rapid cancel of damage causes please send the instrument to the following address:

AB ENERGY S.R.L.
VIA AMENDOLA 340
13836 COSSATO (BI)
ITALY

Tel.: +39 015 9842253
Fax: +39 015 9233243

Declaration of Conformity
Attestato di Conformità

The manufacturer
Il Costruttore

A.B.Energy S.r.L.

Via Amendola 340 13836 COSSATO (BI) Italy

declare under sole responsability that the products
dichiara sotto la piena responsabilità che i prodotti

model/modello: ABE_1500

type/tipo: Portable gas analyzer/Analizzatore di gas portatile

as originally delivered comply with the essential requirements of the following applicable European Directives
cosi come originariamente consegnati, rispondono ai requisiti essenziali delle seguenti applicabili Direttive Europee

Electromagnetic Compatibility Directive 2004/108/EC

and conform with the following product standards
e sono conformi ai seguenti standard di prodotto:

EMC **EN 61131-1, EN 61131-2**
EN 61000-4-2, EN 61000-4-3, EN 61000-4-4
EN 61000-4-6, EN 61000-4-11, EN 61000-6-4

CE

The products carry the CE marking accordingly
I prodotti riportano il marchio CE in accordo a quanto sopra

Cossato 01/10/2011

General Manager
Andrea Ing. Baroni