Gas Analyzer
for TC Sensors
(CO2, H2, N2)
Series 62101, 64101, 65101

Operating Manual

Dextens

Disclaimer

Please read and understand the user manual before installing and using the products described herein. It is also recommended to follow the safety recommendations from this manual.

The material in this manual is for informational purposes only. The products it describes are subject to change without prior notice, due to the manufacturer's continuous development program.

Dextens SA makes no representations or warranties with respect to this manual or with respect to the products described herein.

Dextens SA shall not be liable for any damages, losses, costs or expenses, direct, indirect or incidental, consequential or special, arising out of, or related to the use of this material or the products described herein.

Symbols and conventions
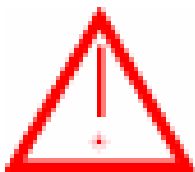
The danger sign indicates actions or configurations that may be dangerous for the user or that may lead to wrong measurements. Read and understand these paragraphs before starting to use the described material.

CE conformity

The Series 6X101 instruments are manufactured conforming to the requirements of the electromagnetic compatibility directive 89/336/CEE and the low voltage directive 73/23/CEE.

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1 Process gas analyzer, Installation

1.1 Content of the Package

When ordering a 6X101 process gas analyzer, you receive the following items:

1.   The process TC gas analyzer

2.   The wall-mount support plate
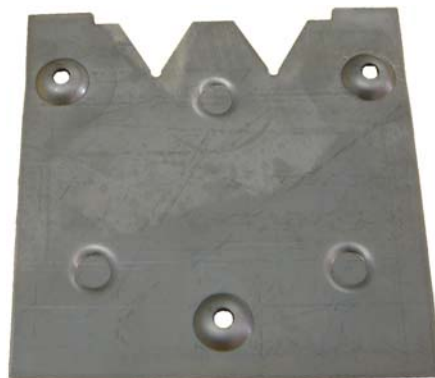
3.   The user manual.

1.2 Accessories

There are no dedicated accessories for the wall mount TC gas analyzer. Please take a look at the TC sensor manual for the flow chambers, pipe adapters and other sensor related accessories.

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1.3   Installation

Instrument and wall-mount plate dimensions (mm)

The process gas analyzer is intended to be mounted on a wall using the wall-mount support plate. Please have a look on the drawing below for the dimensions and the holes position. The instrument has a clip on its back panel, which will slide over the wall-mount support plate.
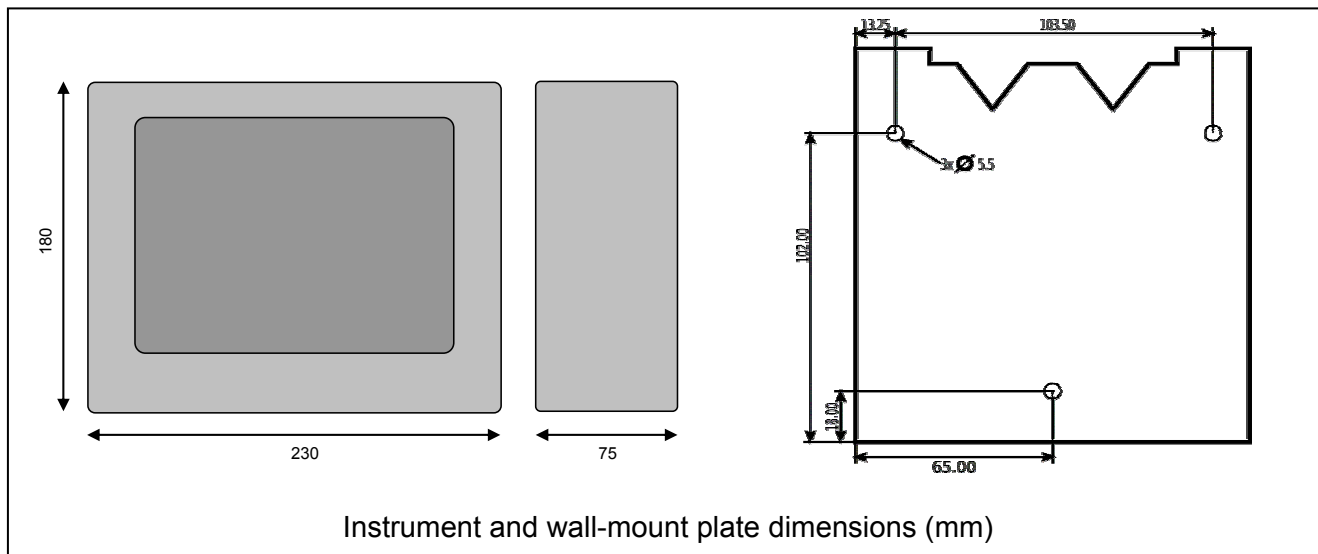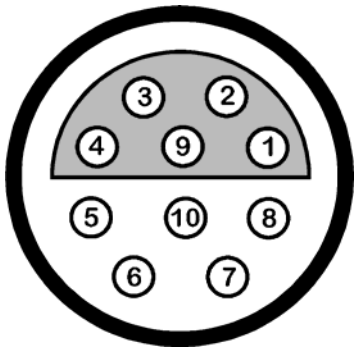
Take in account that a minimum clearance of 230mm to the left is required to completely open the panel. Also keep in mind that you will need a clearance of 120mm to the bottom for the electrical connections

1.4   Sensor Connection

There are the wiring details. They are given for information purpose only.

Lemo10 pin	Sensor signal
1	Power ground
2	Polarisation voltage (V2)
3	Purge valid command
4	Thermal cutoff
5	V+ power
6	24V power
7	TC chip voltage (V3)
8	Signal ground
9	V- power
10	Temperature voltage

1.5   Power Input connection

The installation of the power input requires the intervention of qualified and authorized personnel for electric installations.

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Before connecting the instrument to the mains, make sure that the instrument has been configured for your local supply (230VAC or 115VAC). Check the sticker on the back panel for the right voltage.

The power cable must have 3 wires (minimum section: 0.75 mm^2 each) with a double insulation for the phase, neutral and protective earth. They must be connected to the provided internal plug as shown in the picture bellow.

Live   Neutral   Earth

Power connector wiring and location on the main board
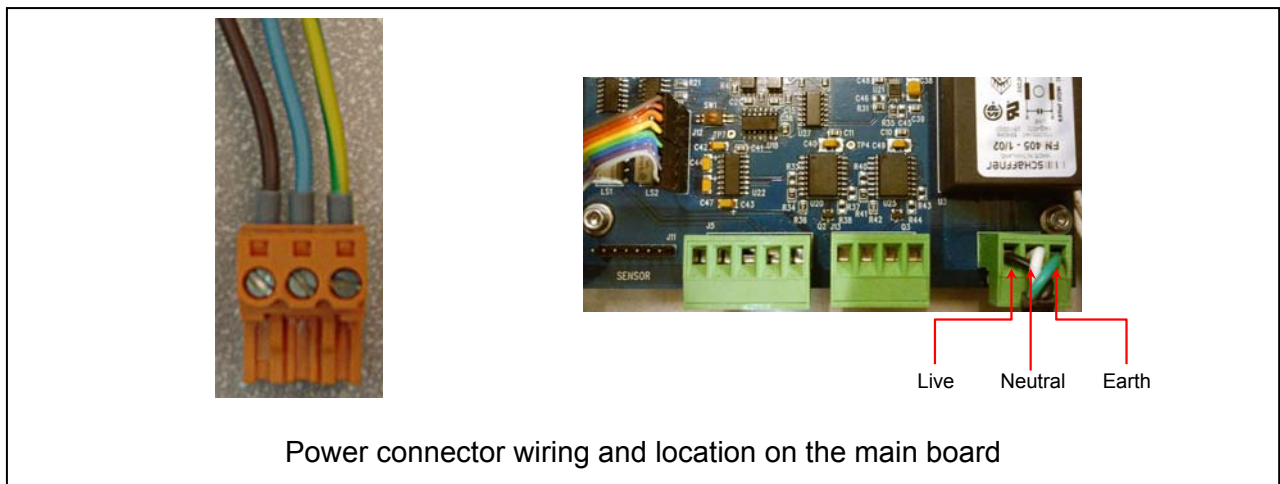
1.5.1   Cable fixation

The power input cable is fixed to the instrument using strain relief bushings. It uses a M16 cable gland for diameter from 6mm to 10.5mm. Follow the instructions for the cable installation:

1. Strip off 60mm of the external insulation.

Fig. 1
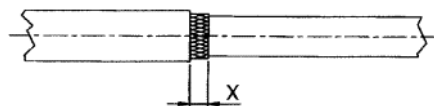
2. Strip off 5mm of the 3 cables insulations.
3. Unscrew the cable gland nut; remove the rubber gasket (position 2) and the metal washer (position 3).

Fig. 2

4. Pass the cable through the nut, the gasket and the washer.
5. Insert the cable in the bushing.
6. Push the seal inside the gland.
7. Screw the gland to tighten cable passage.

Fig. 3

1.6 The Current Outputs

The instrument provides 2 analog current outputs. The first one is representing the gas concentration in the configured units and range (cf. 2.5.3.2 for the software configuration) and the second one gives the temperature of the sensor.

The temperature output has a fixed range, the 0% current is obtained for -5ºC (23ºF or 268.15K) and below. At the other end, the full range current is obtained for 100ºC (212ºF or 373.15K) and above.

The connection and the wiring indications are represented in the picture below:

Out(gas) + — Out(temp) -
Out(gas) - — Out(temp) +

Analog output connector wiring and location on the main board
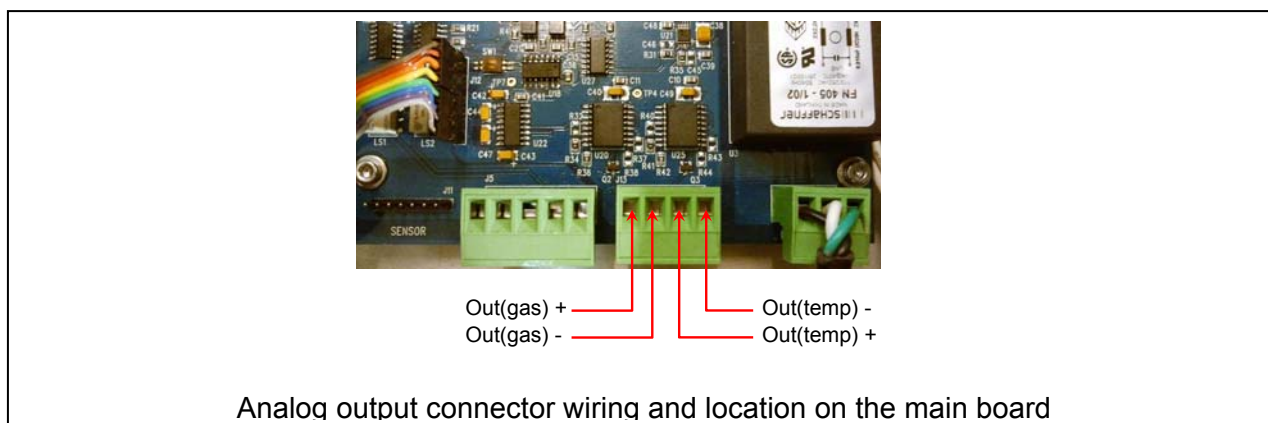
1.6.1 Cable fixation
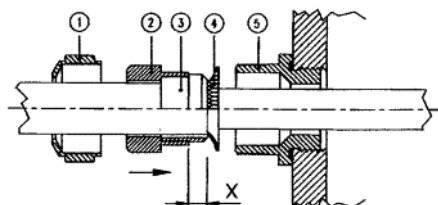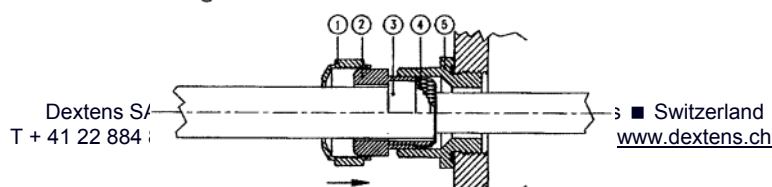
The current output cable is fixed to the instrument using EMC (the cable shield can be connected to the instrument's box) strain relief bushings. It uses a M16 cable gland for diameter from 6mm to 10.5mm. The installation's instructions are the same as in paragraph 1.5.1 excepted for the shield that must be bend over the metal washer (position 3).

1.7 The Serial Outputs

For instrument-to-PC connections of 12 meters or less, the RS-232 output can be used. Dextens supplies a 3 meters cable for instrument-to-PC connection, with a LEMO-4 plug on one end, and a standard DB 9 plug on the other.

Connect the LEMO-4 plug from this cable to the instrument, and the 9-pin plug to a serial port on your PC (If your PC only has a 25-pin serial port connector, you will need a 25-to-9-pin adapter).

Lemo4 pin	RS232 signal	Sub D9	User RS232 signal
1	GND	5	GND
2	TxD	2	RxD
3	RxD	3	TxD
4	Not connected	-	Not connected

1.8 The Alarm Outputs

The instrument provides 2 low power alarm relays, each relay has a normally open (NO) and a normally closed (NC) switches and both relays have a common point (look at the schematic below).

Alarm output connector wiring and location on the main board
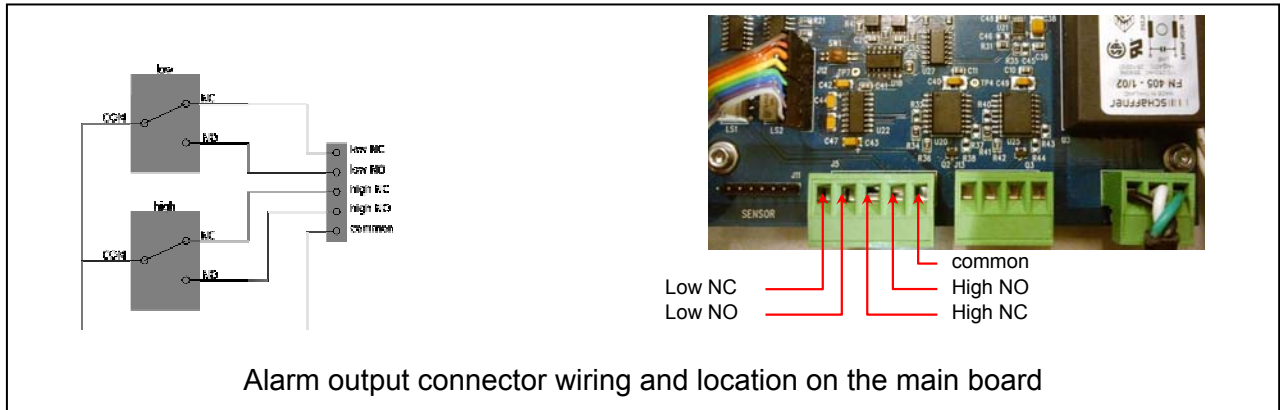
The connector wiring is shown in the picture below. Take the same precautions as for the power connector wiring to ensure the enclosure tightness.

The LOW relay is either used to signal that the gas concentration is below the lower limit (in High-Low mode, cf. 2.5.3.1.3 for configuration) or that the gas concentration is above the lower limit (in High-HighHigh mode, cf. 2.5.3.1.4 for configuration).

The HIGH relay is used to signal that the gas concentration is above the upper limit in both working modes. The following table lists the alarm condition signaled by the instrument.

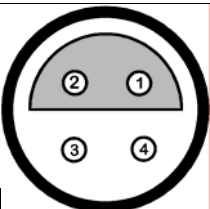| Condition	LOW (NC) to COM	HIGH (NC) to COM	LOW (NO) to COM	HIGH (NO) to COM
Power off	closed	closed	open	open
No alarm	closed	closed	open	open
Low alarm	open	closed	closed	open
High alarm	closed	open	open	closed
Sensor not connected	open	open	closed	closed

= Relay is open, = Relay is closed.

1.8.1 Cable fixation

The alarm output cable is fixed to the instrument using EMC (the cable shield can be connected to the instrument's box) strain relief bushings. It uses a M16 cable gland for diameter from 6mm to 8mm. The installation's instructions are the same as in paragraph 1.5.1 excepted for the shield that must be bend over the metal washer (position 3).

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1.9 USB Computer Connection

The connection to a computer through the USB is done with a standard USB A – B cable. To access the USB port, open the instrument's door. Unlock the keyboard and plug the "square side" of the USB cable. Take a look on the picture to get the details.

USB
Connector

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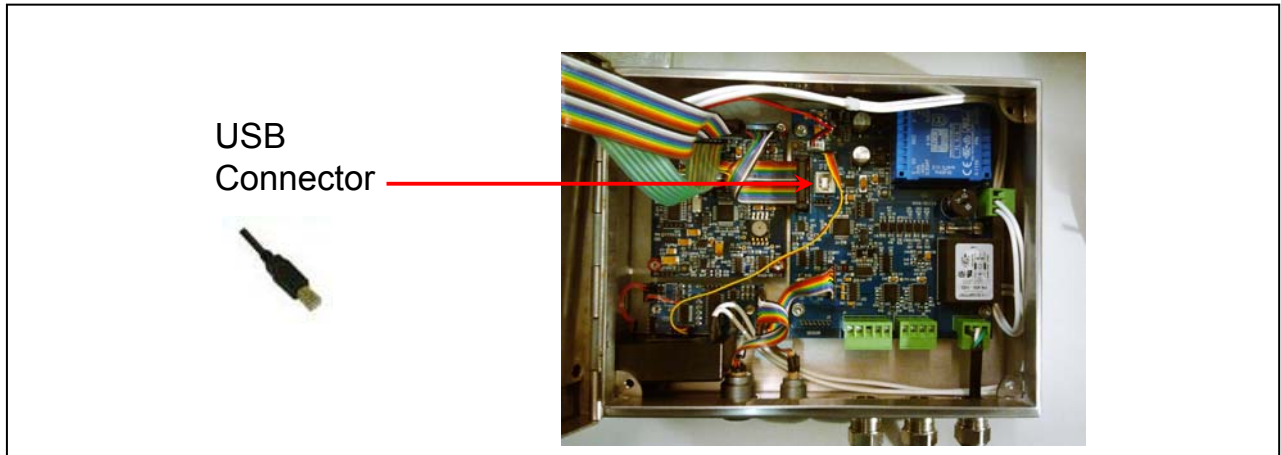
2   Instrument Operation
2.1   Process Front panel
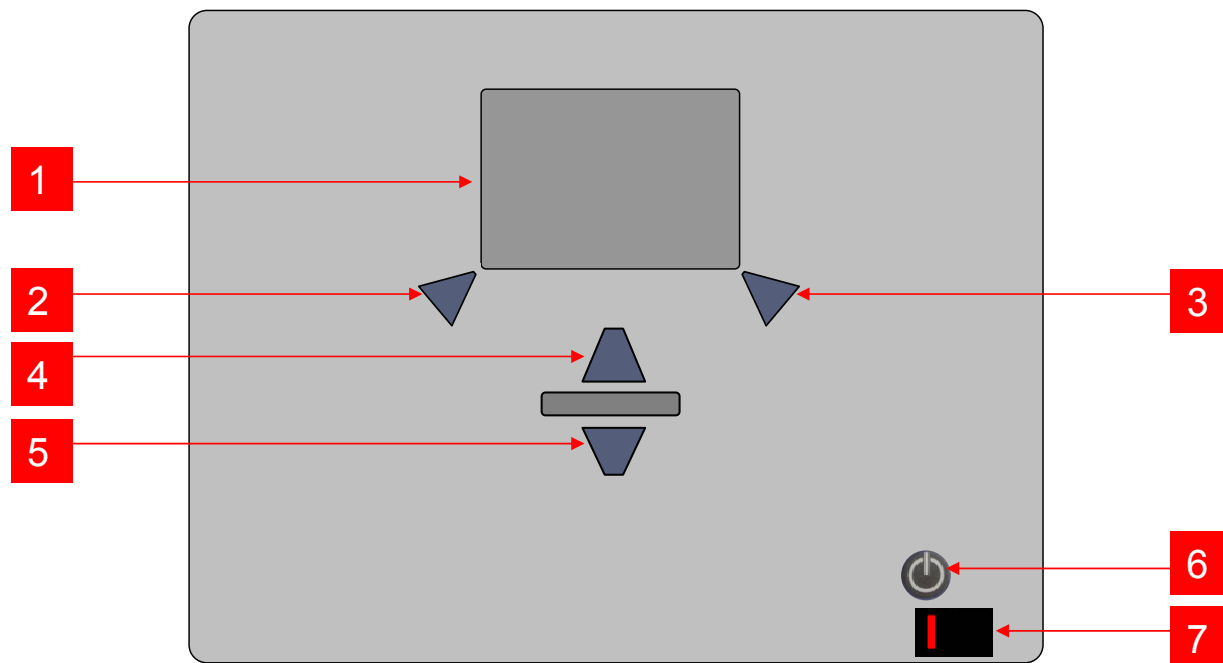
1. Graphical LCD display.
2. Contextual key. It is related to the bottom left screen corner.
3. Contextual key. It is related to the bottom right screen corner.
4. Up key.
5. Down key.
6. ON/OFF button. Press it about 2seconds to switch on and off the instrument
7. Mechanical switch. This switch cuts the main power from the instrument.

2.2   Quick start

After installing the instrument and sensors as described in the previous chapter. Press for more than two seconds the "On / Off" button to switch on the instrument. The startup sequence is described in the following lines.

The first operation done by the instrument is to initialize the software and proceed with some hardware test and configuration. During this phase the screen displays a Dextens Logo.

Shortly after starting, the display shows the device manufacturing information.
- **Model**: Instrument model identification.
- **SN**: Instrument serial number.
- **Manu**: Manufacturing date.
- **Soft**: Software revision.

These are useful when you need information from Dextens and must be included in all your communications.


```
device information

Model :51200
SN    :0000129
Manu  :05.04.12
Soft  :1.09
```

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It continues with the information about the connected sensor.

- **Sensor**: Sensor serial number.
- **Manu**: Manufacturing date.
- **Calib**: Date of the last calibration.
- **Memb**: Type of the used membrane.
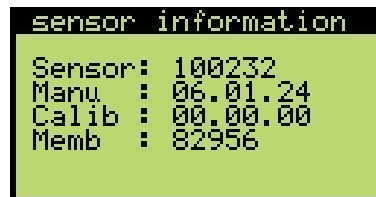
In case no sensor has been connected or when the connected sensor has no tag (also called 1 wire EEPROM), the mentioned information are not available and it requires a calibration before entering the measurement screen.

```
sensor information

Sensor: 100232
Manu  : 06.01.24
Calib : 00.00.00
Memb  : 82956
```

Finally the instrument enters the measurement mode and will show the gas concentration and the sensor temperature.

```
10.04.12 12:21
0.00         PPB
1.2          °C
Sto 018     menu
```

Once you finished using the instrument, press for about 2 seconds the power button to switch off the instrument.

2.2.1   Measurement screen

The picture below shows you a typical measurement screen with explanations about the different area in the screen.
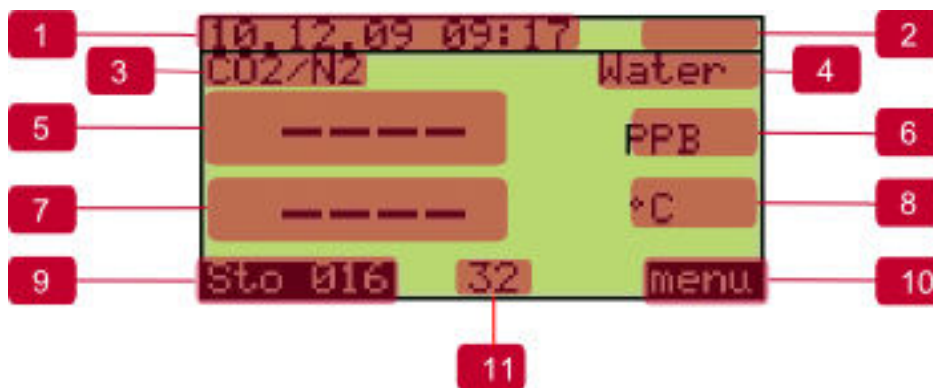
1.   Date and time indication.
2.   Battery gauge (portable only).
3.   Measured gas and purge gas
4.   Indicates the medium in which the gas is dissolved. Blank if gas measurement.
5.   Gas concentration
6.   Gas concentration unit
7.   Temperature
8.   Temperature unit
9.   Data storage or logging indication
10.   Menu soft key
11.   Purge / measurement cycle counter

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When the sensor is disconnected, the display line 5 and 7 are both filled with dashes. When the temperature is too high and the thermal cutoff is enabled, the display line 3 contains dashes but the temperature is still displayed.

2.2.2   Menu screen

The picture below shows you the first menu screen with explanations about the different area in the screen.
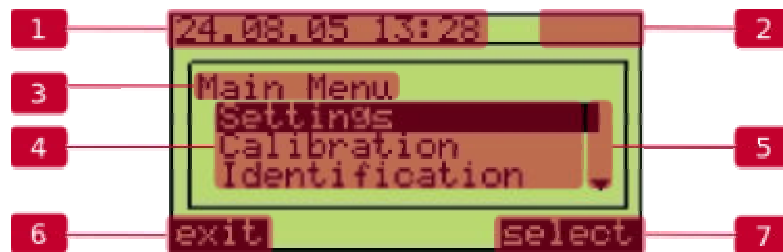
1. Date and time indication.
2. Battery gauge (portable only)
3. Menu title
4. Menu items
5. navigation slider
6. Function attached to the left soft key: Exit menu or return to previous menu.
7. Function attached to the right soft key : Enter sub-menu or execute item

When you are in the measurement screen, press the right contextual key to open the main menu. There are four sub menus but only two of them are activated by default. The other two items are activated after the PIN code has been entered. Please refer to Chapter 2.3 for the detailed menu structure and, in the following paragraphs which are related to a specific menu or sub-menus.

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2.2.3   User Input

Before being able to get the full power of this instrument, the user must understand how he can enter information in the instrument. The picture here under shows you a typical input screen and explains what the different areas are.

1. Input title.
2. Input help or indication.
3. The part of the input that is being modified.
4. Function attached to the left soft key: Select previous digit or cancel the input.
5. Function attached to the right soft key: Select next digit or validate the input.

When you first enter an input screen, the cursor highlights the left most digit or part of the input. At this time pressing the left soft key cancel the input. You can use the UP and DOWN arrows to modify its value. Once the digit has the expected value, press the right soft key to move the cursor to the next position. Repeat that procedure until you reach the right most position. Now pressing once more the right soft key will validate the input. Take a look to the sequence below that' shows how to change the system date and time.

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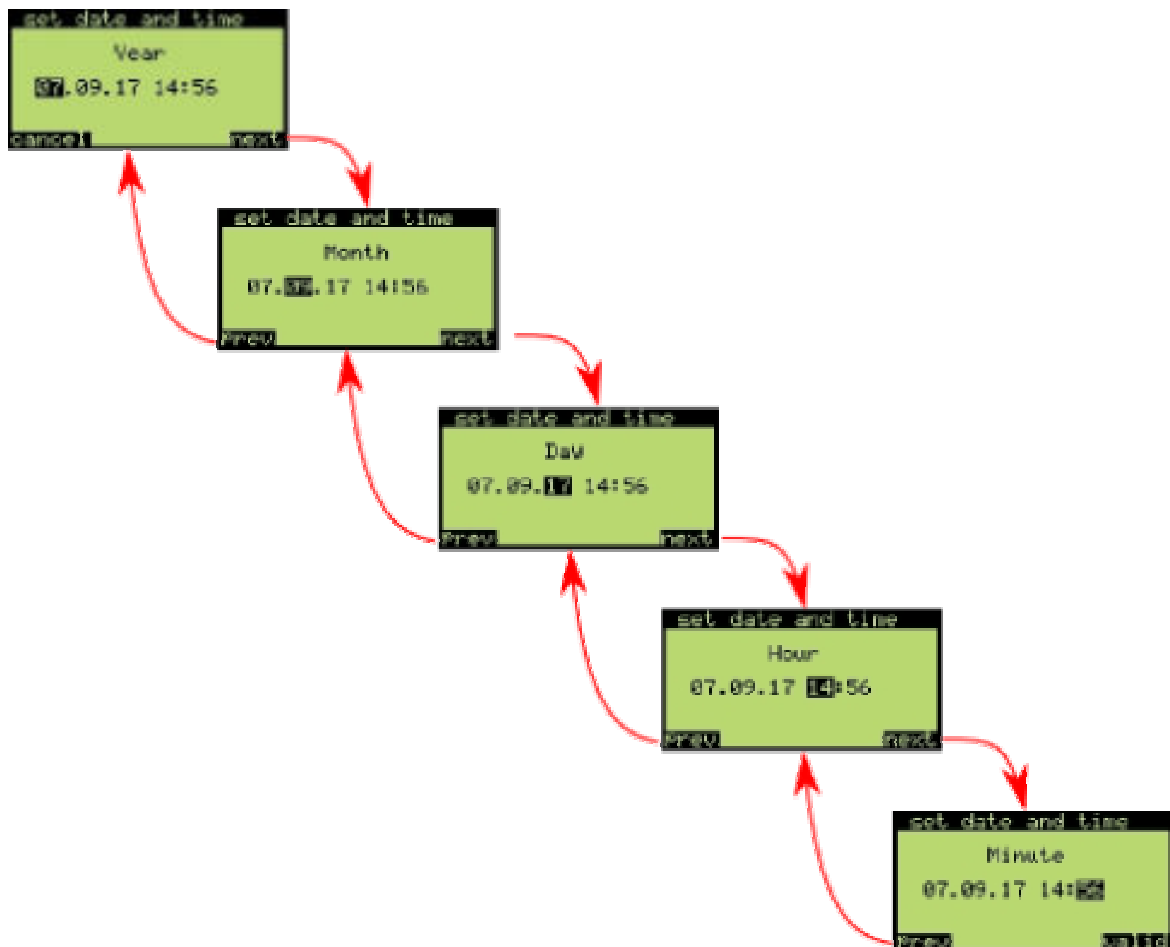
2.3 Menu Organization

The following diagrams show how the functions are organized in the menus.

Main Menu
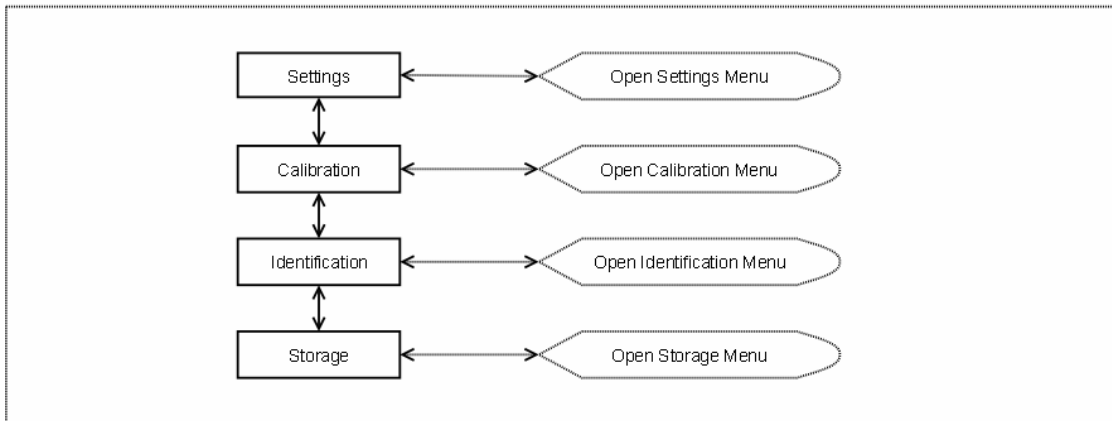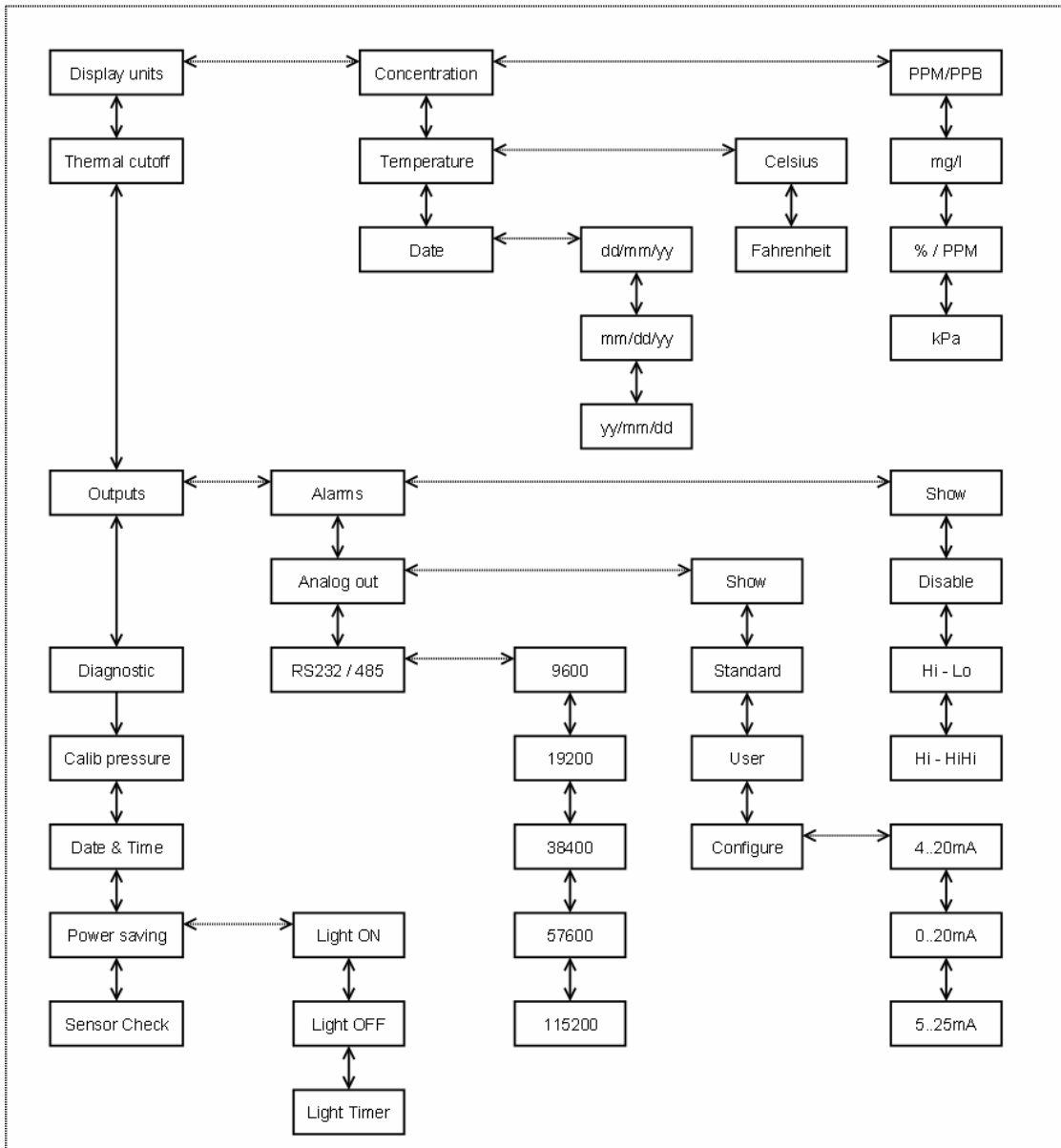
```
Settings        ───────►   Open Settings Menu
   ▲
   ▼
Calibration     ───────►   Open Calibration Menu
   ▲
   ▼
Identification  ───────►   Open Identification Menu
   ▲
   ▼
Storage         ───────►   Open Storage Menu
```

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Settings Menu

```
Display units ←········· Concentration ←··················· PPM/PPB
     ↕                         ↕                               ↕
Thermal cutoff            Temperature ←···········→ Celsius    mg/l
     ↕                         ↕                        ↕       ↕
     ↓                        Date ←·······→ dd/mm/yy  Fahrenheit  % / PPM
     ↓                                          ↕                  ↕
     ↓                                       mm/dd/yy             kPa
     ↓                                          ↕
     ↓                                       yy/mm/dd
     ↓
  Outputs ←········· Alarms ←···································· Show
     ↕                  ↕                                        ↕
     ↓              Analog out                    Show         Disable
     ↕                  ↕                           ↕            ↕
  Diagnostic       RS232 / 485 ·······→ 9600     Standard     Hi - Lo
     ↕                                    ↕          ↕            ↕
  Calib pressure                        19200      User        Hi - HiHi
     ↕                                    ↕          ↕            ↕
  Date & Time                           38400    Configure ←··· 4..20mA
     ↕                                    ↕                      ↕
  Power saving ·······→ Light ON        57600                  0..20mA
     ↕                     ↕              ↕                      ↕
  Sensor Check         Light OFF       115200                  5..25mA
                          ↕
                      Light Timer
```

Identification Menu

```
        Enter PIN
           ↕
        Modify PIN
           ↕
        Sensor's ID
           ↕
        Device's ID
```

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Storage Menu

```
        ┌─────────────────┐
        │  Show Memory    │
        └─────────────────┘
                 ↕
        ┌─────────────────┐
        │    Manual       │
        └─────────────────┘
                 ↕
        ┌─────────────────┐        ┌─────────────────┐
        │   Automatic     │ ◄·····► │      15s         │
        └─────────────────┘        └─────────────────┘
                 ↕                          ↕
        ┌─────────────────┐        ┌─────────────────┐
        │    Clear all    │        │      30s         │
        └─────────────────┘        └─────────────────┘
                                           ↕
                                   ┌─────────────────┐
                                   │     1min         │
                                   └─────────────────┘
                                           ↕
                                   ┌─────────────────┐
                                   │     5min         │
                                   └─────────────────┘
                                           ↕
                                   ┌─────────────────┐
                                   │     15min        │
                                   └─────────────────┘
                                           ↕
                                   ┌─────────────────┐
                                   │     30min        │
                                   └─────────────────┘
                                           ↕
                                   ┌─────────────────┐
                                   │     60min        │
                                   └─────────────────┘
```

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2.4 Identification

The identification menu groups the function related to the user, sensor and instrument identification.

2.4.1 Enter PIN

To secure the use of the instrument, some functions (settings and calibration) are enabled only if the user enters a secret code, also called PIN code. The purpose of this menu item is to let the user enter its PIN code to unlock the restricted functions of the instrument. Once the PIN code is entered, it will remain valid for 10 minutes. After that delay, the user needs to enter again the PIN code.
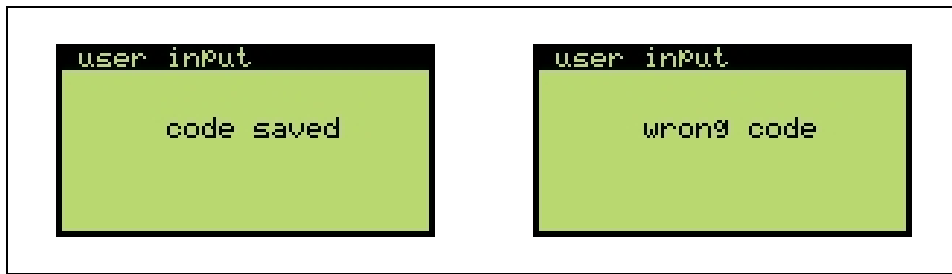

All instrument shipped by Dextens have the same default PIN code: **000000**

2.4.2 Modify PIN

This is a restricted function. To unlock it, the user needs to enter the current PIN code (cf. §2.4.1). To make sure the entered value is the expected one, the instrument asks the user to enter the new PIN code twice. Of course the two values must be equal to save the new PIN code. The picture shows you the complete input sequence.


After validation of the PIN code confirmation, the instrument confirms whether the new PIN code has been saved or rejected.

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In case you forgot your PIN code, Dextens provides a small software tool working on any personal computer (with windows XP) which lets you restore the factory default PIN code.

2.4.3   Device ID

This function shows the instrument manufacturing information for a short time then it returns to the measurement screen. The information provided on the screen are:
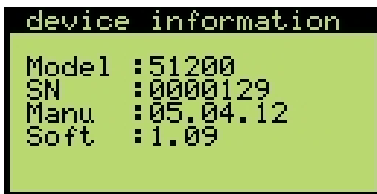
- **Model**: Instrument model identification.
- **SN**: Instrument serial number.
- **Manu**: Manufacturing date.
- **Soft**: Software revision.

If you have questions about a specific instrument, please copy the information on this screen. It will greatly ease the communication with your local distributor.

2.5   Settings

The access to this menu is protected by the PIN code. This means that the menu will appear only after a valid PIN code has been entered.

2.5.1   Display Units

This sub-menu lets you customize the display units for the gas concentration, the temperature and the date.

2.5.1.1   Concentration

This menu lets the user change the display unit for the gas concentration. In all cases the instrument measures the partial pressure of gas in the tested medium. That partial pressure is then converted in the requested unit. The instrument has four possible choices:


1. **PPM**: This unit is used for dissolved measurements. It displays the ratio between the number of gas molecules and the number of water molecules. It is well suited to measure the gas concentration in beverages, water in power plant and ultra-pure water.
2. **mg/l**: This unit is used for dissolved measurements. It displays the weight of the gas dissolved in 1 liter of liquid. It is well suited to measure the gas concentration in beverages, water in power plant and ultra-pure water.
3. **g/kg**: The same as above but takes in account the density of the medium.
4. **v/v**

5. **%**: This is used for gaseous measurements. The displayed value is the ratio between the number of gas molecules and the number of gas molecules. To compute this value, the instrument uses a measure of the atmospheric pressure. Therefore this display unit is only valid if the measured medium is at atmospheric pressure.
6. **kPa**: This is used for gaseous measurements. The displayed value is the partial pressure of gas in the measured medium. This display unit is well suited for measures in gas at variables pressures.
7. **Bar**: same as above but expressed in bar.

2.5.1.2 Temperature

This menu lets the user change the display unit for the temperature. The instrument has two choices:

1. **°C**: Shows the temperature in Celsius degrees.
2. **°F**: Shows the temperature in Fahrenheit degrees.
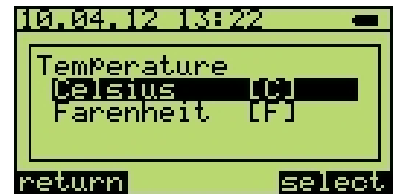
This measurement is also used internally for compensating the effect of the temperature on the membrane and on the tested medium. To get the best accuracy and time response the temperature sensor has been placed as near as possible from the membrane inside of the sensor. Nevertheless, depending on your application (liquid or gas, flow rate, ….) it may take a little time to the temperature to stabilize.

2.5.1.3 Date Format

This menu item lets the user select his preferred date format. This choice only modifies the date display format (in the title bar and when displaying the stored measurements). But it has no effect on the date and time input (cf. §2.5.6). There are 3 choices:

1. **DD/MM/YY**: European date format (day / month / year)
2. **MM/DD/YY**: American date format (month / day / year)
3. **YY/MM/DD**: ISO date format (year / month / day)

2.5.2 Thermal Cutoff

This menu lets you select whether the thermal cutoff is enabled or not and select the cutoff temperature.

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Thermal cutoff is an important feature because it increases time between maintenances. When enabled, the thermal cutoff function switches off the sensor polarization when the measured temperature rises above a fixed limit. Its main purpose is to prevent the sensor from measuring during the Clean-In-Place (CIP) or Sterilize-In-Place (SIP) phases and gas monitoring is not useful.

To avoid oscillation on the polarization, the thermal cutoff has a hysteresis. It means that the instrument switches off the polarization when the temperature is higher than a specified value, and only switches on when the temperature drops below the specified value minus 2.5°C.
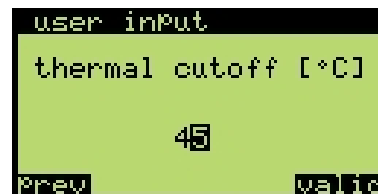
When the user decides to enable the thermal cutoff, he will be prompted to enter the requested cutoff temperature. The factory default is 45°C.

2.5.3   Outputs (Process only)

This sub-menu is only available on the process (wall-mount) instruments.

2.5.3.1   Alarms

The process instruments have 2 alarm relays. They can be used to signal unexpected gas concentration values. It is important to note that these relays are low power switches and can only be used to report an alarm. Never use them to switch pumps, valves or other electro-mechanical devices.

2.5.3.1.1 Show Settings

This function displays the current alarm settings.

2.5.3.1.2 Disable Alarms

This function forbids the instrument to generate any kind of alarms. It is the factory default.

2.5.3.1.3 High – Low Mode

This function configures the instrument to generate an alarm when the gas concentration is too low or too high. The user is prompted to select the lower (min) and the upper (max) bound. Please look at the truth table below:

Condition	Relay 1	Relay 2
(gas < min) and (gas ≤ max)	Closed	Open
(gas ≥ min) and (gas ≤ max)	Open	Open
(gas ≥ min) and (gas > max)	Open	Closed

Where a closed relay signal an alarm. In other words a closed relay lets the electricity go through it.

2.5.3.1.4 High – HighHigh Mode

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This function configures the instrument to generate an alarm when the gas concentration is above a first limit and generate another alarm when the gas limit is above the second limit. This mode can be used to generate a warning when gas concentration increases and an alarm when the gas concentration is too high. The user is prompted to select the warning (min) and the alarm (max) levels. Look at the truth table below:

Condition	Relay 1	Relay 2
(gas < min) and (gas < max)	Open	Open
(gas ≥ min) and (gas < max)	Closed	Open
(gas ≥ min) and (gas ≥ max)	Closed	Closed

2.5.3.2 Analog Outputs

The process instruments have 2 analog current outputs. They are used to transmit the gas concentration and the temperature to a control center. The gas output range is user configurable and the temperature output is fixed (-5°C .. +100°C).

2.5.3.2.1 Show Settings

This function displays the analog output settings.

2.5.3.2.2 Standard Settings

This function selects the factory default settings (0 .. 300ppb) for the gas concentration output.

2.5.3.2.3 User Settings

This function lets the user select the range of interest for the analog output. He will be prompted to enter the lowest and the greatest gas value.

2.5.3.2.4 Configuration

This function let the user select the current output boundaries to suite the plant standard. It is possible to switch between the following choices:

1. **4..20mA**: This is the most common choice and the factory default.
2. **0..20mA**: Another choice.
3. **5..25mA**: May be useful for a few places.

2.5.3.3 RS-232 / RS-485

The process instrument as a digital output which sends every second all the measurements on its serial port. The data fields are separated by tabulation and the field order is:

1. Gas concentration.
2. Gas unit.
3. Temperature.
4. Atmospheric pressure.
5. Alarm 0 flag ('a' when alarm 0 is active, '-' when inactive).
6. Alarm 1 flag ('A' when alarm 1 is active, '-' when inactive).

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7. No sensor flag ('s' when alarm 0 is active, '-' when inactive).
8. Thermal cutoff flag ('t' when alarm 0 is active, '-' when inactive).

With this menu, the user can select the output bit rate. Choices are:

1. 9600 bauds
2. 19200 bauds
3. 38400 bauds
4. 57600 bauds
5. 115200 bauds

2.5.4 Diagnostic

This menu groups in one screen all the measurements done by the instrument. It is useful to diagnose some sensor problems. The available information are:

- Gas concentration and its unit.
- The sensor temperature measurement and its unit.
- The atmospheric pressure (in milli-bar)
- TC chip voltage (in volt)
- Cycle counter

2.5.5 Calibrate Pressure

This function lets the user calibrate the barometric pressure sensor that is used for the in-air sensor calibration and for the gaseous display unit in percent.
The user is prompted to enter the absolute atmospheric pressure for its location. If you get this information from a weather forecast internet site, make sure it is an absolute pressure and not a value reported to the sea level pressure. In the latter case, use the following formula to compute an approximated value: $P_{abs} = P_{sea} - 0.11 \cdot H$

Where
- P_{abs} = the absolute pressure
- P_{sea} = the value reported to the sea level
- H = the altitude in meter of your location

Please note that it is not useful to calibrate the pressure sensor more than once a year.

2.5.6 Set Date and Time

The user can set the system date and time with this menu.

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2.6   Calibration

This paragraph explains the content of the calibration menu and how the user should proceed to get a good calibration. The Dextens sensors are sold pre-calibrated and there should be no need to calibrate them between services.

When selecting the calibration menu, the instruments shows the configuration screen the following points have to be entered :

2.6.1   Calibration Parameters

The screen asks you to enter the calibration parameters

1. Gas : Select the measured gas and the purge gas
2. Memb : Select the membrane used for the measuremen\
3. Calib : Enter the span gas concentration.

To navigate from a line to the next use the right contextual key, to go back use the left contextual key. To change the selected value use up/down arrow.

For instance you want to measure CO2 with a N2 purge using a 82956 membrane and you have access to a 100% CO2 gas bottle.
Go to the display unit, select concentration unit PPMV the go to calibration screen, enter CO2/N2 on the 1st line, 82956 as membrane and 100.000 % in the last line. And continue.

2.6.2   Calibration

After you entered the calibration parameters, the screen shows you the calibration progress. The calib menu will appear only when the instrument specified that the calibration is stable.

This process may take a long time.

1. Measured gas / Purge Gas
2. Medium in which the gas is dissolved (null when gas phase)
3. Number of successive valid measurement
4. Calibration efficiency

Expect 4 valid measurement to enable the calibration.

2.7 Storage

The user has the possibility to store up to 255 measurements in the instrument's memory. It can be done either manually or automatically. In the manual mode, the main screen shows in the lower left corner the "Store xxx" label. Pressing the left contextual key saves the current measure. In the automatic mode, the instrument saves the measurements periodically. The left contextual key becomes inactive and the lower left corner shows "Log xxx"

2.7.1 Show Memory
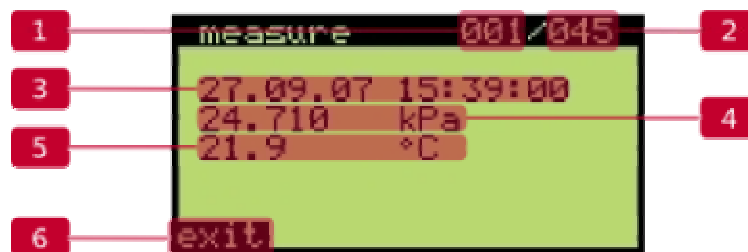
1. Current sample
2. Total number of samples
3. Date and time stamp.
4. Sample's gas concentration and measurement unit
5. Sample's temperature measurement
6. Leave the measurements

The navigation from one point to another point is done with the up and down keys.

2.7.2 Manual Storage

This menu point selects the manual storage mode.

2.7.3 Automatic Storage

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This menu point opens a sub-menu with the choices of storage period from 15[s] to 60[min].

2.7.4   Clear Memory

This menu point is only visible after a PIN code has been entered. It let the user clear all measurements from the instrument memory.

```
confirmation

   clear the memory?


no                    Yes
```

```
clear measures

      Clearing :
         112

```

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3 Data connection

3.1 General Information

Dextens provides some programs that work on standard desktop or laptops computers. They can be used by the end users and the agents to get access to some of the instrument's functionalities through the external USB connection. In the following part of this chapter, theses programs will be called the "user tools"

3.2 Requirements

Before you can start using the user tools, please check that you meet all the following requirements:

- A working computer with Windows XP or Windows 2000.
- a process gas gas analyzer.
- A standard USB cable if you are using a process analyzer.

It is important to note that the user tools probably work well on other version of the windows operating system but they were not tested and therefore we recommend using only the two officially supported versions.
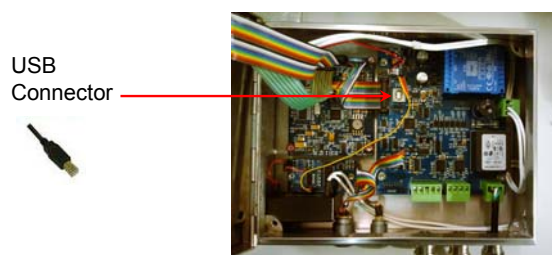
3.3 Instrument Connection

3.3.1 Process

The process instrument is also simple to connect but it requires opening the instrument's front panel.

Unplug the instrument from main power, switch it off using the mechanical switch on the front panel. Open the front door. Then unscrew and open the front panel.

Connect the square USB connector on the printed circuit board. The image shows you where the connector is located.

USB Connector

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Connect the "flat" USB connector on a spare plug in your personal computer.

Switch on the instrument using the mechanical switch and then the touch button.

3.4 Using the Programs

3.4.1 Driver Installation

To avoid the need to install drivers on your computer, we based the communication with the instruments on a standard transport protocol. This means that the first time you connect a gas analyzer to a computer. Windows will show you that new hardware has been detected and it will install automatically the standard driver. You do not have anything to do for it.

3.4.2 Program distribution and installation

These tools are distributed to the end user or local distributors by e-mail or on a CD shipped with the instruments. They are packaged as a set of small programs especially designed to work as is. They *do not need to be installed* on the computer, thus making your life easier.

To use these tools on a regular basis, we recommend creating a directory on the computer's hard disk. Then copy all the programs in there and finally create shortcuts on your desktop to access them quickly.

3.4.3 Restoring PIN Code

The program called "**usr_clear_pin.exe**" returns the instrument's PIN code to the factory default setting (987654). To do that, just start the program and follow the instruction given on the computer's screen.

3.4.4 Reading Data

The program called "**usr_read_data.exe**" lets you save the data saved in the instrument in you personal computer. The resulting file can be imported in spreadsheet programs like Excel. When you start, please follow the instruction given on the computer's screen.

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At one time in the wizard, you will be prompted to enter the name for the target file. Select carefully the destination on the hard disk to make sure you will find the file later. The easiest way to do that is to press the "…" button which will open a file selector.

3.4.5 Updating firmware

The program called "**usr_update_xyy.exe**" will update the instrument's firmware to version x.yy. As this program modifies the instrument's internals it might be dangerous if not targeted to the right instrument. Therefore read carefully the instruction in this manual and on the computer screen.
This program is *available only on request* and to avoid manipulation errors; it should be deleted after use.

3.4.5.1 Feedback

During the execution, the program generates a configuration file "xxxx.mcs", where the xxxx is the serial number and manufacturing date of the instrument, as shown in the picture below. **It is very important to us that you send back this file**. It proves that the updating program behaved well and gives us important information about the instrument version and calibration data. Thanks in advance.

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4   Technical Specifications

Power	230±10%VAC 50Hz or 150±10%VAC 60Hz Depending on the option.
Operating Limits	0 ºC to +40 ºC (32 ºF to 140 ºF)
Enclosure	IP 65 Stainless steel.
Dimension WxHxD	230 x 160 x 75mm
Weight	2.8 kg
Logging	255 measurement points Date and time stamp gas and sample temperature Atmospheric pressure Logging can be manual or periodic
Dissolved display unit	PPM/PPB, mg/l
Gaseous display unit	%/VPPM, kPa
Supported membranes	82952 and 82956
Thermal cut-off	Adjustable by the user.
Analog outputs	4-20mA, 0-20mA or 5-25mA user selectable
Alarm relays	2 relays rated : 125VDC, 30W, 1A
Serial output	RS-232 or RS-485
Interface	USB 1.1

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