TELEDYNE
OLDHAM SIMTRONICS
Everywhere**you**look™

USER MANUAL

BM 25/25W

AREA GAS MONITOR

MX
DETECTOR
USER MANUAL

User Manuals in other languages are available on Website https://teledynegasandflamedetection.com

Thank you for choosing this TELEDYNE OLDHAM SIMTRONICS instrument.

All of the necessary actions have been taken in order to ensure your complete satisfaction with this equipment.

It is important that you read this entire manual carefully and thoroughly.

The extent of our responsibility

- TELEDYNE OLDHAM SIMTRONICS shall not be held responsible for any damage to the equipment or for any physical injury or death resulting in whole or in part from the inappropriate use, installation, or storage of the equipment, which is the result of not complying with the instructions and warnings, and/or with the standards and regulations in force.

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Warnings and cautionary statements

- This is not a contractual document. In the best interest of its customers and with the aim of improving performance, **TELEDYNE OLDHAM SIMTRONICS** reserves the right to alter the technical features of its equipment without prior notice.

- **IMPORTANT:** Failure to perform certain procedures or note certain conditions may impair the performance of this product. For maximum safety and optimal performance, please read and follow the procedures and conditions listed below.

⚠ **IMPORTANT**: Read and understand this manual before operating.

⚠ **WARNING**: SERVICING THE UNIT OR CHANGING THE BATTERIES MUST ONLY BE DONE IN AN AREA KNOWN TO BE NONHAZARDOUS.

⚠ Prior to each day's use, a bump test should be performed. If the instrument does not pass the bump test, a full calibration is recommended.

⚠ Oxygen deficient atmospheres may cause combustible gas readings to be lower than actual concentrations.

⚠ Oxygen enriched atmospheres may cause combustible gas readings to be higher than actual concentrations.

⚠ Verify the calibration of the combustible gas sensor after any incident where the combustible gas content has caused the instrument to display an over-range condition.

⚠ Silicone compound vapors or other known contaminants may affect the combustible gas sensor and cause readings of combustible gas to be lower than actual gas concentrations. If the instrument has been used in an area where silicone vapors were present, always calibrate the instrument before next use to ensure accurate measurements.

⚠ Sensor openings and water barriers must be kept clean. Obstruction of the sensor openings and/or contamination of the water barriers may cause readings to be lower than actual gas concentrations.

⚠ When in the hazardous area, connections to the battery charging or communications ports must be done in accordance with this technical manual.

⚠ **WARNING:** Substitution of components may impair intrinsic safety and may cause an unsafe condition.

⚠ **CAUTION:** For safety reasons, this equipment must be operated and serviced by qualified personnel only. Read and understand the instruction manual completely before operating or servicing.

⚠ **CAUTION:** High off-scale readings may indicate explosive concentration.

⚠ **CAUTION:** Any rapid up-scale reading followed by a declining or erratic reading may indicate a gas concentration beyond the upper scale limit which may be hazardous.

⚠ **CAUTION:** Before each day's usage, sensitivity must be tested on a known concentration of pentane or methane equivalent to 25%-50% of full scale concentration. Accuracy must be within -0% to +20% of actual concentration. Accuracy may be corrected by referring to the zero/calibration section of the instruction manual.

⚠ BM 25/25W (with radio communication module) complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interferences, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠ BM 25/25W complies with FCC Maximum Permissible Exposure (MPE) requirements when used with an approved antenna and the antenna is at least 20cm away from the user. Use of the product closer than 20cm may exceed the MPE limits. Use of any antenna other than approved antennas will invalidate the certification of the product.

Warranty

- Under normal conditions of use and on return to the factory, parts and workmanship carry a two year warranty, excluding consumables such as sensors, filters, etc.

Waste Electrical and Electronic Equipment (WEEE directive)

European Union (and EEA) only. This symbol indicates that, in conformity with directive DEEE (2002/96/CE) and according to local regulations, this product may not be discarded together with household waste.

It must be disposed of in a collection area that is set aside for this purpose, for example at a site that is officially designated for the recycling of electrical and electronic equipment (EEE) or a point of exchange for authorized products in the event of the acquisition of a new product of the same type as before.

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1 Introduction

1.1 General information

The BM 25/25W is a portable gas monitor that can be used in explosive gas atmospheres.

It provides simultaneous detection of up to five gases present in the air by means of sensors specific to each risk to be evaluated (under-oxygenation, presence of combustible or toxic gases).

Figure 1

1.2   Product Overview

Figure 2: Product Overview

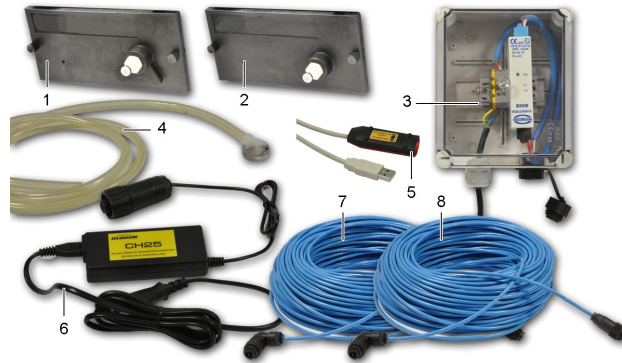| Ref.	Description	See page
1.	Carrying handle	
2.	LED alarm indicator (visual warning for gas alarms, transferred alarms and faults) • Low Alarm: slow flash (1 Hz) • High Alarm: rapid flash (2 Hz) • Alarm Transfer: very slow flash (0.5 Hz) • Fault: steady (0 Hz)	18
3.	Loud speakers (audible warning for gas alarms, transferred alarms and faults) • Low Alarm: two-tone, slow (1 Hz) • High Alarm: two-tone, rapid (2 Hz) • Alarm Transfer: two-tone, very slow (0.5 Hz) • Fault: mono-tone, continuous (0 Hz)	18
4.	Charging port connection (red ring)	9
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14.	Brief instructions for use and approval label	-

(*) Push buttons are "piezo" type

1.3   Additional equipment

Figure 3: accessories

Ref.	Description	See page
1.	Sensors Cover for use with aspirated versions (*)	15
2.	Calibration cup for use with manual sampling system or for sensors calibration	16
3.	Intrinsically Safe Trickle Charge Kit (provided with cables)	10
4.	Calibration/Sample tubing	-
5.	Communication Adaptor	37
6.	Universal charger 110/230 VAC	9
7.	Cable for IS power supply (see 3)	-
8.	Cable for alarm transfer (25, 50 or 100 meters)	11

(*) Optional

1.4   Connections

1.4.1   Charging port connection (red ring)

- Connection to *TELEDYNE OLDHAM SIMTRONICS* universal charger (110/230 VAC) or charger for vehicle (12/30 VDC)
- Pin 1: V- charge
- Pin 4: V+ charge

⚠️ Connection prohibited in hazardous area.

Unused connectors must be equipped with their protective cap.
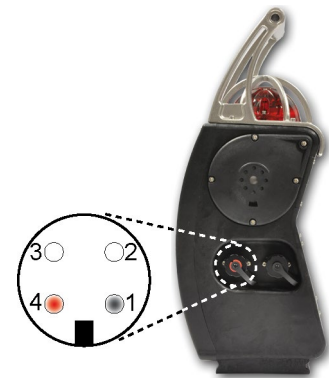
See details on pages 9.

Figure 4: local charging port

1.4.2   Trickle charge port connection (black ring)

- Only for connection to the intrinsically safe certified trickle charger
- Pin 1: V+ trickle charge
- Pin 2: V- trickle charge
- Pin 3: V+ trickle charge
- Pin 4: V- trickle charge

Pins 1-3 and 2-4 are connected in parallel.

> ⚠ Unused connectors must be equipped with their protective cap.

See details on pageIntrinsically safe power supply (trickle charger) features:10.

Figure 5: trickle charge port

1.4.3   Relay Outputs (black ring)

- Pins 1-6: alarm relay (NO) output
- Pins 3-4: fault relay (NC) output

> ⚠ Unused connectors must be equipped with their protective cap.

See details on pages 11 and 41.

Figure 6: relay outputs

1.4.4   Dry logic inputs (yellow ring)

- Pin 2: logic input for alarm transfer
- Pin 5: logic input for alarm acknowledgement
- Pin 7: common ground

> ⚠ Unused connectors must be equipped with their protective cap.

See details on pages 12 and 41.

Figure 7: dry logic inputs

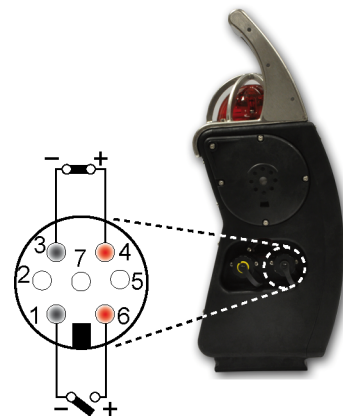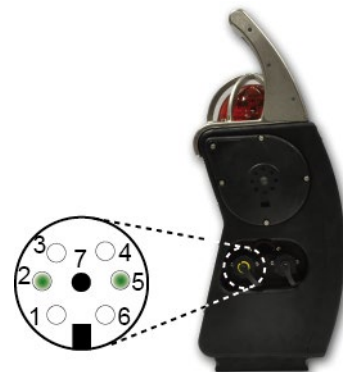## 1.4.5   Intrinsic safety parameters

- Alarm relay output: dry relay contact, U_i = 30 V, I_i = 150 mA, no L or C condition
- Power supply for trickle charging: U_i = 30 V, I_i = 160 mA, no L or C condition
- Dry logic input: U_o = 5 V, I_o = 50 mA, L_o = 8 mH, C_o = 7 µF

> ⚠ The person responsible for the gas monitor must create a Descriptive System Document (for intrinsically safe circuits).

1.5   Gas sensors

The sensors are located on the front of the monitor (

Figure 2, ref. 10). They are smart, pre-calibrated from factory and interchangeable. They are composed of a sensitive element and electrical components, including an EEPROM memory in which the sensor characteristics are stored (gas type, range, span value, instantaneous, STEL and TWA alarm values, date of manufacture, serial number, date of last calibration, span reserve, etc.). The span reserve is updated after each calibration and allows the user to gage the optimal time for changing the sensor. Sensors must be positioned as indicated in the table above.

Figure 8: sensors configuration

Ref.	Description
1.	Combustible gas sensor (0 to 100% LEL)
2.	Mini sensors for toxic gases or the 1 year O_2 sensor
3.	Mini sensors for toxic gases or the 1 year O_2 sensor
4.	Medium sensors for: • O_2 (>2 year lifetime) • CO/H_2S (combo medium sensor) and other toxic gases • CO_2 IR
5.	Medium sensors for:

Ref.	Description
	• O$_2$ sensor (>2 year lifetime) • Toxic gases (medium sensors except CO/H$_2$S sensor) • CO$_2$ IR • Infrared sensor for combustible gases • PID sensor for VOCs (Volatile Organic Compounds)

Note:

- If a sensor is present in slot #5, then sensor in slot #2 is not monitored
- The "combo" CO/H$_2$S sensor can only be plugged in slot #4
- The PID sensor can only be plugged in slot #5

> ⚠ Sensor slots and protection filters must be kept clean. Otherwise, gas measurements could be jeopardized.

1.6   LCD Display

The instrument features a graphic LCD display with backlit (

Figure 2, ref. 9). It automatically illuminates when an alarm or a fault occurs. It can be rotated by 180° using *COM2100*.

Figure 9: LCD display

The following information is displayed:

- Up to 5 gas measurements along with gas names and units
- Maintenance call for calibration
- Date and time
- Minimum and maximum values (peak) measured
- STEL (short-term exposure limit) and TWA (time-weighted average) values
- Remaining battery runtime (bargraph)
- User's and/or location's identification
- Maintenance menus
- Alarm events (gas alarm, alarm transfer, sensor fault, battery fault, etc.)

1.7 Visual alarm

A red bright flashlight (
Figure 2, ref. 2) visible from all direction is located on the top of the device and alerts the user in the event of an alarm.

1.8 Audible alarm

Two powerful speakers (103 dB at 1 meter) located on each side of the BM 25/25W (
Figure 2, ref. 3) alert the user in the event of an alarm.

1.9 Sampling system

The gas monitor can be equipped with an internal electric pump or an external manual aspirator for confined space monitoring.

2 Installation and Connections

2.1 Power supply

2.1.1 General Information

Power is supplied to the gas monitor through an interchangeable and rechargeable battery pack (NiMH 7.2 V / 9 Ah). Under normal usage conditions and no radio communication, the battery life ranges from 40 to 170 hours depending on the configuration (100 hours under typical configuration: diffusion mode with 1 catalytic or 1 infrared sensor and 2 electrochemical sensors). For the wireless version, the battery life ranges from 35 to 135 hours (65 hours under standard configuration).

⚠️	The gas monitor is approved for use in explosive atmosphere only when it is equipped with the battery pack type recommended by the manufacturer. Before changing the battery pack, make sure the instrument is off.

2.2 Charging the batteries

2.2.1 Charger for vehicle (12 to 30 VDC) or 110/230 VAC universal charger

Insert the male connector (Figure 10, ref. 1) from the charger (ref. 3) into the corresponding charging port and identified with a red ring (ref. 2) on the BM 25/25W. Connect the other end of the power supply (ref. 4) to the power source. Charging time is 4.5 hours with the 110/230 VAC universal charger.

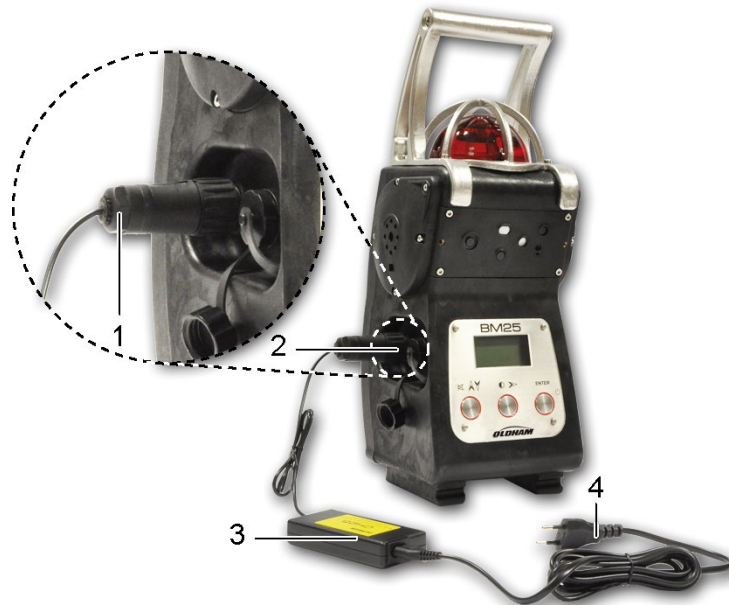| ⚠️	Charging the BM 25/25W with the truck-charger or the universal charger shall be done in non-classified area only.

Figure 10: charging in safe area

2.2.2   Trickle charge kit

An intrinsically safe power supply (Figure 11: trickle charger connection provides power to the monitor while it is located in hazardous area through a dedicated connector on the left side (Figure 2, ref. 5). In this configuration, the internal battery is charged very slowly. The current supplied by the trickle charger is mostly used to power the electrical circuits.

2.2.3   Intrinsically safe power supply (trickle charger) features:

- Io ≤ 160 mA.
- Pmax= 1.2 W.
- Maximum cable resistance = 16 ohm, based on a maximum cable length of 500 meters (AWG 16 – 1,5mm²).

Trickle chargers are available with 25, 50 or 100 meters of cable. The dual charging kits are intended for use with BM 25/25W monitors equipped with two high current draw sensors (catalytic, infrared, PID) or when the pump is continuously running. Only intrinsically safe power supplies provided by TELEDYNE OLDHAM SIMTRONICS can be used.

Insert the male connector (Figure 11, ref. 6) from the trickle charger (ref. 1 and 3) into the port with a black ring that is located on the left side of the BM 25/25W (ref. 4). Connect the other end of the power supply (ref. 2) to the mains and only in areas known to be safe.

⚠	The trickle charge connector (Figure 11, ref. 1) must be located in a non-hazardous location. The BM 25/25W can be used in hazardous area while trickle charging.

Figure 11: trickle charger connection

2.3 Alarm Transfer

By connecting the output of a BM 25 to the input of another BM 25, and so on, it is possible to transfer alarms from instruments to instruments. This configuration is particularly useful for perimeter monitoring. For example, it may be used to monitor a fence by connecting the BM 25s on a daisy chain or to monitor a tank by connecting the units in loop.

Refer to the *Connections* paragraph on page 5 for the wiring of the dry logic input or the alarm relay output. The input and output can be configured using the *COM 2100* software; see page 41.

2.4 Connection of a manual call point

By connecting a manual call point to the input of a BM 25/25W, it allows the user to fire the local audible and visible alarm in order to alert of an immediate danger (fire, man down, evacuation, etc.). When the BM 25 is in wireless mode or wired to another BM 25/25W, the local alarm is reported to the other instruments (Alarm Transfer).
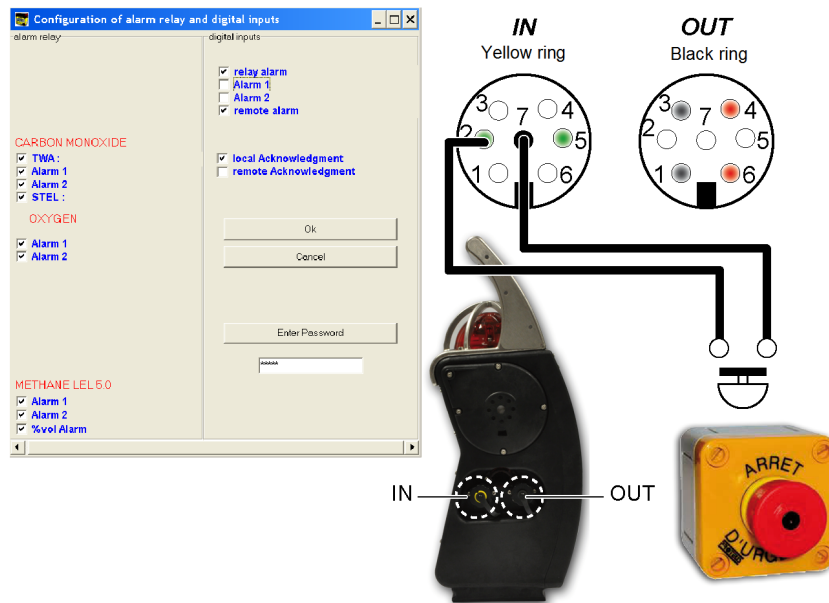

Figure 12: Push button connection (Example. Refer to *COM 2100 software* chapter on page 41 for more details)

3 Operation

3.1 Start-up

⚠️ When starting up the BM 25/25W for the first time or after a period of inactivity longer than one month, it is recommended to proceed a charge-discharge cycle. Moreover, keep in mind that all portable gas monitors must be tested with gas before each day of use.

3.1.1 Switching on the instrument

- Press the *Enter* button (ref. 1).
- Before displaying current measurements, the BM 25/25W performs visual and audible tests during a few seconds and then displays:

  - The TELEDYNE OLDHAM SIMTRONICS logo,
  - The software revision and the serial number,
  - The alarm thresholds set for each measurement channel.

- Continue to paragraph Test Routine and Calibration Overdue on page 14.

Note: During normal operation, the BM 25/25W flashes every 2 minutes to indicate that it operates correctly. This confidence flash can be canceled and the frequency can be changed using the *COM 2100* software; see page 37.

Figure 13: start-up in standard mode by pressing the *Enter* button

3.1.2 Selection of the flammable gas on start-up

On start-up, it is possible to change the calibration gas. This option allows the user to measure a different flammable gas (acetone, methanol, etc.) from that which was originally used (methane or pentane) to calibrate the instrument. This action allows the instrument software to compensate and display more accurate readings. *Note: Accuracy for the re-selected gas type is +/- 15%.*

Step 1: Switch the instrument on

- Press and hold the Acquit button (ref. 1). Press the Enter button (ref. 2) to switch the instrument on.
- Release both buttons.
- When warm-up is complete, the BM 25/25W displays the list of different gases. The gas currently selected is highlighted.
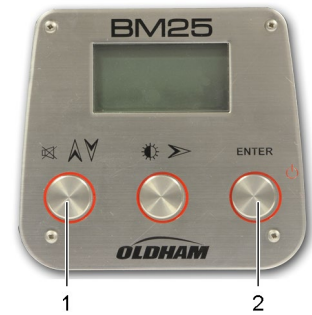

Figure 14: press 1 and 2 to select the calibration gas

Step 2: Select the reference gas

- Use the Acquit button (Figure 14: press 1 and 2 to select the calibration gasref. 1) to scroll down the list of gas. Thirty-one (31) combustible gases are available in the library. Choose *Other* to select a gas for your specific needs.
- *Note: if a gas is not selected in the allotted time, the monitor will start in normal mode without changing the reference gas.*
- Press the *Enter* button (ref. 2) to confirm your choice.
- The BM 25/25W starts another test routine. Once the test is complete, the selected gas is now the reference gas.

3.1.3   Test Routine and Calibration Overdue

During warm-up the BM 25/25W performs a self test and then starts gas measurement. If the test is not completed successfully, the BM 25/25W goes into fault mode (continuous audible and visual signal).

When the calibration date for a sensor is overdue, the BM 25/25W triggers a calibration alert for the appropriate channel. This warning message may be dismissed and the instrument will operate using its previous calibration settings; however, as the sensors response may have diminished, the instrument should be recalibrated and tested.

3.2   Gas monitor positioning

Position the monitor vertically at the relevant location by taking into account the density of the gases and the airflow.

3.3   Diffusion mode

In this configuration, the gas monitor is used without additional sampling device; the sensors monitor the ambient atmosphere.

3.4 Aspirated mode (with pump option)

Remote sensing is possible with the internal electric pump option, or by using a hand aspirator.

Sampling probes (rigid, semi-rigid or telescopic) and sampling tubing are not antistatic. The user must take the necessary precautions to avoid electrostatic discharges. In all cases, the user must prevent dangerous electrostatic discharges using a metallic probe.

Warning (Hand Aspirator): The BM 25 series is designed to be used with a built-in pump for remote sampling. A hand aspirator can be used for indicative sampling, but it must be noted that when using a hand aspirator, a reading error in the region of + 20% is possible. In addition, whereas the pump can sample quickly and accurately with up to 30 meters of sample line, the hand aspirator must only be used with up to 10 meters of sample line and the sample time is extended. The sample line must be intact and the proper flow established.

3.4.1 Using an electric pump

- ▪The internal pump is powered by the gas monitor's battery and starts automatically when the sensors cover is applied (Figure 15: positioning the sensors cover (BM 25/25W equipped with an electric pump)ref. 1); this cover can be identified by its hump (ref. 4).
- Connect the sample line (ref. 2) to the gas inlet (ref. 3).
- Wait a few seconds before reading the measurements. Any anomaly in the pump system is indicated by an audible alarm and on the LCD display.
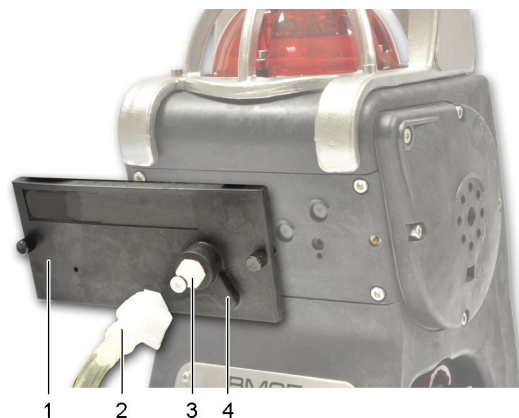

Figure 15: positioning the sensors cover (BM 25/25W equipped with an electric pump)

Before each use of the electrical pump, check the seal by obstructing the end of the sampling line until the Flow Fault alarm is triggered. Do not forget to remove the sensors cover to return to diffusion mode.

3.4.2   Using a manual pump
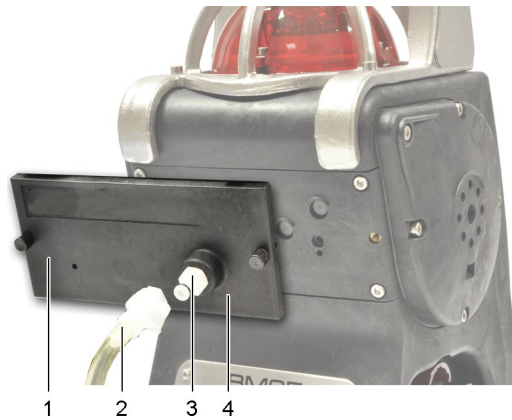

1   2   3   4

Figure 16: positioning the sensors cover (BM 25/25W non-equipped with an electric pump)

- Place and screw the cover over the sensors (Figure 16: positioning the sensors cover (BM 25/25W non-equipped with an electric pump)ref. 1); this cover has no hump as previously mentioned (ref. 4).
- Connect the sample line (ref. 2) to the gas inlet (ref. 3).
- Wait for the measurements to stabilize before recording them; if measurements are recorded too soon, they may be over-estimated (combustible gases), or under-estimated (oxygen).

⚠ Once the sampling is complete, remember to remove the sensors cover to return to diffusion mode.

3.5   Measurements

3.5.1   Reading measurements

The gas measurements are displayed at once on the LCD display in four separate fields. In each field, the measurement is displayed as follows:

- Gas concentration
- Unit (ppm, % vol. or % LEL)
- Gas type
- In "5 gas" configuration, channel #5 is displayed alternately with channel #3 at bottom left

At the bottom of the screen, time, alarm status and wireless communication status (when applied) are displayed (see page 23).

```
     0           0             0           0
PPM CO  | PPM H2S      PPM CO  | PPM H2S
   20.9 |      0       ---     |      0
 %  O2  | LEL CH4              | LEL CH4
   13:14:59             04 BM25 in COMM
```

Figure 17: on the left side, 4-gas monitor with no radio communication. On the right side, 3-gas monitor with radio ON.

⚠️ Combustible gas concentration measurements can be affected by high or low oxygen concentrations. Any reading rapidly changing from too high (exceeding 100% LEL) to too low can in fact indicate a hazardous gas level higher than the measurement scale.

3.5.2 Display management

Backlit

Press the ☀ button to read measurements in dark areas. Backlit turns off automatically after 4 minutes. Display automatically illuminates on fault event or alarm event.

Displaying additional information

When the gas monitor is in normal operation, the user can access additional information. Press the ☀ button repeatedly to scroll through the following screens:

- Date (backlit is ON)
- Area identification or user name (only if Roundsman option is activated; see paragraph Roundsman function, below)
- Remaining battery life (bargraph)
- min/max values for each sensor
- STEL value for each toxic sensor
- TWA value for each toxic sensor
- Maintenance menu which is password protected. To enter the maintenance menu enter the 4-digit code using the Ä and ☀ buttons.
- Press the Ä button to return to normal operation.

Roundsman function

If the *Roundsman* function has been activated, a list of names can be programmed using *COM 2100* software. This list can be viewed at any time by using the front keys on the device.

To select a location or a user, follow these steps:

- Press the ☼ button repeatedly until Current location/name appears.
- Press Enter.
- Scroll through the list using the Å and ☼ buttons.
- Press Enter to confirm your selection.
- Press Å to return to normal mode.

Reset the Min/Max

Press simultaneously the Å and ☼ buttons to reset the min/max values. The BM 25/25W sounds a beep to confirm the action.

3.6   Alarms

The BM 25/25W features visual and audible indicators:

- Visual indicators: clear text messages on the display, one 360° red flashlight that is visible from all directions
- Audible indicators: two loud speakers (103 dB @ 1m)

3.6.1   Gas alarms

The gas monitor features:

- Two instantaneous thresholds per channel for combustible, toxic or oxygen gases.
- One falling and one ascending alarm for Oxygen (two falling alarms in option).
- One STEL (Exposure Limit, country dependent) threshold per channel equipped with a toxic gas sensor. The STEL value corresponds to the average of gas measurements made over the last 15 minutes.
- One TWA (Time Weighted Average, country dependent) threshold per channel equipped with a toxic gas sensor. The TWA value corresponds to the average of gas measurements made over the last 8 hours.

When an alarm is triggered, the monitor will fire its audible and visual indicators at different frequencies depending on the alarm type:

- Low Gas Alarm (Alarm 1): two-tone, slow (1 Hz).
- High Gas Alarm (Alarm 2): two-tone, fast (2 Hz).
- Alarm Transfer (repeated alarm): two-tone, very slow (0.5 Hz).
- Fault: mono-tone, continuous (0 Hz).

The display will also indicate the alarm message(s) (ALARM 1, ALARM 2, AL. TRANSFER, STEL, TWA, mini, etc.) as well as the gas measurement. In alarm mode, the monitor will display the peak values (min or max depending on the gas type) until acknowledgement button ⊠ is pressed.

⚠️ Alarm information has priority over fault information.

3.6.2   Gas Alarms Acknowledgement

Latching Alarms

The audible alarm will be silenced when the ⊠ button is pressed. The visual alarm will continue to blink while the gas measurement is outside the set limits. The visual alarm will turn off automatically when the measurement is within the set limits.

If after two minutes the gas measurement is still outside the set limits, the audible alarm will be automatically reactivated; this function can be deactivated by factory.

Unlatching Alarms

In this configuration, audible and visual alarms will be acknowledged automatically, without any action, as long as the gas measurement is within the set limits.

3.6.3   Fault alarms

Faults can be classified into two categories:

- Sensor faults: out of range, low sensitivity, zero drift, etc.
- Monitor faults (low battery, wireless communication fault, electronics fault, etc.).

In the event of a fault, the monitor sounds a continuous audible alarm and the flash is steady. The corresponding fault message appears at the bottom of the display.

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

Battery fault

- Low battery: remaining battery life is less than 20 minutes. The BM 25/25W is still operating, the audible signal can be silenced.
- Battery fault: detection is no longer guaranteed. The audible signal cannot be silenced.

> 100% LEL: Over-Range Flammable Gas Alarm Function

Applies to the combustible channel only. In this case:

- Value on display is frozen.
- Continuous audible signal cannot be silenced.
- Visual flashlight is steady and cannot be turned off.
- Combustible sensor (LEL) is powered down to prevent damages from overexposure to gas.

Normal operating conditions can be restored by power cycling the BM 25/25W. This operation must be performed outside the hazardous area.

Out of range

- Negative Zero Drift (reading below -20% of full scale). This fault is automatically resettable.
- Over-Range (reading above 120% of full scale). This fault must be acknowledged manually.

3.6.4   Alarm transfer

The gas monitor features:

- one alarm relay output monitored by any channel and dedicated to alarm transfer
- one dry logic input to trigger the local alarm

By connecting the alarm transfer cable (ref. 2), from the output of a BM 25 (ref. 1) to the input (ref. 3) of another BM 25, and so on, it is possible to transfer alarms from instruments to instruments. This configuration is particularly useful for perimeter monitoring. For example, it may be used to monitor a fence by connecting the BM 25s on a daisy chain or to monitor a tank by connecting the units in loop.

The input and output can be configured using the *COM 2100* software; see page 41.

Figure 18: connection between two monitors

| ⚠ | Mandatory parameters for inputs/outputs:
- Voltages and alternating currents: I = 150 mA max. - U = 30 V max.
- Voltages and direct currents: I = 150 mA max. - U = 30 V max.

If the gas monitor is used in an explosive atmosphere, it is imperative to consider output relay parameters, since contact must not impair the intrinsic safety of the gas monitor. These parameters are mentioned in the paragraph *Special Instructions for use in explosive atmospheres* on page 55. TELEDYNE OLDHAM SIMTRONICS shall not, in any event, be liable for failure to follow regulations. |

3.7 Data transfer

The BM 25/25W stores gas measurements, alarm and fault events. Those data can later be downloaded to a Personal Computer thanks to *COM 2100* software.

3.7.1 Stored data

Once turned on, the BM 25/25W records data in time-stamped frames. The monitor creates a new frame every time it starts up and every 24 hours. A frame contains:

- Channels Information
- Readings for each sensor at a defined recording interval (configurable).
- Event logs for each channel:
  - Alarm
  - Fault
  - Alarm Reset
  - Maintenance operations (programming, calibration, sensor replacement, zeroing).

3.7.2 Memory capacity

The gas monitor can store approximately 200,000 measurement points. When the memory is full, oldest data are overwritten (FIFO).

3.7.3 Data storage

Data are stored as long as internal battery is charged. If the BM 25/25W is not used for a long period of time and/or main battery is discharged, a lithium battery will take over for a period of two years max.

3.8 Switching off the instrument

- To switch the instrument off, press the *Enter* button (ref. 1) located on the front plate, for 3 seconds.
- The instrument display starts a countdown from 3 to 1 before it asks to confirm. Release the *Enter* button (ref. 1) and press again to switch the BM 25/25W off.
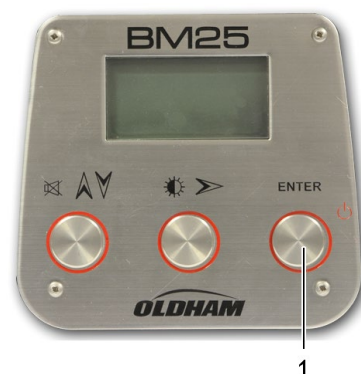
Figure 19: switch off by pressing *Enter* button

4 Wireless Version

⚠️ This product complies with FCC Maximum Permissible Exposure (MPE) requirements when used with an approved antenna and the antenna is at least 20 cm away from the user. Use of the product closer than 20 cm may exceed the MPE limits. Use of any antenna other than approved antennas will invalidate the certification of the product.

4.1 Overview

Available as an option, the radio communication allows several BM 25Ws to communicate on the same network (*BM 25* mode) or to send information wirelessly to a MX40 or X40 controller (CONTROLLER mode).

Wireless communication is made via a 2.4 GHz radio and emitted power is less than 100 mW. Maximum distance between two communicating devices is 3,300 feet line of sight. Up to 30 BM 25Ws can be meshed on the same network and up to 16 networks can coexist with no interference.

The network topology used by the BM 25W is a MESH network. In a mesh network all hosts are connected peer to peer without central hierarchy, thereby forming a net-like structure. Consequently, each node can receive, send and relay data. This avoids having sensitive points, which in case of failure, cut the connection of the network. If a node is down, its neighbors go through another route.

Figure 20 : Wireless version, recognizable by the presence of an antenna

Mesh topology allows fast and simple deployment, high coverage versatility and high fault tolerance. It significantly reduces installation and operating costs of networks. These solutions reproduce the architecture of the Internet while optimizing for wireless.

4.1.1 BM 25 Mode

When in *BM 25* mode, BM 25Ws send information regarding gas alarm and fault status. Once a BM 25W is in gas alarm, the alarm is repeated on all other BM 25Ws on the same network.
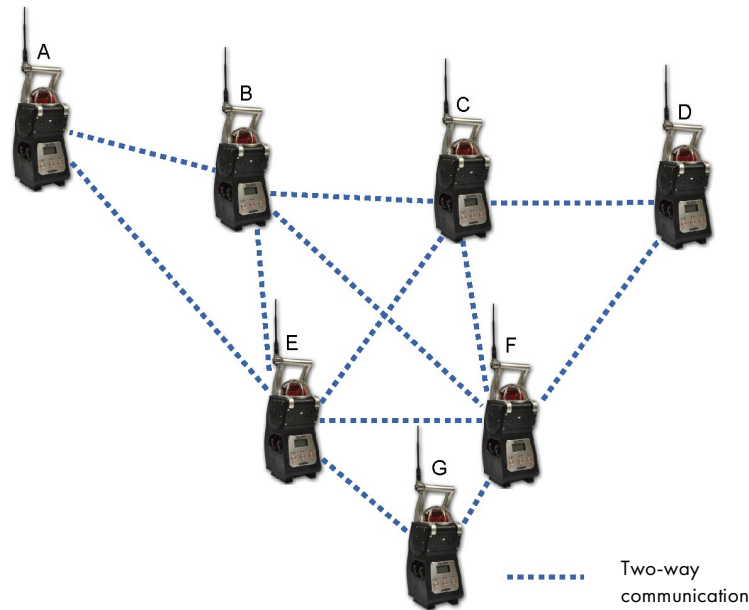

Figure 21 : In the example above, BM 25W tag G communicates with E and F. In the event of a loss of communication between G and F, E still ensures the communication to the rest of the network. If G goes into gas alarm or fault condition, all BM 25Ws on the network will report a corresponding alarm

Alarm sequence differs depending on whether a BM 25W sends information (gas alarm or fault) or receives information (alarm transfer). This allows for quick identification of the BM 25W in alarm condition so that the appropriate action can be taken. Although there is no hierarchy in a mesh network, the unit in alarm and the unit reporting the alarm are referred to later in the manual as 'main' and 'secondary' BM 25W, respectively.

		Main BM 25W		Secondary BM 25W	
Case	Cause	Flash	Siren	Flash	Siren
1.	Fault (no communication at all, sensor fault, low battery, etc.)	Steady	Yes	Steady	Yes
2.	At least one BM 25W does not communicate	Steady	No	Steady	No
3.	Alarm 1	1 Hz	1 Hz	0.5 Hz	0.5 Hz
4.	Alarm 2	2 Hz	2 Hz	0.5 Hz	0.5 Hz

Table 1 : 'Alarm' mode – Table of events

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Gas alarm Transfer

In the event one BM 25W goes into a gas alarm, all secondary BM 25Ws will display « Al. Transfert » as shown below. Press the "acquit" button to silence the audible alarm. The BM 25W strobe will continue to flash until the alarm event has ended. The audible alarm will reactivate after 5 minutes if the alarm event is still active.

Note that if a second BM 25W had to fire a gas alarm, then this BM 25W would pass from 'secondary' to 'main' status and would sound at 1 or 2 Hz depending on the alarm level being reached. The secondary BM 25Ws would not immediately reactivate the local siren.

Figure 22 : Secondary BM 25W reporting an 'Alarm Transfer' condition

Fault Transfert

In the event one BM 25W goes into fault condition, secondary BM 25Ws will display on their LCD screen the message « Def. Transfert » as shown below. This fault condition is not acknowledgeable and is automatically cleared as soon as the main BM 25W goes back into a normal operating condition.

Figure 23 : Secondary BM 25W reporting a 'Fault Transfer' condition

4.1.2 Controller Mode

In Controller mode, BM 25Ws send fault status, alarm status and gas measurements to the controller. As soon as one BM 25W fires an alarm, the controller relays the gas alarm information to all BM 25Ws on the same network that then turn in Alarm Transfer mode.
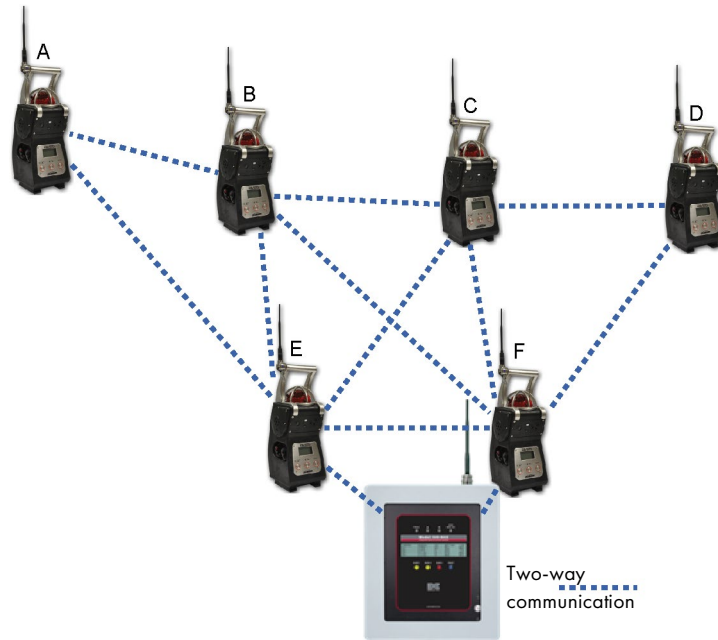
Figure 24 : In the example above, BM 25Ws E and F are the last links between the controller and the rest of the network. If communication between BM 25W F and MX 40 fails, then BM 25W E continues to provide communication between the BM 25W network and the controller. If BM 25W A goes into gas alarm or fault condition, then MX 40 receives information and passes the gas alarm on all others BM 25Ws

The alarm sequence differs depending on whether a BM 25W sends information (gas alarm or fault) or receives information (alarm transfer). This allows for quick identification of the BM 25W that is in alarm so that appropriate action can be taken.

		Main BM 25W		Secondary BM 25W		Controller
Case	Cause	Flash	Siren	Flash	Siren	Channel status
1.	Fault (no communication at all, sensor fault, low battery, etc.)	Steady	Yes	No	No	Fault
2.	Alarm 1	1 Hz	1 Hz	0.5 Hz	0.5 Hz	Alarm 1
3.	Alarm 2	2 Hz	2 Hz	0.5 Hz	0.5 Hz	Alarm 2

Tableau 2 : *Controller* **Mode – Table of events**

4.2   Start-up

From the Maintenance menu (see Chapter 5), choose Wireless. Leave it to 'OFF' if you do not want to activate the radio function. Select '*BM 25*' or 'Controller' according to the chosen operation mode (see above).
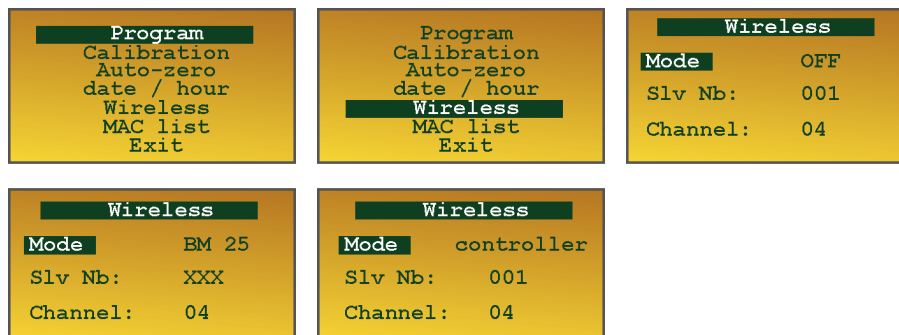

Figure 25 : *Wireless mode* screenshots

- In *BM 25* **mode**: only the network ID (Channel) must be set between 0 and 15. Address number (Slv Number) is not editable and is set to 'XXX'. In this mode, it is not necessary to assign an address as the network is automatically built in by using the MAC[(*)] addresses of each device.

- In *Controller* **mode**: set the BM 25W address *Slv Nb* between 1 and 30 max. and the network ID *Channel* between 0 and 15.

(*) MAC (Media Access Control): unique identifier assigned to network interfaces. Each BM 25W has its own unique MAC address.

WARNING

- It is important that all BM 25Ws intended to be on the same network have the same network ID.
- In Controller mode, two BM 25Ws cannot share the same address otherwise you will get a fault.

Once wireless mode is activated ('*BM 25*' or 'Controller' mode), you have 5 minutes to declare another BM 25W on the same network. When the time is gone and no communication is established, BM 25W shows 'COMM ERR' and goes into fault (see case #1 from table of events).
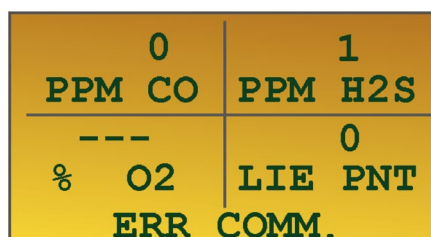

Figure 26 : *COMM ERR*, no communication is established

Thereafter, in normal operation, each BM 25W sends its information over the network every ten seconds. If a BM 25W goes into gas alarm or fault condition, then the information is immediately sent without waiting ten seconds. In *BM 25 mode*, the number of BM 25Ws that are communicating on the network is shown at the bottom of the display screen (example 4 shown below).

Figure 27a – *BM 25* mode : Four BM 25Ws communicate with each other on the same network

Figure 27b – Controller mode : BM 25W is communicating with the controller

When in *BM 25 mode*, BM 25W displays the radio signal strength as indicated below in figure 27c. It corresponds to the average of signals received from all BM 25Ws that the BM 25W you are looking at is communicating with.

Figure 27c – *BM 25* mode : Radio Signal Strengh

When is displayed, the BM 25W has 100% of the signal and the radio communication is very good.

When is displayed, the signal strengh is less than 20% although BM 25Ws are still communicating.

When ----- is displayed, no communication is established, BM 25W shows 'COMM ERR' and goes into fault (see case #1 from table of events).

4.2.1   Adding a BM 25W on an existing network

In *BM 25* mode, the network is automatically built. Each BM 25W with the same network ID is automatically included as long as it communicates with at least one BM 25W belonging to the same network.

To add a new BM 25W to an existing network, simply turn the unit on, activate the radio communication and, if applicable, set the network ID.

In MODBUS mode, you must set the address number (Slv Nb), set the network ID (Channel) and configure, if applicable, a new input on the controller.

4.2.2   Removing a BM 25W from an existing network

In *BM 25* mode
- turn the unit off
- or deactivate the radio module from the maintenance menu.

In both cases, before communication stops, the BM 25W broadcasts a last message to inform the other BM 25Ws on the same network that it will be removed.

In Controller mode

To remove a BM 25W from an existing network, just switch the controller channel off, then turn the BM 25W off or deactivate the radio module if you still need to use the BM 25W in local.

4.3   Self-healing

NOTE : This section covers the 'BM 25' mode only.

Each BM 25W broadcasts a message every 10 seconds. Using the example shown below, if BM 25W tag A receives no message from BM 25W tag B for more than 2 minutes, then B is considered as missing by A which turns into fault mode (case No. 2 – Table of alarms) and transfers the information to all other BM 25Ws on the network. Note that BM 25W tag B can act the same if it receives no information from A. Number of BM 25Ws that do not communicate anymore is displayed on each BM 25W referring a communication fault. This number may differ depending on the BM 25W you are looking. Here below, one BM 25W out of four is no longer communicating.

Figure 28 : One BM 25W out of four does not communicate

In case of communication failure, the network tries to reestablish communication every ten seconds.

In *BM 25* mode, if a BM 25W does not respond or if the network is split, then it is possible to ignore this fault and to continue to work by the time of the restoration of the network.

In the example above, BM 25W (unit D) is the only communication link between A, B, C and E, F, G. If BM 25W (unit D) had a fault (low battery for instance) or if an obstacle were to disrupt communication between D and E or D and B, then all BM 25Ws would report a fault failure (steady flashlight according to case No. 2 – see table of alarms).

IMPORTANT :

- Note that the gas detection remains effective and that BM 25W (unit D) would still locally alarm in the presence of gas. It is the same for each BM 25W on the network. Only the alarm would not be transferred to the whole network.
- To ensure maximum network reliability, a BM 25W should always communicate with at least two neighbors.

Figure 29 : group concept (read details below)

A long press on the « acquit » button ⊠ forces the system to a new identification of the nodes present on the network. BM 25Ws that do no communicate are ignored without triggering a fault condition. In the example above, the communication between D and E is down. A long press on the « acquit » button of BM 25W (unit D) resets the network. All BM 25Ws communicating with D automatically launch a new identification in turn. On one side, BM 25Ws A, B, C and D discover each other and form a first group. On the other side, BM 25Ws E, F and G still report a communication failure since they do not receive data from the BM 25Ws of the newly formed group. A long press on the « acquit » button of one BM 25W (unit E, F or G) clears the list of BM 25Ws on the network and forces to a new identification. Similarly as above, BM 25Ws (units E, F and G) form a second group.

IMPORTANT :

- The two groups run independently and alarm or failure events from one group cannot be transferred to the other group.
- When the obstacle (the truck in our example) is gone, the communication between E and D resumes automatically without the need to restart identification. The two groups merge together to form only one group.

To start a new identification, keep pressing the « acquit » button for 3 seconds. The display successively shows 3, 2, 1 then « confirm ». Release the « acquit » button and press again.

Figure 30 : reset sequence of a group of BM 25Ws

NOTE :

- When a new identification has started, communication errors are inhibited for one minute.
- Once the network healing is completed, it is possible that one or several BM 25Ws remain isolated and stay in fault mode (case No. 1 – Table of alarms). To acknowledge this failure, turn the unit off or disable the radio communication from the maintenance menu.

Adding a new BM 25W to the network at a smart location overcomes the obstacle and restores the communication between the two groups which then merge together. This healing is automatic as long as BM 25W (unit H) belongs to the same network (same 'Channel' ID).
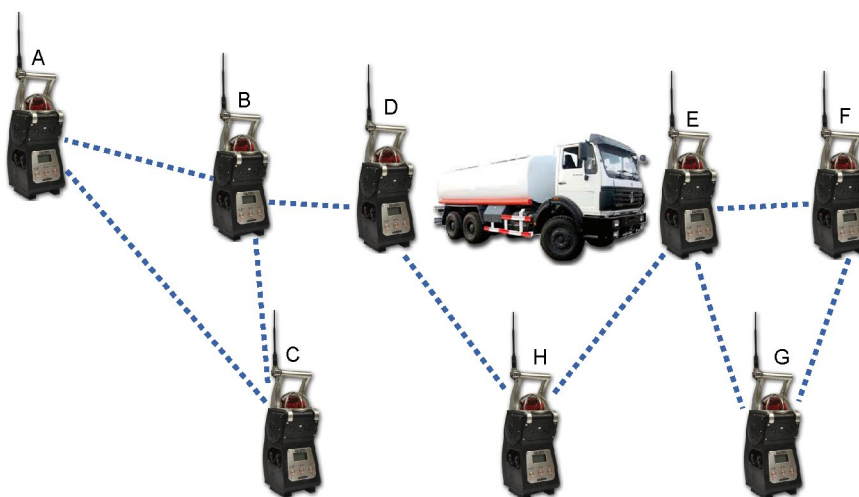

Figure 31 : bypassing an obstacle by adding a new BM 25W (H)

4.4   Mac list menu

NOTE : This section covers the *BM 25* mode only.

Available from the Maintenance menu (see 5), the « MAC List » menu allows the user from any BM 25W belonging to the network to get the MAC[*] address of each BM 25W on the network and its particular status.

(*) MAC (Media Access Control): unique identifier assigned to network interfaces. Each BM 25W has its own unique MAC address.

```
   Program
  Calibration
  Auto-zero
 date / hour
   Wireless
   MAC list
    Exit
```

Figure 32 : MAC List menu

When in the « MAC List » menu, the first address displayed and aligned to the right is the address of the BM 25W you are currently looking at (here 0487D2). Up to 6 MAC addresses can be displayed per page.

```
    MAC list
          0487D2
  0487D1
  04C392
  0487D7

     1 / 5
```

Figure 33 : List of the MAC addresses present on the network

A BM 25W in gas alarm mode is shown with the status 'A' (here, BM 25W with address No. 04C392 is in alarm). A BM 25W in fault mode (low battery for instance) is shown with the status 'D' (here, BM 25W with address No. 0487D1 is in fault).

```
    MAC list
          0487D2
  04C392      A
  0487D7
  0487D1        D

     1 / 5
```

Figure 34 : Status of each BM 25W on the network

When a BM 25W is no longer communicating on the network, its address appears in reverse video. See "SELF-HEALING" parapragh for trouble shooting.
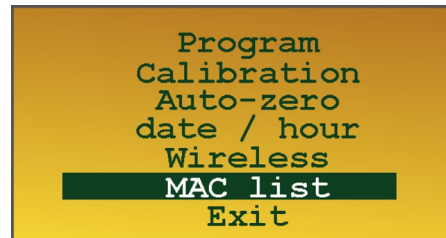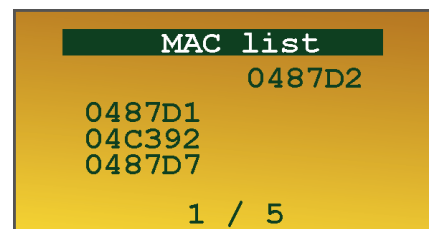
```
    MAC list
          0487D2
  04C392      A
  0487D7
  0487D1        D

     1 / 5
```
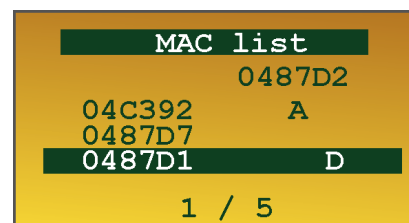
Figure 35 : BM 25W with MAC address No. 0487D1 does not communicate

5   Maintenance

Gas monitors are safety instruments. Recognizing this fact, TELEDYNE OLDHAM SIMTRONICS recommends that a functional test be performed on every portable gas monitor prior to each use. A functional test involves injecting 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 sensors.

If a gas monitor does not respond correctly to a gas test, a full calibration with a calibration 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. TELEDYNE OLDHAM SIMTRONICS is also not responsible for procedures performed onsite.

⚠️ The gas monitor is factory-programmed to display a maintenance alert if a calibration has not been performed in the last twelve months (the message *Calibration due* will appear on the screen).

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

5.1   Accessing maintenance menus

When in normal operation mode,

- Scroll to parameters using the ☼ / ≫ button until a request for an access code and *0000* is displayed.

- *0018* is the default code. Scroll to each digit with the ≫ button. Use Ⱥ button to select the right number and confirm access code with the *ENTER* button.

The list of available menus will then be displayed:

- Program

- Calibration

- Auto-zero

- date / hour

- Wireless (see 4)

- MAC List (see 4)

- Exit

5.2 Program Menu

This is used to:

- Activate/Deactivate a channel

- Display sensor information (gas type and measurement range)

- When using a catalytic sensor, to select the reference gas from the library (see table below) or enter a correlation factor and to program alarm set points

- When using an oxygen sensor, to set the low (descending) and high (rising) alarm thresholds or 2 low alarm levels if this option was selected

- When using a toxic gas sensor, to set alarm thresholds

The coefficients are given for information in relation to CH_4 with an LEL of 5.0% volume, and are automatically used by the monitor during calibration or when changing the reference gas. If the combustible gas to be detected is not in this list, you can use the *Other* window by selecting a coefficient provided by TELEDYNE OLDHAM SIMTRONICS (contact us).

Gas	Molecular formula	LEL 1	LSE 2	Vapor density	Coef. / CH4.	Recommended calgas	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	1.55	But/Prop	ACO
Acetylene	C_2H_2	1.5 %	100 %	0.9	1.1	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	2.2	But/Prop	BUT
Butanone	C_4H_8O	1.8 %	11.5 %	2.5	1.75	But/Prop	BUN
Dimethylether	C_2H_6O	3.0 %	27.0 %	1.6	1.55	But/Prop	DIM
Unleaded petrol	Mixture	1.1 %	~ 6 %	3 to 4	3.0	But/Prop	ESS
Ethanol	C_2H_6O	3.3 %	19.0 %	1.6	1.15	But/Prop	ETA
Ethylene	C_2H_4	2.7 %	34.0 %	0.98	1.0	But/Prop	ETY
G.P.L.	Prop+But	1.65 %	~ 9.0 %	1.85	2.05	But/Prop	GPL
Diesel	Mixture	0.6 %	~ 6.0 %	> 4	5.00	But/Prop	GSL
Natural gas	CH4	5.0 %	15.0 %	0.55	1.05	CH4	GNT
Hexane	C6H14	1.2 %	7.4 %	3.0	6.0	But/Prop	HEX
Hydrogen	H2	4.0 %	75.6 %	0.069	0.80	But/Prop	H2
Isobutane	C4H10	1.5 %	~ 15 %	2.0	1.6	But/Prop	ISB
Isopropanol	C3H8O	2.15 %	13.5 %	2.1	1.6	But/Prop	ISP
Methane[3]	CH4	5.0 % / 4.4 %	15.0%	0.55	1.00 / 1.14	CH4	CH4
Methanol	CH3OH	5.5 %	44.0 %	1.1	1.0	But/Prop	MTL
Methylamine	CH3NH2	4.9 %	20.7 %	1.1	2.0	CH4	MAM
Propylene oxide	C_3H_6O	2.3 %	37.0 %	2.0	2.0	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	2.60	But/Prop	PNT
Propane	C_3H_8	2.0 %	9.5 %	1.6	1.7	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	2.05	But/Prop	TOL
White spirit	Mixture	1.1 %	6.5 %	> 2	5.0	But/Prop	WSP
Xylene	C_8H_{10}	1.0 %	7.6 %	3.7	2.5	But/Prop	XYL

List of pre-programmed combustible gases with coefficients

(1) Lower flammable limit.   *(2) Upper flammable limit.*

(3) The LEL adopted value for methane varies by country. The monitor integrates two different LEL values for CH4 (4.4% vol. and 5.0% vol.)

5.3 Sensor calibration menu

Calibration consists of a zero adjustment in clean air (free from any gases that could be detected by the gas monitor), as well as a sensitivity adjustment using calibration gas of concentration between 15% and 100% of the full sensor range. Test gas shall be applied at a 60 liters per hour flow rate.

5.4 Auto-adjustment menu

Allows to zero each sensor.

5.5 Date and time management menu

To set the instrument's built-in-clock since saved data and event logs are time stamped.

5.5.1 Loss of date and time

An on-board lithium battery keeps date and time saved in memory (see paragraph *Data storage* on page 21) when the main battery is drained or when the monitor is turned off. Expected lithium battery's runtime is 2 years.

	When battery is low, the user is notified with a *Battery fault* message before losing all stored data. The battery must then be replaced. This operation should only be performed by TELEDYNE OLDHAM SIMTRONICS or TELEDYNE OLDHAM SIMTRONICS approved personnel.

5.6 Radio communication menu

This menu allows the user to:

- Switch the radio on and off
- Select the operation mode (*BM25* or *controller* mode)
- Set the BM 25W Modbus address (when in *controller* mode)
- Set the network ID

5.7 MAC List menu

When in wireless mode, this menu displays:

- The monitor's MAC address
- MAC addresses of all BM 25Ws belonging to the same network
- Status of each BM 25W on the same network

5.8 Exit menu

Return to normal mode.

6 *COM2100* software

6.1 Subject

This software is for settings and service purpose. It features:

- Channels settings
- Diagnostics in case of failure
- Instrument settings
- Sensors calibration
- Calibration and Control certificates
- Datalogging management

Through its infrared port (ref. 1), the BM 25/25W can be connected to a computer by using a connection cable (ref. 2 and 3).

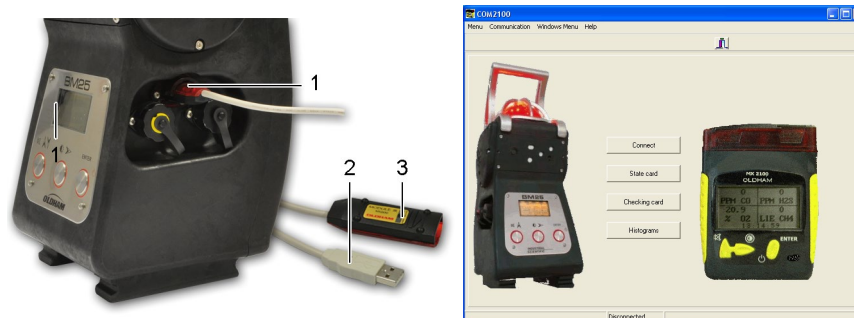**Figure 36: interconnection cable and welcome screen**

6.2 Gas monitor connection

Once *COM 2100* is running, the BM 25/25W connects automatically and a window pops up as indicated in figure Figure 37: the parameter programming menu.

Follow the steps below:

- Set communication parameters as necessary (port, speed, language)
- Click the *Connect* button.

Figure 37: the parameter programming menu

6.3 Maintenance menu

Follow the steps below:

- From the main list of menus, access the *Maintenance* menu.

Options are:

- *Program*: see page 38
- *Calibration*: see page 39
- *Time Setting*: see page 39
- *Monitoring report*: see page 40
- *Status report*: see page 40

Figure 38: *Maintenance* **menu**

6.3.1 Programming Menu

Proceed as follows:

- From the *Maintenance* menu (Figure 38), select *Programming*
- The screen here below pops up

Figure 39 - Program menu screen

Channel settings

- Access is password protected. The default code is *1000* (to change this code, see paragraph *Screen menu* on page 42).
- The first column, *Activated* (top left) allows the user to switch on/off a channel. The second column *Present* allows the user to display (or not to display) a channel that has been switched off, e.g. *O₂ OFF* (or blank screen).
  - Click *Confirm* to save the modification.

Alarm settings

Select the channel from the dropdown list (*Channel selection* - Figure 39):

- Edit alarm threshold values
- Click Alarm validation to save your settings.

Reference Gas settings

- Access is password protected. Select the channel fitted with the catalytic sensor (Channel selection, see Figure 39).
- Select the Reference Gas as necessary:

  - Choose another gas from the list and click on Programming combustible gas (Figure 40: programming combustible gas.
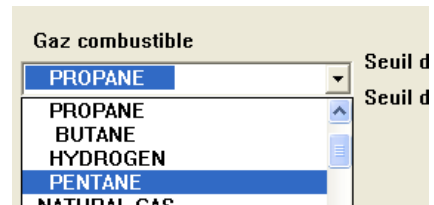 - Click Exit.

Figure 40: programming combustible gas

6.3.2   Calibration menu

- From the Maintenance menu (Figure 38), select Calibration.
- Choose the sensor to calibrate.
- Set the maintenance interval.
- Enter the calibration gas concentration value (shall be between 15 and 100% of the sensor range).
- Click Zero to start the procedure. Follow the software instructions. You will be asked first to inject Zero Air and then Calibration Gas.

Once the calibration is complete, click OK to validate. If you miss something during the calibration, click Cancel and start the calibration again.

Once you have confirmed the calibration is complete, the BM 25/25W will notify whether the sensor passed or failed the calibration. In the event of a failure, repeat the calibration process or proceed with the sensor replacement.

Figure 41: *Calibration* **menu**

Figure 42: confirming Calibration

⚠️ TELEDYNE OLDHAM SIMTRONICS recommends using pure gases: using mixed gases can alter the accuracy of gas measurements due to cross interferences between the sensors.

The calibration gas concentration value shall be between 15% and 100% of the measurement range.

6.3.3   *Date and Time* Settings

- From the *Maintenance* menu (Figure 38), select the option *Update the BM 25/25W date and time from a PC*.
- Click *OK* to validate and exit.

Figure 43: the *Time Settings* menu

6.3.4   *Monitoring Report* menu

Follow the steps below:

- From the *Maintenance* menu (Figure 38), select *'Checking card'*.
- Fill in the fields (user's information for instance)
- Create the monitoring report (.ctr file)
- From the PC (*COM 2100* files) open the files to edit or print.

Figure 44: the *Monitoring Report* menu

Example:

Step 1

Step 2 and 3

Step 4

6.3.5   Status Report menu

From the *Maintenance* menu (Figure 38), select 'State card' and follow the same steps as described in the *Monitoring Report menu* (.etx files).

6.4   Alarm relay configuration and logic inputs

- Set relay output and the logic input by checking the different boxes (Figure 45).
- *Reference 1*
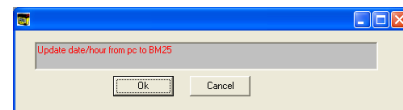- Alarm relay output settings. In this example all CO, O2 and LEL alarms will trigger the relay output.
- *Reference 3*
- To set the BM 25/25W modes when logic input is activated (set to 1).

  - *Alarm relay*: internal relay output is activated
  - *Alarm 1*: BM 25/25W will turn in Alarm 1 mode
  - *Alarm 2*: BM 25/25W will turn in Alarm 2 mode
  - *Remote alarm*: BM 25/25W will turn in Alarm Transfer mode
- Reference 4
- Alarm acknowledgment

  - *Local acknowledgment: alarms must be acknowledged from the gas monitor keyboard.*
  - *Remote acknowledgment: when on a network (wired or wireless), local alarms can be acknowledged from another BM 25/25W.*
- Click *OK* to confirm.

Figure 45: alarm output relay and logic input settings

6.5 Screen menu

This menu displays the log events, gas measurements and device's configuration.

The password to access the maintenance menu is 0018 and software access code is 1000. Those passwords are user configurable.

Lists of users and/or locations can be created from this menu. This function allows to assign log events by user or location.

6.5.1 List of Users/Locations management

- To create a new entry, fill in the field *Enter new Location/User name*.
- Click on *Save new Location/User name*. The new entry appears in the window on the left (*Locations/Users available*).
- To add an (all) user/location to the BM 25/25W, select an input from the left and click on the '>' (>>) icon.
- To remove an user/location from the BM 25/25W, select an input from the right and click on the '<' (>>) icon.
- Click *OK* to confirm.

Figure 46: list of users/locations

7 Technical Specifications

7.1 Gas monitor

Function	
Manufacturer :	TELEDYNE OLDHAM SIMTRONICS
Function:	Area Gas Monitor
Type:	BM 25 and BM 25W (wireless)
Gas	
Configuration:	One to four sensors (catalytic, electrochemical, infrared or PID sensors)
Gases detected:	Combustible, toxic and oxygen
Measurement:	Continuous on all sensors in operation
Sensors:	Plug & Play
Display	
	• Graphic LCD with backlit • Clear messages • *Flip-Flap* function
Various alarms	
Operations check:	• Self-test at start-up • Unit flashes every 2 minutes (Confidence test)
Alarm thresholds:	• Combustible: 2 adjustable instantaneous thresholds in 0-60 % LEL range • Oxygen: two adjustable instantaneous thresholds over the sensor's entire measuring scale (over-oxygenation and under-oxygenation) or two optional under-oxygenation thresholds • Toxic (per sensor): two adjustable instantaneous thresholds over the sensor's entire measuring scale • Toxic (per sensor): two adjustable averaged thresholds over the sensor's entire measuring scale for STEL and TWA monitoring
Gas Alarm:	• Visual and Audible alarm (1Hz and 2Hz) • Clear message on the display
Sensor fault:	• Visual and Audible alarm (continuous) • Clear message on the display
Battery fault:	• Visual and Audible alarm (continuous) • Clear message on the display
• Inputs and outputs	
Inputs/Outputs	• RS232 infrared link

- Alarm relay output
- Fault relay output
- Dry Logic input
- Optional Wireless Communication (2.4GHz - 100 mW – IEEE 802.15.4)

Additional software

Additional software:	Maintenance software *COM 2100*

Power supply

Power Supply:	NiMH rechargeable battery pack		
Battery life in hours (excluding alarms and as a function of the number of sensors):	**Configuration**	**Without radio module (hours)**	**With radio module (hours)**
	1 catalytic and 2 infrared	40	35
	1 catalytic and 1 infrared	70	50
	1 catalytic and several Tox	100	65
	Only Tox sensors	170	135
Charging Time:	4.5 hours		

Weight and dimensions

Weight:	6.85 kg
Dimensions:	470 x 180 x 190 mm (H x W x D)

Certification

Ingress Protection:	IP 66
Certifications:	CE, ATEX, IECEx, FCC

7.2 Sensors

Non-exhaustive list.

7.2.1 Table No. 1

	Methane (CH₄)	Methane (CH₄)	Methane (CH₄)
Sensor reference	6314064	6313888	6313889
Standard range (1)	0 - 100% LEL CH4	0 - 100% LEL CH4	0 - 100% vol
Measurement principle	Infrared	Catalytic	Catharometric
Display resolution(1)	1 % LEL	1 % LEL	1% v/v
Accuracy (2)	2	2	2
Repeatability (3)	± 2 % LEL	± 1 % LEL	± 1% vol
Zero/Span drift (4)	1 / 2	0.5 / 5	0.2 / 2
Response time (5)	< 30s	< 20s	< 20s
Temperature (6)	-20°C to +55°C	-20°C to +50°C	-20°C to +50°C
Relative humidity and pressure range (7)	• 0 – 99 % RH • 1 bar ± 10 %	• 0 – 99 % RH • 1 bar ± 20 %	• 0 – 99 % RH • 1 bar ± 20 %
Service life (8)	> 60 months	48 months	60 months
Storage conditions and maximum storage time (9)	• 4°C to +20 °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
Warming-up delay (10)	300s	30s	30s
Notes	Hydrogen cannot be detected with IR sensor.	• Measurement is underestimated if oxygen level is < 10 %. • Exposure to high levels of silicon or sulfur vapors may damage the sensor. • The monitor is sensitive to the majority of explosive gases.	

7.2.2   Table No. 2

	Isobutylene	Oxygen (O_2) 2 years	Oxygen (O_2) 1 year
Sensor P/N	6313998	6313780	6313817
Standard range (1)	0 – 1500ppm isobutylene	2 - 30% volume	2 – 30% volume
Measurement principle	PID	Electrochemical	Electrochemical
Display resolution(1)	1ppm	0.1% v/v	0.1% v/v
Accuracy (2)	150	0.3% v/v	0.3% v/v
Repeatability (3)		0.1% v/v	0.1% v/v
Zero/Span drift (4)		0.2 / 2	0.2 / 2
Response time (5)	< 20s	< 10s	< 10s
Temperature (6)	0°C to +40°C	-20°C to +40°C	-20°C to +40°C
Relative humidity and pressure range (7)	• 0 – 90% RH • 1 bar ± 20%	• 10 – 95% RH • 1 bar ± 20%	• 10 – 95% RH • 1 bar ± 20%
Lifetime (8)	> 12 months	28 months	16 months
Storage conditions and maximum storage time (9)	• 4°C - 20°C • 10-60% RH • 1 bar ± 10% • 6 months maximum	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 3 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 3 months
Warm-up Delay (10)	60s	Operational upon start up	
Notes	• 10.6ev lamp		• Presence of high levels of CO2 can lead to an over estimation of O2 concentration.

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7.2.3   Table no. 3

	Carbon dioxide (CO_2)	Carbon Monoxide (CO)	Hydrogen sulfide (H_2S)
Sensor P/N	6313818	6313787	6314240
Standard range (1)	0 - 5% v/v	1000	100
Measurement principle	Absorption Infrared	Electrochemical	Electrochemical
Display resolution(1)	0.1% v/v	1	1
Accuracy (2)	0.2% v/v	15	3
Repeatability (3)	0.1% v/v	1	1
Zero/Span drifty (4)	0.2 / 2	0.5 / 1.5	0.5 / 2.5
lowest recommended alarm threshold (11)	0.1% vol.	20ppm	3ppm
Response time (5)	< 30s	< 30s	< 25s
Temperature (6)	-10°C to +40°C	-20°C to +40°C	-20°C to +40°C
Relative humidity and pressure range (7)	• 10 – 95% RH • bar ± 20%	• 10 – 95 % RH • 1 bar ± 20 %	• 15 – 90% RH • 1 bar ± 10%
Lifetime (8)	60 months	36 months	36 months
Storage conditions and maximum storage time (9)	• 0°C – 40°C • 10 – 60% RH • 1 bar ± 20% • 6 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months
Warm-up Delay(10)	120s	Operational upon start up	
Notes		• Exposure to high levels of organic solvents can damage the sensors. • Exposure to gases at levels higher than the monitor's range can damage the device. Recalibrate sensors if they go out of range.	

7.2.4 Table No. 4

	Chlorine (Cl_2)	Hydrochloric acid (HCl)	Hydrogen cyanide (HCN)
Sensor P/N	6313809	6313804	6313805
Standard range (1)	10	30	10
Measurement principle	Electrochemical	Electrochemical	Electrochemical
Display resolution(1)	0.1	0.1	0.1
Accuracy (2)	0.25	1	0.25
Repeatability (3)	2	2	2
Zero/Span drift (4)	0.5 / 5	0.5 / 5	0.5 / 5
lowest recommended alarm threshold (11)	1.5ppm	3ppm	1.5ppm
Response time (5)	< 60s	< 80s	< 60s
Temperature (6)	-20°C to +40°C	-20°C to +40°C	-20°C to +40°C
Relative humidity and pressure range (7)	• 10 – 90% RH • bar ± 20%	• 15 – 95% RH • 1 bar ± 20%	• 15 – 95% RH • 1 bar ± 20%
Lifetime (8)	30 months	24 months	24 months
Storage conditions and maximum storage time (9)	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months
Warm-up Delay (10)	Operational upon start up		
Notes	• Exposure to high levels of organic solvents can damage the sensors. • Exposure to gases at levels higher than the monitor's range can damage the device. Recalibrate sensors if they go out of range.		

7.2.5   Table no. 5

	Ammonia (NH₃)	Ammonia (NH₃)	Nitrogen oxide (NO)
Sensor P/N	6313799	6313800	6313802
Standard range (1)	100	1000	300
Measurement principle	Electrochemical	Electrochemical	Electrochemical
Display resolution(1)	1	1	1
Accuracy (2)	5	30	10
Repeatability (3)	2	2	1
Zero/Span drift (4)	1 / 2	1 / 2	0.5 / 3
lowest recommended alarm threshold (11)	10ppm	30ppm	15ppm
Response time (5)	< 90s	< 90s	< 30s
Temperature (6)	-20°C to +40°C	-20°C to +40°C	-15°C to +40°C
Relative humidity and pressure range (7)	• 10 – 90% RH • bar ± 20%	• 15 – 95% RH • 1 bar ± 20%	• 15 – 95% RH • 1 bar ± 20%
Lifetime (8)	30 months	24 months	30 months
Storage conditions and maximum storage time (9)	• 4°C – 20°C • 10 – 60 % RH • 1 bar ± 10% • 2 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months
Warm-up Delay (10)	Operational upon start up		
Notes	• Exposure to high levels of organic solvents can damage the sensors. • Exposure to gases at levels higher than the monitor's range can damage the device. Recalibrate sensors if they go out of range.		

7.2.6   Table No. 6

	Nitrogen dioxide (NO_2)	Sulfur dioxide (SO_2)
Sensor P/N	6313801	6313819
Standard range (1)	30	30
Measurement principle	Electrochemical	Electrochemical
Display resolution(1)	1	1
Accuracy (2)	1	1
Repeatability (3)	1	1
Zero/Span drift (4)	0.5 / 5	0.5 / 2
lowest recommended alarm threshold (11)	3ppm	2ppm
Response time (5)	< 30s	< 60s
Temperature (6)	-20°C to +40°C	-20°C to +50°C
Relative humidity and pressure range (7)	• 10 – 90% RH • bar ± 20%	• 15 – 95% RH • 1 bar ± 20%
Lifetime (8)	30 months	24 months
Storage conditions and maximum storage time (9)	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months	• 4°C – 20°C • 10 – 60% RH • 1 bar ± 10% • 2 months
Warm-up Delay (10)	Operational upon start up	
Notes	• Exposure to high levels of organic solvents can damage the sensors. • Exposure to gases at levels higher than the monitor's range can damage the device. 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. Averaged value. In normal conditions. 12 month warranty.
9. All sensors must be protected from air when stored.
10. Time to reach full performance of the sensor after warm-up.
11. at 20°C. TWA and STEL values depend on the country of use and might be lower. It is your responsibility to check the product suits your application.

Other gases, other ranges: consult us at gasandflamedetection@teledyne.com

8 Accessories and Spare Parts

8.1 Accessories

Part Number	Description
6511157	Universal charger 110/230 VAC for BM 25/25W - Charging time 4.5hrs
6511164	Vehicle charger 12/30 VDC for BM 25/25W
WCHMUBM	Wall charger for BM 25/25W
6321390	Support for BM 25/25W wall charger
WLOGUSB	COM 2100 software kit with infrared/USB cable
6314588	Connection cable IR/USB
6331159	Sensors cover for calibration and manual sampling
6321388	Tripod
Trickle charge kits	
BM25KITCHS25	Intrinsically Safe Trickle charger with one IS power supply and 25 meters of IS cable
BM25KITCHS50	Intrinsically Safe Trickle charger with one IS power supply and 50 meters of IS cable
BM25KITCHS100	Intrinsically Safe Trickle charger with one IS power supply and 100 meters of IS cable
BM25KITCHD25	Intrinsically Safe Trickle charger with two IS power supplies and 25 meters of IS cable
BM25KITCHD50	Intrinsically Safe Trickle charger with two IS power supplies and 50 meters of IS cable
BM25KITCHD100	Intrinsically Safe Trickle charger with two IS power supplies and 100 meters of IS cable
Alarm transfer kits	
6315862	Alarm transfer kit. Length 25 m
6315863	Alarm transfer kit. Length 50 m
6315864	Alarm transfer kit. Length 100 m

8.2 Spare Parts

Part Number	Combustible sensors (fit slot #1 only)
6313888	EXPLO sensor, 0-100% LEL
6313889	EXPLO CATHARO sensor, range 0-100% LEL and 5-100% vol CH_4 for BM 25 only (H_2 version also available).
	MEDIUM sensors (fit slots #4 and #5 unless mentioned)
6313780	O_2 sensor (lifetime 28 months)
6314240	H_2S sensor 0-100 ppm
6313823	Combo CO/H_2S sensor (fits slot #4 only)
6313818	CO_2 sensor 0-5% vol
6313857	NO_2 sensor 0-30 ppm
6313843	Cl_2 sensor 0-10 ppm
6313821	ETO sensor 0-30 ppm
6313819	SO_2 sensor 0-30 ppm
6313822	SO_2 sensor 0-100 ppm
	MINI sensors (fit slots #2 and #3)
6313817	O_2 sensor (lifetime 14 months)
6313787	CO sensor 0-1000 ppm
6313826	CO sensor 0-2000 ppm
6313816	H_2S sensor 0-30 ppm (special for hydrocarbons)
6313799	NH_3 sensor 0-100 ppm
6313800	NH_3 sensor 0-1000 ppm
6313801	NO_2 sensor 0-30 ppm
6313802	NO sensor 0-300 ppm
6313803	H_2 sensor – 0-2000 ppm
6313804	HCl sensor 0-30.0 ppm
6313805	HCN sensor 0-30.0 ppm
6313806	HF sensor 0-10 ppm
6313807	O_3 sensor (Ozone) 0-1 ppm
6313808	SIH_4 sensor (Silane) 0-50 ppm
6313809	Cl_2 sensor 0-10.0 ppm
6313810	PH_3 sensor (Phosphine) 0-1 ppm
6313811	AsH_3 sensor (Arsine) 0-1 ppm

9 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 or to the applicable local legislation, relevant to improving safety protection and health of workers exposed to the risks of explosive atmospheres.

The installation and maintenance of the gas monitor should be performed according to standards EN/IEC 60079-14 and EN/IEC 60079-17.

For intrinsically safe installations and especially for connections to the gas monitor, the person responsible for the intrinsic safety installation, called the *System designer*, must establish a system document demonstrating that the entire gas monitor system - Cable - Body is Intrinsically Safe (see standard IEC 60079-25 for the preparation of this document).

The BM 25/25W complies with the following standards:

ATEX	IECEx
EN 60079-0:2012/A11:2013	IEC 60079-0 (ed. 6), 2011
EN 60079-1:2014	IEC 60079-1 (ed. 7), 2014
EN 60079-11:2012	IEC 60079-11 (ed. 6), 2011
EN 60079-26:2015	IEC 60079-26 (ed. 3), 2014
EN 50303:2000	

9.1 ATEX areas and general rules

If the device is used in a contaminated atmosphere, the catalytic sensor must be calibrated it before its next use.

> ⚠️ Silicon vapors or other contaminants may have an adverse effect on catalytic sensors (slot 1) for combustible gas detection, and may distort measurements (under-estimated measurements).

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

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

Depending on the type of sensors used on the device, categories covered by the gas monitor are:

a) BM 25/25W <u>without</u> infrared sensors

- Surface industries: Category 1G, use in zones 0, 1 or 2
- Mines containing firedamp: Category M1, for use in all gas levels

b) BM 25/25W <u>with</u> infrared sensors

- Surface industries: Category 2G, use in zones 1 or 2
- Mines containing firedamp: Category M2, for use below a certain concentration of gas

The following operations are prohibited in explosive atmospheres:

- Opening of the instrument: sensors cover or rear cover.
- Charge the batteries using a universal or vehicle charger.
- Link-up with a computer.

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

The battery pack must be replaced by the original part specified by the manufacturer – TELEDYNE OLDHAM SIMTRONICS P/N 6311082.

9.2 Input/output parameters

9.2.1 Gas monitor recharge connector

The charger provided by TELEDYNE OLDHAM SIMTRONICS should only be used outside of the ATEX areas. When the recharging is done by a charger other than the one provided by TELEDYNE OLDHAM SIMTRONICS, its characteristics must not exceed a voltage of 30VDC and a current of 30 A.

9.2.2 Alarm relay output and dry logic input connectors

Input characteristics for the alarm relay output:
- U_i=30 V max.
- I_i=150 mA max.

Output characteristics for the dry logic input:
- U_o=5 V.
- I_o=50 mA.
- L_o=8 mH.
- C_o=7 µF.

Only circuits disconnected from power should be connected to digital input, or:

- Ui=0 V.
- Ii=0 A.

<div style="border">

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

</div>

A Descriptive Document System should be established by the person responsible for the installation as explained above.

9.3 Trickle charging connection (external power source)

The external power source for battery pack maintenance must be intrinsically safe and must be compatible with the following gas detector input characteristics:

- Ui=30 VDC.
- Ii=160 mA.
- Ci=0 µF.
- Li=0 mH.

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

9.4 Connectors wiring diagram

The paragraph *Connections* on page 4 describes the gas monitor's various connections. Unused connectors must be equipped with their protective cap.

9.5 ATEX and IECEx Markings

BM 25 (without radio communication module)

TELEDYNE OLDHAM SIMTRONICS
CE 0080
BM 25
IP 66
Ambient T: -20° C +55° C

⟨Ex⟩ II 1G/ I M1
Ex ia IIC T4 Ga / Ex ia I Ma

<u>With infrared sensor block</u>

IP 66

Ambient T: -20° C +55° C

⟨Ex⟩   II 2G / I M2
         Ex db ia IIC T4 Gb / Ex db ia I Mb

INERIS 05ATEX0044

Do not open in explosive atmospheres

serial number

manufacture year

Warning: Read the instructions carefully before starting-up. Substitution of components may compromise intrinsic safety.

BM 25W (with radio communication module)

TELEDYNE OLDHAM SIMTRONICS

CE 0080

BM 25W

IP 66

Ambient T: -20° C +55° C

⟨Ex⟩   II 1G/ I M1
         Ex ia IIB T4 Ga / Ex ia I Ma

or

⟨Ex⟩   II 2G / I M2
         Ex ia IIC T4 Gb / Ex ia I Mb

<u>With infrared sensor block</u>

IP 66

Ambient T: -20° C +55° C

⟨Ex⟩   II 2G / I M2
         Ex db ia IIC T4 Gb / Ex db ia I Mb

INERIS 05ATEX0044

Do not open in explosive atmospheres

Serial number

Manufacture year

Warning: Read the instructions carefully before starting-up. Substitution of components may compromise intrinsic safety.

9.6   Radio Communication Marking

Contains RF200 FCC ID : U9O-RF200

Contains RF200 IC : 7084A –RF200

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interferences, and (2) this device must accept any interference received, including interference that may cause undesired operation.

10 UE Declaration of Conformity

The document hereafter (2 pages) reproduces the UE declaration of conformity.

DECLARATION UE DE CONFORMITÉ

EU CONFORMITY DECLARATION

Réf : UE_BM25_rev C.1.doc

Nous,
We,

Teledyne Oldham Simtronics S.A.S., ZI Est, 62000 Arras France

Déclarons, sous notre seule responsabilité, que le matériel suivant :
Declare, under our sole responsibility that the following equipment :

Détecteurs de gaz BM 25 / BM 25W / BM 25A / BM 25AW

BM 25 / BM 25W / BM 25A / BM 25AW Gas Detectors

Est conçu et fabriqué en conformité avec les Directives et normes applicables suivantes :
Is designed and manufactured in compliance with the following applicable Directives and standards:

I) Directive Européenne ATEX 2014/34/UE du 26/02/14: Atmosphères Explosives
The European Directive ATEX 2014/34/EU dated from 26/02/14: Explosive Atmospheres

Normes harmonisées appliquées :
Harmonised applied standards

EN 60079 -0 : 2012 + A11 : 2013
EN 60079-1 : 2014
EN 60079-11 : 2012
EN 50303 : 2000

Attestation UE de Type du matériel
EC type examination certificate

INERIS 05ATEX0044

Catégorie*(Category)*/Marquage*(marking)*

IP66   Tamb : -20°C to +55°C

Détecteur sans cellule infrarouge
Detector without IR sensor

BM 25 (sans module de communication radio)
(without radio communication module)

II 1G / I M1
Ex ia IIC T4 Ga / Ex ia I Ma

BM 25W (avec module de communication radio)
(with radio communication module)

II 1G / I M1
Ex ia IIB T4 Ga / Ex ia I Ma
ou
II 2G / I M2
Ex ia IIC T4 Gb / Ex ia I Mb

BM 25A/AW

II 2 G / I M1
Ex db ia IIC T4 Gb / Ex ia I Ma

Détecteur avec cellule infrarouge
Detector with IR sensor

BM 25 (sans module de communication radio)
(without radio communication module)

II 2G / I M2
Ex db ia IIC T4 Gb / Ex db ia I Mb

BM 25W (avec module de communication radio)
(with radio communication module)

II 2G / I M2
Ex db ia IIC T4 Gb / Ex db ia I Mb

P a g e 1 | 2

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DECLARATION UE DE CONFORMITÉ

EU CONFORMITY DECLARATION

Réf : UE_BM25_rev C.1.doc

BM 25A/AW

⟨Ex⟩ **II 2 G / I M2
Ex db ia IIC T4 Gb / Ex db ia I Mb**

Notification Assurance Qualité de Production
Notification of the Production QA

INERIS 00 ATEX Q403

INERIS, Parc Alata
60550 Verneuil en Halatte France

Délivré par l'Organisme notifié numéro 0080
Issued by the Notified Body n°0080

II) Directive Européenne CEM 2014/30/UE du 26/02/14: Compatibilité Electromagnétique
The European Directive EMC 2014/30/UE dated from 26/02/14: Electromagnetic Compatibility

Normes harmonisées appliquées :
Harmonized applied standards

EN 50270 : 2015 for type2
CEM-Appareils de détection des gaz
EMC- apparatus for the detection of gases

III) Directive Européenne R&TTE 99/5/CE du 07/04/99
The European Directive R&TTE 99/5/EC of 07/04/99

Normes harmonisées appliquées
Harmonised applied standards

EN 300 328 : 1.8.1 Compatibilité électromagnétique et spectre radioélectrique (ERM); Les systèmes de transmission à large bande; Fonctionnement de l'équipement de transmission de données dans la bande ISM à 2,4 GHz et en utilisant des techniques de modulation à bande large; EN harmonisée couvrant les exigences essentielles de l'article 3.2 de la directive R&TTE
Electromagnetic compatibility and Radio spectrum Matters (ERM);Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

EN 62479 : 2010 Evaluation de la conformité des appareils électriques et électroniques de faible puissance aux restrictions de base concernant l'exposition des personnes aux champs électromagnétiques (10 MHz à 300 GHz)
Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

Ce matériel ne doit être utilisé qu'à ce pour quoi il a été conçu et doit être installé en conformité avec les règles applicables et suivant les recommandations du fabricant.
This equipment shall be used for the purpose for which it has been designed and be installed in accordance with relevant standards and with manufacturer's recommendations.

A Arras, le 20/05/2020 / *Arras, May 5th, 2020*

AM. Dassonville
Certification Responsible

Dass

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