BM25

OPERATING MANUAL

Made in France

OLDHAM
An Industrial Scientific Company

REF: NPB25GB
REV E

INDUSTRIAL SCIENTIFIC

GAS DETECTION

We are delighted that you have chosen an **INDUSTRIAL SCIENTIFIC-** instrument and would like to thank you for your choice.

We have taken all the necessary measures to ensure that your instrument provides total satisfaction.

Now it is important to read this document carefully.

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GUARANTEE

2 years guarantee in normal conditions of use on parts and technical labour, return in our workshops, excluding consumables (sensors, filters, etc.)

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I. INTRODUCTION

- **The BM25 gas detector is a stand-alone gas detector** that can be used in explosive gas atmospheres according to directive ATEX 94/9/EC, the Canadian Electrical Code, and international standard IEC 60079-10-1. It provides simultaneous detection of up to 5 gases present in the air by means of sensors specific to each risk to be evaluated (under-oxygenation, explosive or toxic gases).

1. POWER

1.1. Power supply

The BM25 is powered by an interchangeable and rechargeable battery pack.

Under normal operating conditions, and depending on the sensor configuration, operating runtime varies between a minimum of 75 hours and a maximum of 170 hours (100 hours standard).

The power supply unit is a NimH 7V2 / 9AH battery pack.

1.1.1. Charging the battery pack

A lateral connector allows the battery pack (see the section on CHARGERS) to be charged without dismantling.

1.1.2. Trickle charge

You can trickle charge your BM25 continuously in a classified area to keep the charge level constant (except in alarm conditions) for as long as needed by means of an intrinsically safe power supply.

1.2. Memory saving

A lithium battery (non rechargeable) ensures the storage of the BM25 gas detector's specific data (time/history), especially when the instrument is out of service (off mode) or without the battery pack (main power supply).
This lithium battery has a maximum service life of two years without the main power supply (battery discharged or internal switch in “off” position).

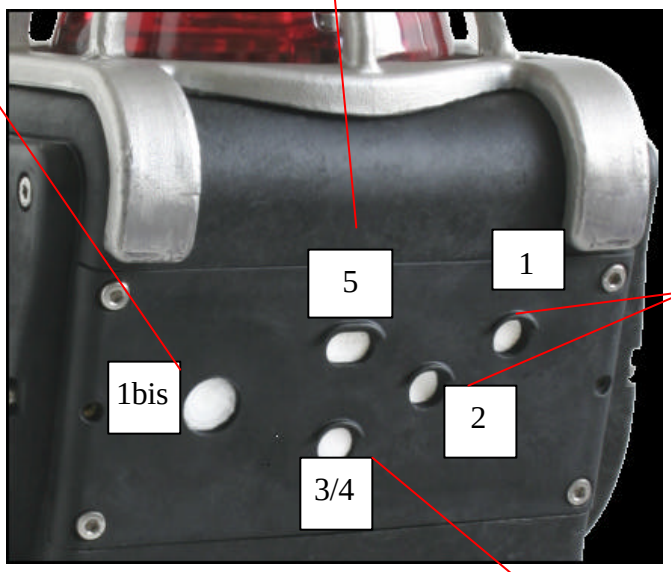
IMPORTANT:	**The instrument is approved for explosive atmosphere operations, only when it is equipped with batteries of a type recommended by the manufacturer. Switch instrument to “off” before any maintenance operation, such as: battery replacement.**

2. SENSORS

2.1. Connecting the sensors configuration samples

Sensors S7/S3
- SO2, ETO etc…
- CO2 IR
Or medium oxygen sensor with 2 years lifetime

Explosive gas sensor 0 to 100% LEL or catharometric sensor 0 to100 Vol.%



Small format sensors for toxic gases and oxygen with 1 year service life

Medium format sensors
- oxygen with 2 years service life
- CO/H2S, SO2, ETO etc…
- CO2 IR

1: tox/Ox mini

2: tox/Ox mini

3/4: tox/Ox medium

1bis: Big sensor (7/3 series type or big size) or medium

5. Explo LEL

Notes:

- "Big sensors" are "3 or 7 series" format. Example: Compensated butane or hydrogen CO sensor
- In case sensors are present in slots 1bis and 1, the sensor for slot 1bis has priority and deactivates the one for slot 1.
- The "combo" CO/H2S sensor can only be plugged in location no. 4.

Caution: Sensors' slots and protection filters must be kept clean, or else measurements could be affected.

2.2. Explosive, toxic gas and oxygen metering sensors

The removable, interchangeable and intelligent sensor blocks are made of catalytic, electrochemical or IR sensor and electronic components, including an “EEPROM” memory in which INDUSTRIAL SCIENTIFIC- has stored the sensor's specific characteristics (measuring range, various correction coefficients, STEL and TWA alarms, date of manufacture, serial number, etc.).

Another parameter called the "wear rate" is used by the BM25 to automatically determine the optimal time to replace the sensor.

These sensor blocks, also called “intelligent blocks,” are plugged in as indicated in Chapter 2.1.

Caution: Silicon vapors or other “poisons” may have an adverse effect on explosive gas detection sensors and distort measurements (under-estimated measurements).
If the instrument is used in poisoned atmospheres, calibrate it before its next use.

3. DISPLAY UNIT

This is an LCD type display unit which lights up automatically in backlit mode in alarm or fault conditions and the display can be reversed.

It shows:

- five measurements for units, type of gas and the presence of a catharometer.
- a calibration reminder
- the date and time
- minimums-maximums
- the mean STEL and TWA values
- the remaining battery time (bar graph)
- operator identification (roundsman function)
- maintenance menus
- alarm transfers

4. VISUAL INDICATIONS

An indicator light (made of 20 ultra-bright LEDs) installed on top of the instrument indicates alarm conditions and can be seen from all directions.

5. AUDIBLE ALARMS

The operator is also warned when an alarm is triggered by two very powerful, built-in horns (103 dB @ 1m).

6. SAMPLING

The BM25 gas detector can be equipped with an internal electrical pump or an external manual pump to measure gas concentrations in inaccessible locations or in locations needing to be verified before access.

6.1. Operating instructions

The operator can:

- Gas detector mode: place the gas detector in the working area and let the BM25 monitor the atmosphere.
- Sampling mode: take regular measurements by means of a sampling system (manual or electrical).

6.2. Electrical pumping system

The BM25 gas detector can be optionally equipped with an integrated electrical pump, powered directly from the gas detector's battery pack.
Pump drainage is between 18 and 25 1/h

NOTE: After each use of the electrical pump, check the watertightness by obstructing the end of the sampling line until the draining alarm is triggered.

6.3. Manual pumping system for manual and electrical pump

It consists of a cover, a horn bulb, a probe and a connecting line.

6.4. Different probes

Manual or electrical sampling systems can be equipped with various probes.

- Rigid probe
- Semi-rigid probe
- Telescopic probe

CAUTION: Flexible probes, horn bulbs and certain rods are not antistatic. The operator must take the necessary precautions to avoid electrostatic discharges, and, in any event, must prevent any hazardous discharge through a metallic probe.

6.5. Gas detector mode

The BM25 must be positioned vertically.

Depending on the type of gas to be detected or likely to be present, the instrument must be placed:

- On the ground for detection of heavy gasses (density > 1)
- At medium height (approx. 1 m.) or in an outlet nozzle for a general detection of a maximum of gases or for oxygen monitoring.
- Optionally, the gas detector can also be used on a tripod to be more visible from different areas.

7. Communication Software COM 2100

This password-protected software is used to supervise and maintain the BM25 gas detector:

- clearly displays readings and parameters on channels
- gives diagnostic assistance in case of failure
- helps programming of the instrument and sensor channels
- allows management of options
- enables calibration of channels through an automated scrolling menu
- prints status and monitoring reports
- enables the management, display and printout of events and measurements stored

The BM25 can be connected to a computer via a cable equipped with an infrared port.
Two versions are available:
- COM or USB port

II. UTILIZATION

1. KEYBOARD

Push buttons are "piezo" type with slight deformation.
They enable:

- turning the instrument on and off
- the display mode
- the acknowledgment of audible gas alarm
- backlighting of display (turns off automatically after 4 minutes)
- scrolling through parameters
- selecting menus during operation
- Access to the Maintenance level
- validating (Enter)

2. READING MEASUREMENTS

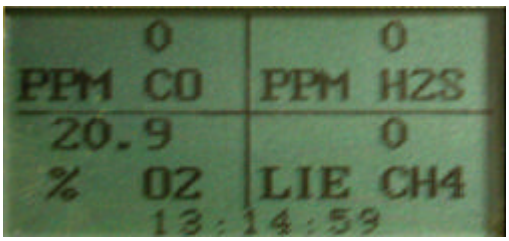
The gas content measured by each of the sensors "in service" can be seen on the alphanumeric display unit.

It is divided into four independent zones, each one corresponding to a sensor channel.
A maximum of four readings can be displayed simultaneously.

In each field, the reading is displayed as follows:

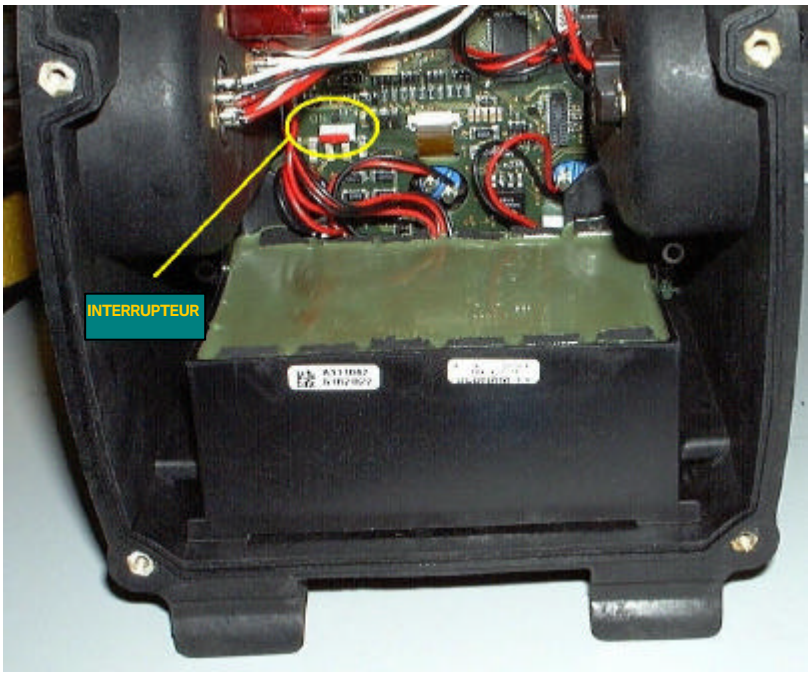
- Measurement
- Unit
- Gas symbol
- in case of a 5-gas configuration, channel 5 is displayed alternately in field 3 of the display unit.

The time is also shown at the bottom of the display unit.



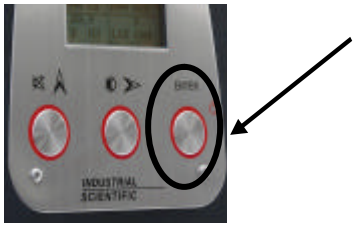
3. STARTING UP

IMPORTANT: In order to avoid random start up during shipment, the BM25 was sent to you with the power supply switch turned OFF.
For the first power up, you must open the rear cover of the BM25, and switch the button to ON.
During first start-up, or after a period of inactivity longer than one month, the detector must be charged, then discharged and recharged completely before operation. Additionally, keep in mind that any portable gas detector must be tested with gas daily before use.



REMINDER: Before starting up the BM25, check that the necessary sensors are connected.

To start-up the BM25, you need only to push this button on the front plate.



During instrument start up, you have a choice of two procedures:

- standard procedure used in most cases
- procedure allowing you to select a reference explosive gas. This procedure is useful when checking for a specific gas (town gas, butane, etc.).

3.1. Starting up in standard mode

- Briefly press the "On/Off/Enter" key:
- the instrument carries out a visual and audio test phase for a few seconds and indicates:
  - the INDUSTRIAL SCIENTIFIC- logo
  - the version of the instrument software, date, code and serial number
  - the pre-programmed values of the alarm thresholds for each sensor channel
  - the current readings.

Note: when the instrument is operating, it emits a visual confirmation flash in order to indicate that the BM25 gas detector is operating correctly. Upon request or by using COM 2100 software, this signal can be cancelled and the interval between each signal can be modified.

3.2. Starting up with choice of reference explosive gas

Hold down the "Lighting" or "Acknowledge" button

- switch on the instrument by pressing the “On/Off/Enter” key
- release both buttons
- the display unit shows the INDUSTRIAL SCIENTIFIC- logo for a few seconds while it performs self-tests. It then displays the list of pre-programmed gases, with the currently selected gas in the dark field.

Choosing a new reference gas:

- each time you press the “Acknowledge” button, the list scrolls downwards and each time you press the “Lighting” button, the list scrolls upwards. thirty-one reference gases are pre-programmed in the range 0-100% LEL (or 0-5% volume CH4). A thirty-second (32) “Other” lets you select a gas according to your specific requirements. The data specific to that gas is entered in the workshop.

- Accept the choice: when the chosen gas is displayed, press the “Enter” key.

After a testing phase, the explosive reference gas is now the gas that was selected.

If you do not select a gas after a certain amount of time, the gas detector switches to normal phase without changing the reference gas, therefore aborting the procedure.

3.3. Start-up test and calibration due

During start-up, the instrument performs a self-test.

- If tests are incorrect, the instrument switches to “fault” mode (audible signal and continuous visual indication).
- If tests are correct the instrument is ready to use.

CALIBRATION DUE

If, after starting up, the date of calibration has expired, the instrument triggers a calibration due signal on the channel concerned. This calibration due signal can be cancelled and the gas detector is still in use but must be calibrated.

4. SHUTTING DOWN

To shut down, hold down the "On/Off" button for three seconds.

On the display unit, the countdown "Stop 3,2,1" is displayed until the instrument is switched off.

In more recent gas detector versions (1/2007), it is necessary to release the ON/OFF button, then press the key again (follow the on-screen instructions).

When the gas detector is switched off, the set values (sensor adjustment data, alarm thresholds, histogram, etc.) are saved.

5. DISPLAY BACKLIGHTING

Measurements can be read in dark places by pressing the "Lighting" button. This lighting is automatically deactivated after 4 minutes.

The display unit backlighting is automatically activated in case of an alarm or fault.

6. SCROLLING THROUGH SET PARAMETERS

When the instrument is in normal operating mode, you can consult a series of data on gas measurements and also the instrument's internal data (remaining battery time, date and time).

While the instrument is in normal operation, press the "Lighting" button repeatedly to scroll through the parameters for each sensor channel

- display unit backlighting and date
- measurement location and operator’s name (only with “roundsman” option activated: see Section 6.1.)
- remaining battery time in a bar graph
- indication of minimums detected by each sensor
- indication of maximums detected by each sensor
- STEL of each “toxic” channel
- TWA of each “toxic” channel
- Message stating “Entrez le code de maintenance” (Enter maintenance code): to access maintenance menus, specify the four-digit code with the “Acknowledge" and “Lighting” buttons.
- If the code entered is incorrect: return to normal display
- To exit the list before the end: press the “Acknowledge” button.

6.1. “Roundsman” function

If the instrument is equipped with the "Roundsman" function (optional), a list of names can be pre-programmed using the COM 2100 software. This list can be consulted manually via the keypad.

To change the name or location, as follows:

- current location/name
- enter

- scroll down or up through pre-programmed list using the “Acknowledgment” and “Lighting” button
- enter (to select the new name)
- acknowledge (to return to normal mode)
-

6.2. Re-initialization of MIN/MAX

Pushing Acknowledge and Lighting simultaneously restores “min and max” values to the current measurement value. An audible beep confirms the action.

7. ALARMS

The BM25 is equipped with two types of alarm signals:

- Visual alarms: messages in uncoded mode displayed, a 360° red light visible from all directions
- Audible alarms two powerful horns (103 dB @ 1m.)

Alarm types:

Gas alarm 1:	two-tone
Gas alarm 2:	two-tone fast
Alarm transfer:	two-tone slow
Fault:	single-tone

7.1. “Gas” alarms

- Two instant thresholds per channel for Explo, Toxic or Oxygen
- High and low thresholds on oxygen channel (2 optional low thresholds)
- 1 instant threshold on the catharometric channel.
- Exposure limit (STEL) corresponding to a sliding average of measurements over 15 minutes (depending on the country) for each channel equipped with a toxic gas sensor.
- Mean exposure (TWA) corresponding to a sliding average of measurements over eight hours for each channel equipped with a toxic gas sensor.

Hence, as soon as the predefined alarm thresholds are exceeded on at least one channel, the gas detector triggers a pulsed-tone audio and light signal (flashing red light). The alarm message or messages (FAULT, ALARM, TWA, STEL, min., etc.) and the reading value appear on the display unit.
In case of a gas alarm, the gas detector displays the maximum value detected until acknowledgement.

7.2. Fault alarms

Faults can be classified into two categories:

- Faults concerning sensors: out of range, worn sensors, request for calibration in the case of a major deviation during auto-adjustment. These faults generate messages on the display unit, a visual alarm (steady red light) and a steady audible alarm.
- Faults concerning the instrument itself (discharged batteries or electronic fault). The corresponding fault message appears at the bottom of the display unit. It takes priority over all other sensor-related messages.

Examples of information which may be brought to the user's attention

❖ **Battery pre-alarm warning**

- The remaining battery life is at least 20 minutes, during this phase, measurements are still provided, only audible beep can be acknowledged.
- **Battery fault**: The BM25 is no longer measuring, fault is not acknowledgeable.

❖ **" > 100% LEL: outside range" in explosive channel**

This concerns only the explosive channel and if there is no catharometric sensor (0 to 100% vol).
In this case:

- the display of the channel concerned is frozen
- it is impossible to acknowledge the continuous audio signal
- the general alarm indicator lights come on in steady mode
- power to the explosive gas sensor (LEL) is cut off for its protection

Normal operating conditions can be restored by stopping and restarting the BM25 gas detector (this operation must be performed outside the hazardous area)

❖ **“Outside range” for toxic gas and oxygen**

- negative fault (reading below -20% of the scale), acknowledged automatically
- positive fault (scale exceeded by 120%), must be manually acknowledged.

7.3. Acknowledging gas alarms

7.3.1. Manually acknowledging gas alarms

Pressing the “Acknowledge” button stops the audible alarm, but the alarm indicator light flashes until the measurement is lower than the programmed alarm threshold. As soon as the measurement returns within the defined limits, the visual signal is automatically stopped.

In standard configurations, the audible alarm will be reactivated after 2 minutes if the gas level is still above pre-defined limit(s) (this feature can be disengaged by request).

7.3.2. Acknowledging alarms automatically

By request, it is possible to automatically stop gas alarms as soon as the concerned gas levels exceed the pre-defined threshold without pressing the “Acknowledge” button.

7.4. Alarm transfer

The BM25 has two “static” relays: one “gas alarm” relay common (in closing) for all channels and one “failure” relay common (in opening) for all channels. The alarm relay is configured through COM2100.

The BM25 is also equipped with two logic inputs (TOR):

- 1 input dedicated to remote acknowledgment
- 1 input dedicated to alarm triggering

These inputs are also configured through COM 2100.
Connections: see Chapter III, 2.5.

Several gas detectors can be connected to each other in order to transfer an alarm from one gas detector to another or to manually trigger an alarm.

2 relay outputs (default and gas) and 2 logic inputs (remote acknowledged and alarm transfer)

IMPORTANT: Imperative parameters for relay outputs

AC	I Max 150 mA - V max 30V
DC	I Max 150 mA - V max 30 V

Caution: If the BM25 gas detector is used in a explosive atmosphere, it is imperative to consider output parameters, since contact must not impair the intrinsic safety of the gas detector. These parameters are mentioned in the Special Instructions section for use in ATEX areas.
INDUSTRIAL SCIENTIFIC- shall not, in any event, be liable for failure to follow regulations.

8. MEASUREMENTS

Caution: measurements can be affected by high or low oxygen concentrations. Any reading rapidly changing from too high (exceeding the scale) to too low can in fact indicate a hazardous gas level higher than the measurement scale.

8.1. Display of instantaneous readings

8.1.1. Diffusion mode

All the instantaneous readings regarding gases are displayed in continuous mode.
The display unit is divided into four separate fields (quadrants).

Therefore, the operator can read:

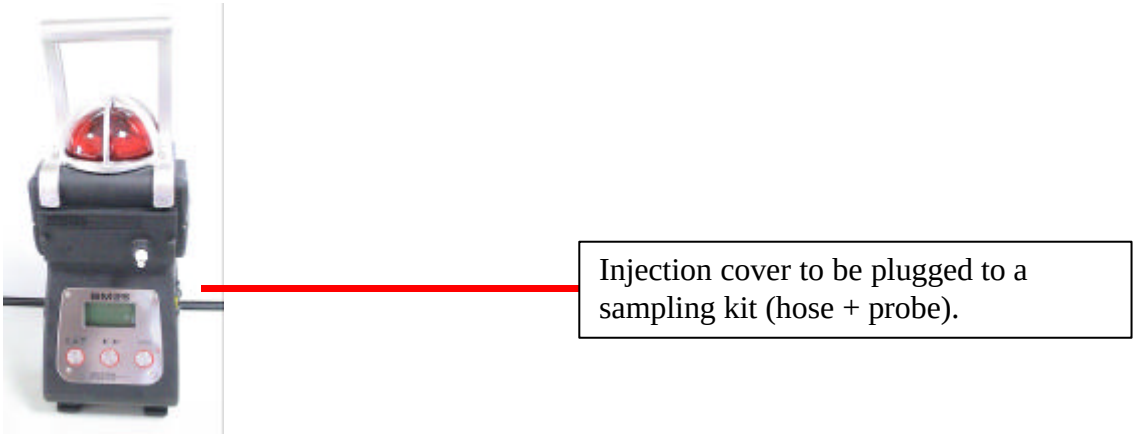
- the measurement
- the measuring unit preceding the gas symbol

8.1.2. With electric pump systems

Caution: you must place a cover on the gas detector as indicated

- Wait a few seconds to read measurements. Any anomaly in the pump system is indicated by an audible alarm and on the display unit

Caution: do not forget to remove the cover to return to diffusion mode.



8.1.3. With manual pump systems

Place the calibration pipe as shown
Wait for measurements to stabilize before recording them. They could be over-estimated (explosive gas) or under-estimated (oxygen) during manual pumping due to air movement and system draining.
Caution: do not forget to remove the pipe to get back to diffusion mode.

8.2. Automatic range change « 0-100 % Gas »

With a explosimetric % LEL/ catharometric (% vol) sensor and with an oxygene sensor
(mandatory in this case), the BM25 switches automatically from the gas explosibles measure range “0-100% LEL” to the range “0-100% GAS” when the measure is above 100%LEL of the selected gas reference.

NB : For this operation type, the BM25 must be equipped with an oxygen sensor.
The letter K diplay confirms this mode.

8.3. Memorizing histogram measurements

Depending on the version, the BM25 gas detector can memorize measurements so that they can be restored later on a computer.

The "Histogram's" function can be used to output values and events memorized by BM25 during its operating period to a computer (a workstation, for example). Resetting of the data contained in the histogram memory can only be performed with a computer. Switching off the gas detector has no effect on memorized data.

8.3.1. Operating principle, memorized items:

The BM25 stores sets of data as soon as it is started, and then in cyclic mode. Each of these sets or threads (with their pre-programmed specifications) has the same structure.

A thread contains:

- information on measurement channels
- the mean measurements of concentrations on each sensor in operation, over the period of storage intervals (configurable)
- the events on each channel:
  - resetting
  - fault
  - instantaneous or mean alarms
  - types of maintenance requested (programming, calibration, sensor replacement)
  - date and time
  - battery in discharged state
  - auto-adjustment request
  - maintenance function request.

8.3.2. Memory capacity

The gas detector can store about 200,000 measurement points.

If the quantity of data to be stored exceeds the gas detector's storage capacity, the oldest data are lost.

8.3.3. Data storage time

The data stored by the BM25 are stored even if the instrument is not used for a long time (out of service).

III. Special instructions for use in explosive

atmospheres or hazardous locations

Information in following paragraphs must be taken into account and followed by the person responsible for the equipment installation site. Refer to the provisions of European ATEX Directive 1999/92/EC, the Canadian Electrical Code, or to the applicable local legislation, relevant to improving safety protection and health of workers exposed to the risks of explosive atmospheres.

For intrinsically safe installations and especially for connections to the BM25, keep in mind that the person responsible for the IS installation, called "the system designer," must establish a system document demonstrating that the whole BM25 system - Cable -- Body device is Intrinsically Safe (See standard EN 50039 FOR GROUP II and EN 50394-1 for group I for the preparation of this document).

ATEX Essential Safety and Health requirements
comply with the following standards:
EN 50014 of June 1997 + Amendments 1 and 2
EN 50018 of November 2000 +amendment 1
EN 50020 of June 2002
EN 50284 of January 1999
EN 50303 of July 2000

1. Hazardous areas and general rules

The BM25 can be used in explosive atmospheres in Group II surface industries and Group I mines containing firedamp.

The ambient temperature range for its use is from –20° C to + 55° C.

Depending on the type of sensors used on the instrument, categories covered by the gas detector following the European Directive 94/9/CE are:

a) Device with any type of sensor block except infrared block
- Surface industries: Category 1G, use in zones 0,1 or 2
- Mines containing firedamp : category M1, whatever the gas value

b) Device with any type of sensor block including infrared block
- Surface industries: Category 2G, use in zones 1 or 2
- Mines containing firedamp : category M2, use below a gas limit value

The following operations are **prohibited** in explosive atmospheres:
- opening of the instrument: sensor cover or rear cover
- recharging of batteries
- link-up with a computer

All servicing, adjustment and maintenance operations must be performed by duly approved personnel.

In order to avoid any risk of explosion by electrostatic discharges, the display unit glass and indicator light must be cleaned only with a damp cloth. The battery pack must be replaced by the original part specified by the manufacturer – INDUSTRIAL SCIENTIFIC- p/n 6 311 082.

2. ATEX areas: input/output parameters

2.1. Gas detector recharge connector

It is recommended that the charger provided by INDUSTRIAL SCIENTIFIC- be used outside of the ATEX (hazardous) area. When the recharging is done by a charger other than the one provided by INDUSTRIAL SCIENTIFIC-OLDHAM, its characteristics must not exceed a voltage of 30VDC and a current of 30 mA

2.2. Connector for alarm outputs / fault and digital TOR inputs

The characteristics of static relay contacts inputs opto isolated and built into the gas detector are:

U in = 30 V max I in = 150 mA max

The output characteristics of TOR digital inputs built into the gas detector are:

U out = 5 V max I out = 50 mA max L out = 8 mH C out = 7 µF

Only zero voltage circuits can connect to the digital inputs, i.e. Uin = 0V and Iin = 0A.

Caution: The two previous circuits are separate intrinsic circuits. The cables connected to the ends of these circuits must comply with the requirements for intrinsically safe circuit wiring: type of cables, insulation voltage, insulation, linear capacity and inductance. Refer to national and international standards, for example EN 60079-14.

A system log should be established by the person responsible for the installation as explained above.

2.3. External power connector for maintenance of the battery pack

The output characteristics of each external power source connected to the BM25 are:

- Either: Po=0.81W Uo =28V Io=115 mA Lo=2 mH Co=0.08µF
  For instance power supply 5302B by Pr. Electronics
  II (1) G [EEx ia] IIC DEMKO 99ATEX126257)
- Or: Po=1.3W Uo =23.5V Io=160 mA Lo=1 mH Co=0.132µF
  For instance BXNEO1 by Georgin
  I (M1) II (1) G/D [EEx ia] I [EEx ia] IIC LCIE 02ATEX6104X)

The BM25 gas detector has a Co=0 and a Lo=0 on external power connectors.

It is possible to connect two external power supplies on the connector in accordance with the rules specified in the previous paragraph.

2.4. Connector accessories / options

Figure 1 shows the different connection options for the BM25.
The connectors are located on the BM25 sides.
Remark : the unused connectors will be equipped with their cap.

2.5. Reference for electrical signals of connectors

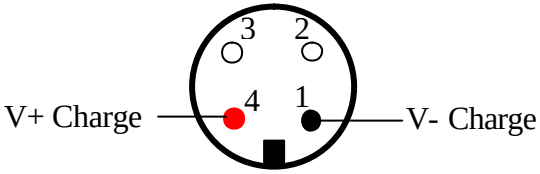
Figure 1 shows the different connections of the BM25. The connectors are located on the sides of the gas detector.

Note: Unused connectors must be equipped with their protective cap.

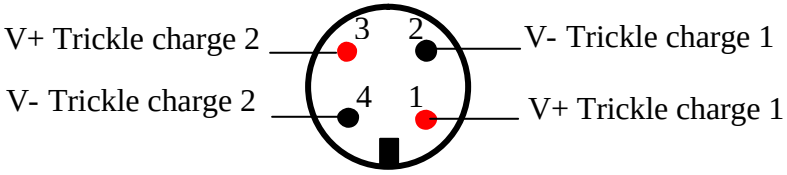
INDUSTRIAL SCIENTIFIC

ELECTRICAL REFERENCE FOR BM25 CONNECTORS

Figure 1

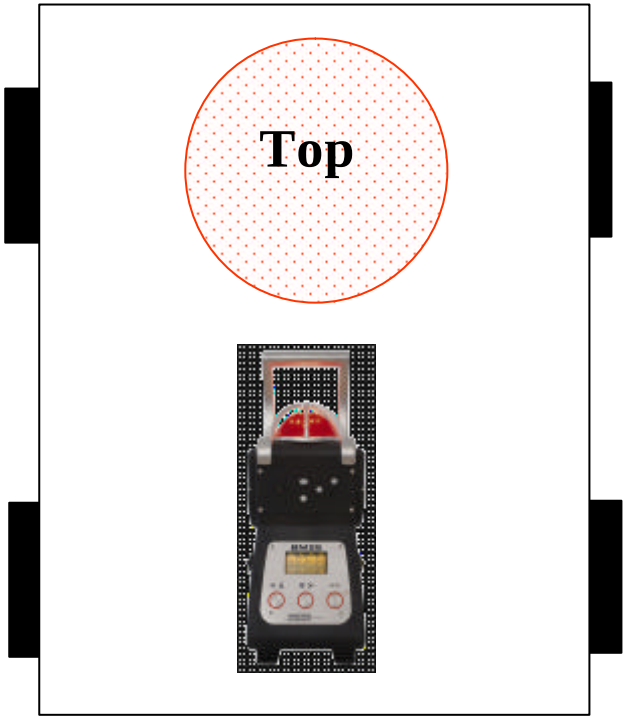


To INDUSTRIAL SCIENTIFIC- charger
(do NOT connect) in ATEX area

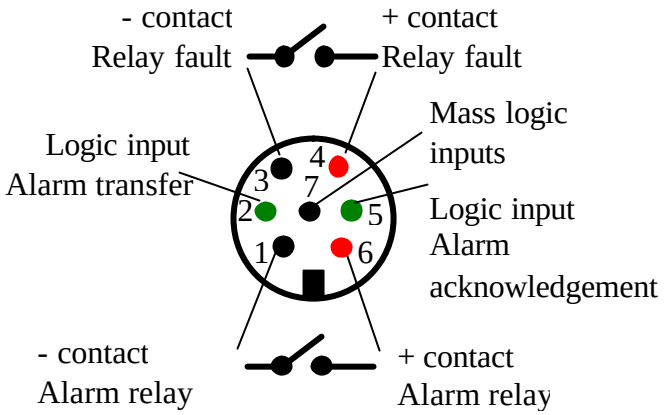


External power supply for trickle charging of BM25 battery pack

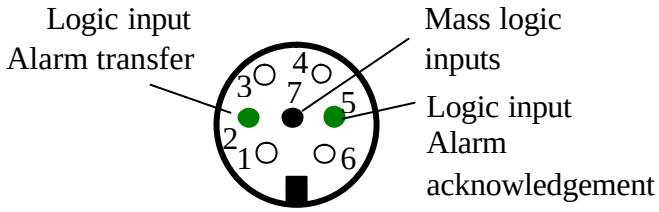
BACK



FRONT



Relay outputs and logic inputs

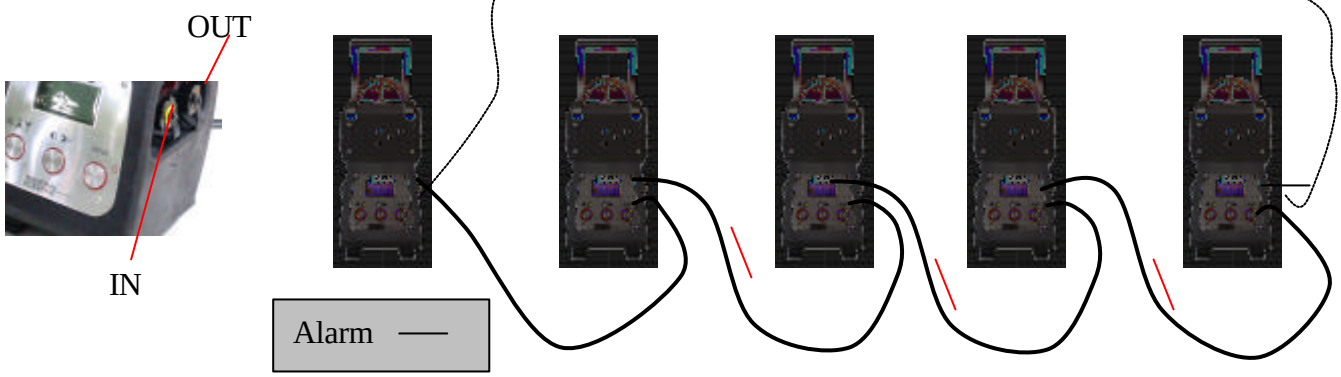


Yellow ring
Option connector = logic input

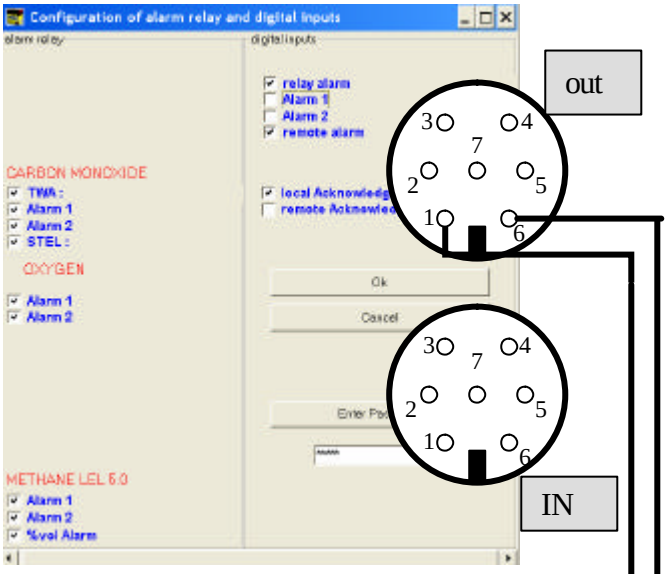
SI Parameters:

- Alarm contact Static type relay Vin=30Vdc, Iin=150 mA, Lin=0 et Cin=0
- External power supply for trickle charging U in =30V, I in=160 mA, Lin=0 et Cin=0
- Logic input U out = 5 V, I out = 50 mA, L out = 8 mH, C out = 7 µF

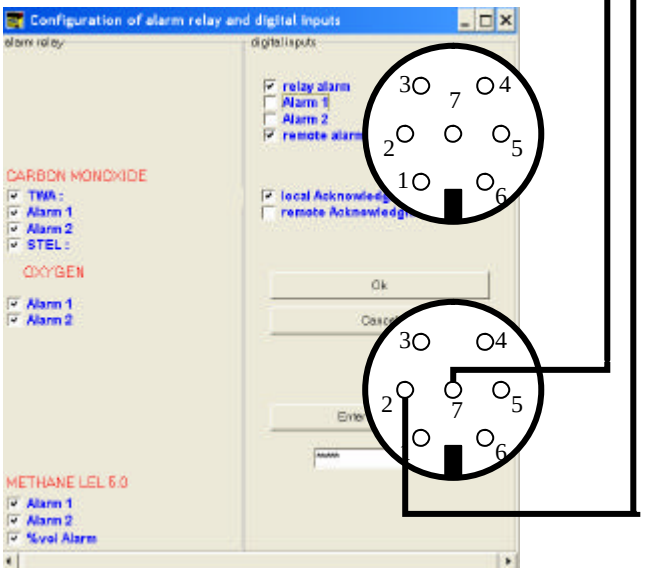
Caution: The responsible person must create an IS system log (see BM25 note)



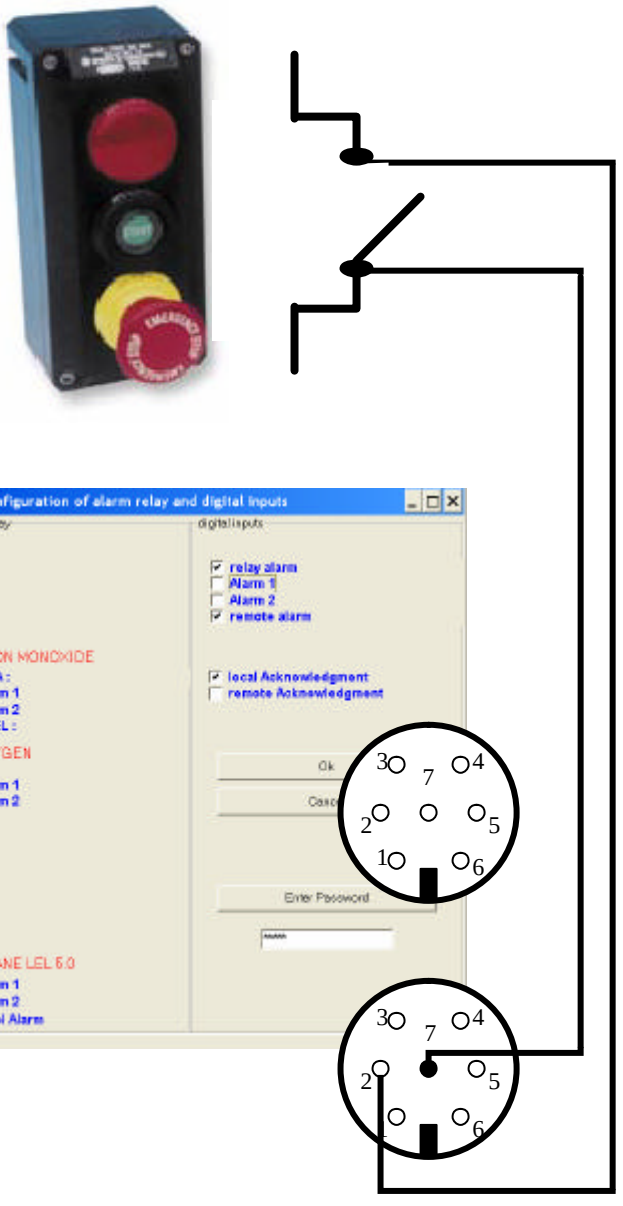
Staight forward alarm transfert



Two Balise interconnection



Manual call point connection



3. Marking

ATEX and IEC Ex
Industrial Scientific Oldham
CE 0080
BM25
IP66
Ambient T : -20° C +55° C
II 2G / I M2
Ex ia d IIC T4 Ex ia d I

INERIS 05ATEX0044

IECEX INE 06.0002X
Do not open in explosive atmospheres
Potentially hazardous electrostatic charges – see instructions
serial number
manufacture year

Warning : read instructions carefully before starting up. The component change could compromise the intrinsic safety.

IV. MAINTENANCE

Gas detectors are above all safety instruments. Recognizing this fact, Industrial Scientific Corporation recommends that a functional (bump) test be performed on every portable gas detector prior to each use. A functional test involves the injection of a gas of sufficient concentration at the sensor level to trigger pre-set alarms. This test does not, in any event, replace a full calibration of the sensor.

Industrial Scientific further recommends that a full instrument calibration be performed using a known and certified concentration of calibration gas monthly to ensure accuracy of the instrument.*
If a gas detector does not respond correctly to a gas test, a full calibration with a standard gas is mandatory.
These recommendations are consistent with applicable industry safety protocols and with the standards and directives relative to the safety of industrial sites. Furthermore, Industrial Scientific is not responsible for procedures implemented on a site.

IMPORTANT:
The **BM25**s are programmed by the manufacturer for an automatic maintenance check after twelve months if the calibration has not been done. ("calibration due" appears on screen).
Switch off the instrument before any maintenance operation.

The operations explained in this chapter must be performed by authorized, qualified personnel only as they could adversely affect detection safety.

1. ACCESS TO MAINTENANCE MENUS

With the BM25 in operation, menus can be accessed in the following manner:

- Scroll to parameters with a central key until a request for a standard access code 0018 is displayed
- Scroll to each digit with the “Lighting” button, choose the figure with the “Acknowledge” button and validate access code with the “Enter” key.

The list of available menus is then displayed:

- programming
- calibration
- auto-zero
- date and time
- exit

1.1. Channel programming menu

This is used to:

- Select the channel to be programmed
- Switch the selected channel On and Off
- Inform the operator of the type of sensor for the measuring range
- In the case of a explosive sensor, select the type of reference gas from 31 pre-selected gases or enter the coefficient of a 32^{nd} gas and program instantaneous thresholds.
- When an oxygen sensor is used, to program the “min” and “max” alarm thresholds if this option was selected.
- When a toxic gas sensor is used, to program instantaneous thresholds.
- When a catharometric sensor is used, to program low instantaneous thresholds.

(1) List of pre-programmed “explo" gases and coefficients

The explosive sensor of the BM25 is of thermo catalytic “Pont de Wheatstone” type. The coefficients are given for information in relation to a CH_4 scale with LEL = 5.0% (the BM25 already takes them automatically into consideration during the calibrations / range changes)

Gas	Molecular Formula	LEL	LSE [2]	Vapour density	Coef. / CH_4	Suggested gas calibr.	Abbreviation (French)
Ethyl Acetate	$C_4H_8O_2$	2.1%	11.5%	3.0	**1.35**	But/Prop	AET
Acetone	C_3H_6O	2,15 %	13 %	2,1	**1,70**	But/Prop	ACO
Acetylene	C_2H_2	1,5 %	100 %	0,9	**1,3**	But/Prop	ACY
Butadiene	C_4H_6	1.4%	16.3%	1.85	**1.25**	But/Prop	BUD
Butane	C_4H_{10}	1,5 %	8,5 %	2,0	**2,13**	But/Prop	BUT
Butanone	C_4H_8O	1.8%	11.5%	2.5	**1.75**	But/Prop	BUN
Diméthyléther	C_2H_6O	3.0%	27.0	1.6	**1.55**	But/Prop	DIM
Essence SP	Mélange	1.1%	~ 6 %	3 à 4	**3**	But/Prop	ESS
Ethanol	C_2H_6O	3,3 %	19,0 %	1,6	**1,50**	But/Prop	ETA
Ethylene	C_2H_4	2,7 %	34,0 %	0,98	**1,30**	But/Prop	ETY
G.P.L.	Prop+But	1,65	~ 9,0 %	1,85	**1,90**	But/Prop	GPL
Gasoline	Mélange	0.6%	~ 6 %	>4	**5**	But/Prop	GSL
Natural gas	CH_4	5,0 %	15,0 %	0,55	**1,05**	CH_4	GNT
Hexane	C_6H_{14}	1,2 %	7,4 %	3,0	**2,30**	But/Prop	HEX
Hydrogen	H_2	4,0 %	75,6 %	0,069	**0,89**	But/Prop	H_2
Isobutane	C_4H_{10}	1.5%	~ 15 %	2.0	**1.6**	But/Prop	ISB
Isopropanol	C_3H_8O	2,15 %	13,5 %	2,1	**1,9**	But/Prop	ISP
Methane[3]	CH_4	5,0 %	15,0 %	0,55	**1,00**	CH_4	CH_4
		4,4 %	15,0 %		**1,14**		
Methanol	CH_3OH	5,5 %	44,0 %	1,1	**1,175**	But/Prop	MTL
Methylamine	CH_3NH_2	4.9%	20.7%	1.1	**1.05**	CH_4	MAM
Propylene oxide	C_3H_6O	2.3%	?	2.0	**2**	But/Prop	OPR
Ethylene Oxide	C_2H_4O	2.6%	100%	1.5	**2.1**	But/Prop	ETO
Pentane	C_5H_{12}	1,4 %	8,0 %	2,5	**2,08**	But/Prop	PNT
Propane	C_3H_8	2,0 %	9,5 %	1,6	**1,77**	But/Prop	PRO
Propylene	C_3H_6	2,0 %	11,7 %	1,5	**1,2**	But/Prop	PRY
Toluene	C_7H_8	1,2 %	7,0 %	3,1	**2,10**	But/Prop	TOL
							WSP
Xylene	C_8H_{10}	1,0 %	7,6 %	3,7	**2,5**	But/Prop	XYL

[1] Lower flammable limit
[2] Upper flammable limit
[3] The LEL adopted value for methane varies by country, there are two different CH_4 ranges (LEL = 4.4% and 5.0% = LEL) to consider.

If the explosive gas that you want to detect is not in the list above, you can use the window "other" by selecting a coefficient given by INDUSTRIAL SCIENTIFIC- (contact us).

1.2. Sensor calibration menu

This menu is used to regularly calibrate the sensors connected to the instrument.
Calibration consists of adjusting the zero of the clean air sensor (free of gas which may be detected by the BM25) and adjusting sensitivity with a standard gas of known characteristics. Flow rate of the standard gas rate must be 601/h.

- access “calibration” menu and follow instructions.

1.3. Auto-zero menu

This menu lets you adjust the "zero" of each sensor used in the BM25 automatically and simultaneously.
Caution: this menu must be used in clean air only!

1.4. Date and time management menu

This menu is used to update the internal calendar and clock of the gas detector.
These data are used to define time scales, especially when the measurements stored in memory (min., max., STEL and TWA) are printed out or downloaded to an external microcomputer.

Loss of date and time
The electronic circuits for the date and time are supplied with power by a specific lithium battery when the main battery is flat or when the device is switched off.
This lithium battery has an estimated service life of 2 years.
When this battery is low, operator is notified with a message “low battery” before losing all stored data. Battery must then be replaced.

CAUTION: This operation is to be performed by INDUSTRIAL SCIENTIFIC- or INDUSTRIAL SCIENTIFIC- approved personnel only.

1.5. Exit menu

To return to normal user mode.

V. COM 2100 SOFTWARE

COM2100 software ensures the gas detector's supervision and maintenance:

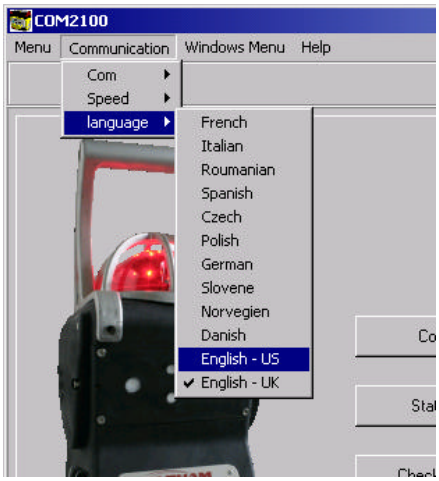
- display in uncoded mode of readings and parameters on channels
- gives diagnostic assistance in case of failure
- helps programming of instrument and sensor channels
- allows management of options
- enables calibration of channels through an automated scrolling menu
- prints status and control reports
- enables the management, display and printout of events and measurements stored
- is password protected

The link between the BM25 and the PC is made by a “COM” or “USB” infrared port adaptor cable.

Opening screen

Instrument connection

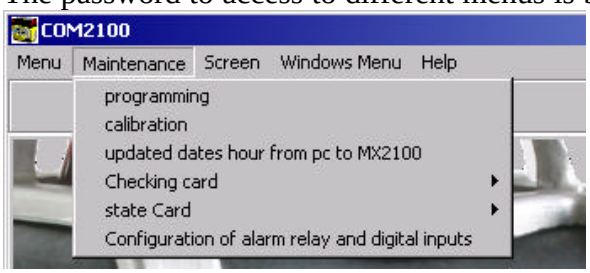
NOTE: COM 2100 automatically detects a MX2100 or BM25 connection and relevant screens are displayed.



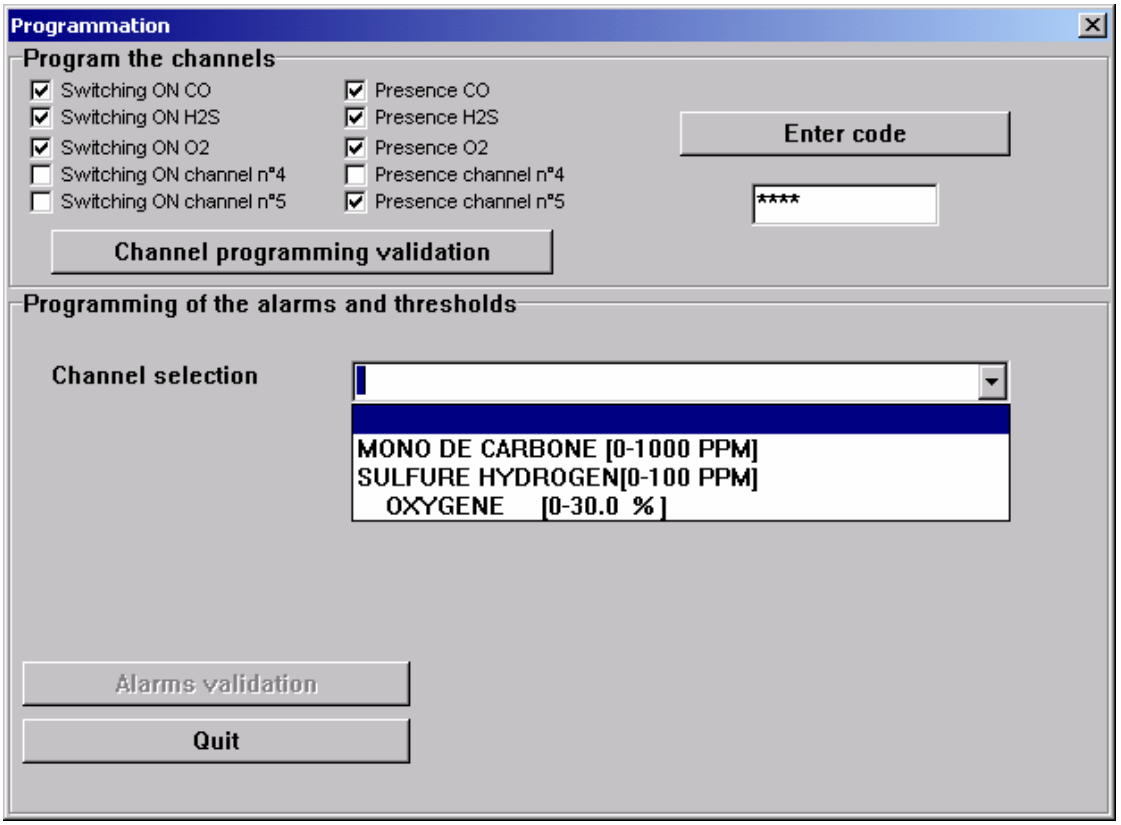
- program necessary communication parameters (port, speed, language).
- Click on “connect”

Maintenance:

Maintenance window: Menu access
The password to access to different menus is by default 1000.



PROGRAMMING



1/ Channel programming:

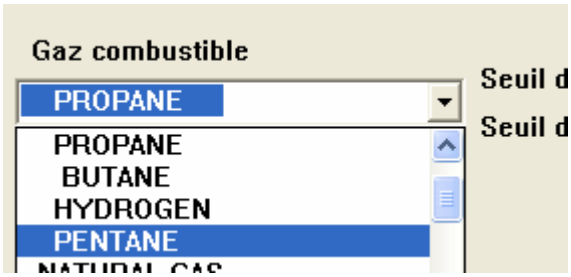
- Access authorized by code. The standard code is 1000.
- select desired configuration: the first column “Start up" (on the upper left) corresponds to activated or inactive measurement channels. The second column “Presence" (on the upper right) corresponds to the presence or absence of sensors on the instrument.
- then click on “Channel programming validation.”

2/Programming of the alarms and thresholds:

- Select the tab choice of channel
- Modify alarm threshold values
- And confirm with “Alarms validation”:

3/ Programming combustible gas:

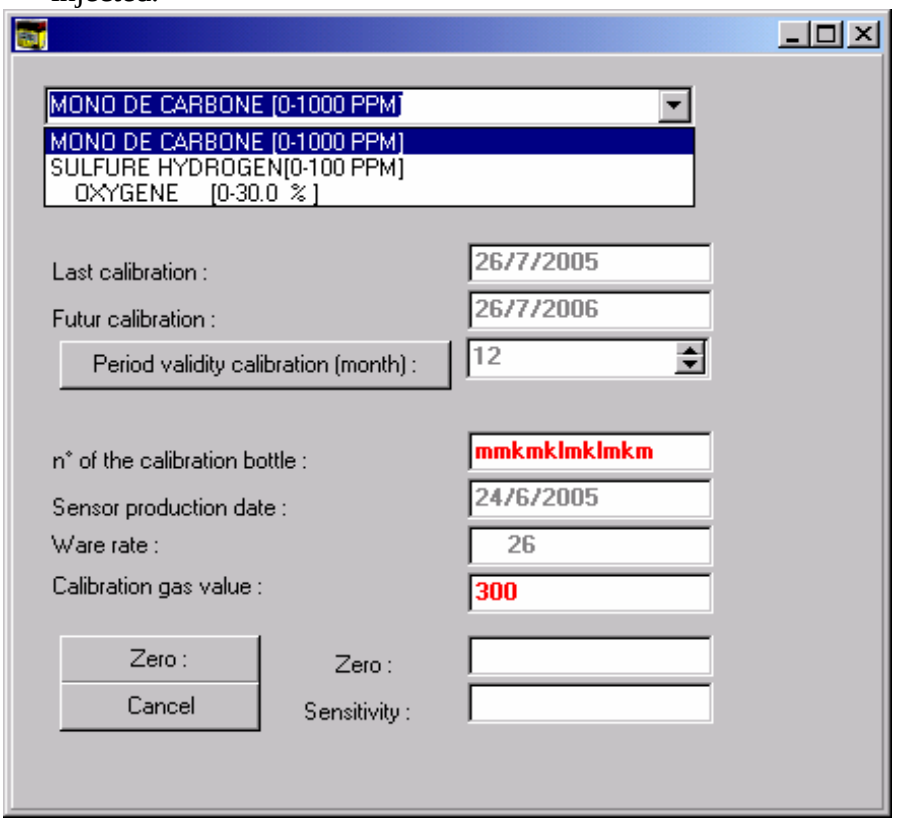
- Authorized access by code
- Change combustible gas name if necessary:
- Choose another gas from the list and click on “programming combustible gas”.



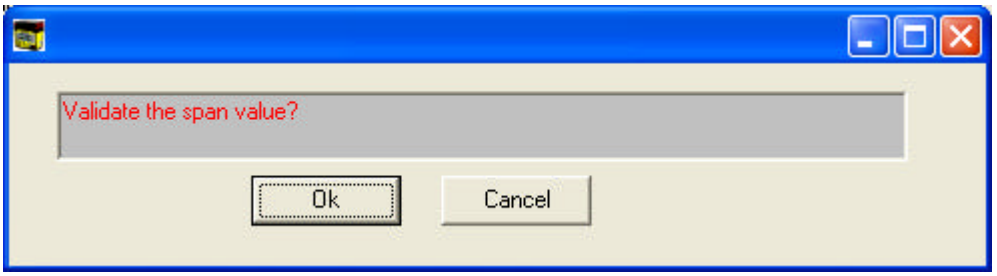
Then click “quit”.

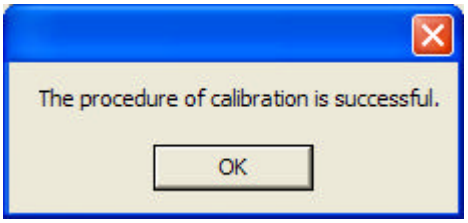
CALIBRATION

- choose sensor to calibrate
- set, if necessary, the maintenance interval
- indicate the standard gas level used
- proceed to “zero” as per instructions of software
- then proceed to sensitivity without forgetting to indicate first (in red) the standard gas level to be injected.



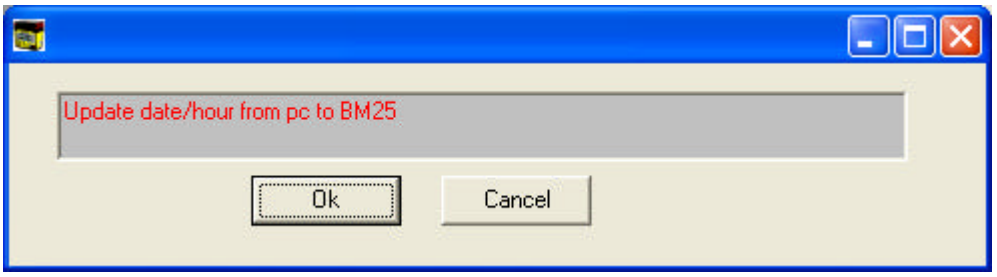
If everything is in order, you will get the following messages:





UPDATE OF DATE and TIME FROM PC to BM25

You can update the BM25 clock directly with the PC clock.

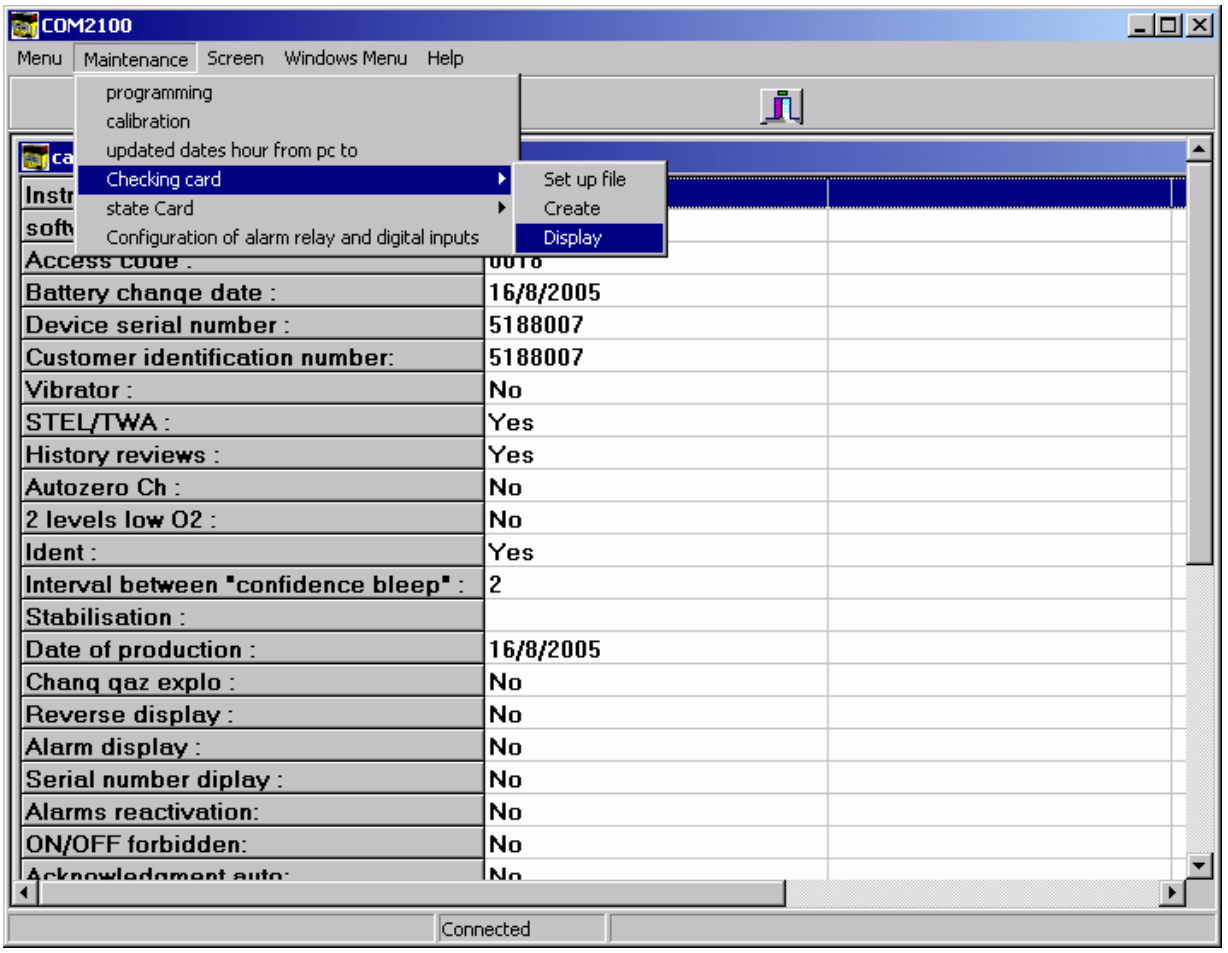


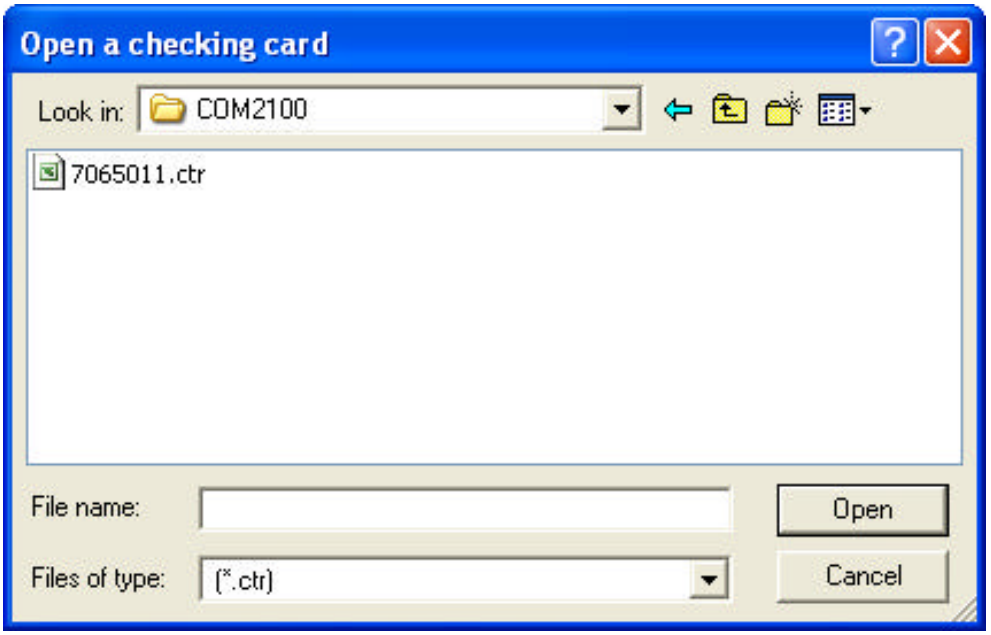
- click “OK” to validate

MONITORING REPORT

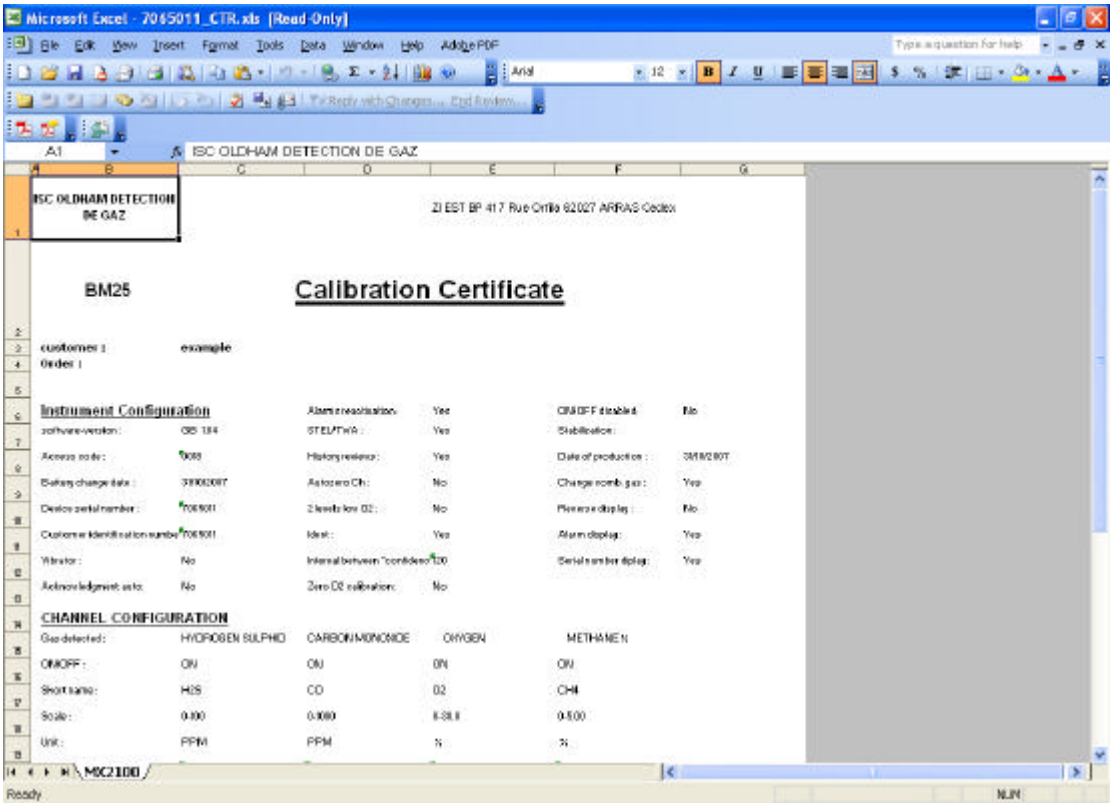
- fill in the fields (user's information for instance)
- create the monitoring report
- open it from the PC (from COM 2100 folders) to view or print it.

Examples:





- click “read-only”
- printable version of certificate
- it is possible to personalize this document by changing headers for instance (your firm ...)

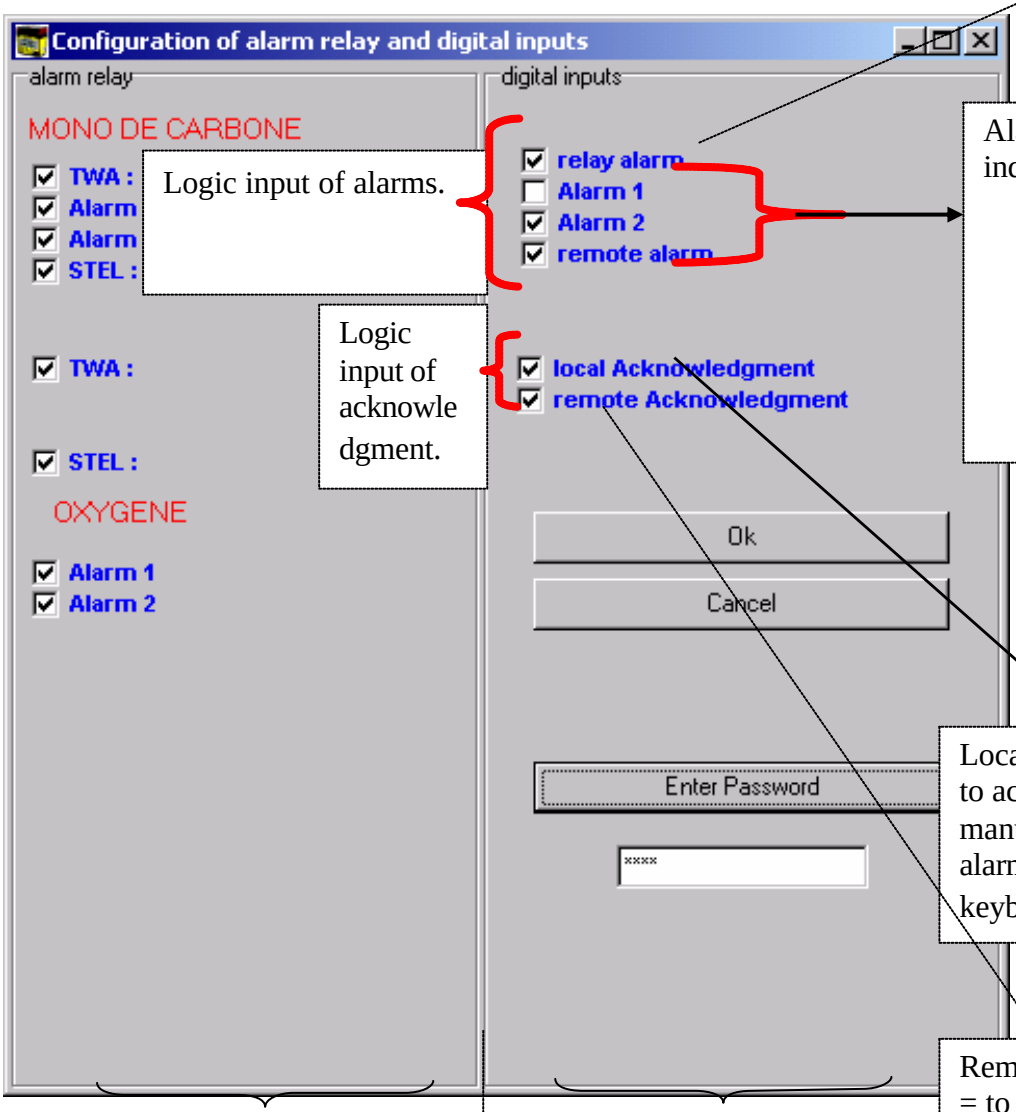


STATUS REPORT

Follow the same procedure as above

Configuration of alarm relay and logic inputs for the BM25:

- fill in the table displayed on screen by clicking on the appropriate windows according to alarm relay use and logic inputs needed.
- click “OK” to validate.



For activation of internal alarm relay by an external alarm

Logic input of alarms.

Alarm type, visual indicators

- Alarm 1 = low speed
- Alarm 2 = high speed
- Transferred alarm = very low speed

Logic input of acknowledgment.

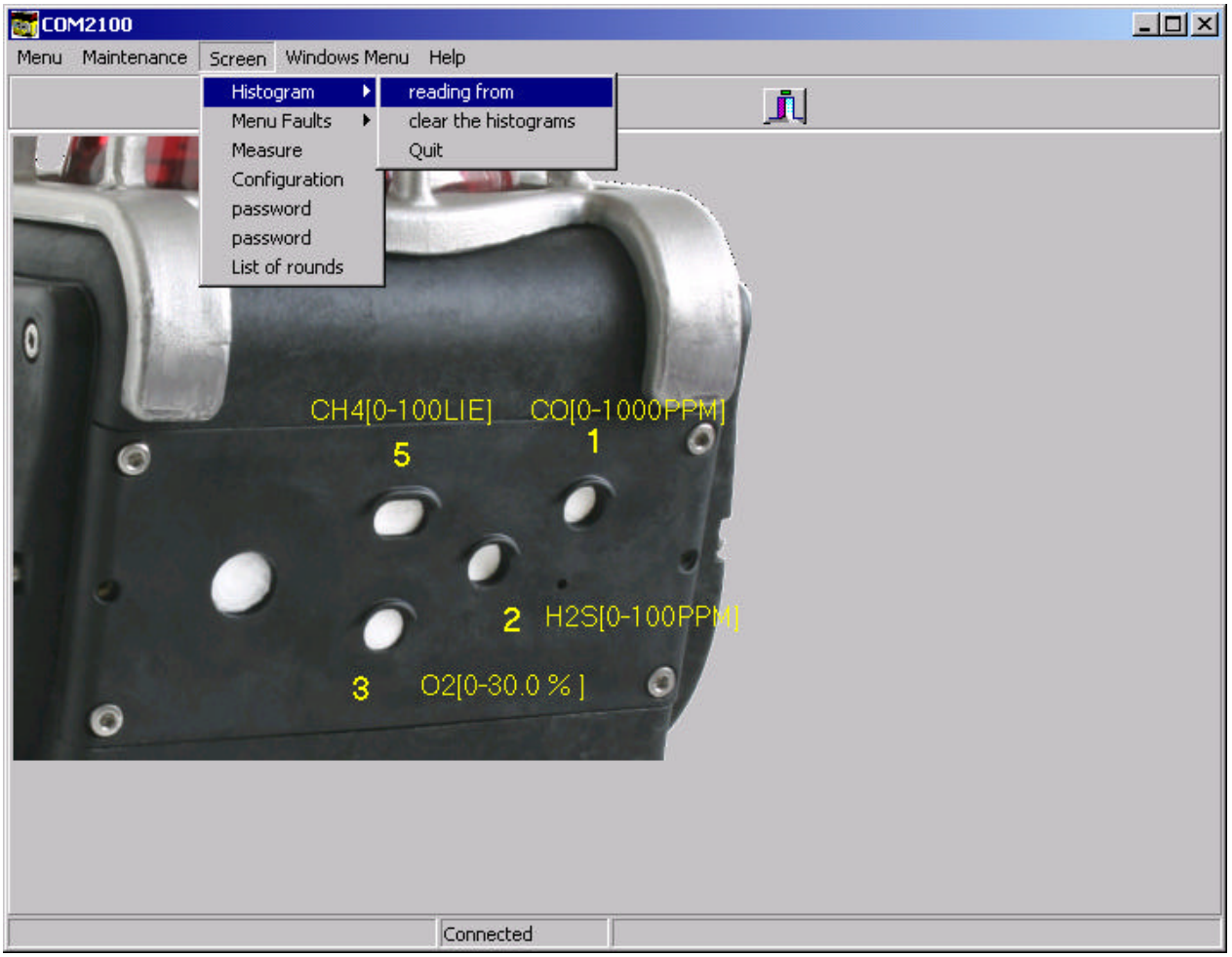
Local acknowledgement = to acknowledge a manually transferred alarm from BM25 keyboard

Remote acknowledgment = to acknowledge a BM25 alarm by a transfer button (closing of contact)

- programming column for activation of alarm relays

programming column of logic inputs.

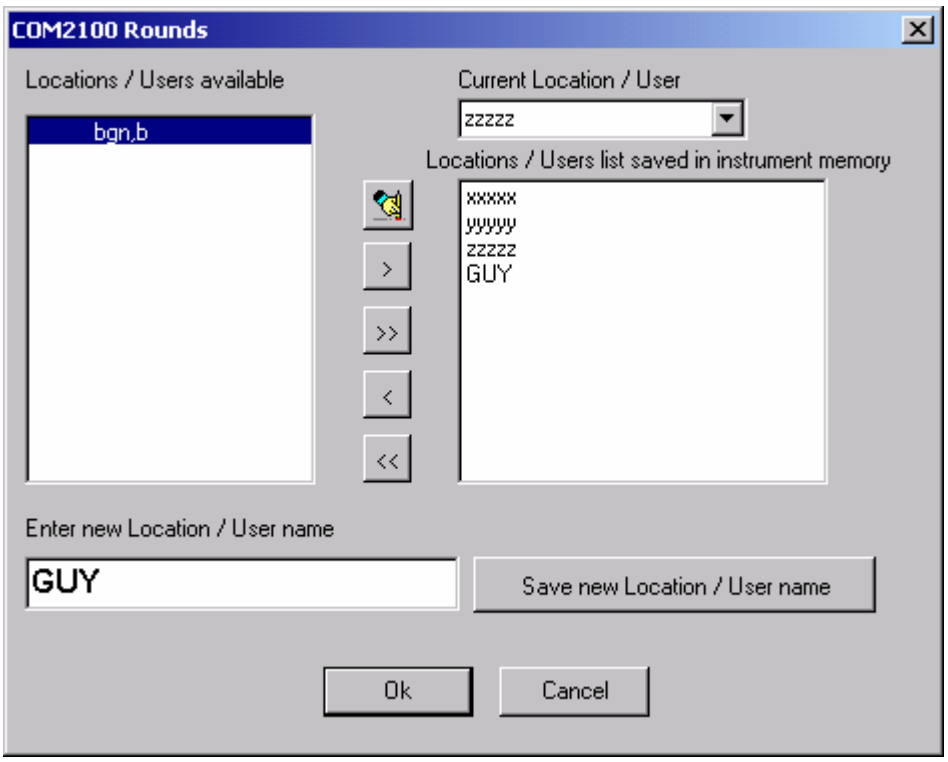
SCREENS



- Window "screen": displays history, faults, readings and configuration of the instrument at the time of purchase.

- The maintenance access code for the BM25 (**0018** standard) and software access code (**1000** standard) can also be modified

- A **roundsman list** can be created for further use by operators. This provides histograms related to a date/time and a **name** (location or user)
- How to create a name list:

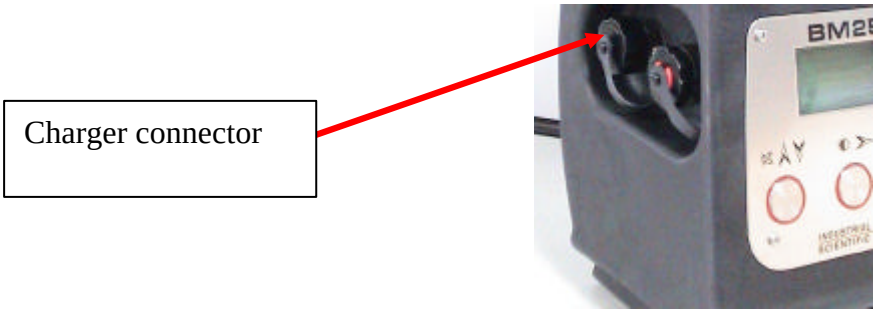


- Write a new name under “Enter new Location/User name”
- validate by clicking “Save new Location/User name”, it will automatically appear in “Locations / Users available” box.
- click on the name (in blue)
- in the area on the right “Locations / Users list saved in instrument memory” by clicking the right arrow” “>” key This way, you can navigate names or the full list from left to right and right to left, by using the single or double arrows
- Click “OK” to download the new list to the BM25.

VI. CHARGERS

1. INTRODUCTION

Integrated and intelligent charger, with continuous power supply of
12VCC to 30VCC compatible for vehicle use.
A 100VAC/230VAC adaptor allows sector recharge



2. CHARGING THE BATTERY

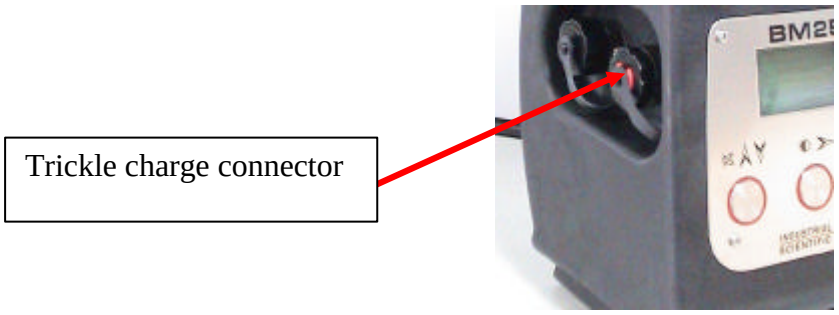
Battery charge time is 4 hours and a half.

3. TRICKLE CHARGE

The BM25 is supplied with a connector for trickle charge (right next to the charger connector). By means of one or two intrinsic safety power supply, the battery's charge can be maintained (except in alarm conditions) while leaving the BM25 in use in a classified area.

Technical characteristics of the IS power supply for trickle charge:

- Io ≤ 160mA
- Pmax= 1.2W
- Maximum resistance of cable=16 ohms
- This means a max. cable length of 500 m to 1.5 mm²



Trickle charge cables with lengths of 25 m, 50 m or 100 m are single or double depending on whether the BM25 is equipped with both explosive and infrared sensors.

CAUTION: ATEX applications – Refer to Section III, Clause 2. Only power supply, p/n 6111303, provided by INDUSTRIAL SCIENTIFIC- can be used.

a) For connection to single trickle charge supply, use BLUE INSTRUMENTATION CABLE TYPE 01 IP 09 EGSF.
b) For connection to dual trickle charge supplies, use BLUE INSTRUMENTATION CABLE TYPE 03 IP 05 EISF.

CAUTION: CSA applications – Refer to Section III, Clause 3. The trickle charge connector is for connection to CSA Certified Associated Apparatus with entity parameters that satisfy the conditions of Note 4 in the control drawing (Figure 2).

a) For connection to single trickle charge supply, use cable assembly p/n 6315866, 6315867, or 6315868 and mating connector, p/n 6153064.

b) For connection to dual trickle charge supplies, use cable assembly p/n 6315869, 6315870, or 6315871, and mating connector, p/n 6153064. Cable shields must be connected to ground at the supply end.

VII. Disposal

For the preservation, protection and improvement of environmental quality, and for the protection of human health and the prudent and rational utilization of natural resources, the BM25 must be disposed of separately from electronic equipment and cannot be disposed of with normal household waste. The user therefore has an obligation to separate the BM25 from other waste to ensure that it is recycled safely for the environment. For further details on existing collection sites, contact the local administration or seller of the product.

VIII. ACCESSORIES

REF	DESCRIPTION
6 511 154	Charger 220 VAC for BM25 / Charging time 4 hrs. 30 min.
WCHMUBM	Wall charger for BM25
6 321 390	Support for wall charger BM25
WLOG210	Software kit COM 2100 with infrared cord /COM
WLOGUSB	Software kit COM 2100 with infrared cord /USB
6 314 588	Connection cord IR / USB
6 314 583	Connection cord IR / COM
6 331 159	Gas calibration and sampling (manual) pipe
6 327 920	Sampling kit with rigid pump rod
6 327 919	Sampling kit with semi-rigid pump rod (not for use in classified areas)
6 327 918	Sampling kit with telescopic pump rod
6 327 921	Manual sampling kit with crystal tube (4 m)
6 327 922	Manual sampling kit with telescopic rod
6 327 923	Manual sampling kit with semi-rigid rod (not for use in classified areas)
6 327 924	Manual sampling kit with rigid rod
6 321 388	Tripod
	TRICKLE CHARGE CABLES
6 311 085	Trickle charge cable, single, 25m
6 311 089	Trickle charge cable, single, 50m
6 311 093	Trickle charge cable, single, 100m
6 311 094	Trickle charge cable, dual, 25m
6 311 095	Trickle charge cable, dual, 50m
6 311 096	Trickle charge cable, dual, 100m
6 153 027	Mating connector

	ALARM TRANSFER KITS
6 152 816	CONNECTOR by item (caution, quantity needed) 2)

IX. SPARE PARTS

	EXPLO sensors
6 313 888	EXPLO sensor, 0-100% LEL
6 313 889	EXPLO CATHARO sensor, 0-100% LEL and 5-100% vol CH4. Only for BM25 (available also in version H2)
	MEDIUM sensors
6 313 780	O_2 sensor (medium type) (lifetime 2 years)
6 313 823	COMBO CO / H_2S sensor
6 313 818	CO_2 sensor 0-5% vol.
6 313 857	NO_2 sensor 30 ppm
6 313 843	Cl2 sensor 10 ppm
6 313 821	ETO sensor 0-30 ppm
6 313 819	SO_2 sensor 0-30 ppm
6 313 822	SO_2 sensor 0-100 ppm
6 313 841	$C1O_2$ sensor 0-3 ppm
	MINI TOX / O2 sensors
6 313 817	O_2 sensor (lifetime 1 year minimum)
6 313 787	CO sensor 1000ppm
6 313 826	CO sensor 2000 ppm
6 313 788	H_2S sensor 100ppm
6 313 816	H_2S sensor 0-30ppm, special for hydrocarbons
6 313 799	NH_3 sensor 100 ppm
6 313 800	NH_3 sensor 1000 ppm
6 313 801	NO_2 sensor 30 ppm
6 313 802	NO sensor 300 ppm
6 313 803	H_2 sensor – 2000 ppm
6 313 804	HCl sensor 30.0 ppm
6 313 805	HCN sensor 30.0 ppm
6 313 806	HF sensor 10 ppm
6 313 807	O_3 (Ozone) sensor 1 ppm
6 313 808	SIH_4 (Silane) sensor 50 ppm
6 313 809	Cl_2 sensor 10.0 ppm
6 313 810	PH_3 (Phosphine) sensor 1 ppm
6 313 811	AsH_3 (Arsine) sensor 1 ppm
6 313 812	$COCl_2$ (phosgene) 1 ppm
6 313 820	F_2 sensor 0-1 ppm
6 313 879	N_2H_4 sensor 0-1ppm
6 313 832 6 111 303 6 153 027	Batch of factice sensors TOX/O_2/EXPL POWER SUPPLY se IS only Connector for IS power cable

Note: This list is not exhaustive and may be modified.
Sensors must be stored in a cool place (5°C).

X. Technical Characteristics

1. DESCRIPTION

Manufacturer: **INDUSTRIAL SCIENTIFIC-OLDHAM**

Function: **Multi-risk gas detector**

Type **:** **BM25**

Configuration:

- One to four sensors (explosive, electrochemical, infrared (CO_2) or catharometric sensors)

Gases detected: Explosive gases, toxic gases and oxygen

Measurement: Continuous on all sensors in operation

Sensors:

- Intelligent, precalibrated, interchangeable units
- Automatic recognition by the BM25 by means of EEPROM

Display unit:

- Graphic LCD
- Messages in uncoded mode, with backlighting
- “Flip-Flop” function

Display lighting : With time switch upon request, automatic for alarm or fault

Switching of explosive ranges

- Automatic, from "% Gas" scale to "% Volume" scale

Sensor faults

- Indication by indicator light
- Message in uncoded mode
- Corresponding display "frozen". Other channels operational
- Continuous general audible and visual alarm

Battery fault

- Display in uncoded mode
- Continuous general audible and visual alarm

Operating check

- Self-test on power-up
- Visual signal every 2 minutes (factory)
- Display of measured values in uncoded mode

Alarms

- Explosives: 2 adjustable instantaneous thresholds in 0-60 % LEL range
- Oxygen metering: two adjustable instantaneous thresholds over the sensor's whole measuring scale (over-oxygenation and under-oxygenation) or two optional under-oxygenation thresholds.
- Toxic gas metering (by sensor)
    - Two adjustable instantaneous thresholds over the whole range
    - one TWA threshold
    - one STEL threshold

Alarm signals

- General audible and visual alarm (display unit, indicator light)
- Display in uncoded mode of the fault or alarm for the channel concerned

Inputs/Outputs

- RS232 link by infrared
- on PC, maintenance and supervision software, EXCEL database
- Alarm relay output
- Fault relay output
- One logic input for alarm trigger
- One logic output for remote acknowledgement

Ancillary software packages

- Maintenance software COM 2100

Power Supply:

- NiMH rechargeable battery pack

Battery Life (except in alarm conditions)

- 70 hours with Explo and CO_2 sensors
- 100 hours with Explo and Tox sensors
- 170 hours with Tox sensors only

Charging Time:

- 4 hours 30 minutes

Sealing

- IP66 certified by approved laboratory (INERIS)

Weight: 6.85kg

Dimensions: H470X L180 X P190 mm

CE marking

Marking in accordance with Electromagnetic Compatibility Directive 89/336/EEC compliance with standard EN 50270.

Marking in accordance with Explosive Atmospheres Directive 94/9/EC ATEX and the IEC Ex standards.
On the BM 25 :

INDUSTRIAL SCIENTIFIC OLDHAM
CE 0080
BM 25
Ex
II 1G/ I M1
EEx ia IIC T4 EEx ia I
Avec bloc MOS/IR
II 2G/ I M2
EEx ia d IIC T4 EEx ia d I
INERIS 05ATEX0044
Do not open in explosive atmospheres
Potentially hazardous electrostatic charges – see instructions
serial number
manufacture year

2. Sensors (non-exhaustive list)

Table No. 1

	Methane CH4	Propane C_3H_8	Methane CH4	Oxygen O_2 2 years	Oxygen O_2 1 year	Carbon Dioxide CO_2	Carbon Monoxide CO	Hydrogen sulphide H_2S
Sensor reference	6 313 888	6 313 888	6 313 889	6 313 780	6 313 817	6 313 818	6 313 787	6 313 788
Standard range (1)	0 - 100% LEL CH4	0 - 100% LEL C_3H_8	0 - 100% vol	2 - 30 % volume	2 – 30 % volume	0 - 5 % v/v	1000	100
Measurement principle	Thermo - catalytic	Thermo - catalytic	Catharo metric	Electrochemical	Electrochemical	Infrared absorption	Electrochemical	Electrochemical
Display resolution (1)	1 % LEL	1 % LEL	1% v/v	0,1 % v/v	0,1 % v/v	0,1 % v/v	1	1
Accuracy (2)	2	2	2	0.3 % v/v	0.3 % v/v	0.2 % v/v	15	3
Repeatability (3)	± 1 % LEL	± 1 % LEL	± 1 % vol	0,1 % v/v	0,1 % v/v	0.1 % v/v	1	1
Deviation of zero/sensitivity (4)	0,5 / 5	0,5 / 5	0,.2 / 2	0,2 / 2	0.2 / 2	0,2 / 2	0.5 / 1,5	0.5 / 2,5
Response time (5)	< 20 seconds	< 25 seconds	< 20 seconds	< 10	< 10	< 30	< 30	< 25
Temperature (6)	-20°C to +50°C	-20°C to +50°C	-20°C to +50°C	-20°C to +40°C	-20°C to +40°C	-10°C to40°C	-20°C to40°C	-20°C to40°C
Relative humidity and pressure range (7)	0 – 95 % RH 1 bar ± 20 %	0 – 95 % RH 1 bar ± 20 %	0 – 95 % RH 1 bar ± 20 %	10 – 95 % RH 1 bar ± 20 %	10 – 95 % RH 1 bar ± 20 %	10 – 95 % RH 1 bar ± 20 %	10 – 95 % RH 1 bar ± 20 %	10 – 95 % RH 1 bar ± 20 %
Service life (8)	48 months	48 months	60 months	28	16	60	36	36
Storage conditions and maximum storage time (9)	-40°C to +40 °C 10-60 % RH 1 bar ± 10 % 6 months maximum	-40°C to +40 °C 10-60 % RH 1 bar ± 10 % 6 months maximum	-40°C to +40 °C 10-60 % RH 1 bar ± 10 % 6 months maximum	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 3 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 3 months	0 – 40 °C 10 – 60 % RH 1 bar ± 20 % 6 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months
Response time (10)	30 s		30 s	Sensors functional immediately after start up of device		120 s	Sensors functional immediately after start up of device	
Notes:	- Measurement is underestimated if oxygen level is < 10% - Exposure to high levels of silicon or sulphur vapors may damage the detector. - The detector is sensitive to a majority of explosive gases			- Presence of high levels of CO_2 can lead to an over estimation of O_2 concentration			- Exposure to high levels of organic solvents can damage the sensors. - Exposure to gases at higher levels than detector's range can damage it Recalibrate sensors if they go out of range.	

Table No. 2

	Chlorine $C1_2$	Hydrochloride acid HCl	Hydrocyanic acid HCN	Ammonia NH_3	Ammonia NH_3	Nitrogen oxide NO	Nitrogen Dioxide NO_2	Sulfur Dioxide SO_2
Reference	6 313 809	6 313 804	6 313 805	6 313 799	6 313 800	6 313 802	6 313 801	6 313 819
Standard range (1)	10	30	10	100	1000	300	30	30
Measurement principle	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical
Display resolution (1)	0,1	0,1	0,1	1	1	1	1	1
Accuracy (2)	0,25	1	0,25	5	30	10	1	1
Repeatability (3)	2	2	2	2	2	1	1	1
Deviation of zero/sensitivity (4)	0.5 / 5	0.5 / 5	0.5 / 5	1 / 2	1 / 2	0.5 / 3	0.5 / 5	0.5 / 2
Response time (5)	< 60	< 80	< 60	< 60	< 60	< 30	< 30	< 60
Temperature (6)	-20 to +40	-20 to +40	-20 to +40	-20 to +40	-20 to +40	-15 to +40	-20 to +40	-20 to +50
Relative humidity and pressure range (7)	10 – 90 % RH 1 bar ± 20 %	15 – 95 % RH 1 bar ± 20 %	15 – 95 % RH 1 bar ± 20 %	15 – 90 % RH 1 bar ± 10 %	15 – 90 % RH 1 bar ± 10 %	20 – 90 % RH 1 bar ± 20 %	15 – 90 % RH 1 bar ± 20 %	15 – 90 % RH 1 bar ± 10 %
Service life (8)	30	24	24	24	24	30	40	30
Storage conditions (9)	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months	4 – 20 °C 10 – 60 % RH 1 bar ± 10 % 2 months
Response time (10)	Sensors functional immediately after start up of instrument							
Notes:	- Exposure to high levels of organic solvents can damage the sensors. - Exposure to gases at higher levels than detector's range can damage it Recalibrate sensors if they go out of range.							

1 - In ppm unless otherwise specified .
2 - At 50% of scale (same unit as range)
3 - As % of signal read unless otherwise specified
4 - Nominative values in normal use conditions per month as % of scale for zero and as % of measurement for sensitivity
5 - In seconds at 90% of final value
6 - In °C
7 - Without condensation
8 - Average noted per month 12 month guarantee
9 - All sensors must be protected from air when stored
10 - Time from start-up for optimal performance of sensor.

INDUSTRIAL SCIENTIFIC

DECLARATION DE CONFORMITE CONSTRUCTEUR
Manufacturer Declaration of Conformity

CE

ATMOSPHÈRES EXPLOSIVES — INERIS — EXPLOSIVE ATMOSPHERES

La **Société Industrial Scientific Oldham**, ZI Est 62000 Arras France, atteste que le matériel neuf destiné à être utilisé en Atmosphères Explosives désigné ci-après:
*(The **Company Industrial Scientific Oldham**, ZI Est 62000 Arras France, declares that the following new material intended for use in Explosive Atmospheres:)*

Détecteur de gaz *(Gas detector)* BM25

est conforme aux exigences des Directives Européennes suivantes :
(comply with the requirements of the following European Directives :)

I) Directive Européenne ATEX 94/9/CE du 23/03/94 : Atmosphères Explosives
The European Directive ATEX 94/9/CE of 23/03/94: Explosive Atmospheres

N° Attestation CE de Type du matériel :
(N° of EC type examination certificate) — **INERIS 05ATEX0044**

Normes européennes de référence *(Reference European Standards) :*

Règles de Construction *(rules of construction)* : — EN 60079-0, 60079-1, 60079-11, 60079-26, 50303

Catégorie *(category)* :

Détecteur de Gaz combustibles, Oxygène et Toxique :
(Detector for combustible, oxygen, and toxic gases)
⟨Ex⟩ II 1G / I M1
Ex ia IIC T4 / Ex ia I
Tamb -20°C +55°C IP66

Détecteur avec Bloc cellule IR :
(Detector with IR module)
⟨Ex⟩ II 2G / I M2
Ex ia d IIC T4 / Ex ia d I
Tamb -20°C +55°C IP66

N° de la Notification Assurance Qualité de Production de l'usine de Arras INERIS 00ATEXQ403
(N° of the Production Quality Assurance Notification of the Arras factory)

Délivrés par l' Organisme notifié sous le numéro 0080: — INERIS, rue Taffanel, 60550 Verneuil en Halatte, France.
(Issued by the Notified Body n°0080)

II) Directive Européenne CEM 89/336/CEE du 3/05/89 : Compatibilité Electromagnétique
The European Directive EMC 89/336/CEE of 3/05/89: ELECTROMAGNETIC COMPATIBILITY

Normes harmonisées appliquées : — EN 50270
(Harmonised applied Standards)

CE/ATEX121 rev b

Arras, le 26/11/07

La Personne Autorisée ATEX
The ATEX Authorized Representative

Lionel Witrant

Directeur Technique
Engineering Director

AFAQ ISO 9001 VERSION 2000

Industrial Scientific Oldham
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Nous nous engageons – We undertake

1 Les Plus
Au travers de notre service client, à répondre rapidement et efficacement à vos besoins de conseil, de suivi de commande, et ce, partout dans le monde.
A répondre dans les plus brefs délais à toutes questions d'ordre technique.

2 Qualité
A vous assurer la meilleure qualité de produits et de services conformément aux normes et directives internationales en vigueur.

3 Fiabilité & Contrôles
A vous fournir un matériel fiable. La qualité de notre production est une condition essentielle à cette fiabilité. Elle est garantie grâce à des vérifications très strictes réalisées dès l'arrivée des matières premières, en cours et en fin de fabrication (tout matériel expédié est configuré selon vos besoins).

4 Mise en service
A mettre en service, sur demande, votre matériel par nos techniciens qualifiés Ism.ATEX. Un gage de sécurité supplémentaire.

5 Formation
A dispenser des formations ciblées.

6 Contrat d'entretien
A vous proposer des contrats d'entretien évolutifs au regard de vos besoins pour vous garantir une parfaite sécurité :

- Une ou plusieurs visites par an, garantie totale ou partielle,
- Renouvelable par tacite reconduction,
- Incluant le réglage des détecteurs de gaz fixes ou portables et le contrôle des asservissements.

7 Dépannage sur site
A faire intervenir nos techniciens du **Service Après Vente** rapidement. Ceci est possible grâce à nos implantations de proximité en France et à l'étranger.

8 Dépannage en usine
A traiter tout problème qui ne pourrait être résolu sur site par le renvoi du matériel en usine. Des équipes de **techniciens spécialisés** seront mobilisées pour réparer votre matériel, dans les plus brefs délais, limitant ainsi au maximum la période d'immobilisation.
Pour toute intervention du Service Après Vente en France, un numéro Indigo a été mis en place : le 0 825 842 843

1 *Strong points*
Through our customer service to respond to your needs for advice and order follow-up services wherever in the world you may be.
To answer all your technical questions as quickly as possible.

2 *Quality*
To provide you with products and services of the best quality, in accordance with current international directives and regulations.

3 *Reliability and inspections*
To supply you with reliable equipments. The *quality of our production is essential to achieve reliability. Quality is ensured by extremely strict verifications carried out as soon as raw materials are received, during production and at the end of manufacture (all shipped equipments are configured to meet your requirements).*

4 *Start-up*
That our Ism.ATEX qualified technicians will start up your equipment, if you wish so. This gives you the guarantee of additional safety.

5 *Training*
Will train on risks, on products and on consulting: Highlights that meet your needs.

6 *Maintenance contract*
To offer you open-ended maintenance contracts according to your needs so as to give you the guarantee of complete safety:

- *One or more visits a year, comprehensive or partial warranty,*
- *Renewal by tacit agreement,*
- *Including the adjustment of fixed or portable gas detectors, the calibration of equipment and the verification of servo-control systems.*

7 *Field servicing*
*To send out our **After-Sales Service** technicians quickly for servicing on your site. This is made possible by our efficient network in France and other countries.*

8 *Factory repairs*
*We give the undertaking that any problem that cannot be solved in the field will be dealt with by the return of the equipment concerned to our factory. Teams of **specialized technicians** are on hand to ensure the immediate repair of your equipment in the shortest possible time, so keeping downtimes for your equipment to a minimum.*
For any specific technical question, please contact our technical support service : 00 33 3 21 60 80 80

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